AVIOM
Distributed Audio Networks

# AN-16/i-M

## A-NET INPUT MODULE

# User Guide

Document Rev. 1.00

# WARNING!

NO USER SERVICEABLE PARTS INSIDE

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL ONLY

- To reduce the risk of fire or electrical shock, do not expose this product to rain or other types of moisture.
- Operating Temperature: 10˚C to 40˚C (50˚F to 105˚F)

**CAUTION**:

- Using any audio system at high volume levels can cause permanent damage to your hearing.
- Set your system volume as low as possible.
- Avoid prolonged exposure to excessive sound pressure levels.

**IMPORTANT**:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications to the product not expressly approved by Aviom, Inc. could void the user's FCC authority to operate the equipment.

# Warranty Information

Please record the following information for future reference:

Your Authorized Aviom Dealer:

Name: _____

Address: _____

_____

Phone: _____

Serial Number of Your Aviom Product: _____

Date of Purchase: _____

Your Authorized Aviom Dealer is your primary source for service and support. The information recorded above will be helpful in communicating with your Authorized Aviom Dealer should you need to contact Aviom Customer Service. If you have any questions concerning the use of this unit, please contact your Authorized Aviom Dealer first. For additional technical support, or to find the name of the nearest Authorized Aviom Repair Station, check the Aviom web site at **www.aviom.com**.

To fulfill warranty requirements, your Aviom product should be serviced only at an authorized Aviom service center. The Aviom serial number label must appear on the outside of the unit, or the Aviom warranty is void.



Although every effort has been made to ensure the accuracy of the text and illustrations in this manual, no guarantee is made or implied as to the accuracy of the information contained within.

# Aviom, Inc. Limited Warranty

Aviom, Inc. warrants this product against defects in materials and workmanship for a period of one year from the date of the original retail purchase.

This warranty does not apply if the equipment has been damaged due to misuse, abuse, accident, or problems with electrical power. The warranty also does not apply if the product has been modified in any way, or if the product serial number has been damaged, modified, or removed.

If a defect is discovered, first write or call Aviom, Inc. to obtain a Return Authorization number. No service will be performed on any product returned without prior authorization. Aviom, Inc. will, at its option, repair or replace the product at no charge to you. The product must be returned during the warranty period, with transportation charges prepaid to Aviom, Inc., 1157 Phoenixville Pike, Suite 201, West Chester, PA 19380, USA. You must use the product's original packing materials for shipment. Shipments should be insured for the value of the product. Include your name, address, phone number, description of the problem, and copy of the original bill of sale with the shipment. The Return Authorization number should be written on the outside of the box.

THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY HAVE OTHER RIGHTS, WHICH VARY FROM STATE TO STATE (OR JURISDICTION TO JURISDICTION). AVIOM'S RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN HARDWARE IS LIMITED TO REPAIR AND REPLACEMENT AS SET FORTH IN THIS LIMITED WARRANTY STATEMENT. ALL EXPRESS AND IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE WARRANTY PERIOD SET FORTH ABOVE. NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER SUCH PERIOD.

AVIOM, INC. DOES NOT ACCEPT LIABILITY BEYOND THE REMEDIES SET FORTH IN THIS LIMITED WARRANTY DOCUMENT. AVIOM, INC.'S LIABILITY IS LIMITED TO THE REPAIR OR REPLACEMENT, AT OUR OPTION, OF ANY DEFECTIVE PRODUCT, AND SHALL IN NO EVENT INCLUDE INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND.

SOME STATES DO NOT ALLOW EXCLUSIONS OR LIMITATION OF IMPLIED WARRANTIES OR LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

# Contents


Warranty Information 3
Welcome 3
Features 3
The EtherCon Connector 3
Front Panel Components 4
Rear Panel Components 6
Package Contents 8
AC Line Conditioning 8
Rack Mounting 9
What is Category 5? 10
Cable Lengths 11
Extending Cable Lengths 12
About A-Net™ 12
Cleaning and Maintenance 13
Panel Descriptions 14
AN-16/i-M Front Panel 14
- Channel LEDs 14
- Phantom Power Switch 15
- Gain Knob 15
- Low Cut Rolloff 15
- Phase Invert Switch 16
- The Stereo Link Switch 16
- Power LED 17

AN-16/i-M Rear Panel 18
- Channel Input Jacks 19
- Channel Thru Jacks 19
- Channel Inserts 19
- Direct Line Outputs 20

A-Net Connections 21

Signal Flow 22
A-Net Connection Options 23
Series connection of A-Net devices 23
Parallel A-Net Routing 24
Extending A-Net Cable Runs 24
Connecting Audio 26
AN-16/i-M Rear Panel 26
Connecting a Mixer 26
Direct Output 27
Submixing 27
Bus Outputs 27
Aux Sends (Effects Sends) 28
Connecting an AN-16/o Output Module 29
Adding More Audio Outputs 30
Adding Personal Mixers 31
Audio Networks 32
16-Channel Systems 32
32-Channel Systems 33
A-Net Expansion 33
32 Send by Zero Channels Return 34
16 Send by 16 Channels Return 36
Adding More Audio Outputs 38
Expanding a Network with an A-Net Distributor 39
64-Channel Systems 40
AN-16SB System Bridge 40
Connecting the AN-16SB 41
Configuration Notes 42
Expanding a Network 44
Using Multiple System Bridges 45

# Welcome

Thank you for purchasing the **AN-16/i-M Mic Input Module.** This User Guide is designed to familiarize you with the features of your new product and to have you up and running in no time.

## Features

The AN-16/i-M Mic Input Module provides a host of professional features designed to make A-Net monitoring and audio networking products flexible and easy to configure in a variety of professional audio situations.

AN-16/i-M Mic Input Module Features:

- Sixteen audio channels
- Mic/line combo input jacks (XLR and TRS)
- +48 volt phantom power on each channel
- Phase Invert switch per channel
- 85Hz rumble filter per channel
- Channel link switches for stereo channel pairing
- Splitter provides sixteen Thru outputs
- Balanced insert points per channel
- Two parallel A-Net outputs
- EtherCon RJ45 connectors
- A-Net Expansion port for 32-channel operation

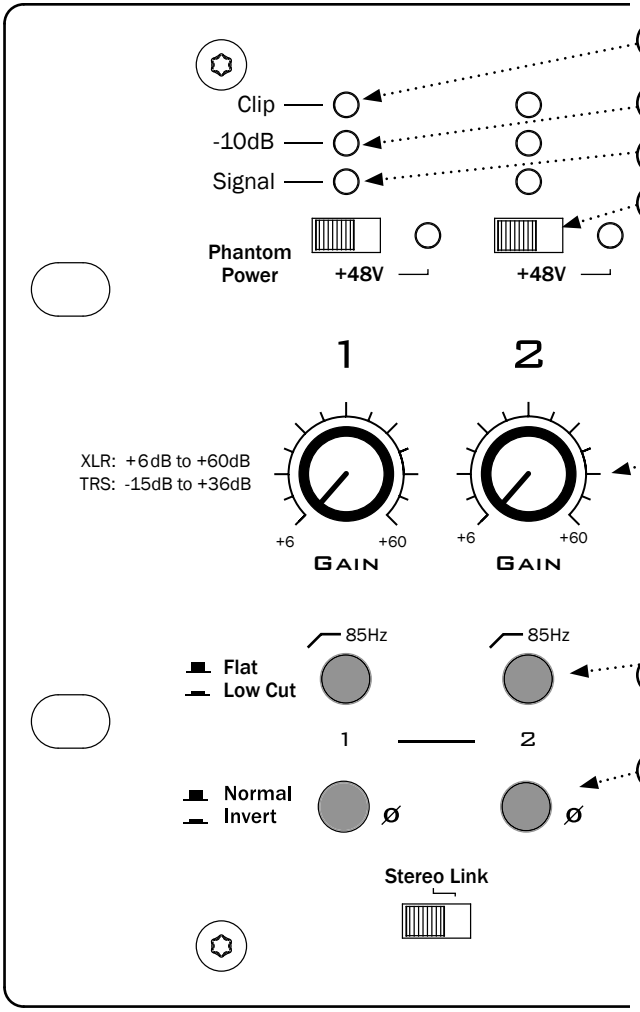
## The EtherCon Connector

The Neutrik EtherCon connector is a dual RJ45 type connector. It can receive a standard Category 5e cable or a cable fitted with the special heavy-duty EtherCon connector.

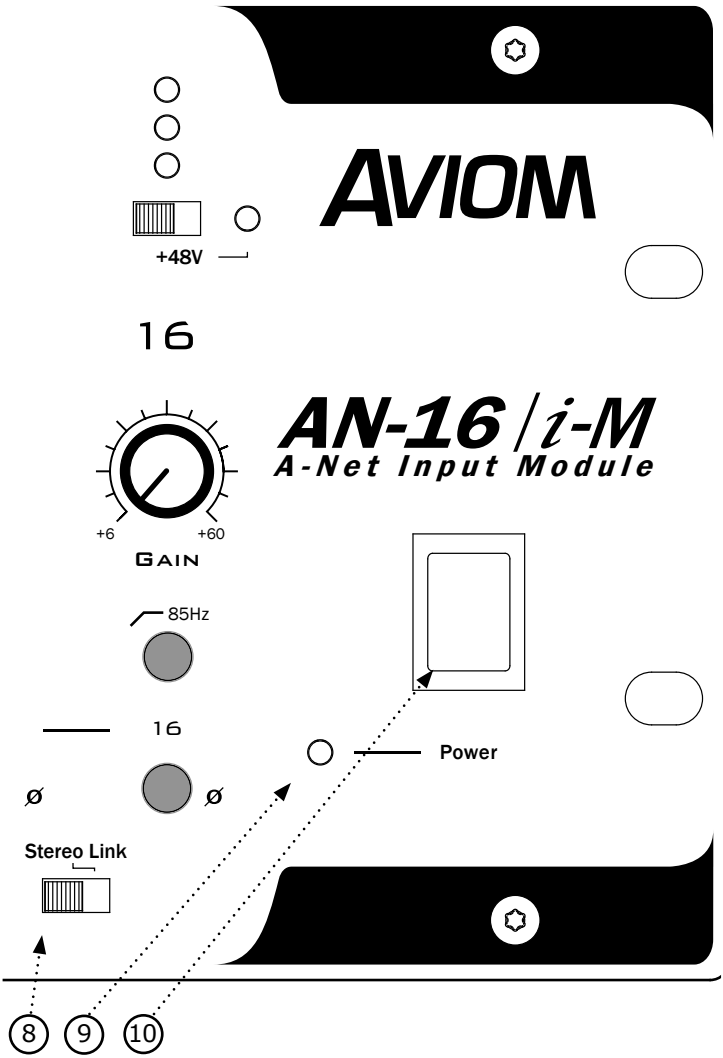
When using a standard Cat-5e cable, plug the cable into the center of the jack; release the cable by pressing on the small plastic tab built into the cable connector.

The locking EtherCon connector is similar to an XLR cable, the kind commonly used on microphones. Insert an EtherCon equipped cable into the jack until it clicks and locks in place. To remove the cable, press on the metal release tab at the top of the panel-mounted EtherCon jack and pull the connector outward.

