A320
Personal Mixer

User Guide

PRO 16® PRO 16e® A·NET®

9310-1031-0001F v1.1

READ THIS FIRST

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or third prong is provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. No on/off power switches are included in the system. The external power supply should be used to control power to an Aviom device. This power supply should remain readily operable.
16. The solid line over dashed line symbol (⎓) indicates that the input voltage must be a DC voltage.
17. The box within a box symbol (⧈) indicates that the external power supply is double insulated.

WARNING!

TO REDUCE THE DANGER OF ELECTRICAL SHOCK DO NOT REMOVE COVERS.

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.

To avoid the hazard of electrical shock, do not handle the power cord with wet hands.

Replace fuse with same type and rating.

Operating Temperature: 0˚C to 50˚C (32˚F to 122˚F)

Risque de choc électrique – ne pas ouvrir. Pour réduire le risque de feu ou de choc électrique, ne pas exposer cet équipement à la pluie ou la moisissure. Pour réduire le risque de choc électrique, ne pas retirer le couvercle. Pièces non remplaçables par l'utilisateur. Confier la réparation à une personne qualifiée. Attention – utiliser seulement un fusible de rechange de même type.

Cet appareil est conforme à la section 15 de la norme FCC. Son fonctionnement est soumis aux conditions suivantes : (1) cet équipement ne doit pas causer des interférences nocives, et (2) cet équipement doit accepter toute interférence captée incluant les interférences pouvant causer des opérations indésirables.

Cet appareil numérique de Classe B est conforme à la norme NMB-003 du Canada.

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.

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.

Certifications

EMC: EN55103-1:2009
EN 55103-2: 2009
EN 55022:2006 / CISPR 22:1997
CAN/CSA-CEI/IEC CISPR 22:02
FCC 47 CFR, Part 15

Safety: UL 62368-1 Ed 2.0; Proposal Number 500542870;
Testing done to UL 62368-1 first edition
Can/CSA C22.2 62368-1

ETL/cETL Listed and RoHS Compliant

Notice of Rights

Trademarks

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 opened or modified in any way; if the product serial number has been damaged, modified, or removed; or if the original Quality Assurance label 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. 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.

Warranty Information

Please record the following information for future reference:

Your Authorized Aviom Dealer:

Name: _____

Address: _____

_____

_____

Phone: _____

Serial Numbers of Your Aviom Products: _____

_____

_____

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.

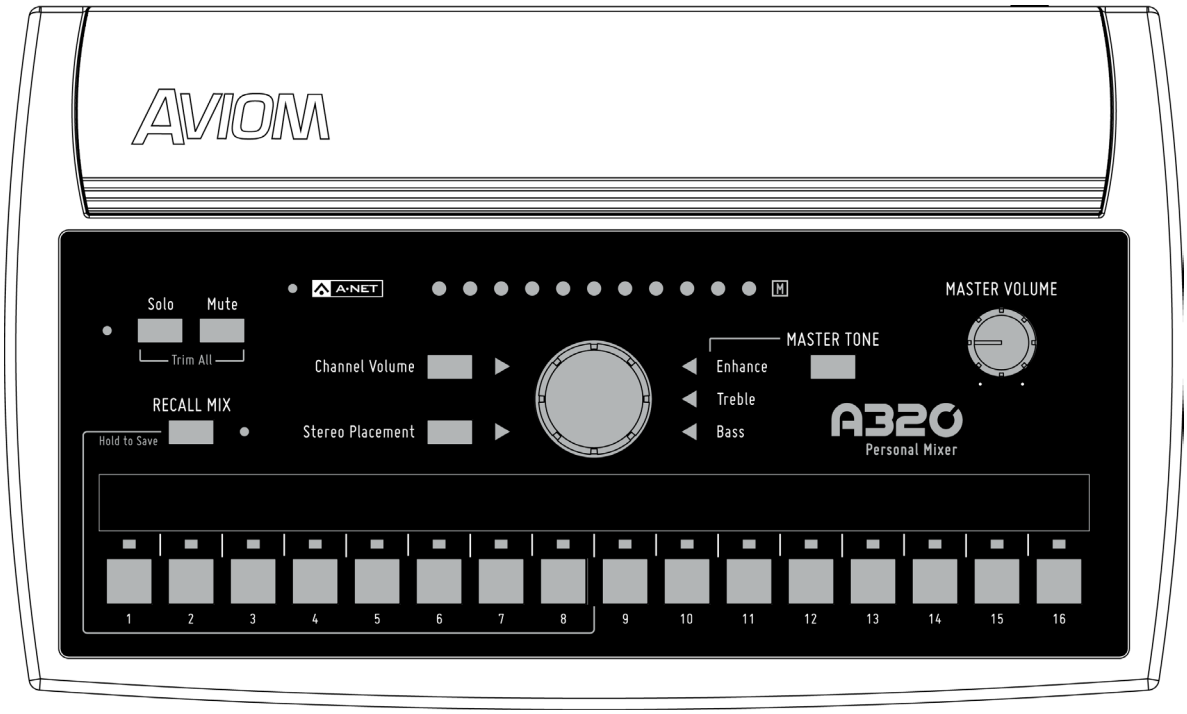
To fulfill warranty requirements, your Aviom product should be serviced only at an authorized Aviom service center. The Aviom serial number label must appear on the outside of the unit, or the Aviom warranty is void.

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.

Table of Contents

A320 Personal Mixer

*Thank you for purchasing the Aviom **A320 Personal Mixer**. This User Guide is designed to familiarize you with your new product's features and to have your personal mixing system up and running as quickly as possible.*



Feature Overview

The A320 Personal Mixer is part of Aviom's Pro16® Series of products; it can be combined with Pro16® and Pro16e™ analog input devices, console cards, and/or the Pro64® ASI A-Net® Systems Interface to create personal mixing systems for applications in live performance, recording, and broadcast.

The A320 Personal Mixer features:

- 16 mono or stereo mix channels
- 32-channel mix engine
- Advanced Stereo Placement positioning controls for improved sonic clarity
- Three-band master tone controls with Enhance™, optimized for in-ear monitors
- 8 Mix Presets
- Powered over the Cat-5 cable
- Seamless integration with existing Aviom personal mixing systems

Conventions Used in this Document

Using Personal Mixers

When referring to the use of the Personal Mixers in a personal mixing system in general, the term ***Personal Mixer*** is used to describe a case where an A320 Personal Mixer or A360 Personal Mixer can be used. Legacy personal mixers such as the A-16II and A-16R may also be used.

Cat-5 Cables

In most cases Cat-5e, Cat-6, and Cat-6e cables can be interchanged. When speaking about interconnections between components in a system, the term ***Cat-5*** is used generically to indicate the use of any of the applicable cable types.

A-Net Distributors

The Aviom D800, D800-Dante, D400, D400-Dante, A-16D and A-16D Pro A-Net Distributors are referred to generically as ***A-Net Distributors***. These are used to supply power to the A320 and to copy an A-Net digital signal and split it into multiple copies so that personal mixers may be connected in parallel.

Channels and Slots

Analog input devices and digital console cards used with Aviom personal mixing systems typically provide 16 input channels each to the Pro16 network. Once a part of the network, we refer to these resources as ***Slots*** rather than channels.

Button Presses

When instructed to press a specific button on the A320 Personal Mixer, a special font style is used. For example, "Press the **Solo** button."

Package Contents

The A320 Personal Mixer box includes:

- One A320 Personal Mixer
- Quick Start Documentation

Options for your personal mixing system include:

- Cat-5e/Cat-6 interconnect cables
- MT-1a Mic Stand Mount
- D800, D800-Dante, D400, D400-Dante, A-16D or A-16D Pro A-Net Distributors

Also included 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.

About A-Net

A-Net® is a proprietary high-speed data transmission protocol developed by Aviom, capable of sending and receiving high-quality digital audio using readily available Cat-5 cables.

A-Net is based on the physical layer of Ethernet, a Local Area Network (or LAN) technology. This provides A-Net with a mature and robust base on which to build. However, it is important to note that A-Net devices are not compatible with Ethernet devices.

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

- Virtually no latency; analog in to analog out is always less than one millisecond
- No ground loops
- Easy cabling using readily available components
- An unlimited number of A-Net devices can be used in a system
- Ease in spanning long distances between system components

There are two versions of Pro16 A-Net: the original Pro16 A-Net signal carries sixteen channels of digital data while the enhanced Pro16e version of A-Net is capable of carrying up to 64 channels of digital audio data. Like standard Pro16 A-Net, Pro16e is a point-to-point digital audio protocol.

Pro16e A-Net data is intended for use with the A320 and A360 Personal Mixers which can take advantage of the higher network channel count that Pro16e provides.

Compatibility

The A320 Personal Mixer is compatible with current and legacy Pro16, Pro16e, and Pro64 A-Net devices as detailed below.

Pro16 Products

The A320 Personal Mixer must be connected to a powered port on an A-Net Distributor to be used in a personal mixing system. Compatible A-Net Distributors include:

- D800 A-Net Distributor
- D800-Dante A-Net Distributor
- D400 A-Net Distributor
- D400-Dante A-Net Distributor
- A-16D A-Net Distributor (requires optional PS-120 Power Supplies)
- A-16D Pro A-Net Distributor

The **A-Net Out** from the following devices may be connected to the A-Net distributors listed above to provide inputs and A-Net data to the A320 Personal Mixer:

- AN-16/i v.2 Input Module
- AN-16/i-M Mic Input Module
- AV-M8 Mic Input Module
- Aviom16/o-Y1 A-Net Card for Yamaha® devices
- Third-Party Pro16 A-Net digital console cards
- AN-16/i Input Module

Pro64 Products

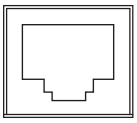
Adding the ASI A-Net Systems Interface to a Pro64® digital snake or audio network allows Pro64 channels to be translated into Pro16 data. The ASI separates the 64-channel Pro64 stream into up to four 16-channel Pro16 outputs, depending on the Pro64 sample rate being used. Any of the four Pro16 A-Net outputs from the ASI may be connected to the A-Net In on an A-Net distributor to supply A-Net data and DC power to the A360 Personal Mixer.

The ASI's Pro16 A-Net outputs can also be connected to the A-Net In on the AN-16/i v.2 Input Module when creating a personal mixing system that uses the enhanced Pro16e version of A-Net for increased channel count.

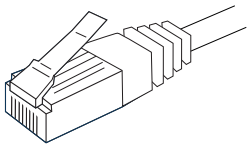
About Category 5

The term Category 5 (also referred to as *Cat-5*) is broadly used to describe a type of high performance network cabling used for data transmission purposes to connect computer networks and other devices. A standard 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 Cat-5 female RJ45 jacks.

A variation of the cable, called Category 5e (or Cat-5e), has largely replaced Cat-5 in the field; it uses additional twists in the cable's wire pairs to reduce interference in high-speed network applications. Additional wire pair variations are found in Cat-6 and Cat-6e cables, typically used with gigabit networking devices.



RJ45 Jack



Cat-5e Cable

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

Cat-5e Cables

Although the A320 Personal Mixer will operate properly with unshielded Cat-5e cable, shielded Cat-5e (or better) cable must be used to stay below the CISPR 22 Class B, ICES-003, and FCC 47 CFR Part 15 Class B emissions limits.

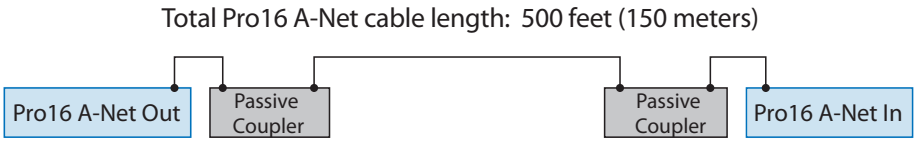
For fixed or permanent installations, you have the option of running Cat-5 cables inside walls and terminating them with readily available wall panel connectors that include the RJ45 jack. (Solid wire is recommended for permanent installations.) A Cat-5 cable wiring pinout table is included at the end of this document. See "Cat-5 Cable Pinout" on page 51.

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

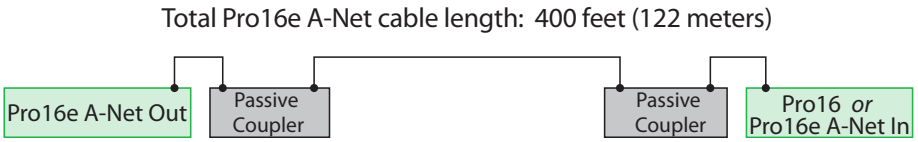
✓ **Note:** When purchasing Category 5e cables, be sure to buy only standard Cat-5e cables, not those sold as crossover cables. A crossover cable is used for file transfer between two computers and is not compatible with your Aviom equipment.

Cable Lengths

For Pro16 applications—connecting one **Pro16** device to another—the Cat-5e cables used with your Aviom products may be up to 500 feet (approximately 150 meters) in length between devices. For example, connecting a Y1 console card from a Yamaha digital console to the **A-Net In** on a D800 A-Net Distributor is such a connection.



When using **Pro16e**—such as the **A-Net Out** from an AN-16/i v.2 to *any other* Pro16 or Pro16e device—Cat-5e cables may be up to 400 feet (approximately 122 meters) in length between compatible devices due to the larger amount of data being transmitted to accommodate Pro16e's higher channel count.



The maximum cable length specification applies to the total cable length between an **A-Net Out** port on one device and the **A-Net In** port on the next A-Net capable 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 passive devices such as cable couplers or passive wall panel interconnections in use.

Stranded or solid Cat-5e cable may be used; stranded cable is easier to deploy on a stage while solid core cable provides slightly better maximum distance performance. Solid core wire is typically used in permanent installations in walls and across ceilings.

When using the optional SB4 System Bridge with Pro16 and Pro16e devices, the cable length specification applies to the *total* cable length between the two active A-Net devices being connected with the passive System Bridge, plus all cables. This is also true when using a passive inline coupler to extend cable lengths.

Pre-made cables in a variety of lengths and colors are available at most computer outlets. Cables may 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 the maximum cable length performance can be compromised by using inline couplers or other passive connection devices.

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).