# Front Panel Components

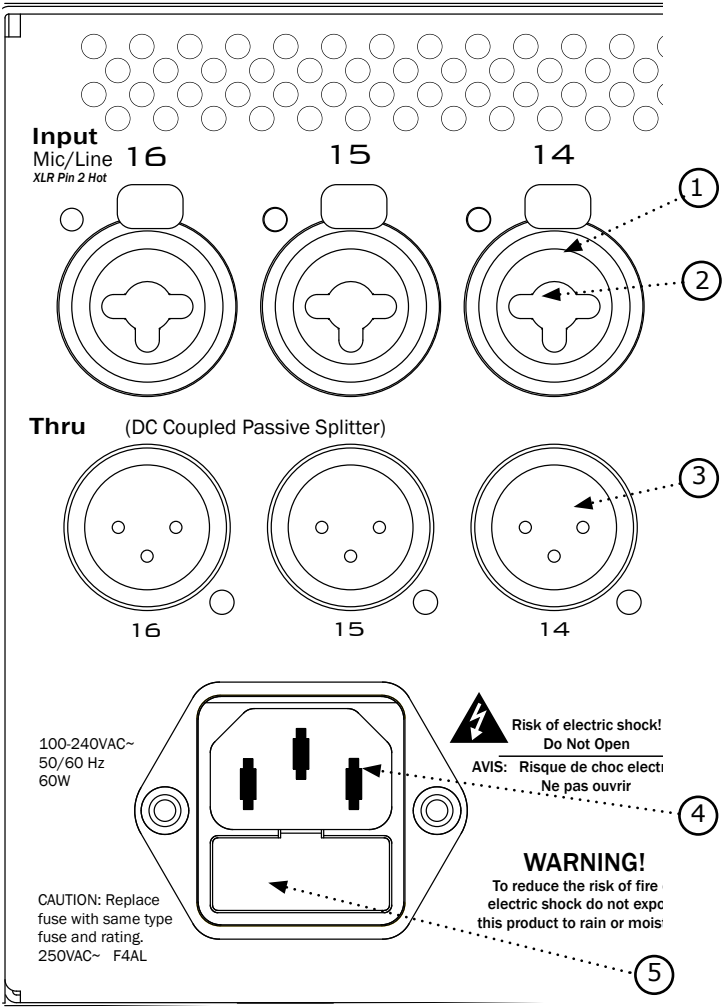



**1** Clip LED
**2** -10dB signal level LED
**3** Signal present LED
**4** +48 volt Phantom Power switch and LED
**5** Rotary Gain knob
**6** 85Hz Low Cut rolloff
**7** Phase Invert switch

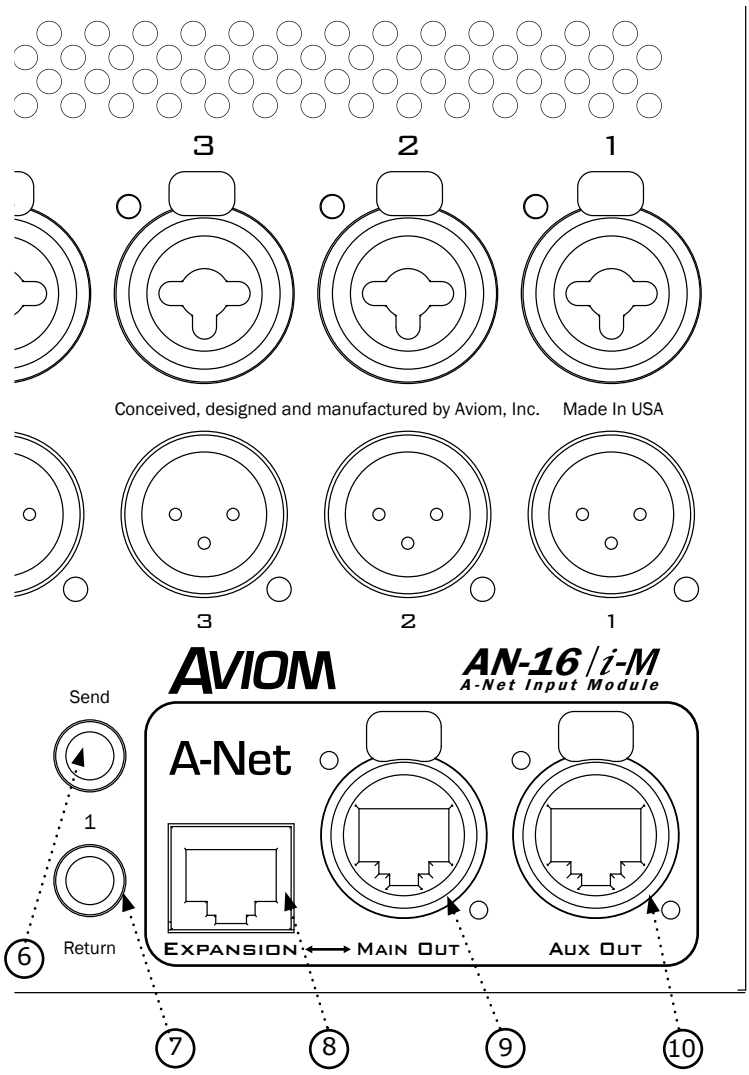



**8** Stereo Link switch
**9** Power LED
**10** Power switch

# Rear Panel Components




**1** XLR mic input
**2** TRS line-level input
**3** Mic Thru jack, XLR
**4** AC power inlet
**5** Fuse compartment




**6** Channel insert Send jack
**7** Channel insert Return jack
**8** A-Net Expansion jack
**9** A-Net Main Out jack
**10** A-Net Aux Out jack

# Package Contents

A complete AN-Series distributed audio network system consists of at least one AN-16/i-M Mic Input Module connected to an A-Net output device such as the AN-16/o Output Module or A-16II Personal Mixer. Many configurations are possible by using additional Input Modules and/or AN-16/o Output Module units. Check the contents of the shipping box carefully before making connections and continuing with installation.

The contents of the AN-16/i-M Mic Input Module box include:

- One AN-16/i-M Mic Input Module
- One power supply cable for the AN-16/i-M
- User Guide

Options for your system include

- Category 5 interconnect cables (or Category 5e)
- The AN-16SB System Bridge
- Aviom Personal Monitor Mixing System products such as the A-16II Personal Mixer, or A-16R rack mount Personal Mixer
- AN-16/o Output Module
- A-16D A-Net Distributor, or
- A-16D Pro A-Net Distributor

Also included with the system is a Warranty Registration, found within this User Guide. Be sure to fill out the form and return it to Aviom, Inc. via mail or fax as soon as possible.

# AC Line Conditioning

Aviom products are digital devices and as such are sensitive to sudden spikes and drops in the AC line voltage. Changes in the line voltage from lightning, power outages, etc. can sometimes damage electronic equipment.

To minimize the chance of damage to your equipment from sudden changes in the AC line voltage, you may want to plug your equipment into a power source that has surge and spike protection. Power outlet strips are available with built-in surge protection circuits that may help protect your equipment.

Other options for protection of your equipment include the use of an AC

line conditioner or a battery backup system (sometimes referred to as an *uninterruptible power supply*, or UPS).

# Rack Mounting

The AN-16/i-M Mic Input Module is designed to be installed in a standard 19-inch audio equipment rack. Each unit takes up three standard rack spaces (19 inches wide by 5.25 inches high).

The rack ears on each side of the device are designed to support the weight of the AN-16/i-M without additional hardware. Each rack ear contains holes for two screws per side. Always support the unit with all four screws.

To rack mount Mic Input Module, position it in the equipment rack at the desired location. Use standard rack-mounting screws (10-32 size) to attach the unit to your rack hardware. Tighten all four screws firmly, but avoid overtightening.

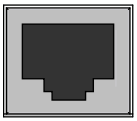
Aviom suggests the use of non-metallic washers between the rack-mounting screws and the device's finished surface to avoid marring the painted finish on your Aviom products.

Always allow adequate ventilation for devices mounted in equipment racks. Avoid placing your AN-16/i-M directly above or below other rack-mounted devices that produce high levels of heat, such as power amps.

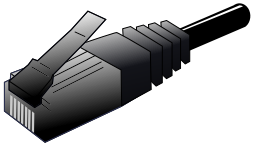
# What is Category 5?

Category 5 (sometimes referred to as *Cat-5*) describes a commonly used type of high performance network cabling. It is used mainly for data transmission purposes to connect computers, modems and other devices. A standard Category 5 patch cable consists of four twisted pairs of copper wire terminated by RJ45 male connectors. The cable assembly is used to provide connectivity between any two Category 5 female outlet jacks. A variation, called Category 5e (or Cat-5e), uses additional twists in the cable to reduce interference in high-speed network applications. In general, when using long cable lengths, select Cat-5e cables for best performance.

The RJ45 connector looks similar to the connectors found on a telephone system, only larger. The twisting of the wire pairs helps to shield the cable from unwanted interference from electrical fields or radio interference (sometimes referred to as "RF"). Cat-5 cabling supports frequencies up to 100 MHz and speeds up to 1000 Mbps.



RJ45 Jack



Cat-5 Cable

## Cables Used in the Aviom System

The Category 5 cables used with your Aviom system are interchangeable with any standard Category 5 (or Cat-5e) cables. If you need a longer cable for a particular application, any computer store should be able to supply you with an appropriate cable. A qualified technician should be able to build custom cables to any length (up to the maximum of 500 feet (about 150 meters) between components).

For fixed or permanent installations, you have the option of running Category 5 cables inside walls and terminating them with readily available wall panel connectors that include the RJ45 jack. Solid wire is recommended for permanent installations. Always use *unshielded* Cat-5 cables for best performance.

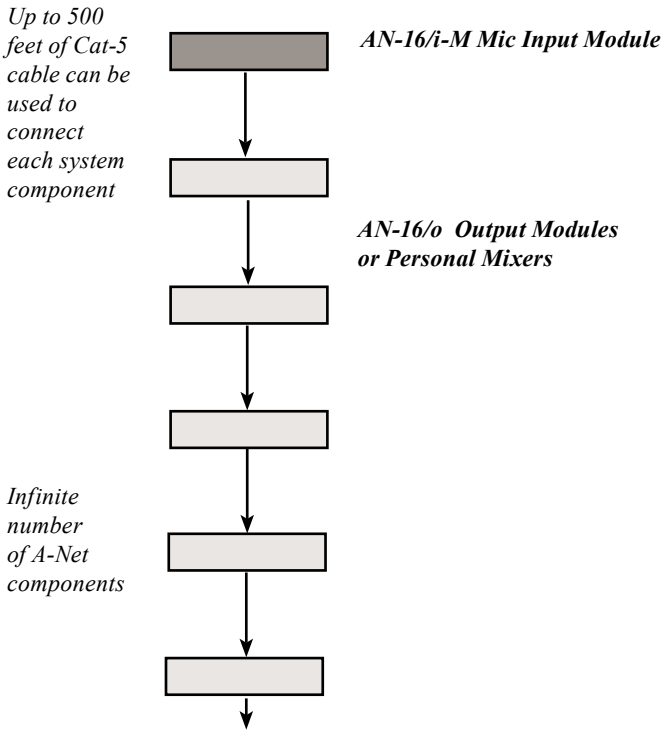
In addition to standard Category 5 and Cat-5e cables, Category 6 (Cat-6) cables can also be used.