Supplying Power to Your A320

The A320 Personal Mixer is intended to be connected to an Aviom A-Net Distributor such as the D800, D800-Dante, D400, or D400-Dante when creating a personal mixing system. A-Net Distributors provide both parallel A-Net connections for up to eight devices as well as the DC power required to run them.

Cleaning and Maintenance Information

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.

Quick Start Tutorial

Can't wait to get started with your A320 Personal Mixer? Don't have time to read the entire manual? Here's a quick guide to setting up your A320.

Choose a Mixer Mode

The A320 can operate in one of two modes, 16-channel or 32-channel, which accommodate the two versions of the A-Net protocol, Pro16 and Pro16e. Which mixer mode you should use is based on the number of input channels your personal mixing system has.

16-Channel Mode

If your system has only one input device (analog or digital console card), use the 16-channel mode. Mono inputs are mapped to a single A320 mix channel button and stereo inputs are mapped to an adjacent pair of channels.

By default, the A320 ships in 16-channel mode, so there is nothing to change if you want to plug your A320 into a 16-channel system. To set the A320 back to 16-channel mode after using the 32-channel mode, hold the **Mute** and **Channel 1** buttons while powering up the unit. (The A320 powers up when its rear-panel Cat-5 jack is connected to an A-Net Distributor port.)

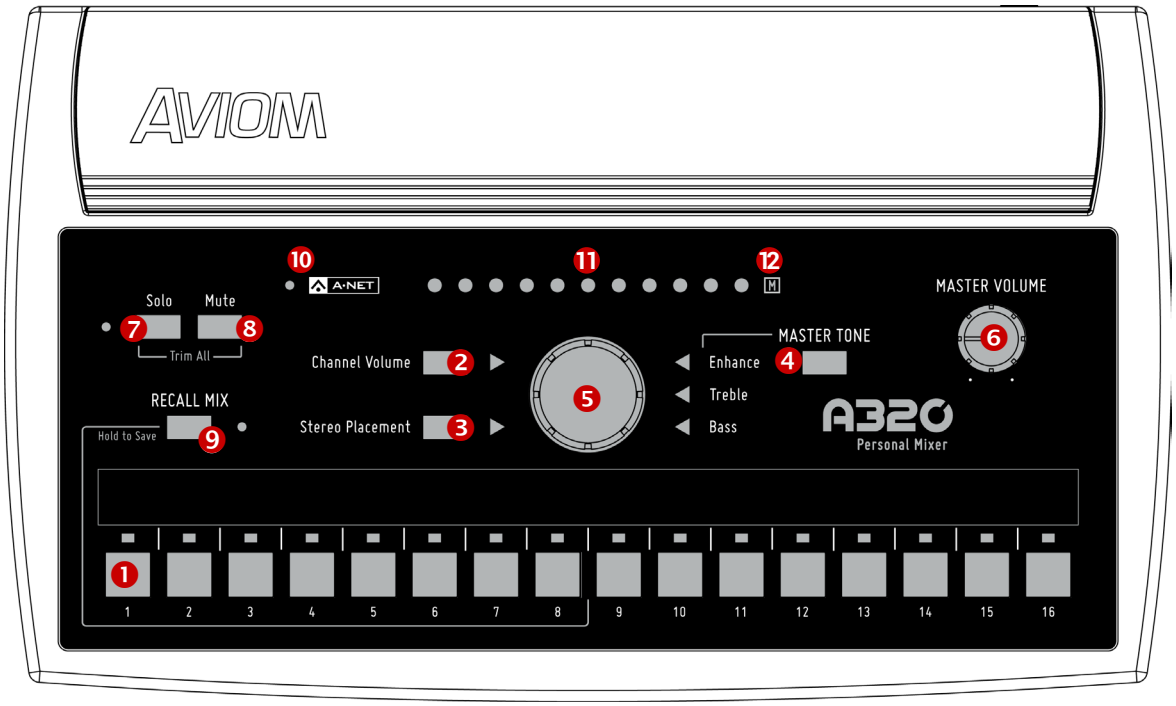
32-Channel Mode

When a system includes multiple input devices or a Dante network, the 32-channel mode can be used. In 32-channel mode, stereo inputs are mapped to a single A320 mix channel button, allowing up to 16 stereo inputs to be used.

To set the A320 to use 32-channel mode, hold the **Mute** and **Channel 2** buttons while powering up the unit.

✓ **Note:** Once the mixer mode is set, the A320 retains the setting through power cycles and will only need to be changed if the input section of the monitor system it is connected to changes.

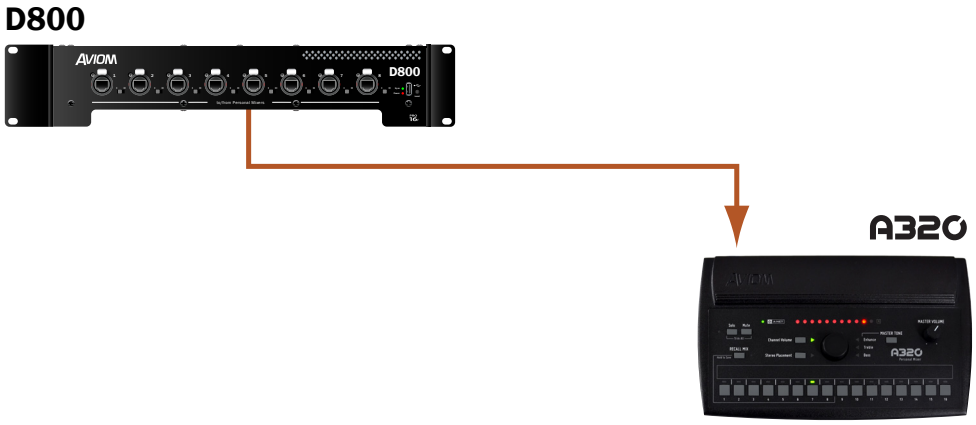
Basic A320 Features



	Function	
1	Mix Channel Buttons, with LED	Press to select a channel and make it active for editing.
2	Channel Volume Button	When pressed, the green LED lights. Sets the central control knob to change volume.
3	Stereo Placement Button	Sets the central control knob to change stereo placement. The green LED lights when active.
4	Master Tone Button	Toggle to select Enhance, Treble, Bass, then turn the central control knob. The LED lights when active.
5	Central Control Knob	Changes the value for the selected function—Volume, Stereo Placement, Treble, Bass, or Enhance.
6	Master Volume Knob	Sets the level of the stereo mix in the headphones or earbuds.
7	Solo Button and LED	Press to activate Solo mode; isolates the selected channel from the mix; Solo LED blinks when active.
8	Mute Button	Press to mute the selected channel in the mix. The M icon flashes.
9	Recall Mix Button	Press and release to recall a mix preset; press and hold to save a mix preset.
10	A-Net LED	Lights green for Pro16 A-Net and red for Pro16e A-Net.
11	Volume, Stereo Placement, and Tone LEDs	Shows the value for the selected function being edited.
12	Mute LED	Flashes when the selected channel is muted.

Connect the A320 to an A-Net Distributor

The A320 Personal Mixer needs to be connected with a Cat-5 cable to a powered port on an A-Net Distributor such as the D800 or D400. The A-Net Distributor supplies the multi-channel digital audio data as well as the DC power required to run the A320.



Connect A320 Personal Mixer to an A-Net Distributor.

The Cat-5 cable connecting the A-Net Distributor and the A320 can be up to 400 feet (122 m) in length.

✓ **Note:** When connecting the A320 Personal Mixer to a D800 or D800-Dante A-Net Distributor, the D800's front panel switches must be set to the "**I**" position. The "**II**" position is for use only with the A360 Personal Mixer.

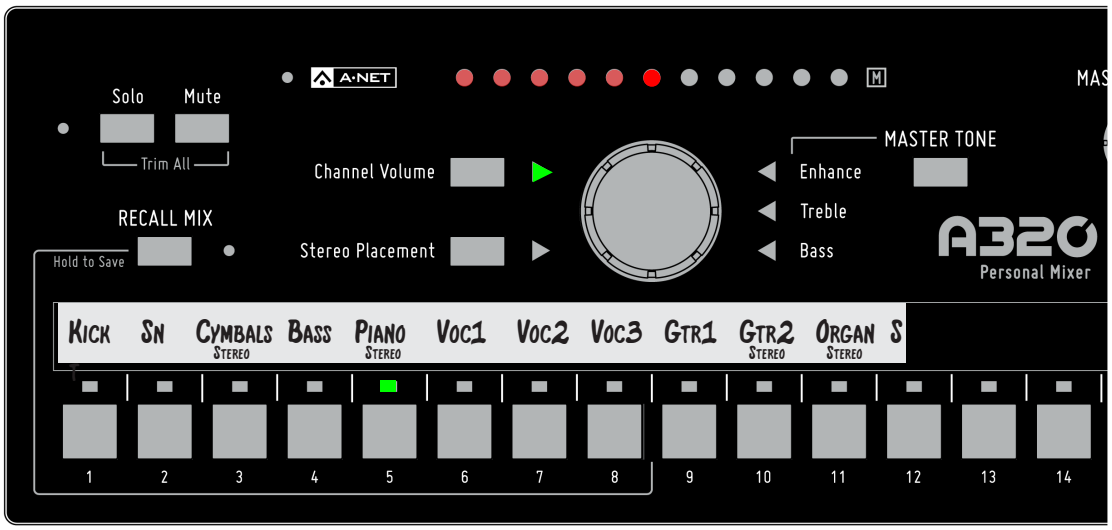
Make Your First Mix

After plugging headphones or earbuds into the rear-panel **Stereo Mix Out** jack, you're ready to make your first mix on the A320.

Set Channel Volumes

Start by turning up the volume level of the most important channels, those that supply the essential elements you need most in a monitor system while performing, singing and/or playing an instrument—channels that provide critical timing and pitch reference cues.

- Press a channel button to select a mix channel for editing; the green LED above the channel button lights.
- The green triangle LED next to the **Channel Volume** button should be lit. If it's not, press the **Channel Volume** button to light it.
- Turn the central control knob to raise the level of the selected channel. The channel's volume is shown in the row of red LEDs across the top of the A320.
- Select another channel and follow the same procedure to set its volume level.



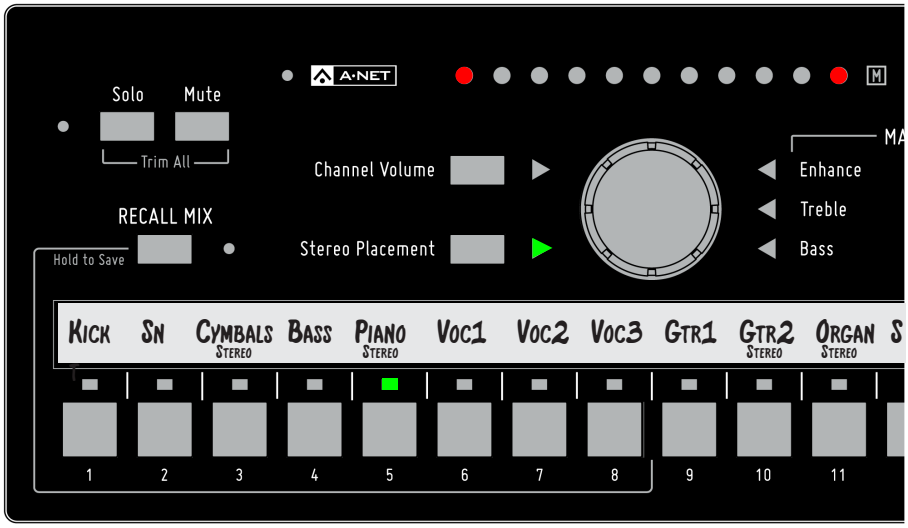
Channel 5 is selected for editing.

The volume setting for each channel in your mix will be saved when you store a mix preset or power down the system.

Set Stereo Placement

Monitoring in stereo provides a more natural monitoring experience, especially if you are wearing in-ear monitors.

- Select the mono or stereo channel that you want to change.
- Press the **Stereo Placement** button; the green triangle LED next to the button should be lit.
- Turn the central control knob to pan the channel in the stereo mix.



Stereo Placement is being edited on Channel 5.

Mono channels will use a single LED to display panning, while a stereo channel will use a pair of LEDs that indicate the left and right sides of the channel. Stereo Placement settings for each channel in your mix are saved as part of a mix preset.

Adjust the Master Tone Settings

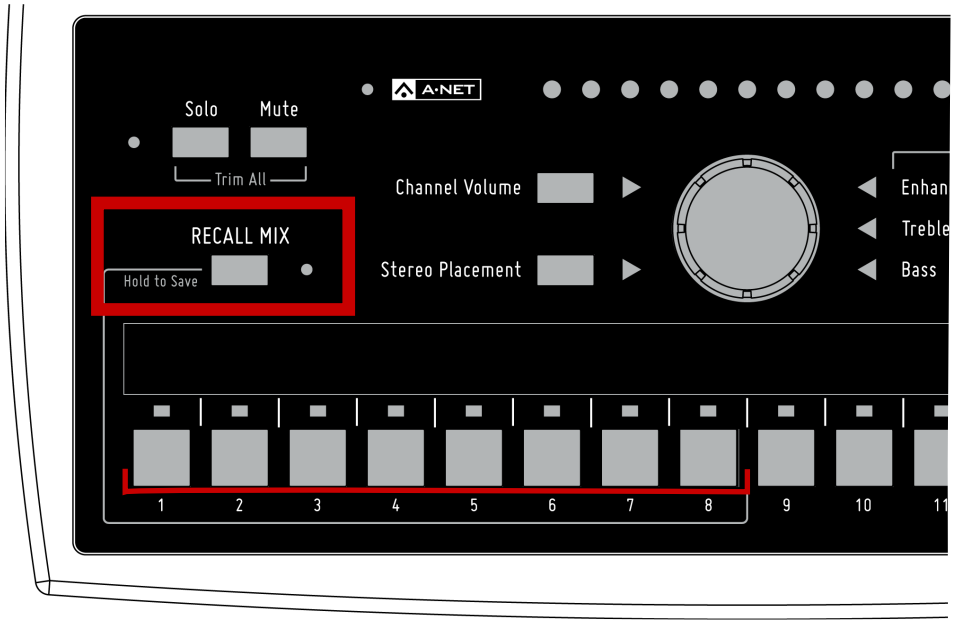
The Master Tone section's Treble, Bass, and Enhance can be used to adjust to overall EQ of your headphones or earbuds. Once you have a basic mix set up, adjust the Treble and Bass tone controls first, leaving the Enhance control set to the minimum. Once you have the treble and Bass tone controls set to your liking, slowly raise the amount of Enhance until you find a pleasing amount. Enhance is a combination bass/treble circuit that boosts the extreme low end and extreme high end of a mix. Press the **Master Tone** button to cycle through the three tone options.

The Master Tone section affects the stereo mix output as a whole and its settings are not saved as part of a mix preset.

Save a Mix Preset

Once you have a basic mix set up, it can be saved as a preset for easy recall later. The A320 can store eight mix presets using the first eight channel buttons as storage locations. To save a mix as a preset:

- Press and hold the **Recall Mix** button.
- Press a channel button 1-8.
- The mix is saved; the A-Net and Recall Mix LEDs flash as a confirmation.

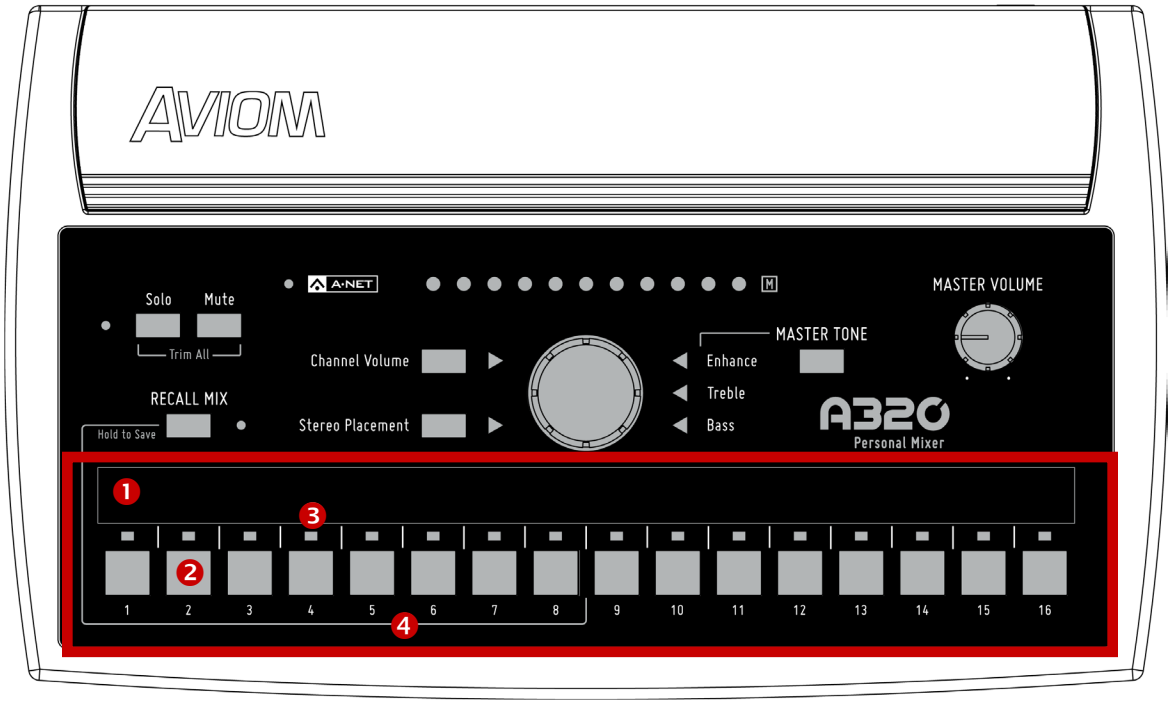


Hold the **Recall Mix** button and then press a channel button 1-8 to save a mix preset.

A320 Front Panel

The following sections cover the basic functions of the A320's user interface. See "Personal Mixing System Setup" on page 36 for information about adding your A320 Personal Mixer to a new or existing system

Mix Channels



	Function
1	Channel Label Strip
2	Mix Channel Buttons
3	Channel LEDs – green
4	Mix Preset Locations - Channel Buttons 1-8

Channel Label Strip

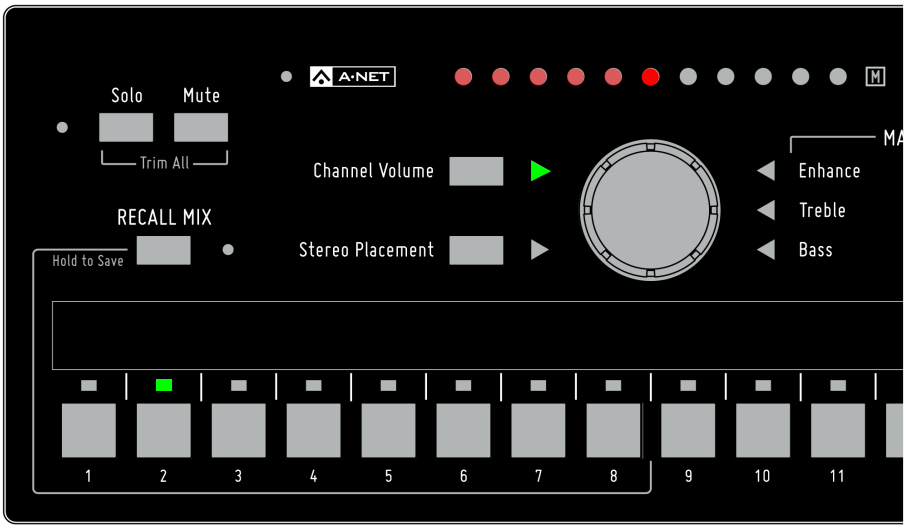
The channel label strip is designed to accept 1/2-inch (13 mm) wide artist's tape or custom-made labels. A spreadsheet style channel label template is available on the Aviom website. Do not use permanent adhesives or tapes with your Aviom product. See "Mixer Label" on page 50.

Mix Channel Buttons

The 16 mix channel buttons can be assigned either a mono or stereo source, allowing up to 32 input sources to be mixed on the A320 (if each of the 16 mix channels is assigned a stereo source). Stereo links are assigned at the Pro16 or Pro16e input device with the stereo link switches on that device.

To select a channel and make it active for editing, press one of the 16 mix channel buttons; its green LED will light and the green **Channel Volume** LED will light. The current volume level for the selected channel will be shown in the horizontal row of red LEDs across the top of the mixer.

Make channel-level changes as needed using the Channel Volume, Stereo Placement, and Mute controls. While editing, the Solo function is also available to isolate the selected mono or stereo channel from the mix. See "Channel Solo" on page 23 for addition information on the Solo function.



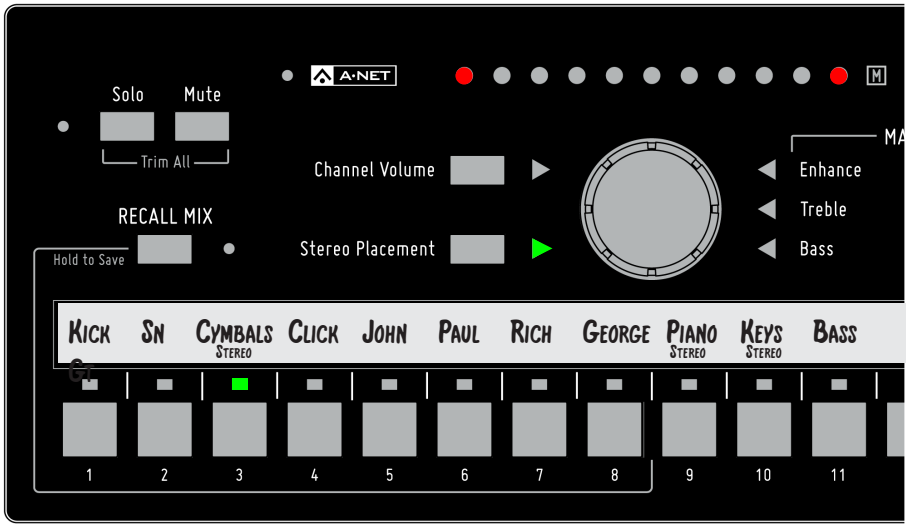
Channel 2 is selected for editing.

Mix Presets

The first eight mix channel buttons also double as Mix Preset storage locations. See "Saving Mix Presets" on page 31 for information on saving and recalling Mix Presets.

16-Channel Vs. 32-Channel Mode

When the A320 is in 32-channel mode, stereo pairs of input channels are mapped to a single channel button on the A320. When a stereo channel is selected, the Stereo Placement feature uses two LEDs to indicate the relative positions of the left and right sides of the stereo signal in your mix.



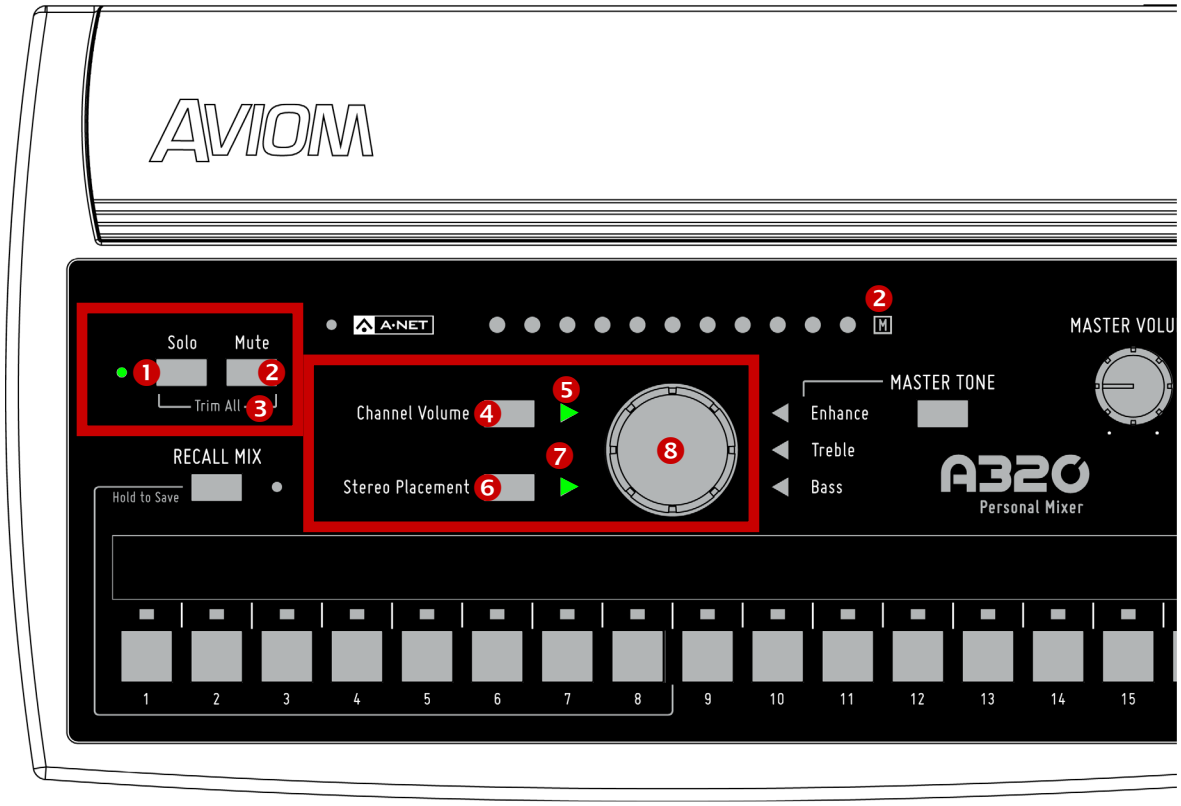
Channel 3 is a stereo input when in 32-channel mode.

When the A320 is in 16-channel mode, a stereo source will be mapped to two adjacent channel buttons (in odd-even pairs). Pressing either channel button will light both buttons, and the stereo channel pair may be edited using the Channel Volume, Stereo Placement, and Mute controls. Pressing the **Solo** button will place both channels into solo, isolating them from the rest of the current mix. See “32-Channel Systems” on page 39 for information about using stereo inputs with the A320.

Channel 5-6 are stereo linked at a Pro16 input device when in 16-channel mode.

Channel Controls Section

Each mix channel has Volume, Solo, Mute, and Stereo Placement settings available.



	Function
1	Solo Button with Solo LED - green
2	Mute Button and Mute LED
3	Trim All Function - Solo + Mute
4	Channel Volume Button
5	Channel Volume LED - green
6	Stereo Placement Button
7	Stereo Placement LED - green
8	Central Control Knob

Channel Controls

The individual channel control functions are available whenever one of the 16 mix channel buttons is selected. Volume, Stereo Placement, and Mute settings are saved with a Mix Preset.

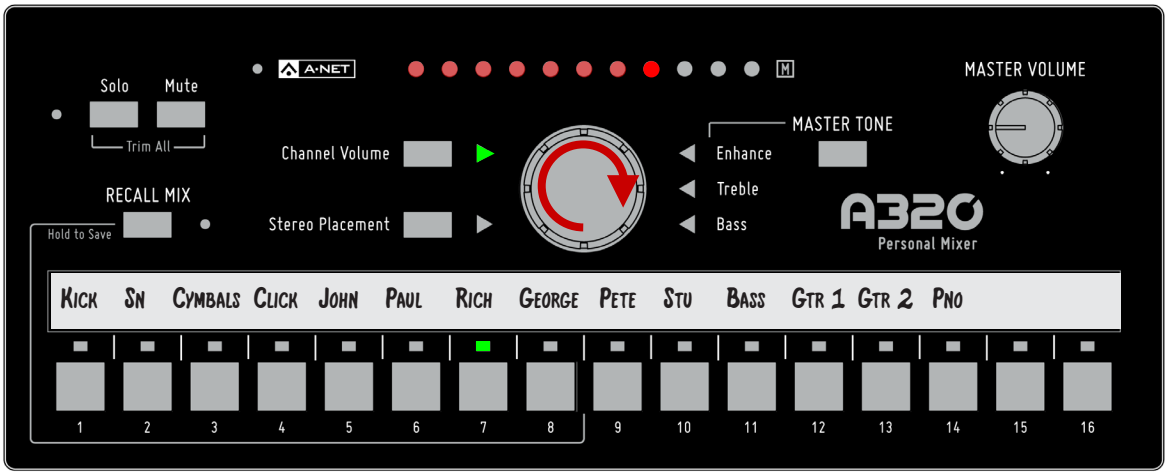
Central Control Knob

The large knob in the center of the A320 Personal Mixer is a multi-function rotary encoder that is used for channel-level editing as well as for making changes to the Master Tone settings—Enhance, Treble, and Bass. The function currently assigned to the central control knob is controlled by pressing the Channel Volume, Stereo Placement, and Master Tone buttons. (The green triangle LED next to the currently assigned function will be lit.)