**Note**: When purchasing Category 5 cables, be sure to buy only standard Cat-5 or Cat-5e cables, not those sold as *crossover* cables. A crossover cable is used for file transfer between two computers. A crossover cable is **not** compatible with your Aviom equipment.

## Cable Lengths

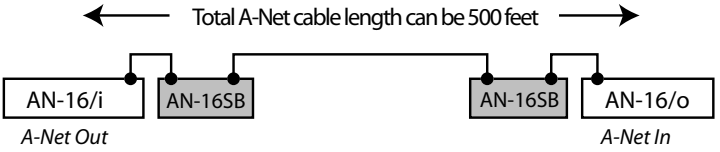
Category 5 cables used with your Aviom products can be up to 500 feet (approximately 150 meters) in length. The maximum cable length specification applies to the cable connected between the AN-16/i-M Mic Input Module and the first A-Net device (AN-16/o Output Module, Personal Mixer, etc.) in your system as well as for cable runs between each additional A-Net compatible device in your system.

Your cable length performance will be affected by a number of factors including the quality of the cables used, and the number of devices such as cable couplers used or wall panel interconnections in use. Use



Cat-5e or higher cables for best performance wherever possible.

When using the optional AN-16SB System Bridge, the cable length specification applies to the *total* cable length between the two A-Net devices being connected with the AN-16SB.




Pre-made cables in a variety of lengths and colors are available at most computer outlets.

## Extending Cable Lengths

Cables can be extended by using a simple passive device called an *inline coupler* to add length to existing cables (as long as you do not exceed the specified maximum cable length). If you need a longer cable on occasion, this is a simple solution. Note that it is possible that the maximum cable length specification can be compromised by using inline couplers or other passive cable connection devices.

# About A-Net™

Aviom's A-Net is a high-speed data transmission protocol. It is capable of sending and receiving uncompressed, high-quality audio using readily available Category 5 cables. The A-Net technology is a proprietary system developed by Aviom.

A-Net is based on Ethernet, a Local Area Network (or LAN) technology. This provides A-Net with a mature and robust base on which to build. However, Aviom products are not compatible with off-the-shelf computer products designed for Ethernet networks such as hubs and switches.

As used in the AN-Series Products, the A-Net signal carries sixteen channels of digital data from the AN-16/i-M Mic Input Module to each AN-16/o Output Module or Personal Mixer connected to the system.

Some of the benefits of using A-Net to transmit digital audio are:

- Virtually no latency
- No ground loops
- Easy cabling using readily available components
- An unlimited number of A-Net devices can be used in a system
- Long distances between system components

**Note:** While the Category 5 cables and connectors used on your Aviom products look like typical computer network connections, do not connect computers, routers, or other home and business networking equipment to your Aviom products.

# Cleaning and Maintenance

The exterior of your Aviom products should be cleaned with a dry, soft, lint-free cloth. For tougher dirt, you can use a cloth slightly dampened with water or with a mild detergent.

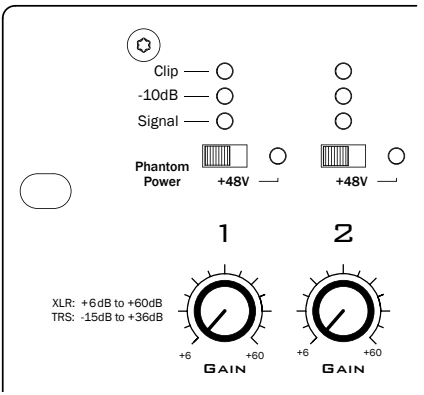
When cleaning your Aviom products, never spray cleaners directly onto the product surfaces. Instead, spray a small amount of the cleaning solution onto a clean cloth first. Then use the dampened cloth to clean the product.

**Note:** Never use solvents or abrasive cleaners on the finished surfaces of your Aviom products.

# Panel Descriptions

This section explains the basic layout of your new Aviom product. The diagrams on the previous pages can be used as a quick visual guide to the location of the components of the AN-16/i-M mentioned in this section.

## AN-16/i-M Front Panel




The front panel of the AN-16/i-M contains the Channel input strip, Stereo Link switches, Signal Present LEDs, Clip LEDs, Power indicator, and the AC power switch.

### *Channel LEDs*

The numbered Channels on the AN-16/i-M front panel correspond to the sixteen analog (mic or line) audio inputs on the rear panel of the unit. They are grouped together in pairs — Channels 1 and 2, Channels 3 and 4, etc. Each Channel contains three LEDs, one showing that there is an audio signal present, one LED to display when signal levels reach a point that is 10dB from maximum level, and another used to indicate that the input to a channel is causing audio clipping.

The lower LED, marked *Signal*, will light as long as an audio signal of at least -40dB is present on the channel. It provides an easy way to confirm that audio is indeed passing into—and being processed by—the AN-16/i-M.

The center LED lights when audio signals reach a level that is within 10dB of the maximum level before clipping.

The upper LED is marked *Clip*. It lights when input signal levels exceed the maximum of 0dB. If the Clip LED is lighting frequently, you should lower the level of the audio source using the AN-16/i-M Gain knob.

## Phantom Power Switch

Phantom power is provided for condenser mics on each channel. Engaging the Phantom Power switch for a channel delivers +48 volts to the XLR jack on the rear panel of the AN-16/i-M. The LED lights to indicate that phantom power is on.

> Note: Avoid using phantom power with line level devices.

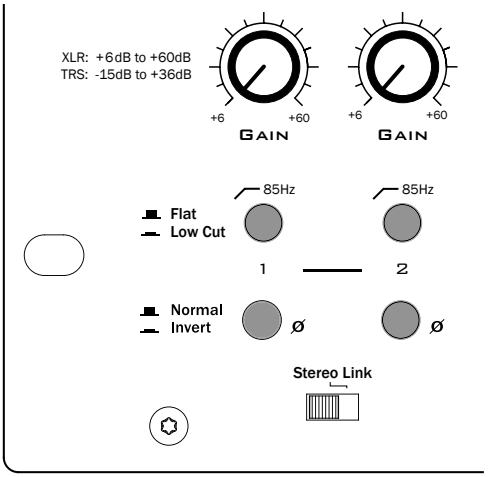
## Gain Knob

Each channel has a rotary Gain knob with continuously variable gain. Two gain ranges are available, one for the signals connected via the XLR jack and another for signals connected to the TRS balanced inputs on the rear panel combo jacks.

The XLR input has a gain range of +6dB to +60dB. The TRS input gain range is from -15dB to +36dB. The XLR input will be most often used with microphone signals, although it can also accept line level signals.

## Low Cut Rolloff

Below the Gain knob is the Low Cut switch. It provides a low frequency rolloff at 85Hz that can be used to minimize low frequency artifacts such as vibration noise and rumble. Press the switch in to engage the rolloff. In the up position, marked *Flat*, the filter is not engaged.




## Phase Invert Switch

The Phase Invert switch alters the polarity of the audio signal on a per-channel basis. It can be used to correct phase anomalies that sometimes occur when using multiple microphones on the same sound source (such as a drum kit). To invert the phase of a channel, set the channel's Phase - switch to the *in* position.

## The Stereo Link Switch

The AN-16/i-M Mic Input Module provides an easy solution for stereo input sources such as mixer sub-groups, keyboards, effects device outputs, CD players, etc. The Stereo Link switch is most useful when used to turn a pair of adjacent channels into a stereo channel that can be controlled as a single source on the A-16 series of Personal Mixers, which includes the A-16, A-16II and A-16R products.

When using the AN-16/i-M Input Module with AN-16/o Output Modules alone to create a distributed audio network or snake, the setting of the Stereo Link switch will have no effect.

There are eight Stereo Link switches on the front panel of the AN-16/i-M. They can be used in any combination, as your needs require. The Stereo Link switch is located between two channels—one odd and one even. Stereo Links always affect adjacent channels (for example, channels 1 and 2, channels 13 and 14, etc.).

The default setting, with the switch to the left, allows independent

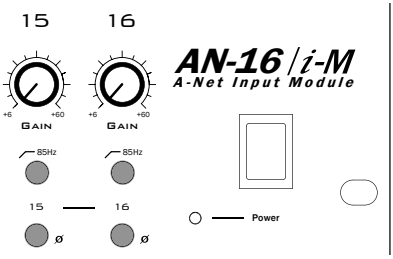
control of each input channel from A-Net Personal Mixer products connected to the system. To link channels together as a stereo input, move the Link switch to the right. (Moving the switch to the Link position causes all Personal Mixers, including the A-16CS Control Surface, connected to the system to instantly update their channel status.)

Some things to keep in mind about linked channels:

- The position of the Stereo Link switch does *not* affect the audio in the AN-16/o Output Module.
- Linking channels affects *all* A-Net Personal Mixers connected to the system.
- Any combination of stereo and mono channels can be used.
- If you want to control two input channels as a stereo source, they must be connected to an odd and even pair of channels, as indicated by the graphics on the AN-16/i-M front panel.
- Changes to the Stereo Link status can be made on the fly, with audio running through the system.
- All Personal Mixers will instantly update their channel status if the Link switch position is changed for any channel pair.
- The Link status is not saved when you create a Preset on A-16 (or A-16II, or A-16R) Mixers.
- Changing the channel link status will affect Groups you have created on A-16, A-16II and A-16R Personal Mixers in some cases.

## Power LED

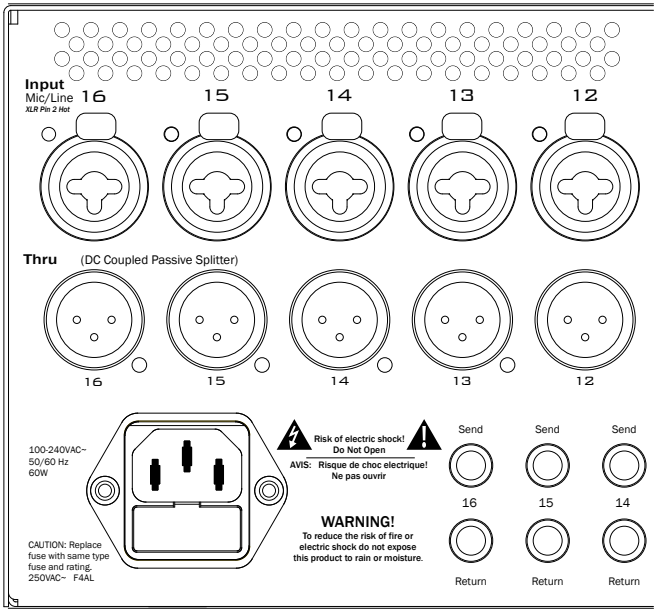
The right side of the AN-16/i-M Mic Input Module front panel interface also contains the Power LED. This indicator shows that power is connected to the unit. When the AN-16/i-M is powered up, a valid A-Net signal is being generated.



# AN-16/i-M Rear Panel

On the rear of the AN-16/i-M Mic Input Module are the power connector (with fuse), A-Net connections, the sixteen mic/line balanced analog audio inputs, the sixteen audio Thru jacks, and the insert Send/Return jacks.

Signal routing into and out of the AN-16/i-M Mic Input Module has been designed to be extremely flexible, allowing the AN-16/i-M to integrate into virtually any audio environment.