Channel Volume

Each channel's level in the current mix is set with the control knob; the 11 LEDs that run horizontally across the top of the A320 indicate the current volume of the channel and will update in real time as you make changes.

To set a mix channel's level, press its numbered button to select it; the green triangle LED next to the **Channel Volume** button will light indicating that the Central Control knob is affecting volume. Turn the central control knob to set the desired level. The red LEDs indicate the current volume for the channel. Two LED brightness levels are used—low and high. Each LED turns on first at its low level and then at its high level. (Only one LED will ever be at its maximum brightness.)



Volume is being edited for channel 7.

To turn a channel off, turn the central control knob fully left until no LEDs are lit. To silence a channel temporarily, use the Mute function.

Stereo Placement

Each channel button on the A320 Personal Mixer can host either a mono or stereo channel when the A320 is set to 32-channel mode. The advantage to this approach is in the simplicity afforded the user. A stereo source such as a piano, drum submix, or the left/right outputs of a stereo guitar processor are easily accessible with a single button press. This powerful feature makes it easy to keep stereo sources intact in a monitor mix rather than forcing the performer to listen in mono to inputs that have valuable stereo spatial information. See "Setting the Mixer Mode" on page 26 for more information.

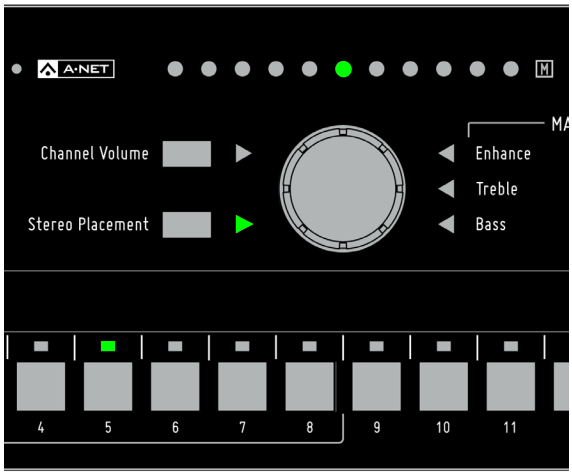
The Stereo Placement feature controls the selected channel's position within the current mix's stereo image. The A320 Personal Mixer offers a unique treatment of the stereo positioning controls for each channel in a mix. Stereo placement on the A320 Personal Mixer uses carefully selected position locations that are musically useful and have been optimized for use with in-ear monitors.

Every audio source can be heard in full stereo fidelity without taking up additional space on the mixer, creating a more realistic monitor mix environment for performers wearing stereo earbuds and headphones. Using stereo sources allows every channel to be positioned precisely in the left-right stereo image and provides a clearer, more accurate mix at a lower volume with no loss of fidelity.

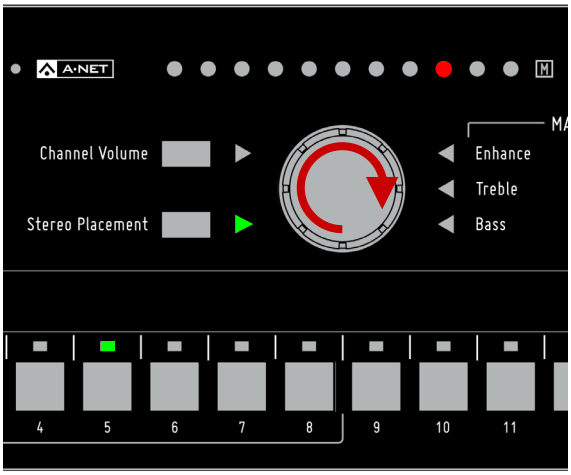
When positioning a mono or stereo channel in your mix, the central control knob uses two encoder clicks per location as it steps through the various options as described below.

Mono Channels

A mono channel's position in the stereo field is indicated with a single LED that is green when centered, or red when panned left or right.



The default centered pan position for a mono channel



A mono channel shown panned

To position a mono channel, first press the **Stereo Placement** button; its green triangle LED will light. Turn the central control knob left or right. To return the selected channel to its default center position, make sure that the green Stereo Placement LED is lit, and then turn the central control knob until the green LED is shown in the center of the LED display.

Stereo Channels

Stereo sources are set up at the Pro16 or Pro16e input device feeding the A320 Personal Mixers by simply setting the stereo/mono Link switch for a pair of channels. On the A320, the stereo channel behavior is determined by the mixer mode. See “Setting the Mixer Mode” on page 26.

The Pro16 version of A-Net has a fixed 16-channel maximum, while the Pro16e version offers a pool of up to 64 source channels, connected to up to four input devices. The A320 Personal Mixer can make use of inputs 1-32 in a monitor system that uses more than 32 input channels. Channels 33 and above are only accessible to the A360 Personal Mixer.

Using the A320 in 16-Channel Mode

When a system is configured with a single 16-channel input device (including the original AN-16/i Input Module, AN-16/i-M Mic Input Module, Y1 A-Net Card for Yamaha®, or the console cards built by Aviom partners that use the Pro16 A-Net technology), the A320 should be set to 16-channel mode so that stereo channels are mapped to adjacent channel pairs. Odd-even adjacent mixer channels behave as one. For example, linking inputs 3-4 on a Y1 A-Net Card installed in a Yamaha digital console will cause an A320 mixer’s channels 3 and 4 to light together when either channel button is pressed.

The A320 should always be used in 16-channel mode when a single input module (16 inputs or less) is used to create a personal mixing system.

Using the A320 in 32-Channel Mode

When at least one Pro16e input device (such as the AN-16/i v.2 Input Module) is used to provide 32 inputs to the network, the A320 should be set to 32-channel mode so that stereo sources will be mapped to a single A320 channel button when the input device’s mono/stereo link switches are set to stereo.

When two or more Pro16e input modules or a Dante network are used as the system’s input section, the A320 should be set for 32-channel mode. Each stereo pair will be mapped to a single A320 mix channel button. Up to 16 stereo channels are possible when all input pairs are set to stereo.

Compatibility

When at least one AN-16/i v.2 is used to create a system with multiple input devices, the first 16 input channels of the network may come from any device that outputs the Pro16 version of A-Net including: the original AN-16/i, AN-16/i-M, AV-M8, Y1 A-Net Card, partner console cards, or the Pro64 ASI A-Net Systems Interface. Connecting the A-Net Out from one of these Pro16 devices to the A-Net In on the AN-16/i v2 causes the data to be merged inside the AN-16/i v.2 and output as a Pro16e packet.

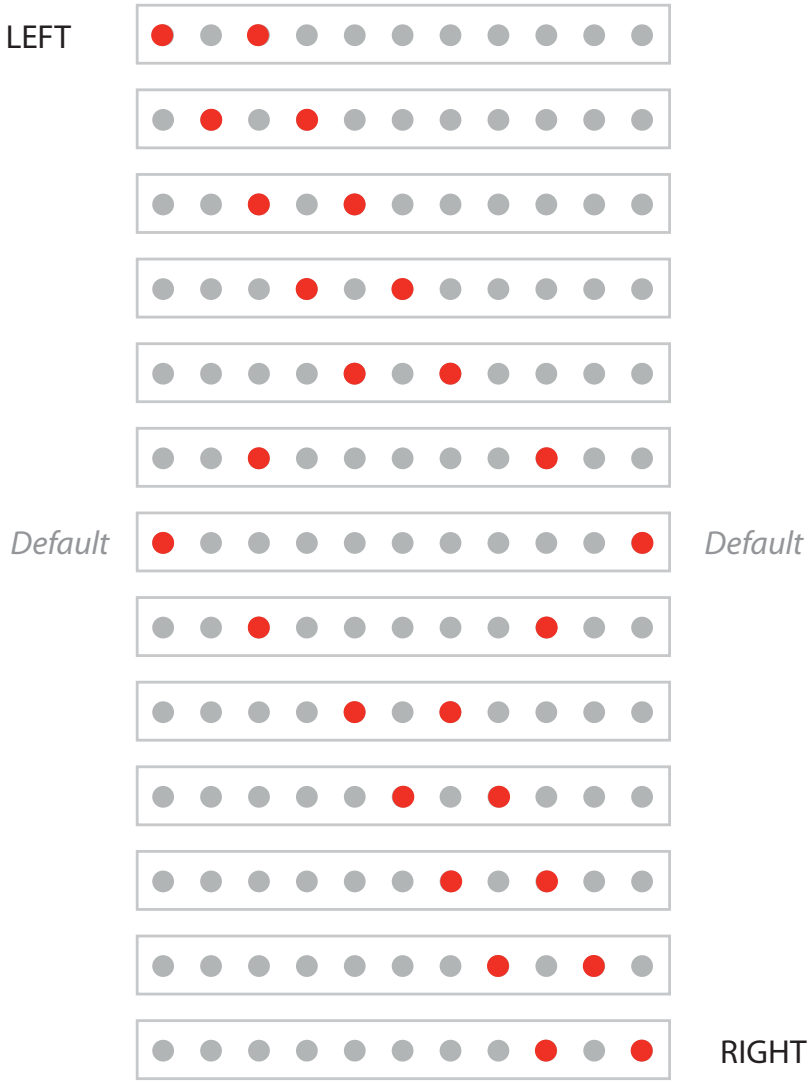
When a D800 or D800-Dante A-Net Distributor is used, multiple digital console cards from the same clock source may be connected to an SB4 System Bridge. The System Bridge’s output may be connected to the A-Net In on the D800; the data streams will be merged by the D800 and transmitted from its A-Net outputs. The D800 always outputs the Pro16e version of A-Net.

✓ **Note:** The A320 Personal Mixer can use only input channels 1-32 of any personal mixing network that has more than 32 input sources.

Understanding Stereo Placement on the A320

When Stereo Placement is selected for editing, two red LEDs are used to indicate the location of the sources within the stereo image. The default spread for a stereo source is full left and full right.

The following example shows the eleven relative Stereo Placement positions available for a stereo channel. As you change the Stereo Placement setting for a channel, you'll notice that the center-panned options appear twice—as you move from the left side of the stereo image to the right and again as you move from the right back to the left.



The A320 Stereo Placement LED positions

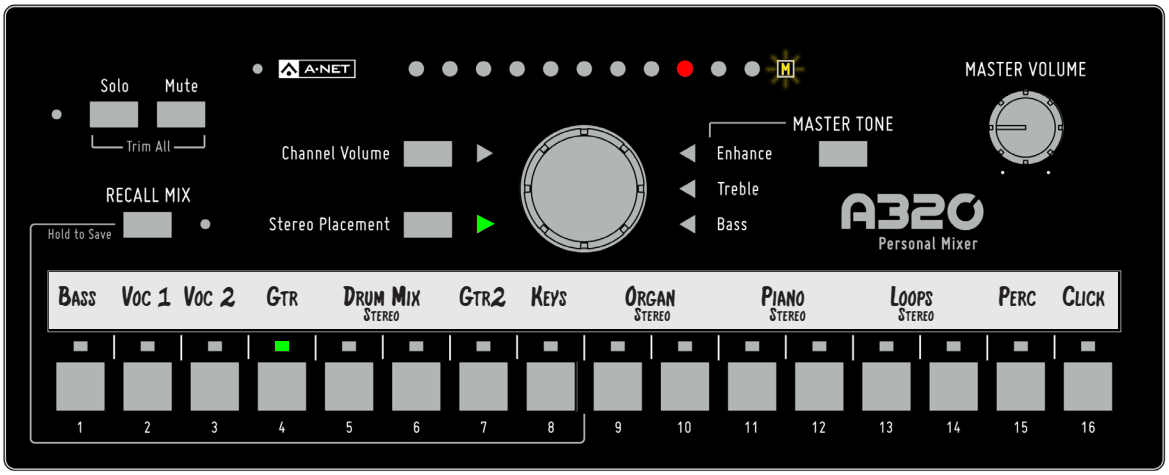
The stereo positions have been carefully selected to be both easy to use and musically useful while performing live on stage or in the studio.

Channel Mute

Any mix channel on the A320 can be muted. To mute the selected channel, press the **Mute** button. The yellow Mute Ⓜ icon blinks to indicate that the channel is muted in the current mix as long as the channel is selected (or whenever the channel is re-selected). The Mute setting for each channel will be saved when you store a mix preset.

Any number of mix channels may be muted while making a mix. To mute additional channels in the current mix, simply select a channel's mix button and then press the **Mute** button.

To unmute a channel, select the channel first (its green LED above the channel button will light and the Mute Ⓜ icon will be flashing) and then press the **Mute** button. The channel can be heard again in the mix. While muted, a channel's Volume and Stereo Placement settings can still be edited, but these changes will not be heard until the channel is unmuted.



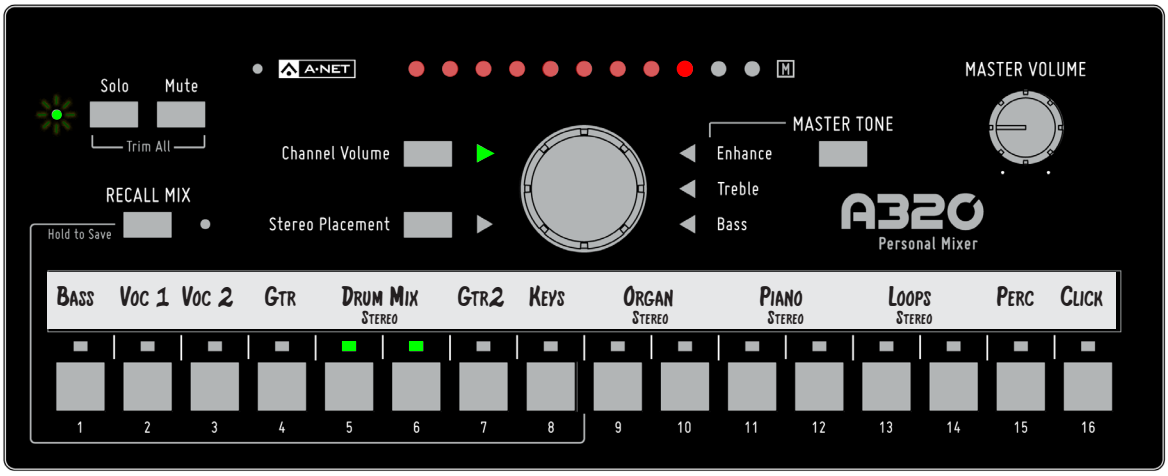
Channel 4 is muted; the Mute LED is flashing as long as Channel 4 is selected.

✓ **Tip:** To clear a mix, press the **Recall Mix** button and then press the **Mute** button. Refer to "Clear a Mix" on page 33 for more information.

Channel Solo

Pressing the **Solo** button on the A320 allows the selected mono or stereo channel to be heard alone without affecting the rest of your mix. If the A320 Personal Mixer is used in 16-channel mode, two adjacent channels are used to create a stereo pair. Pressing the **Solo** button when a stereo linked pair is selected on the A320 will cause both channels to enter Solo Mode.

The green Solo LED next to the **Solo** button will flash while a channel is in solo. Edit channel volume or Stereo Placement settings as needed. To exit Solo Mode and return to the full stereo mix, press the **Solo** button again. The green Solo LED will stop flashing.



A stereo channel, 5-6, is in Solo Mode; the Solo LED is flashing.

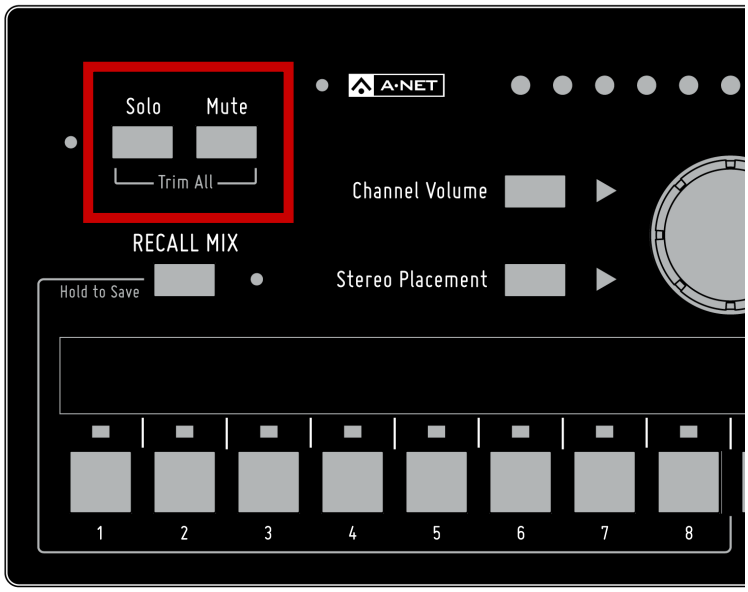
To isolate a different channel, press its channel button at any time while the Solo LED is flashing. The new channel enters Solo, replacing the previous channel. Only one mono or stereo channel may be in Solo at a time. Muted channels in the mix will be temporarily unmuted when placed in Solo; the channel's **Mute** LED will go out while the channel is in Solo. Note that you cannot mute a channel while it is in Solo mode; the Solo LED will flicker briefly as a reminder.

To exit Solo mode, press the **Solo** button; the Solo LED stops flashing and you are returned to the full mix.

Trim All Function

The Trim All function is an easy way to turn down the volume of all channels in a mix by a uniform amount with a single command. Use Trim All if a channel being edited is already at its maximum level and you want to continue to raise its volume relative to the other elements in the current mix.

To use Trim All, simultaneously press the **Solo** and **Mute** buttons. Each press of this button combination lowers all channel volumes by 3dB.

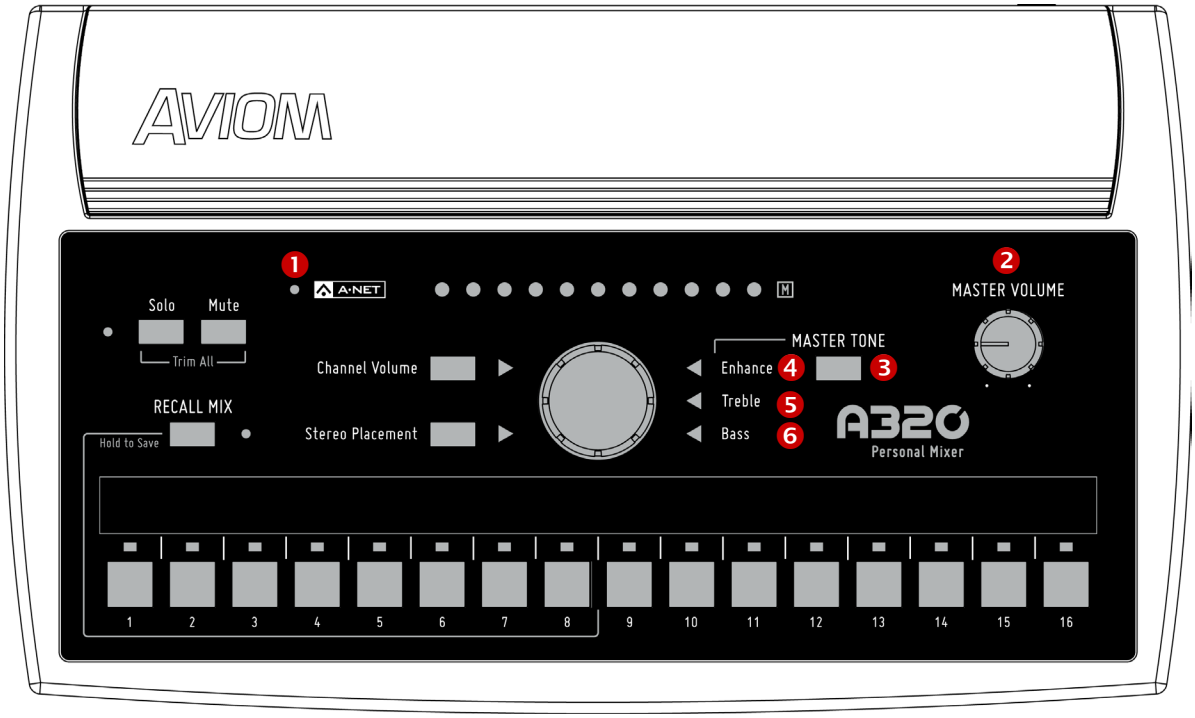


All channel volumes are lowered by 3dB when you use the Trim All command.

Once the mix has been trimmed by the desired amount, you can continue making mix adjustments as needed. After using the Trim All function as described above, you may need to raise the Master Volume level to compensate for the lower overall mix level.

Master Section

The master section of the A320 Personal Mixer's interface includes the A-Net LED and the global controls for master volume and tone.



	Function
1	A-Net LED, bi-color green/red
2	Master Volume Control
3	Master Tone Button
4	Enhance Tone Control LED, green
5	Treble Tone Control LED, green
6	Bass Tone Control LED, green

A-Net and the A320

The A320 Personal Mixer can operate in one of two modes—the 16-channel maximum Pro16 version where each channel is assigned to one mix channel button (and stereo channels, therefore, occupy a pair of adjacent channels), or the 32-channel Pro16e mode where stereo channel pairs occupy a single mix button on the A320 interface. Which mixer mode you will use will depend upon the type and number of input devices that make up your personal mixing system.

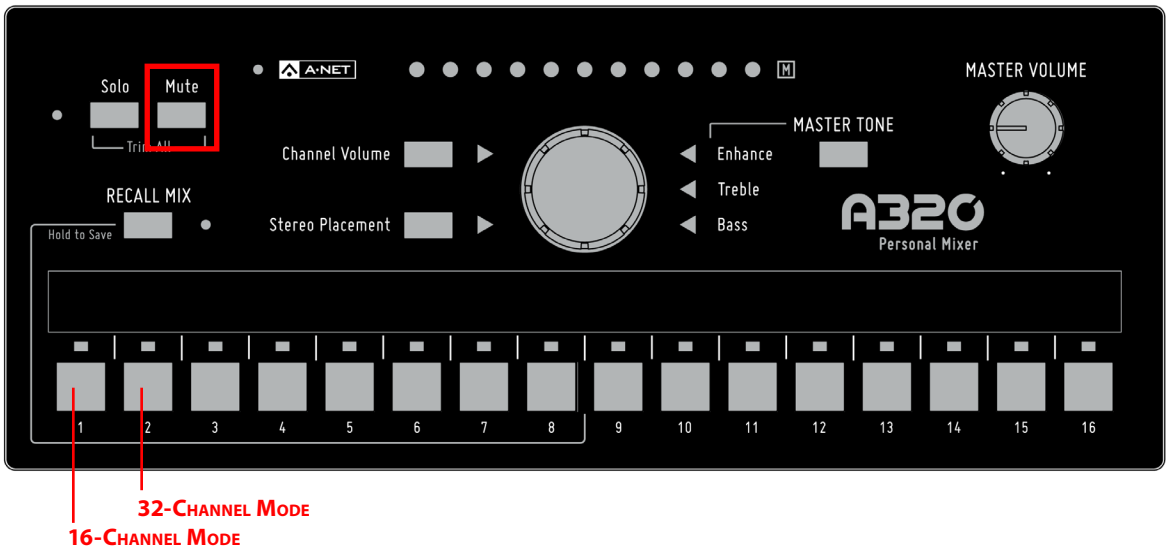
If your personal mixing system has only 16 input sources and uses a single analog input module or digital console card, use the 16-channel mode. If you use a Dante network, use the 32-channel mode. If your system has two or more input devices and at least one of them is a Pro16e device such as the AN-16/i v.2 Input Module, then you can make use of the 32-channel (Pro16e) version of the protocol. (Remember that the A320 can only use slots 1-32 of a larger Pro16e network; slots 33-64 can be accessed only by the A360 Personal Mixer.)

A-Net LED

The A-Net LED on the A320 Personal Mixer will light green when it is receiving the Pro16 version of A-Net; it will light red when the Pro16e version is being received.

Setting the Mixer Mode

To choose a mixer mode, a special power-up button combination is used. Start with the power off (disconnect the Cat-5 cable from the back of the mixer). To set the A320 to use the 16-channel mode, hold the **Mute** button and the **Channel 1** mix button and then power up the unit. To use the 32-channel mode, start with the power off, hold the **Mute** button and the **Channel 2** mix button and then power up the unit.



On power up, holding **Mute** and **Channel 1** sets the A320 to 16-channel mode; holding **Mute** and **Channel 2** sets the A320 to 32-channel mode.

✓ **Note:** When the mixer mode is changed, the A320 is completely reset. This clears all volume, stereo placement, and mute settings from the current mix and also resets the eight mix presets to default values.

Troubleshooting Mixer Modes

The A320 cannot be damaged by choosing the wrong mixer mode, but the channel mapping may not be what you expect. Here is how the A320 will react:

- If ***Pro16*** A-Net packets are received while the A320 is in 32-channel mode, only the first 8 mix channel buttons are usable. Pressing mix channel buttons 9-16 will flicker the red A-Net LED to indicate that you are trying to access network slots that are not available in the 16-channel Pro16 packet.
- If ***Pro16e*** A-Net packets are received in 16-channel mode, only the first 16 slots from the packet are available. The upper slots (17-32) and any associated stereo links will be ignored.
- When ***Pro16e*** A-Net packets are received while the A320 is in 32-channel mode, and those packets include slots from 33-64 (which *can* be used by the A360 Personal Mixer), slots 1-32 are used and slots 33-64 are ignored.

✓ **Note:** The A360 will briefly display the mixer mode during power up. A green A-Net LED indicates 16-channel mode (the factory default), and a red A-Net LED indicates 32-channel mode.

Master Volume

The Master Volume control sets the level for the 1/4-inch Stereo Mix Out jack on the rear panel. The Master Volume level is an analog control and is not saved as part of a Mix Preset.

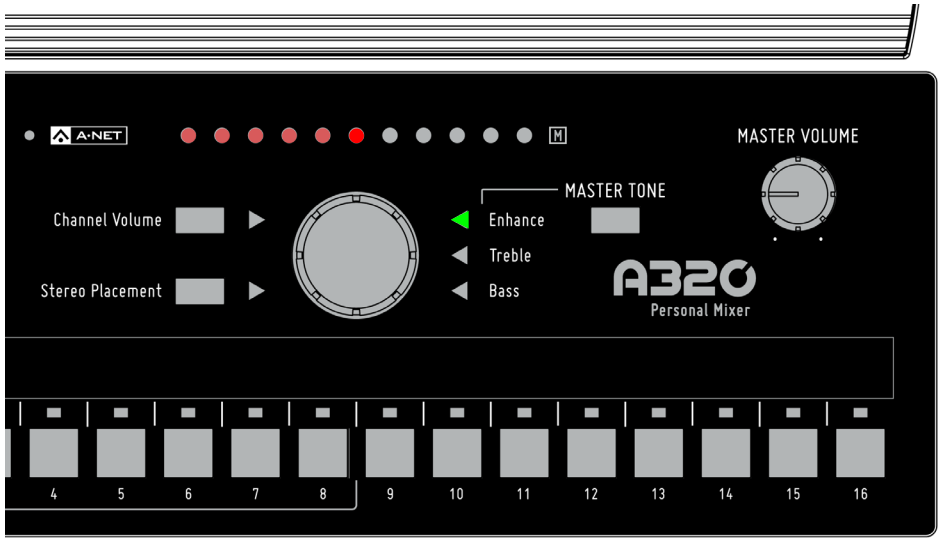
Master Tone Button

The Master Tone button is used to select one of the three tone settings—**Enhance**, **Treble**, or **Bass**—for editing. Pressing the button will cycle through the three options, lighting the green triangle LED next to the current selection.