## Power Connector

The AN-16/i-M Mic Input Module comes with an internal switching-type power supply. This type of power supply can be used worldwide with a wide range of AC wall current output voltages. You do not need to replace the power supply if the unit will be used in countries where current voltages are different if you travel with your Aviom gear occasionally. (You may, however, need plug adapters to allow the power supply to be connected to wall outlets internationally since many countries use different physical plug layouts for their power systems.)

## Channel Input Jacks

The rear panel of the AN-16/i-M Mic Input Module contains sixteen audio Input jacks. Microphone or line level audio signals can be used. The combo jack used for audio input can accept an XLR connector or a 1/4-inch TRS connector.

The XLR input is designed to accept microphone-level signals from dynamic or condenser microphones. Phantom power is supplied for each channel for use with condenser mics. The XLR input can also accept a line level audio signal. But, be aware that using the XLR jack for a line level input can cause clipping with some extremely hot audio signals. If adjusting the Gain knob on the front panel does not reduce the clipping, use the TRS input instead.

The 1/4-inch part of the combo jacks can accept balanced or unbalanced signals using TRS or TS plugs.

> Note: Do not connect guitars or other high impedance sources to the line level inputs. Use a direct box to convert a guitar or bass pickup's signal to mic level.

Balanced signals (sometimes referred to as *TRS*, for Tip, Ring, and Sleeve) are found on many professional audio devices. The 1/4-inch connector used for balanced audio wiring has three conductors: the tip, the ring, and the sleeve. The balanced wiring system is ideal for keeping noise out of the audio signal from sources such as radio interference (sometimes called "RF").

Unbalanced audio signals (sometimes referred to as *TS*, for Tip and Sleeve) are found on many effects processors, music keyboards, and consumer electronics. Only two connectors are used, the tip and the sleeve. A standard musical instrument cable (sometimes called a guitar cord) uses this configuration, for example.

## Channel Thru Jacks

The sixteen XLR balanced audio Thru jacks on the AN-16/i-M provide an exact copy of the mic signal plugged into the Input jack just above it. This provides a passive splitter that can send a copy of the audio inputs to another audio mixer, for example.

No front-panel adjustments are passed on to the Thru connector with the exception of the phantom power used by condenser mics.

## Channel Inserts

Each of the sixteen audio channels has a dedicated set of insert send/return jacks. The insert jacks are 1/4-inch balanced TRS and are designed

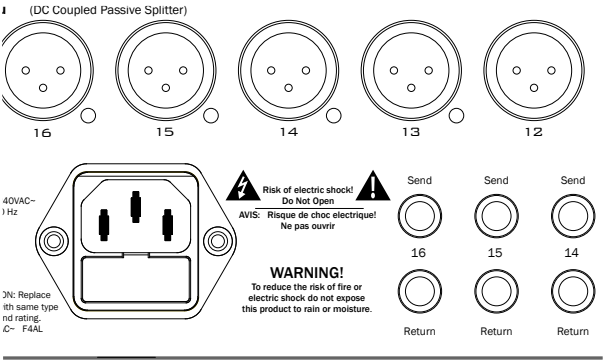
to allow audio processors such as compressors to be added to each channel.

Connect a cable from the channel's *Send* jack to the audio input of the effects processor. Connect another 1/4-inch cable from the device's output to the *Return* jack on the AN-16/i-M channel to be processed.

## Direct Line Outputs

The AN-16/i-M Input Module can also be used as a stand-alone mic preamp. The insert send/return functions as a line output if only the Send jack is used.

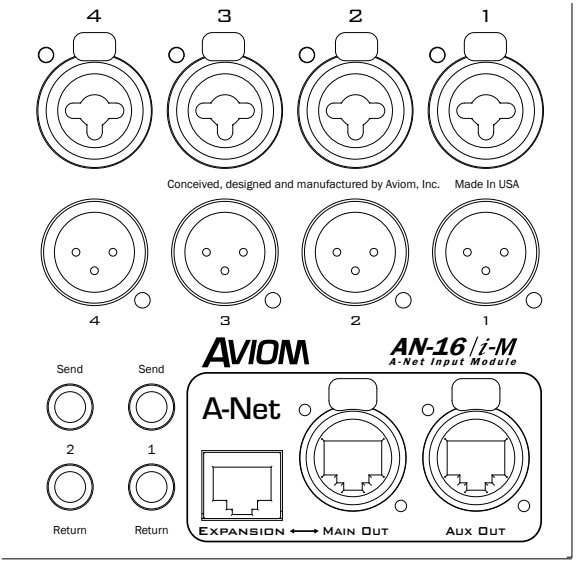
To send a channel's audio signal to another line level device, connect a cable from the channel's Send jack to the other device. Do not connect a cable to the AN-16/i-M Return jack as this will break the line out connection, creating an insert send/return path, as described above.




*The Insert **Send** jack can be used as a direct line output.*

# A-Net Connections

Three A-Net connections appear on the rear panel of the AN-16/i-M Input Module. There are two A-Net Out jacks and one A-Net Expansion jack.




## A-Net Main Out

The A-Net Out jack sends the A-Net data from the AN-16/i-M to an A-Net compatible device such as the AN-16/o Output Module. The AN-16/i-M has two A-Net Out jacks. The first, marked Main Out, is designed to be used as the primary A-Net connection to other devices. It has the ability to be used with the Expansion jack when creating digital snakes of up to 32 channels (described later).

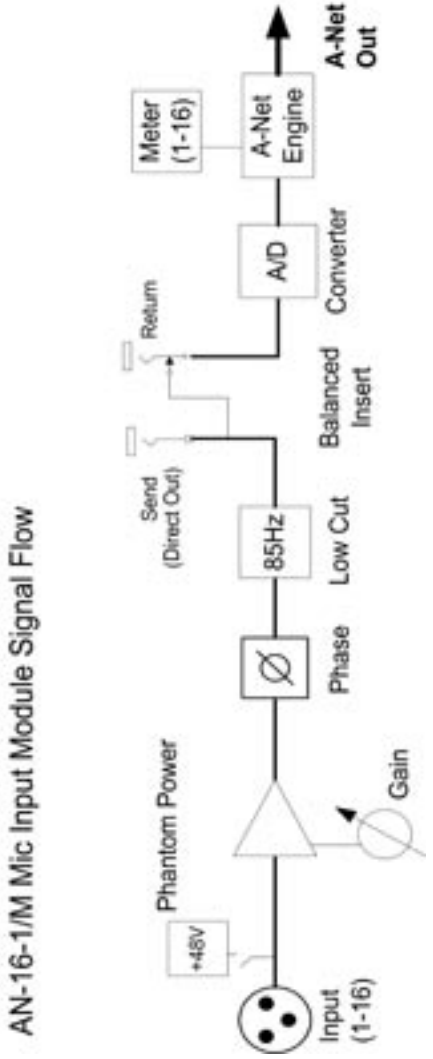
## A-Net Aux Out

The second A-Net Out jack, labeled Aux Out, carries only the A-Net signal generated by the AN-16/i-M and cannot be used with the Expansion jack in a 32-channel snake or distributed audio network configuration.

Use any standard Cat-5 cable for connections between devices. Remember that the maximum cable length between A-Net devices is 500 feet (150 meters).

## Signal Flow

This diagram shows the signal path as it flows through the AN-16/i-M. Note that the meter section is post insert; this means that the level shown on the meters is influenced by any processor that is connected to the insert points.



When a proper A-Net connection between the AN-16/i-M Mic Input Module and an AN-16/o Output Module (or A-16 Series Personal Mixer) exists, the A-Net Active LED on the receiving device will light.

### A-Net Expansion

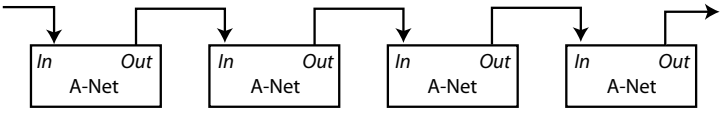
The A-Net Expansion jack is used when creating a 32-channel distributed audio network using at least two AN-16/i-M Mic Input Modules and two AN-16/o Output Modules. Using the A-Net Expansion jack allows all thirty-two channels of data to travel down a single Cat-5 cable up to 500 feet to the destination AN-16/i-M or AN-16/o units.

## A-Net Connection Options

In a simple system, the easiest connection method uses what is called a *daisy-chain*. That is, each A-Net device is connected in series. The first device in the chain receives the A-Net signal from the AN-16/i-M Mic Input Module. Each successive A-Net compatible device gets its A-Net connection from the A-Net Out jack of the device preceding it in the chain.

There is one drawback to this connection method, however. If one A-Net device in the chain is disconnected from the A-Net signal chain, all units beyond this point will not get any audio until the unit is reconnected to a valid A-Net source.

### *Series connection of A-Net devices*

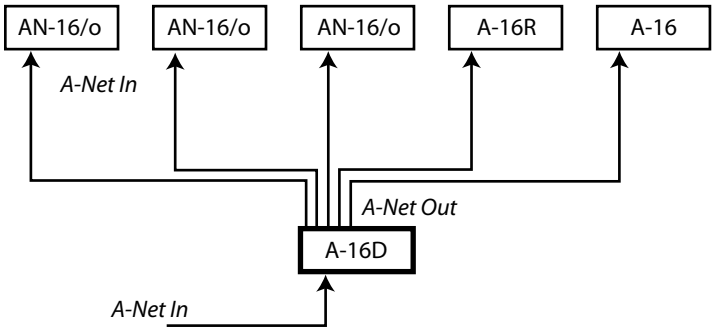



*In this diagram, A-Net is connected from device to device using Cat-5 cable. The A-Net Out port on the first device connects to the A-Net In port on the next, and so on.*

A parallel A-Net connection solves that problem. By using the optional A-16D or A-16D Pro A-Net Distributors, parallel A-Net connections are possible. In fact, any combination of series and parallel connections can be used to solve even the most complex audio routing problems.

## Parallel A-Net Routing

### Using an A-16D A-Net Distributor




*Here, a variety of A-Net compatible components are shown connected in parallel to an A-16D Distributor. The A-Net signal from the A-16D is connected to each A-Net compatible device with a Cat-5 cable. Removing one A-Net device has no effect on the other A-Net outputs being used.*

*An A-16D Pro can also be used in this configuration.*

## Extending A-Net Cable Runs

To go longer than the maximum specified distance A-Net allows (500 feet, 150 meters), the A-16D A-Net Distributor can be used as a signal repeater. Simply insert the A-16D into the A-Net stream at the 500-foot point and the A-Net signal will be refreshed. Another 500 feet of cable can be added. This process can be repeated as many times as required to extend cables.

For extremely long distance application, fiber optic cable can be used to span distances up to 50 miles (80km) with the use of devices called *media converters*. A media converter changes the Ethernet-based A-Net signal to fiber optical at the source location and then back to Cat-5 at the destination. Several companies make media converters that can be used with your Aviom equipment.

# Connecting Audio

The are many ways to get audio into the AN-16/i-M Mic Input Module for processing. Depending on your application—studio, stage, broadcast, etc.—the types of signals and equipment available will vary. This section will give examples of some typical setups that you can modify to suit your individual needs.

## AN-16/i-M Rear Panel

There are two rows of balanced connectors on the rear of the AN-16/i-M Input Module. They are marked **Input** and **Thru**, but are much more flexible than the simple labels may lead you to believe. A balanced insert send/return loop is also provided.

### Connections

The connections on the AN-16/i-M can accept mic signals from dynamic or condenser mics and line level sources from balanced or unbalanced sources via the ¼-inch jacks. The system can accept a wide variety of signal levels; gain settings are changed on the front panel of the AN-16/i-M.

The audio design of the AN-16/i-M allows you to add the system at virtually any point in your existing audio system. The AN-16/i-M can accept audio coming from:

- Microphones
- Mixing console direct outputs
- Mixing console insert sends
- Line outputs from mic preamps
- Line outputs from keyboards and other music devices
- CD players
- Tape decks
- Digital Audio Workstations (DAWs)
- Computer sound cards
- Effects processors
- Video decks, cameras, etc.

## Connecting a Mixer

As mentioned above, almost any line level audio output can be used with the AN-16/i-M. Depending on the topology of your particular mixer, some or all of the following signal types could be available.

## Direct Output

A direct output is typically found at the channel level of a console. That is, each channel on the mixer has its own line level direct output jack. This type of output sends an exact copy of the audio signal present in each channel out of the mixer without interrupting the signal being sent to the main part of the mixer.

If your mixer has direct outputs available, a cable from each channel that you want to be part of the audio network is connected to the AN-16/i-M inputs. A maximum of sixteen direct outputs can be plugged into a single AN-16/i-M Mic Input Module. For systems requiring more than sixteen channels, multiple AN-16/i-M Mic Input Modules can be configured.

## Submixing

If you have more than sixteen direct outputs from a mixer that need to be monitored in a system using only one AN-16/i-M, then some of the channels will need to be submixed. This can be accomplished on most consoles by using a bus output (referred to as a *group* output on some consoles), described below. A submix is simply a selected group of channels assigned to a single output.

## Bus Outputs

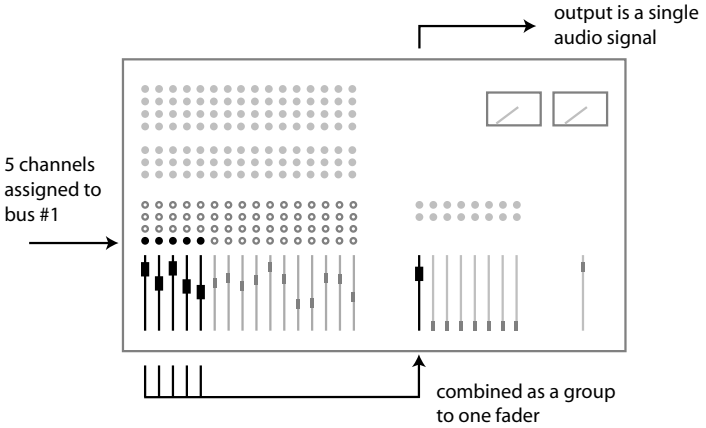
A bus (or group) output is typically used to route audio signals to a recording device or to control the volume of a group of channels from a single fader. Most mixers equipped with bus outputs have fewer bus outputs than channels. Four, eight, or sixteen bus outputs are common mixer configurations.

To use a bus output with the AN-16/i-M Mic Input Module, the individual channels in your mixer need to be assigned to the desired bus output. This is usually done with a selector button located somewhere within each channel strip. Assigning a channel to a bus output does not remove the signal from the main mix. (Some mixers do allow the option, however.) Specific instructions about how to use your particular mixer in this case are beyond the scope of this document. Consult your mixer's documentation to learn more.

With a number of channels assigned to a bus output, you can then control the level of the bus independent of the other levels on the mixer. The individual channel level fader is used to set the relative balance of all channels assigned to the bus.

The following example shows a typical mixer. Five of the audio channels are first assigned to bus #1 using the buttons in the channel

strip. This routes their audio signals to the bus output faders seen on the right side of the mixer. The level for the combined channels is set by this fader. The output of the bus fader can be patched as needed to a monitoring system, audio distribution network, recording device, etc.




*Using a Bus Output*

As an example, all the channels of the main mixer devoted to drums can be assigned to a bus. As mentioned previously, the relative mix of all the components of the drum sound would remain the same; the levels are based on the individual channel's level settings. By sending all the drum channels to a bus, the entire drum kit's volume can be raised or lowered from a single fader.

*Stereo Drum Mix Example*

By using two bus outputs, a stereo drum sub-mix with panning can be created. The drums are assigned to two bus outputs, usually consecutive numbers such as 1 and 2, or 3 and 4. The stereo pan (or left/right balance) from the drum kit is then set by using the mixer's Pan knobs. To get the floor tom into only the right speaker, for example, its pan knob should be turned to the fully clockwise position.

## Aux Sends (Effects Sends)

An Auxiliary Send (also called an Aux Send or effects send) is typically used on a live or recording console to send the sound from a

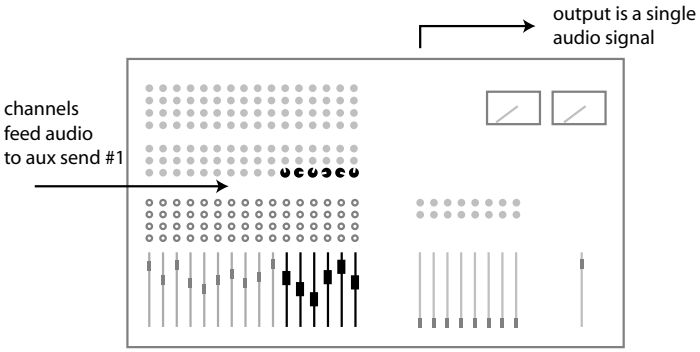
channel into an effect device such as a reverb. Using a dedicated set of knobs found in each channel strip, each channel can have a different amount of the effect applied as needed.

An Aux Send does not have to be used exclusively with effects, though. You can think of an Aux Send as another mini mixer; it functions in a similar manner to a bus output. It is used to pass the audio signals from the console to another destination. You can use any combination of available audio sources with the AN-16/i-M Mic Input Module.

The method for using an Aux Send to create a monitor mix is similar to that described for using a bus output. Most consoles have from two to eight Aux Sends. Some console designs also allow Aux Sends to be pre- or post-fader. The number of independent audio signals that can be sent to the AN-16/i-M Mic Input Module via Aux Sends will depend upon the design of the mixing console you are using.

The following diagram shows multiple mixer channels sending various amounts of signal to one aux send  The master output of the aux send is fed to an input on the AN-16/i-M Mic Input Module.

It is suggested that the 1/4-inch input be used for typical line level audio sources. Line level audio can be connected via the XLR jack, but be aware that clipping may occur with some high level signals. If this occurs use the 1/4-inch inputs.




## Connecting an AN-16/o Output Module

To convert the mic or line level signals connected to the AN-16/i-M back to analog audio, the AN-16/i-M needs to be connected to a

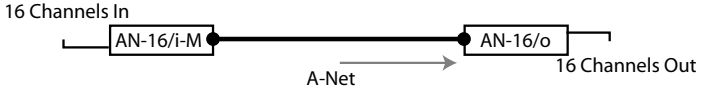
compatible A-Net output module such as the AN-16/o Output Module.

There are sixteen line level audio outputs on the rear panel of the AN-16/o Output Module. They can be connected to any device capable of using line level audio sources, such as audio mixers, effect processors, computer workstations, and recording devices.

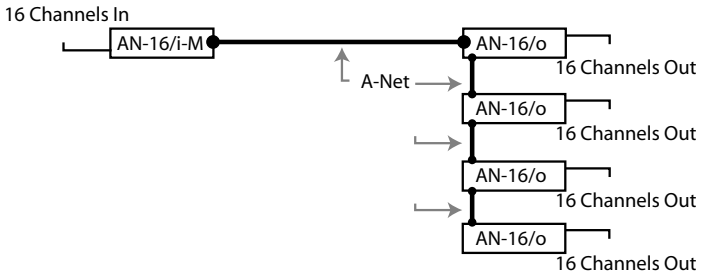
Two operating levels are possible, controlled by the switches on the front panel of the unit. Most professional audio equipment uses the +4dB output level, while semi-pro and consumer audio gear operate at the -10dB level. Channel output level settings are switched in pairs from the front panel of the AN-16/o.

## Adding More Audio Outputs

When additional copies of the same audio channels are needed, using A-Net allows easy system expansion. The A-Net Out jack on the back of the AN-16/o can be used to send an exact copy of the audio data being received to as many AN-16/o Output Modules as required.




This diagram shows a simple system with one AN-16/i-M Mic Input Module connected to one AN-16/o Output Module. Audio connected to the AN-16/i-M is delivered to the AN-16/o via A-Net.




By connecting AN-16/o Output Modules, any number of exact copies of the sixteen channels can be added. Remember, cable runs between devices can be up to 500 feet (150 meters) for added flexibility.

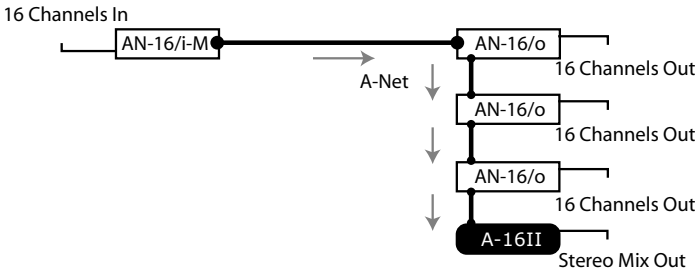
To create a sixteen channel distributed audio network:

- Connect audio from your source to the inputs of the AN-16/i-M
- Connect the A-Net Out jack on the AN-16/i-M to the A-Net In jack on the first AN-16/o Output Module.
- Expand the system by connecting a Cat-5 cable from the A-Net Out of the first AN-16/o Output Module to the A-Net In jack on the next AN-16/o Output Module
- Repeat this same patching as needed for each additional AN-16/o added to the network.
- Connect the audio outputs of each AN-16/o to the line level audio inputs of your receiving devices.

## Adding Personal Mixers

An audio distribution network can be expanded to include Aviom's line of Personal Monitor Mixing System products as well. As seen in the previous section, the A-Net Out jack on any A-Net compatible device can be used to send a copy of the sixteen channels of audio data to another A-Net compatible device. This includes the A-16II and A-16R rack mounted Personal Mixers.

The following diagram shows a 16 x 16 system with two different types of expanded outputs. It uses both AN-16/o Output Modules and Personal Mixers.




Any number of A-16II or A-16R Personal Mixers can be added using this method. In fact, it's important to remember that *any* A-Net compatible device can be added to a system, connected via daisy-chain or parallel.

# Audio Networks

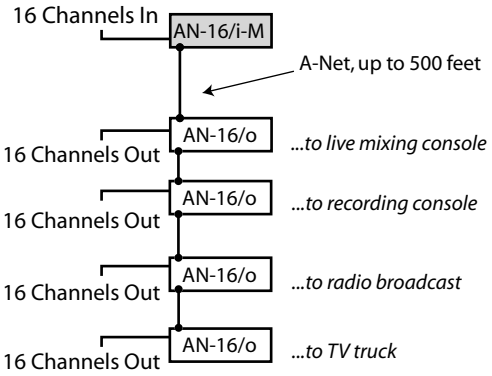
A-Net input and output modules can be combined to create distributed audio networks of up to sixty-four audio channels with unlimited expansion. When using more than sixteen channels of audio in a distributed audio network, several options are available.