Enhance Tone Control

Enhance is a specially developed bass and treble EQ curve designed to increase low-end punch and high-end brilliance in a mix. It is especially useful for performers listening through in-ear monitors.

The default position for the Enhance control is fully left with no LEDs lit—off. To use the Enhance control, start by creating a mix with the control in the full off (counterclockwise) position. Set the Master Tone Treble and Bass as desired. Press the **Master Tone** button to light the green LED next to **Enhance** and select it for editing. Then start raising the Enhance amount slowly while listening to the mix until you find an amount that's pleasing.



When the Enhance LED is lit, turn the central control knob to change the amount of Enhance applied to the mix.

The Enhance tone control amount is not saved with a Mix Preset.

Treble Tone Control

Use the Treble tone control to add or subtract high frequencies from the stereo mix output. The default (flat) setting for the Treble tone control is at the center of the LED display; a green LED is shown.

To change the amount of treble frequencies in your mix, press the **Master Tone** button until the **Treble** LED is lit and then turn the central control knob left to remove treble or right to add it. The amount of treble adjustment is shown with a red LED.

The Treble tone control's amount is not saved with a Mix Preset.

Bass Tone Control

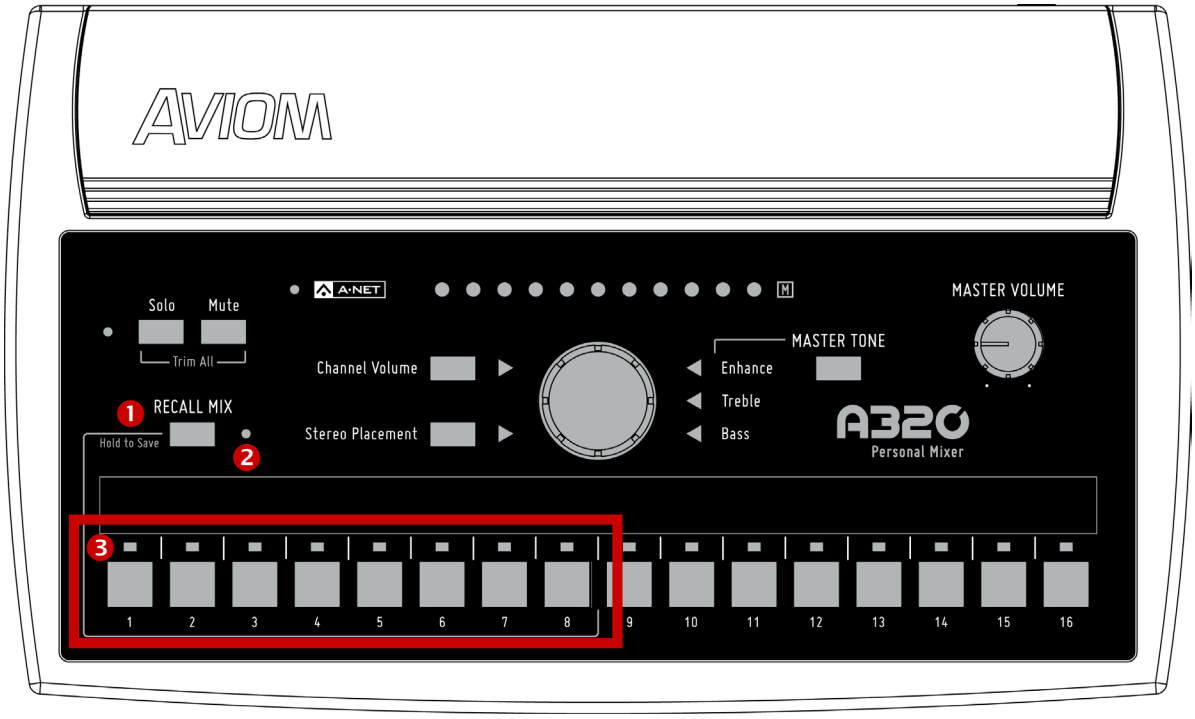
The master section's Bass tone control adds or subtracts low frequencies from the stereo mix output. It is designed as overall tone compensation for the headphones, earbuds, or speaker systems connected to the A320 Personal Mixer.

The default setting for the Bass tone control is at 12 o'clock (flat). To change the amount of bass frequencies in your mix, press the **Master Tone** button until the **Bass** LED is lit and then turn the central control knob left to remove bass or right to add it. The amount of adjustment is shown with a red LED.

The Bass tone control's setting is not saved as part of a Mix Preset.

Mix Presets

The A320 can save up to eight separate mixes as presets. These presets are accessed using the first eight mix channel buttons, which double as preset location buttons. The A320 will also preserve the last mix settings when the mixer is powered down.



	Function
1	Recall Mix Button (Hold to Save)
2	Recall Mix LED
3	Mix Preset Memory Locations 1-8

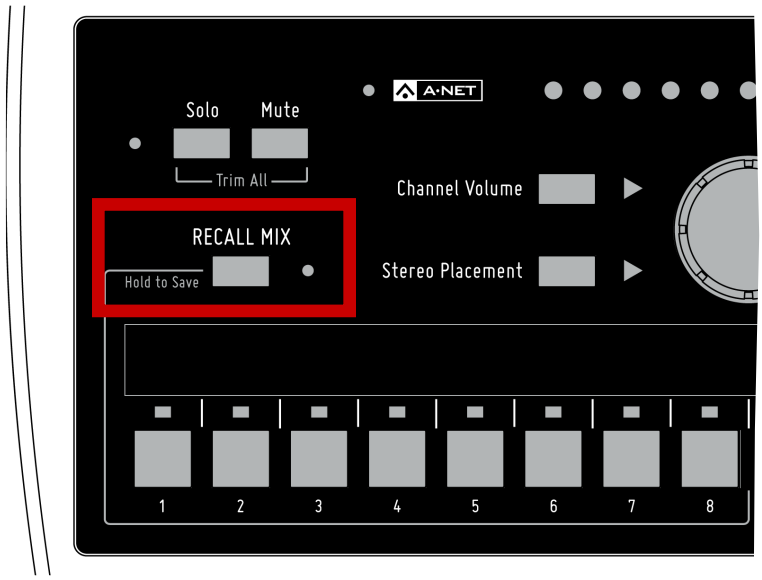
Saving Mix Presets

The A320 Personal Mixer can save up to eight Mix Presets using the channel select buttons numbered 1-8 as storage locations. Mixes are retained in the A320 even when the mixer is powered down.

To save a mix to one of the channel buttons numbered 1-8:

1. Hold down the **Recall Mix** button to activate the Save function
2. Note that the LED next to the **Recall Mix** button does not blink.
3. While still holding the **Recall Mix** button, press one of the first eight channel buttons.
4. As a confirmation, the **Recall Mix** and **A-Net** LEDs will blink briefly.

While holding the **Recall Mix** button, you can store a mix to multiple locations if desired. Each save action will display the confirmation message (the **Recall Mix** and **A-Net** LEDs will blink). While saving a mix reset, buttons 9-16 are ignored; they are not valid mix preset locations.



Hold the Recall Mix button and press a mix channel 1-8 to save a mix preset.

✓ **Note:** Using the Save function will cancel Solo mode.

What Gets Saved in a Mix Preset

The following settings are saved when a Mix Preset is created:

- Channel Volume for all channels
- Channel Stereo Placement for mono channels
- Channel Stereo Placement for stereo channels
- Channel Mute on/off
- Last selected mix channel

Settings Not Saved in a Preset

The following are not saved when a Mix Preset is created:

- Master Volume level
- Master Bass tone control amount
- Master Treble tone control amount
- Enhance tone control amount
- Solo mode

Recall Mix Button

The **Recall Mix** button has two functions on the A320. When pressed and released, it activates the Recall Mix function. When held, the Save function is activated.

To Recall a Mix Preset

To recall a Mix Preset that has been stored in one of the A320 Personal Mixer's mix locations (the channel buttons 1-8):

1. Press and then release the **Recall Mix** button; its yellow LED will blink.
2. Press the channel button 1-8 that corresponds to the mix you wish to recall (buttons 9-16 are ignored).
3. The mix is recalled and the yellow LED next to the **Recall Mix** button goes out.
4. To cancel a mix recall, press the **Recall Mix** button again instead of a channel button 1-8.

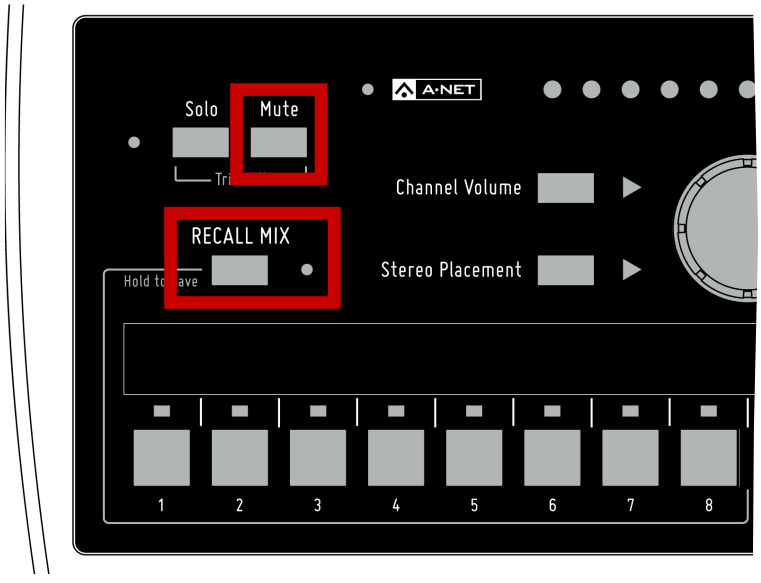
Clear a Mix

The current mix can be cleared and reset by pressing and releasing the **Recall Mix** button and then pressing the **Mute** button, returning all channel settings to their default values. Resetting a mix does not erase the mix parameters stored in memory for any of the eight Mix Preset locations. To overwrite a Mix Preset after performing a reset, use the Save procedures described previously.

This command resets the following:

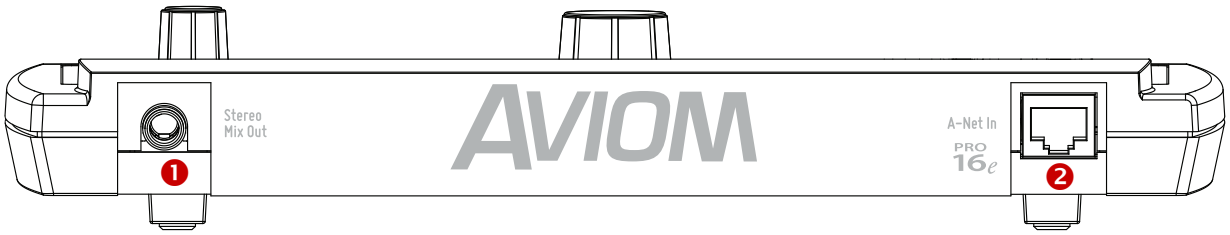
- Channel volumes are set to zero
- All channels are unmuted
- Stereo Placement (Pan) for all mono channels is set to center
- Stereo Placement for all stereo channels is set to full left/right
- Channel Button 1 is selected

The Master Volume and Master Tone settings are not affected by this command.



Press **Recall Mix** and then press **Mute** to clear the current mix.

A320 Personal Mixer Rear Panel



	Function
1	Stereo Mix Out – 1/4-inch TRS
2	A-Net In – RJ45

Rear Panel Features

This section details the function of each of the rear panel features on the A320 Personal Mixer.

Stereo Mix Out

A 1/4-inch TRS Stereo Mix Out jack is provided for direct connections to earbuds and headphones. The TRS output may also be used as a line-level output when connecting the Stereo Mix Out to a wireless in-ear transmitter or a set of powered stereo speakers. A TRS to dual TS splitter cable is required for this application (sometimes referred to as an insert cable or Y-cable). A splitter cable provides separate unbalanced left and right signals to the inputs of the receiving device.

✓ **Note:** Do not connect the TRS output from the Stereo Mix Out jack to a balanced mono input. A balanced audio input is differential—it subtracts the positive signal from the negative signal to remove any noise and interference picked up in the cable. The TRS Stereo Mix Out is not a balanced signal.

A-Net In

The Cat-5 A-Net In port is fitted with a standard RJ45 jack, and accepts either Pro16 or Pro16e A-Net data. The A320 also receives DC power over the same Cat-5e data cable. An external DC power supply is not required.

✓ **Note:** When the A320 is connected to an A-Net Distributor, the type of A-Net received (Pro16 or Pro16e) is dependent on the input device that is supplying A-Net to the distributor. Both data types are compatible with the A-Net Distributors.

See “Setting the Mixer Mode” on page 26 for information on setting the A320 to 16-channel or 32-channel operation.

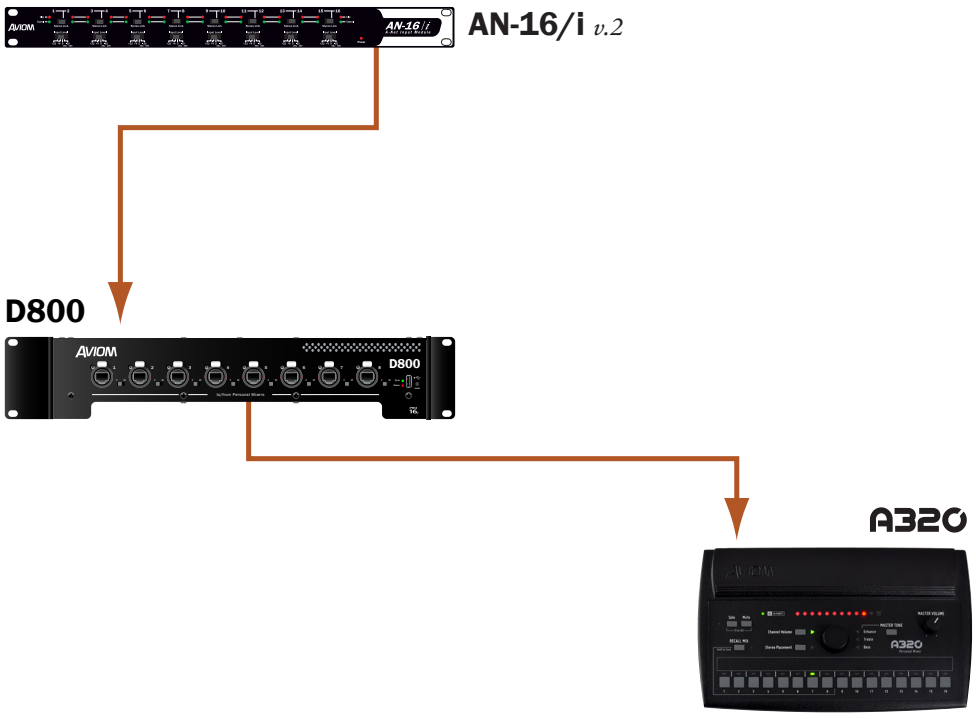
Personal Mixing System Setup

This section explains how the A320 Personal Mixer integrates with other Pro16 devices (from Aviom or third-party partners) to create a personal mixing system. See the detailed User Guides that came with the Aviom products mentioned in this section for complete information about their use, features, and setup.