Systems using sixteen or thirty-two audio channels can be configured with no additional hardware. For systems larger than thirty-two channels, Aviom offers the AN-16SB System Bridge as an option. The System Bridge allows up to four A-Net streams to be combined into a single Cat-5 cable for distribution over long distances.

## 16-Channel Systems

The simplest form of digital snake using A-Net devices is one input module connected to one output module. For example, the AN-16/i-M can be connected with one Cat-5 cable to an AN-16/o Output Module located at the mix position to deliver sixteen discreet line level audio signals to a front-of-house mixing console.

The flexibility of A-Net allows far more than just the simple snake configuration outlined above, however. In fact, any number of A-Net devices can be connected to a single input module. This allows the creation of infinite numbers of signal splits, with each additional A-Net device being located up to 500 feet (150 meters) away. Audio splits can be used to send digital copies of the audio signals from the input module to a live sound mixer, a recording system, remote broadcast truck, and a live television broadcast facility simultaneously with no signal degradation.



# 32-Channel Systems

Aviom's distributed audio network products work in modules of sixteen channels. Distributed audio networks of thirty-two channels can be configured as:

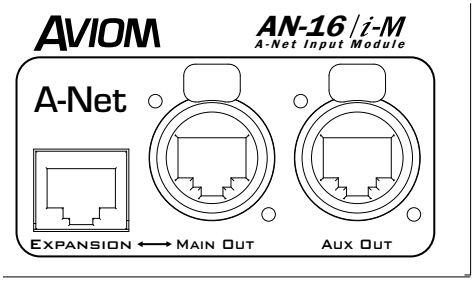
- 32 channels send by zero channels return (32 x 0 )
- 16 channels send by 16 channels return (16 x 16)
- 0 channels send by 32 channels return (0 x 32)

The descriptions above are similar to those used for traditional analog audio snakes. The configurations refer to the number of audio channels used as inputs on each side of the snake. For example, the "32" in the 32 x 0 configuration means that 32 audio inputs can be connected at the stage to send to the front-of-house mix position. The "0" means that on the  there are no audio inputs being sent back to the stage from the front-of-house mix position.

A thirty-two channel system is comprised of four AN-Series units, two AN-Series Input Modules (either the AN-16/i or AN-16/i-M) and two AN-16/o Output Modules. Since the system is modular, you can connect the AN-Series units as needed, making any of the configurations mentioned previously available at any time. Simply move and re-patch the units.

## *A-Net Expansion*

In a thirty-two channel system, the A-Net Expansion jack is used to combine two A-Net data streams into a single steam that can travel down one cable. At the receiving end of the distributed audio network, the A-Net Expansion jack is used again to separate the data into individual 16-channel data streams. The concept used for the Expansion port on A-Net modules is similar to the AN-16SB System Bridge, described later in this document.



Some points to remember about using the A-Net Expansion jacks on the AN-Series input modules and AN-16/o to create a distributed audio network:

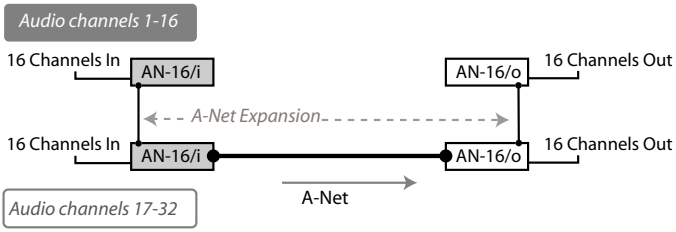
- When creating a network with four AN-Series units, one A-Net Expansion jack will be connected to an A-Net *In* port while the other A-Net Expansion jack will be connected to an A-Net *Out* port.
- The A-Net *Out* jacks on the AN-16/o Output Modules should be empty when only four AN-Series units are being used to create a network. These are then available for adding audio splits with additional AN-16/o Output Modules or for connecting to a Personal Monitor Mixing System.
- The cable connecting the two sides of the network (carrying thirty-two channels of audio) should be connected to one A-Net *In* port and one A-Net *Out* port.
- Do not connect Cat-5 cables carrying expanded system data (more than 16 channels) to an A-16D A-Net Distributor or A-16II Personal Mixer.
- The maximum cable length specification of 500 feet (150 meters) applies to the length between an A-Net *In* port and an A-Net *Out* port. Cables used to connect devices via the A-Net Expansion jacks must fall within this maximum distance.
- An A-Net Expansion port is never connected to another A-Net Expansion port.
- The A-Net Main Out on the AN-16/i-M is the only A-Net jack that works with the Expansion port.

*In the following examples, either A-Net input module, the AN-16/i or the AN-16/i-M, can be used. Only one device is shown in the illustrations. They are referred to generically as "AN-Series Input Modules*."

## 32 Channels Send by Zero Channels Return

The 32 x 0 configuration has all audio inputs on one side of the distributed audio network and all audio outputs on the other side.

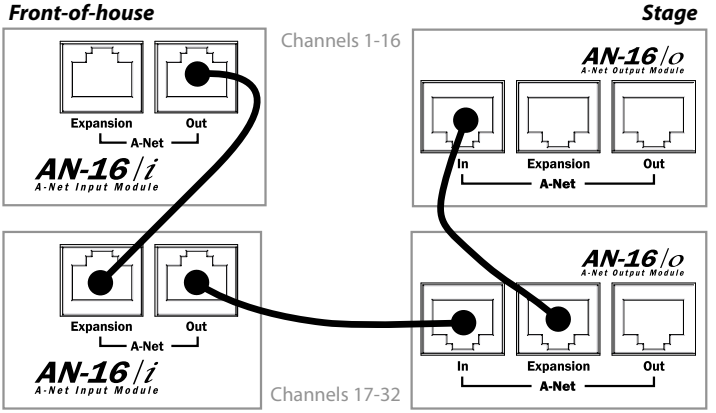
With this configuration, two AN-Series Input Modules receive up to thirty-two analog audio (mic or line level) signals as inputs. One input module contains channels 1-16, while the other has channels 17-32.




**To configure a 32 x 0 system:**

1. Connect the first sixteen mic or line level audio sources to inputs 1-16 on the first AN-Series Input Module.
2. Connect the second group of sixteen audio sources to inputs 1-16 on the second input module.
3. Connect a Cat-5 cable from the A-Net Out jack on the first input module to the A-Net Expansion jack on the second input module.
4. Connect a cable from the A-Net Out jack on the second AN-Series input module and run it to the destination where the AN-16/o Output Modules are located, and plug it into the A-Net In jack on the first AN-16/o Output Module.
5. Connect a Cat-5 cable from the A-Net Expansion jack on the first AN-16/o to the A-Net In on the second AN-16/o.
6. Patch the audio outputs from the two AN-16/o Output Modules into the desired destinations.

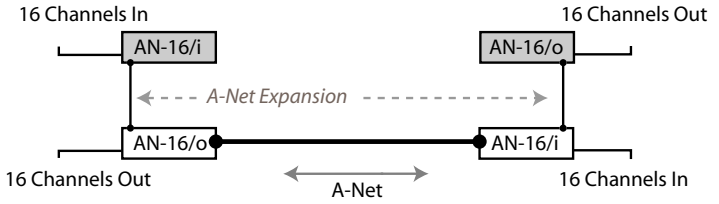
Remember that the maximum cable length between A-Net devices is 500 feet (150 meters).




*Cat-5 connections for a 32 x 0 system, shown in a live performance setting*

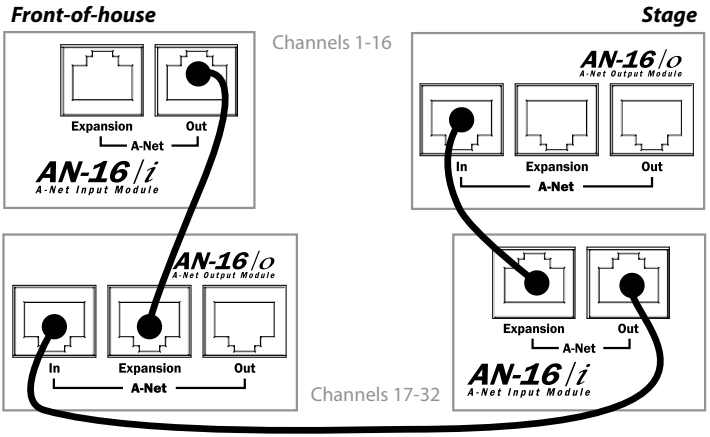
## 16 Channels Send by 16 Channels Return

The 16 x 16 configuration has sixteen inputs and sixteen outputs on each side of the distributed audio network.




Using this configuration, each side of the audio distribution network has one Input Module and one AN-16/o Output Module. Sixteen channels of audio move in each direction over a single Cat-5 cable.

Again, the A-Net Expansion jack is used to combine the A-Net data from two devices for transmission down one Cat-5 cable.

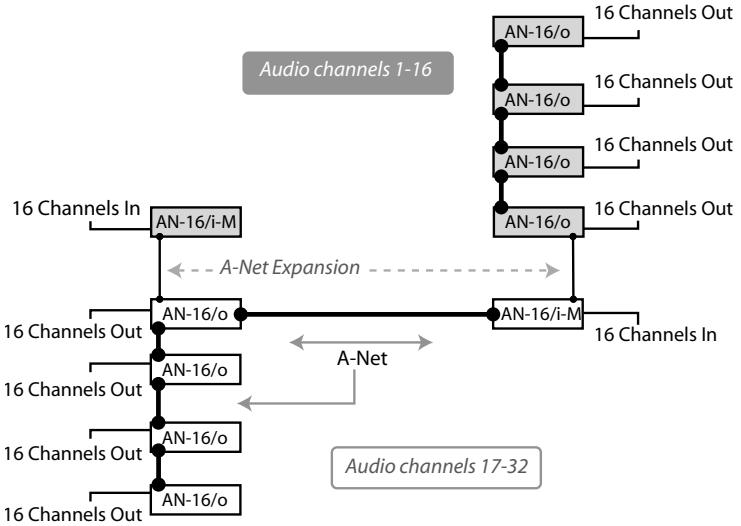



**To configure a 16 x 16 system:**

1. Set up one input module (AN-16/i or AN-16/i-M) and one AN-16/o on each side of the network. (For example, one set is at the front-of-house mix position, the matching set is placed on the stage.)
2. Connect sixteen mic or line level audio sources to inputs 1-16 on the first AN-Series Input Module.
3. Connect a Cat-5 cable from the A-Net Out jack on the first input module to the A-Net Expansion jack on the first AN-16/o.
4. Plug a Cat-5 cable into the A-Net In jack on the first AN-16/o Output Module. This cable will be used to span up to 500 feet between the two sides of the network.
5. Connect the cable from the A-Net In jack in Step 4 to the A-Net Out jack on the second AN-Series Input Module.
6. Connect the second group of sixteen audio sources to inputs 1-16 on the second AN-Series Input Module.
7. Connect a Cat-5 cable from the A-Net Expansion jack on the second input module to the A-Net In on the second AN-16/o.
8. Patch the audio outputs from the two AN-16/o Output Modules into the desired destinations.

# Adding More Audio Outputs

As mentioned previously, the A-Net Out jacks on the AN-16/o Output Modules remain available even when creating a bidirectional audio network. This allows additional output modules to be added as needed to suit a variety of audio situations. Any A-Net compatible product can be added to an A-Net Out port. This flexible routing scheme allows you to send audio to a variety of different locations, and to include Aviom's Personal Monitor Mixing System for performers.




In this example, a 16 x 16 network has been expanded to include three additional AN-16/o Output Modules on each side of the network. Each AN-16/o is connected via A-Net using a Cat-5 cable. Remember that the cable lengths between each A-Net device can be up to 500 feet (150 meters) long.

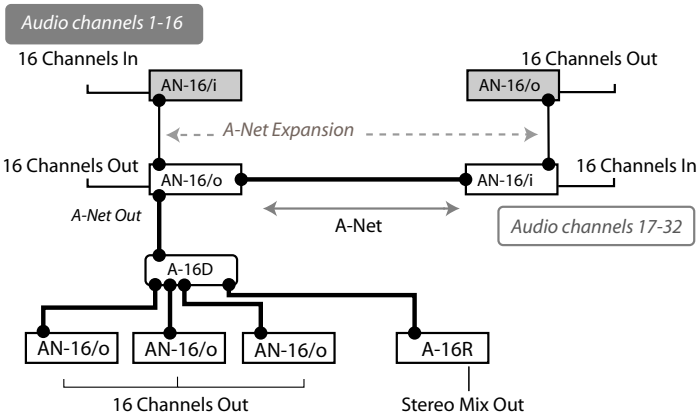
**To create an expanded network:**

- First start by configuring the network according to your basic needs (either as 32 x 0 or 16 x 16).
- Add additional AN-16/o Output modules by connecting a Cat-5 cable from the A-Net Out port on one of the connected AN-16/o Output Modules to the A-Net In port on an AN-16/o Output Module that you want to use to expand the system.
- Each additional AN-16/o that you want to add is con-

nected by patching a Cat-5 cable from the A-Net Out jack on the module preceding it to its A-Net In jack.

## *Expanding a Network with an A-Net Distributor*

While the A-16D and A-16D Pro Distributors are not compatible with the data being generated by the A-Net Expansion ports on the AN-16/i, AN-16/i-M and AN-16/o, you can use an A-16D to add wiring flexibility to your system.




In this diagram, an A-16D Distributor receives A-Net from an AN-16/o Output Module connected to a network configured as 16 x 16. In the example, only audio channels 17-32 are being redistributed to the additional A-Net devices. From the A-16D, up to eight A-Net devices can be connected. The diagram shows three AN-16/o Output Modules connected. Each can provide sixteen line level outputs.

An A-16R rack mounted Personal Mixer is shown, connected to the Distributor as a personal monitor station. The A-16R can be used to mix and monitor the same audio content in stereo. The Cat-5 cable run between the AN-16/o and the A-16D Distributor can be up to 500 feet long, as can the cable from the A-16D to each of the A-Net devices connected to it.

# 64-Channel Systems

When used with the optional AN-16SB System Bridge, the AN-Series Input Modules and the AN-16/o Output Module can create audio networks of up to sixty-four channels. Up to four AN-16/i and/or AN-16/i-M Input Modules and four AN-16/o Output Modules can be used in a variety of combinations to create a flexible and reconfigurable audio distribution network.

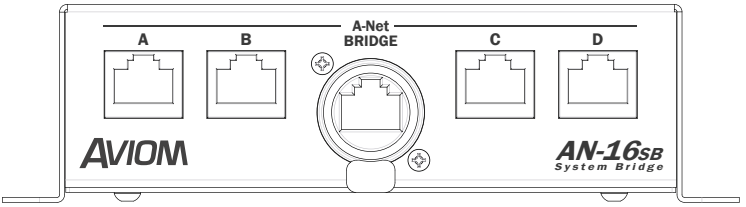
Aviom's distributed audio network products work in modules of sixteen channels. Distributed audio networks of up to sixty-four channels can be configured as:

- 64 channels send by zero channels return (64 x 0 )
- 48 channels send by 16 channels return (48 x 16)
- 32 channels send by 32 channels return (32 x 32)
- 16 channels send by 48 channels return (16 x 48)
- 0 channels send by 64 channels return (0 x 64)

**Note:** When using the AN-16SB System Bridge to create a network, the Expansion jacks on the AN-Series Input Modules and AN-16/o are not used.

## *AN-16SB System Bridge*

The AN-16SB System Bridge is a two-part accessory that takes in up to four A-Net data streams and combines them into a single A-Net signal for transmission. A single Cat-5 cable can then be run to the destination. At the destination, another AN-16SB is used to separate the A-Net streams. The four separate A-Net data streams can then be connected to A-Net compatible devices as needed.

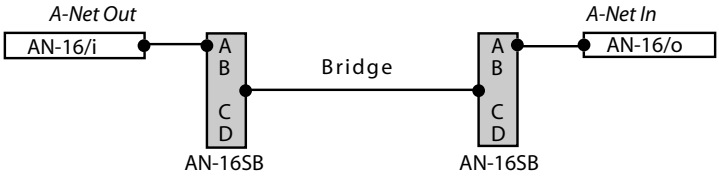



The front panel of the AN-16SB System Bridge contains four standard RJ45 A-Net connector jacks, labeled A, B, C, and D. These accept standard Cat-5 cables. The four standard Cat-5 jacks will always connect to an A-Net compatible product.

The center of the AN-16SB has an EtherCon connector, which is a heavy duty RJ45 connector that looks similar to an XLR mic connector. It can accept a standard Cat-5 cable or the special EtherCon Cat-5 connector. This center connection is labeled *Bridge*. The Bridge jack and its EtherCon connector will always connect to another AN-16SB System Bridge's EtherCon connector.

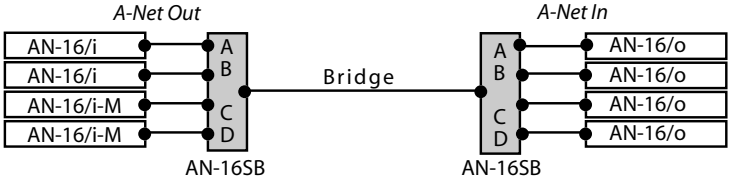
## Connecting the AN-16SB

Adding an AN-16SB System Bridge to a system is quite simple. Two AN-16SB System Bridges are used to create a network The four A-Net connectors (labeled A, B, C, and D) on the one side of the network are directly related to the A, B, C, and D connectors on the other side of the network. That is, if you patch an AN-16/i Input Module into port "A" on one side of a System Bridge, an AN-16/o Output Module would be connected to port "A" on the other side of the System Bridge. See the following diagram.




*This diagram shows the relationship of the A, B, C, and D ports on the AN-16SB.*

A complete network using four units per side follows the same pattern. An AN-Series Input Module connected to port B on one side of the network connects to an AN-16/o Output Module via port B on the other side of the network. The same goes for ports C and D, as seen in the following diagram.




*A-Net ports A, B, C, and D shown connected in a 64 x 0 network configuration*

### To connect a 64 channel network (64 x 0):

*On the Send side*

- Connect a Cat-5 cable from the A-Net Out of the first AN-Series Input Module to port A on the first AN-16SB
- Repeat this process to connect the A-Net out from the remaining three AN-16/i or AN-16/i-M Input Modules to ports B, C, and D.

*On the Receive side*

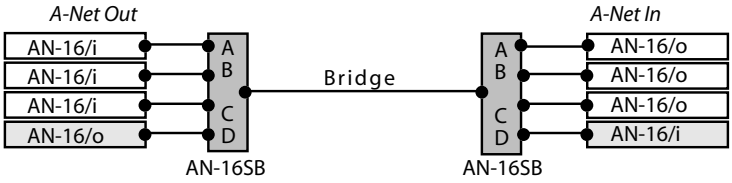
- Connect a Cat-5 cable from port A on the second AN-16SB to the A-Net In jack on the first AN-16/o Output Module.
- Repeat this process to connect ports B, C, and D to the remaining AN-16/o Output Modules.

*Bridge the two sides*

Connect the two sides of the audio network by running a Cat-5 cable (with or without an EtherCon connector) between the Bridge jacks on the System Bridges.

To use other configurations, simply move any pair of AN-16/i (or AN-16/i-M) and AN-16/o units.

In the following example, the devices connected to port D on the AN-16SB System Bridge have been swapped, to create a 48-channel send x 16-channel return system.




*A 48 x 16 system is created by exchanging the units connected to port D on the System Bridge.*

Remember, the total cable length between A-Net devices should not exceed 500 feet. Cables used to connect A-Net devices to the System Bridge are *included* in this calculation.

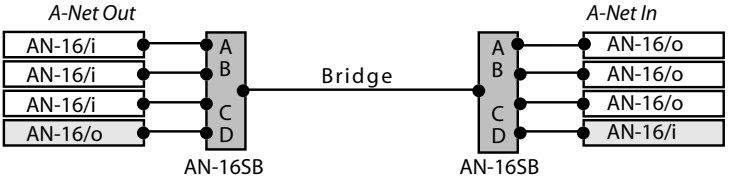
## *Configuration Notes*

When configuring 64-channel systems that send data in both directions, Aviom suggests the following module combinations. While not mandatory, these suggestions are made to accommodate the standard

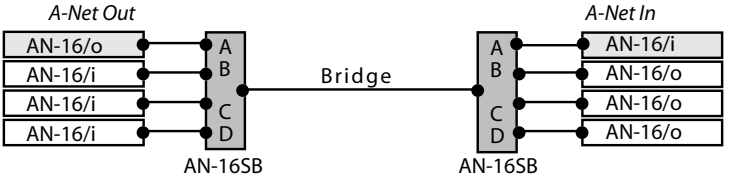
wiring practices that Ethernet uses. (Aviom's A-Net technology is based on Ethernet.) Some wire pairs in a standard Ethernet Cat-5 cable are not next to each other inside the jacket of the cable. This can account for slightly higher data errors in rare cases.

The configuration recommendations apply to systems configured as 16 x 48 and 32 x 32, not those sending data in only one direction. The module combinations are applicable especially when using long cable runs.

For 16 x 48 (or 48 x 16) configurations, place the three similar modules together, connected to either ports A, B, and C on the AN-16SB or to ports B, C, and D, See the following diagrams.

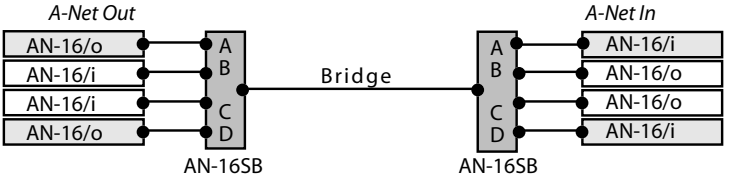



*Ports A, B, and C use the same type of module.*




*Ports B, C, and D use the same type of module.*

For a 32 x 32 configuration, place two similar modules together, connected to ports B, and C on the AN-16SB. The modules connected to ports A and D are also similar by doing this configuration., See the following diagram.