Pro16e Personal Mixing Systems

The A320 Personal Mixer uses the enhanced version of A-Net, Pro16e, which allows up to 64 audio sources to be included in the network pool by using up to four 16-channel input devices. Each A320 in a personal mixing system can use the first 32 Slots of the network; Slots 33-64 can only be utilized by the A360 Personal Mixer and are ignored by the A320.

A basic monitor system that includes the A320 consists of three elements—an input device (analog or console card), an A-Net Distributor, and one or more personal mixers.



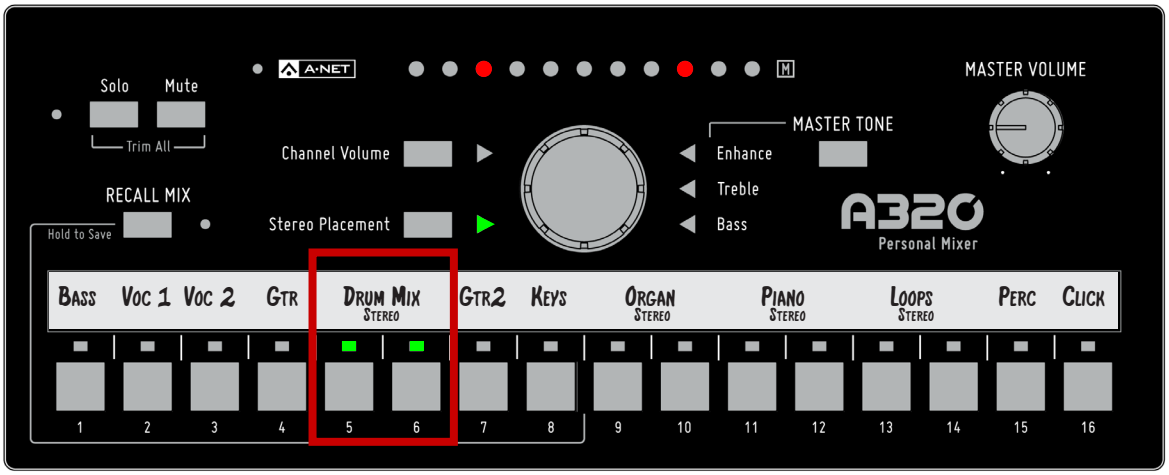
A basic monitor system with one A320 Personal Mixer

16-Channel Systems

When a single analog input module or console card is used with A320 Personal Mixers, the A320 should be set to 16-channel mode (hold **Mute** and **Channel 1** on power up). Each input channel on the input device is mapped to one mix channel button in sequential order. For example, if the input source connected to channel 1 of an AN-16/i v.2 Input Module is a bass, that bass signal will appear on button 1 of the A320.

How Stereo Links Work in a 16-Channel System

The Pro16 version of A-Net allows a total of 16 channels to be sent from an input device to personal mixers. Stereo links are treated as channel pairs, using two adjacent buttons on the A320.



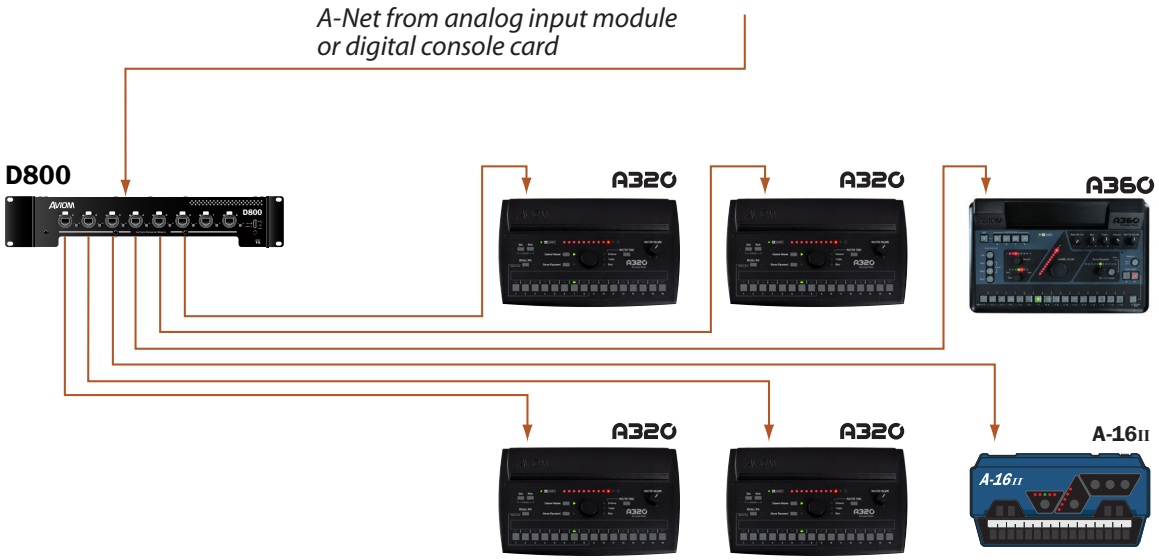
Channels 5-6 are a stereo linked pair in a system with only one input module.

See additional information about the Pro16 and Pro16e versions of A-Net on page 27.

✓ **Note:** When connecting the A320 Personal Mixer to a D800 or D800-Dante A-Net Distributor, the D800's front panel switches must be set to the "**I**" position. The "**II**" position is for use only with the A360 Personal Mixer.

Parallel Connections

Using one or more A-Net Distributors allows any number of Personal Mixers to be integrated into a personal mixing system.



An A-Net Distributor allows Personal Mixers to be connected in parallel.

In addition to Pro16 analog devices and console cards, the Pro64 ASI A-Net Systems Interface may be substituted for the input devices seen in the diagrams that follow. Any of the ASI's four Pro16 A-Net outputs may be used.

Adding the A320 to an Existing System

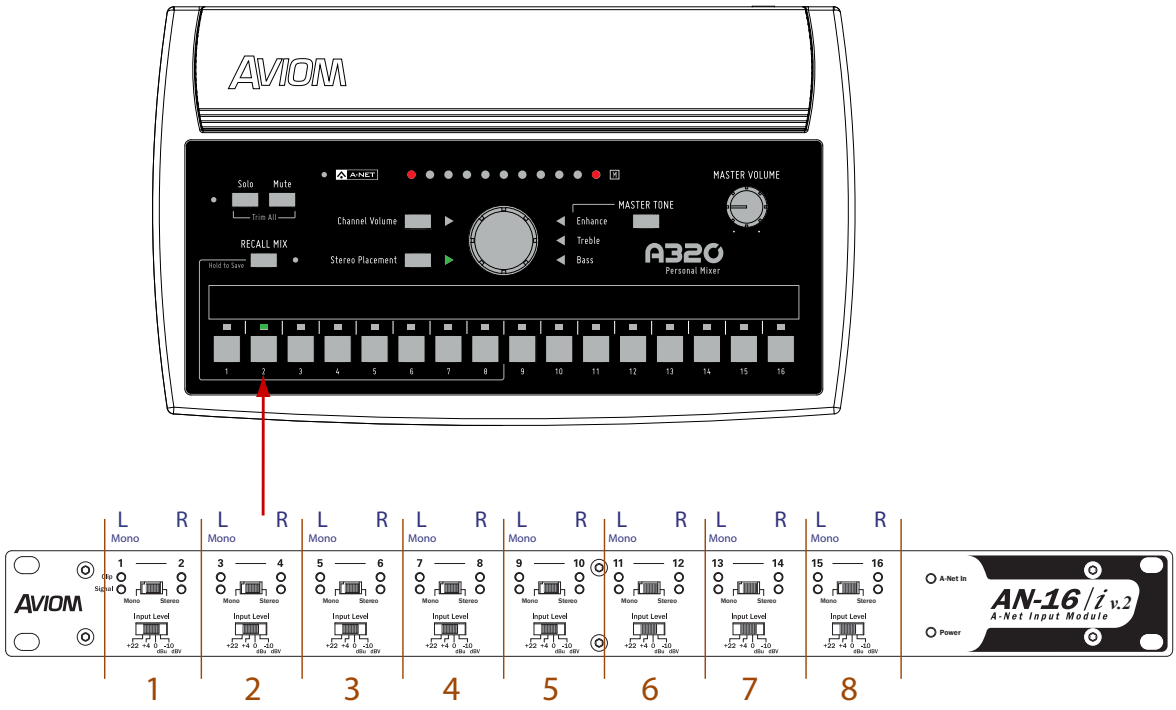
The A320 Personal Mixer can be added to existing 16-channel personal mixing systems that use the A360 and/or A-16II Personal Mixers and contain at least one A-Net Distributor. (The A320 gets its power from an A-Net Distributor and cannot be used in a system without an A-Net Distributor.)

Most 16-channel personal mixing systems use the same basic setup—an input device (analog or a digital console card) is used to generate an A-Net digital signal which is connected to an A-Net Distributor. Personal Mixers are connected to the ports on A-Net Distributor. Remember that when using a D800 or D800-Dante, the front panel switches need to be in the "**I**" position when connecting an A320.

32-Channel Systems

When multiple input devices are combined to create a network with more than 16 input sources, the A320 can use the first 32 network slots and will ignore any slots above 33. The A320 must be placed into 32-channel mode to allow the 32 inputs to be recognized. This is also true when using the A320 with Dante devices. See “Setting the Mixer Mode” on page 26 for additional information.

Each 16-channel input module or digital console card can provide 8 stereo pairs if all Stereo Link switches are set for stereo.



Each channel pair of an input module provides either a mono or stereo source for an A320 mix button, as determined by the Mono/Stereo link switch. When set to mono, the right side input is ignored when the A320 is in 32-channel mode.

How Stereo Links Work in 32-Channel Systems

When channels are stereo linked on an input module, both channels appear as a stereo pair, on one mix channel button on the A320. The table shows the mapping of 32 input sources to A320 buttons.

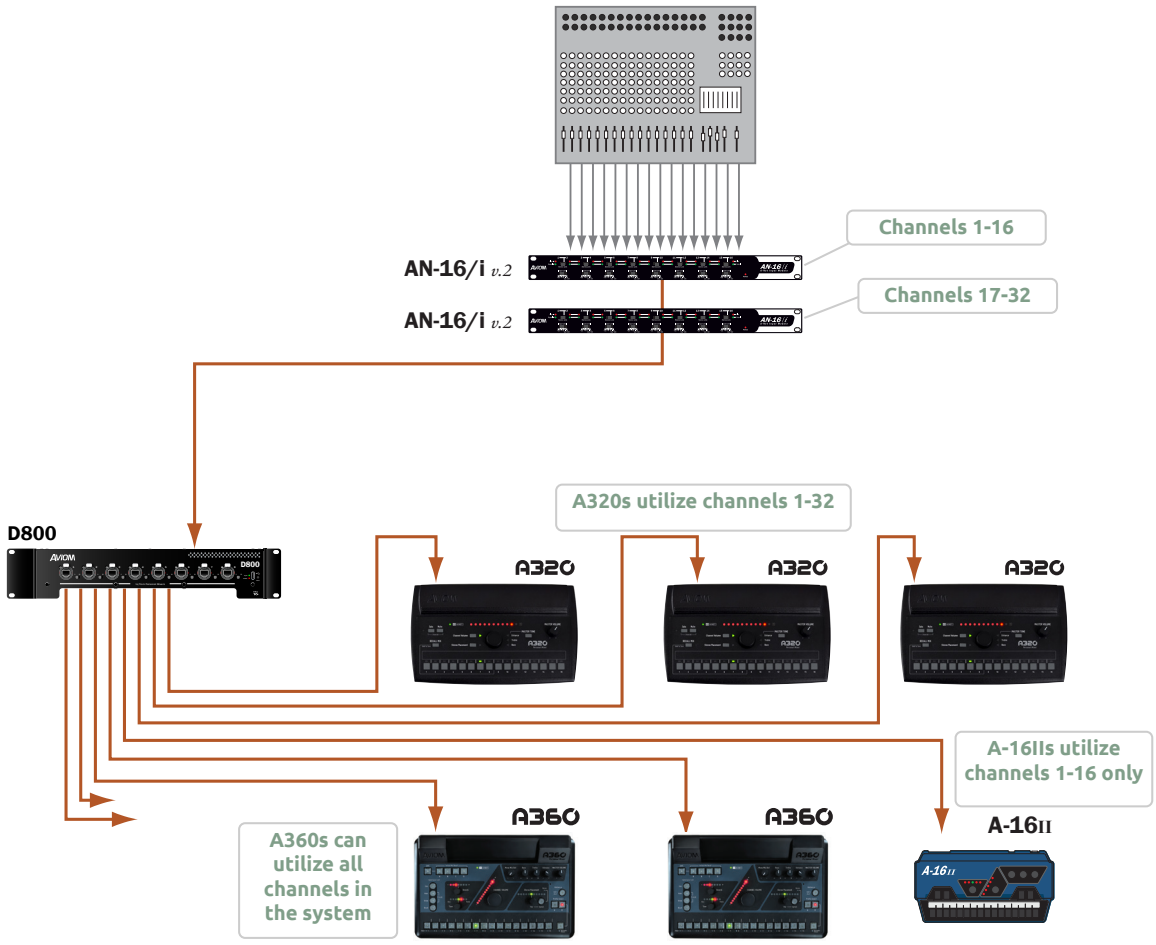
AN-16/i v.2		Default A320 Channel	
Bank	Channel	If Stereo	If Mono
1-16	1	**1** *(left)*	**1**
	2	**1** *(right)*	*Ignored*
	3	**2** *(left)*	**2**
	4	**2** *(right)*	*Ignored*
	5	**3** *(left)*	**3**
	6	**3** *(right)*	*Ignored*
	7	**4** *(left)*	**4**
	8	**4** *(right)*	*Ignored*
	9	**5** *(left)*	**5**
	10	**5** *(right)*	*Ignored*
	11	**6** *(left)*	**6**
	12	**6** *(right)*	*Ignored*
	13	**7** *(left)*	**7**
	14	**7** *(right)*	*Ignored*
	15	**8** *(left)*	**8**
	16	**8** *(right)*	*Ignored*
17-32	1	**9** *(left)*	**9**
	2	**9** *(right)*	*Ignored*
	3	**10** *(left)*	**10**
	4	**10** *(right)*	*Ignored*
	5	**11** *(left)*	**11**
	6	**11** *(right)*	*Ignored*
	7	**12** *(left)*	**12**
	8	**12** *(right)*	*Ignored*
	9	**13** *(left)*	**13**
	10	**13** *(right)*	*Ignored*
	11	**14** *(left)*	**14**
	12	**14** *(right)*	*Ignored*
	13	**15** *(left)*	**15**
	14	**15** *(right)*	*Ignored*
	15	**16** *(left)*	**16**
	16	**16** *(right)*	*Ignored*

If the channels are *not* stereo linked, then only the odd (left) input channel is utilized by the A320, and the even (right) input channel is ignored.