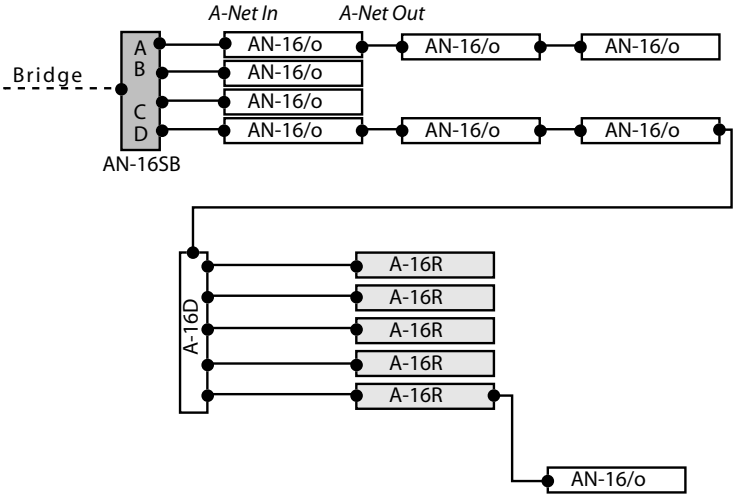
*Ports A, and D use the same type of module; ports B and C contain the same type of module.*

Note that the total A-Net cable length between devices is limited to 500 feet.

## Expanding a Network

As mentioned in the section on 32-channel systems, any available A-Net Out jack on an A-Net device can be used to expand an existing system. Any number of additional AN-16/o Output Modules can be added, as can any number of A-16, A-16II or A-16R Personal Mixers. A-Net Distributors (the A-16D and the A-16D Pro) can also be used to expand a system.

The following example shows one variation of an expanded system.




This example starts as a 64 x 0 configuration (*the input side of the system is not shown in the diagram*). Two of the outputs are expanded. Port A has two AN-16/o Output Modules added. Port D has two Output Modules which then feed an A-16D A-Net Distributor.

The A-16D Distributor connects to five A-16R rack mounted Personal Mixers for use as a monitor system for five musicians performing live. Then, another AN-16/o Output Module is connected via a daisy chain to the last A-16R.

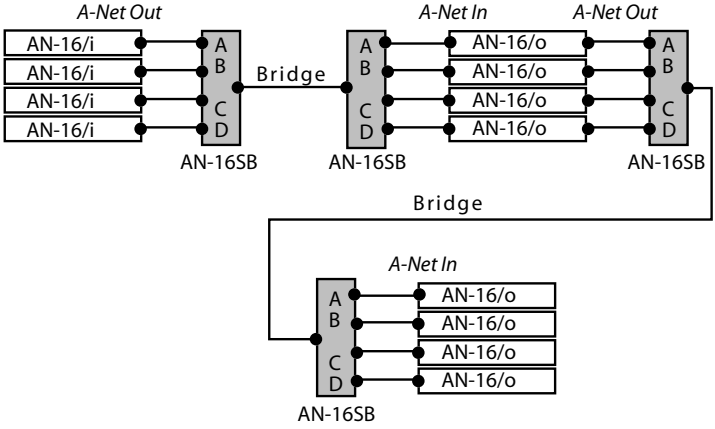
Expansion of a system can continue as your needs require. Any available A-Net Out can be used to connect to the A-Net In on any compatible device.

Again, each A-Net cable used can be up to 500 feet long, making this system capable of spanning long distances between rooms, floors, etc.

## Using Multiple System Bridges

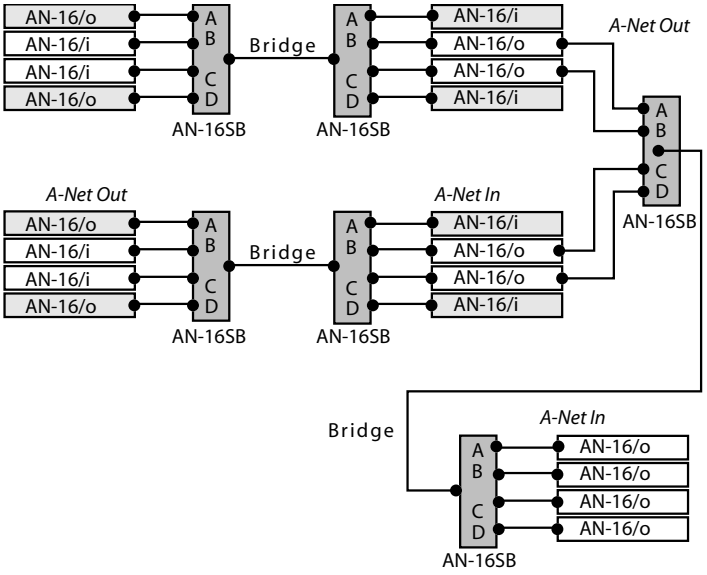
Expansion of a system can include multiple AN-16SB System Bridges. This allows audio to be fed to different locations as needed. Using multiple System Bridges follows the same connection rules as outlined previously. (Port A on one AN-16SB always connects to Port A on another AN-16SB, etc.)

System Bridges can also be used to combine A-Net streams from multiple networks in an installation, allowing, for example, ports A and B from Network #1 to be sent along with streams B and C from Network #2 to a third area, creating Network #3.




*A second set of System Bridges move 64 channels of audio over one Cat-5 cable to another destination.*

The next example shows a complex network that combines A-Net from two different networks




The output modules connected to ports B and C from the system in the top of the diagram are connected via their A-Net Outs to ports A and B of a second set of System bridges. The system in the middle of the diagram's output modules connected to ports B and C from are connected via their A-Net Outs to ports C and D of the second set of System bridges. This combined Bridge output is sent up to 500 feet to another AN-16SB where is separated into four A-Net streams. The separate A-Net streams connect to AN-16/o Output Modules.

As with all A-Net compatible devices, any available A-Net Out can be used as a starting point for expansion.

# Aviom Warranty Registration

*Please take a moment to fill in this warranty registration form. Return it to Aviom via mail or fax. All information will be kept confidential.*

Model Number ..... Serial Number .....

Model Number ..... Serial Number .....

Model Number ..... Serial Number .....

Model Number ..... Serial Number .....

Date Purchased .....

Dealer Name .....

Dealer Location .....

.....

Your Name .....

Address .....

Address .....

City .....

State/Province .....

Zip/Postal Code .....

Country .....

Email Address .....

**Fax this form to Aviom at +1 610-738-9950**

**Aviom, Inc.**
1157 Phoenixville Pike
Suite 201
West Chester, PA 19380

www.aviom.com

Part Number 9310 1007 0001

# Index

## Symbols

+48 volt 4, 6, 15
-10dB LED 4
32-Channel Systems 23, 33
64-Channel Systems 40, 42
85Hz Low Cut rolloff 4, 15

## A

A-16 31
A-16CS Control Surface 17
A-16D Distributor 23, 24, 34, 39, 44
A-16D Pro Distributor 23, 39
A-16R 31, 39, 44
A-16SB System Bridge 8, 12
A-16T Rear Panel 18
A-16 Personal Mixer 17
A-Net 12, 17, 32, 38, 43
  Bridge 42
A-Net, long distance 24
A-Net Active LED 23
A-Net Aux Out 21
A-Net Aux Out jack 7
A-Net connections 18
  AN-16/i 21
A-Net Distributors 23
A-Net Expansion 21, 23, 33, 34, 35, 36
  AN-16/i 21
A-Net Expansion jack 7, 33
A-Net In 45
A-Net Main Out 7, 21
A-Net Out 21, 35, 38, 44, 45
  AN-16/i 21
A-Net signal repeater 24
AC current 18

AC Line Conditioning 8
Adding More Audio Outputs 30, 38
Adding Personal Mixers 31
adding Personal Monitor Mixers 38
AN-16/i-M Front Panel 14
AN-16/i-M Rear Panel 26
AN-16/i Input Module 40
AN-16/o Output Module 16–25, 31, 32, 35, 36, 37, 42
AN-16/o Rear Panel 29
AN-16SB System Bridge 32, 40, 43
  connecting 41
  using multiple 45
AN-Series 33, 35
Audio Networks 32
audio splitter 19
Aux Out 7
  A-Net 21
Aux Sends 28, 29
  pre/post-fader 29

## B

balanced 26
Balanced signals 19
bidirectional 38
Bridge 41, 42
  A-Net 42
Bus Output 27, 28

## C

cable length 11, 12, 42
Cat-5 10, 11
Cat-5e 10
Category 5, 5e 10
    10
Category 6 10
Channel Input Jacks 19
Channel Inserts 19
Channel insert Return jack 7

Channel insert Send jack 7
Channel LEDs 14
Channel Thru Jacks 19
Cleaning and Maintenance 13
Clip LED 4, 6, 15
combo jack 19
compressor 20
computer network 13
condenser mic 19
Configuration Notes 42
Connecting Audio 26
Connecting a Mixer 26
Control Surface 17
crossover cables 11

## D

daisy-chain 23, 31, 44
digital snake 16–25, 32
Direct Line Outputs 20
Direct Output, console 27
distributed audio network 16, 21, 36
Distributor 24, 39, 44

## E

effects device outputs 16
Effects Send 28
EtherCon Connector 3, 41, 42
Ethernet 12, 43
expanded network 38
Expanding 39, 44
Expansion 7, 23, 34, 35, 40
Expansion jack 40
Extending A-Net 24

## F

fiber optic 24
Flat 15
Front Panel

AN-16/i 14

## G

Gain 4
Gain knob 15, 19
gain range 15
Group button 15
group output 27
  console 27
guitar 19

## I

inline coupler 12
Input 26
Input Jacks 19
Insert 18, 19
insert Return jack 7
insert Send jack 7
Invert 16

## L

LAN
  Local Area Network 12
LED 4
LEDs 14
line level 29
  XLR input 19
line level signals 15
Line Output 20
Linking Channels 17
Link switch 16
Local Area Network 12
long distance A-Net 24
Low Cut 4, 15

## M

Main Out 7

A-Net 21
maximum cable length 12, 35
media converter 24
mic/line 18
mixer sub-groups 16
module combinations 42
Mono 17

## N

Network 13, 44
networking 13
Neutrik 3

## O

Output Module 16

## P

Package Contents 8
Parallel A-Net Routing 24
parallel connection 23
passive splitter 19
permanent installation 10
Personal Monitor Mixer
A-16, A-16II, A-16R 17
Personal Monitor Mixers 38
Personal Monitor Mixing System 31, 38
phantom power 15, 19
phantom power switch 4
Phase Invert Switch 4, 6, 16
ports 41
Power Connector 18
Power LED 5, 17
power supply 18
Power switch 5

## R

Rear Panel description 18

Return
  insert 20
Return jack 7
RJ45 3, 40, 41
RJ45 connector 10
Rolloff 4, 15
router 13
rumble filter 15

## S

Send 20
send/return 19, 20
Send jack 7
series connection 23
Signal LED 14
Signal present LED 4
signal repeater 24
snake 16–25, 21, 32, 33
splitter 19
stand-alone mic preamp 20
stereo channel 16
stereo input 16, 17
Stereo Link 16, 17
Stereo Link switch 5
Submixing 27
System Bridge 8, 32, 33, 40, 41, 45
  connecting 41
  using multiple 45

## T

Thru jack 6, 19, 26
Tip, Ring, and Sleeve 19
TRS 19
TRS balanced input 15

## U

unbalanced 19
unshielded Cat-5 cables 10

UPS 9
Using Multiple System Bridges 45

## X

XLR input 15, 19