Using Multiple Input Devices

When using multiple input devices in a personal mixing system, each input device provides one 16-channel bank of slots to the network. The Slot Range switches on the rear panel of the AN-16/i v.2 control the bank assignment. Up to four input devices may be used to create a pool of 64 slots, but remember tha the A320 cannot access slots 33-64.

The system shown below shows 32 input sources being used by a variety of personal mixers.



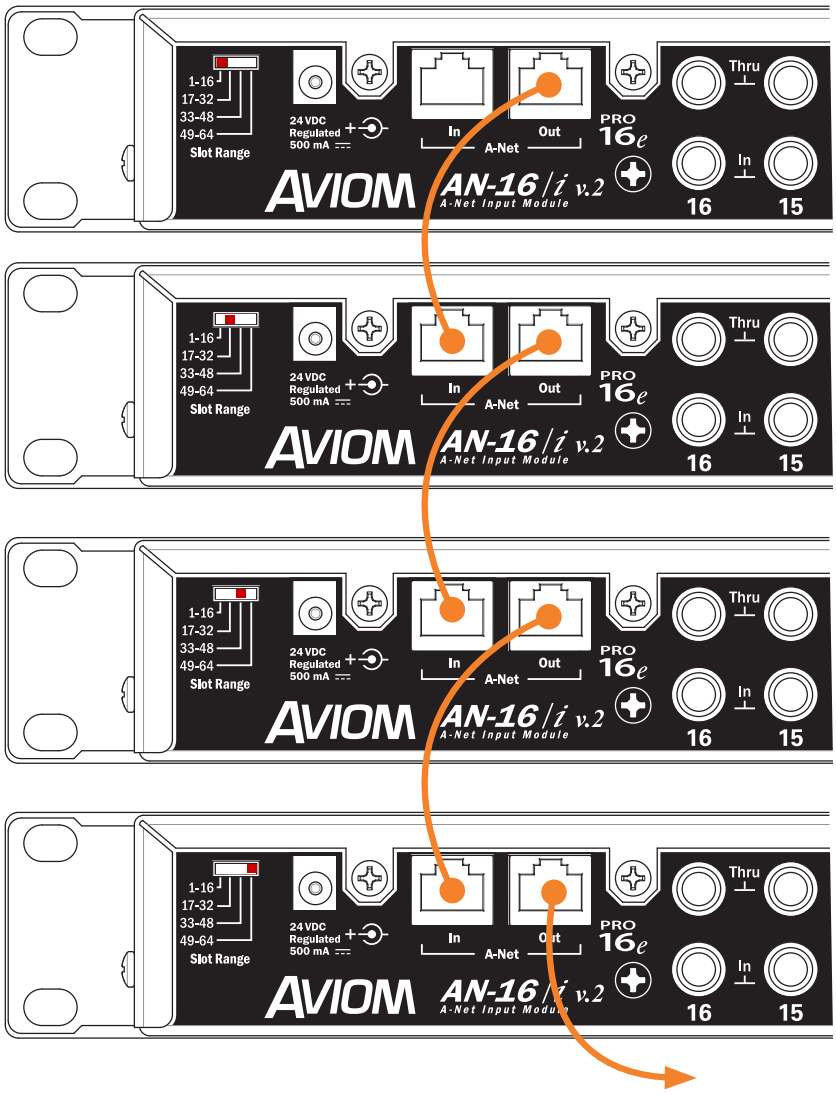
A 32-input personal mixing system with A320 Personal Mixers along with the A360 and A-16II Personal Mixers

✓ **Note:** The A320 Personal Mixer can use Slots 1-32 of a network with multiple input devices. Only the A360 Personal Mixer can use network Slots 33-64.

When using a Dante network, stereo links must be set on the A-Net Distributor.

Slot Range Setup

Each input device in a Pro16e-based personal mixing system supplies one bank of 16 channels to the network. The **Slot Range** switches on the AN-16/i v.2 are used to set the assignment for each; the physical location of the device within the daisy chain does not matter as long as the Slot Range switch settings are correct. Each input module is daisy chained, connecting a Cat-5 cable from its **A-Net Out** to the **A-Net In** of the next input device in the chain.



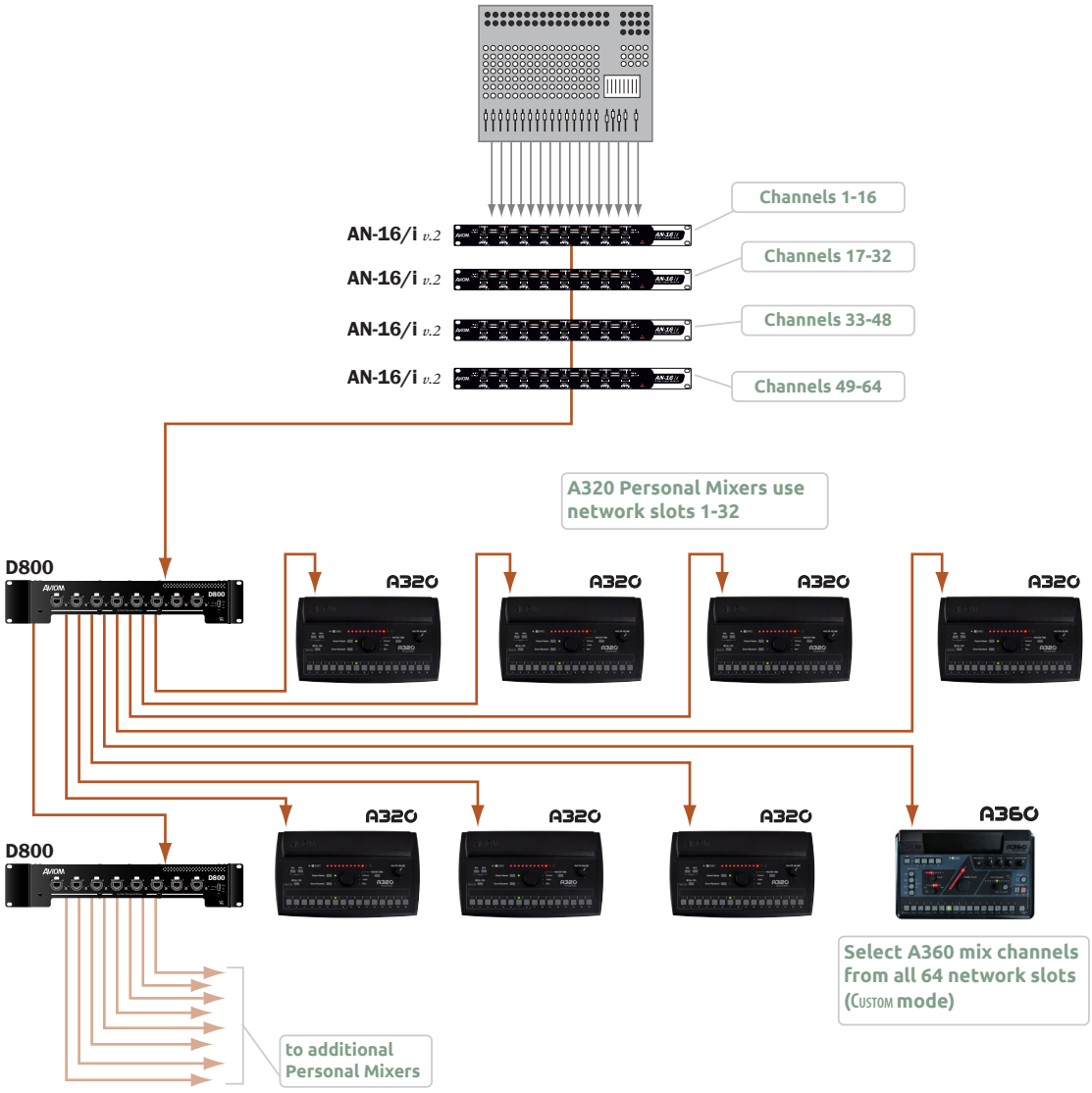
Slot Range switches for each input device in a 64-input system are shown. A legacy Pro16 device may be substituted for the first bank of 16 channels.

Connect the **A-Net Out** of the last input device in the chain to the **A-Net In** of the A-Net Distributor. The A320 Personal Mixers are then connected to the distributor's **A-Net Out** ports. Remember that an A320 Personal Mixer can only use the first 32 slots of an expanded network.

A legacy Pro16 device may be substituted for the first bank of 16 slots in a daisy chain of input devices. It will automatically default to supplying the first 16 slots to the network pool.

64-Channel Systems

The diagram below shows a 64-input system. The A320 Personal Mixers use inputs 1-32 only; the A360 Personal Mixer can use any slot in the network when configured in its Custom mode.



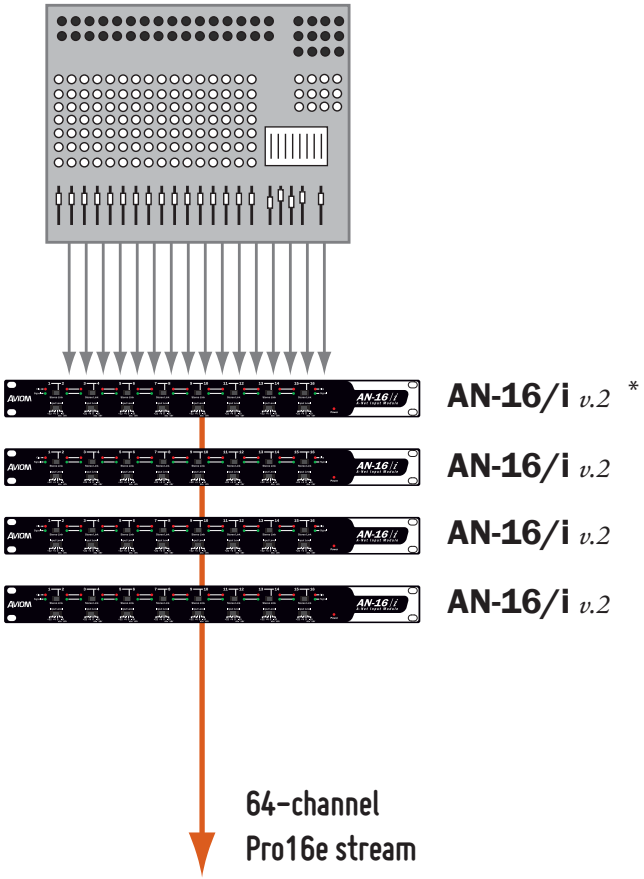
A 64-input system using two A-Net Distributors is shown.

Legacy Products

A-16II or A-16R Personal Mixers may be used in a Pro16e-based system, but note that they can only access the first 16 network slots.

Using Legacy Input Devices

One legacy input device or Pro16 console card may be used in a multiple input device configuration—it will default to supplying the first 16 slots to the network and must be connected to the **A-Net In** of the first Pro16e device in the system. The Pro16e input devices (such as the AN-16/i v.2) should be set to Slot Range 17 and above for this application.

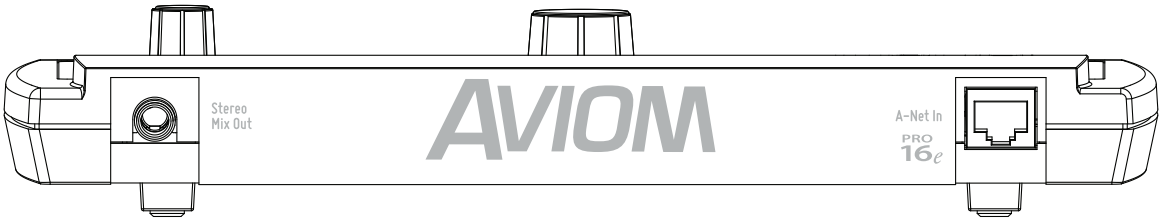


A legacy Pro16 input module or digital console card can be combined with up to three AN-16/i v.2 Input Modules.

** A Pro16 device—original AN-16/i, AN-16/i-M, Y1 A-Net card, ASI, or a third-party console card—may be substituted for the first AN-16/i v.2 in a daisy chain of input devices; a legacy device automatically defaults to Slot Range 1-16.*

Connecting Monitoring Devices

Headphones, wired in-ear monitors, wireless in-ear transmitter systems, and powered speakers can be connected to the A320 Personal Mixer separately or in combination. This section details the connection of these devices to the A320's stereo mix output.



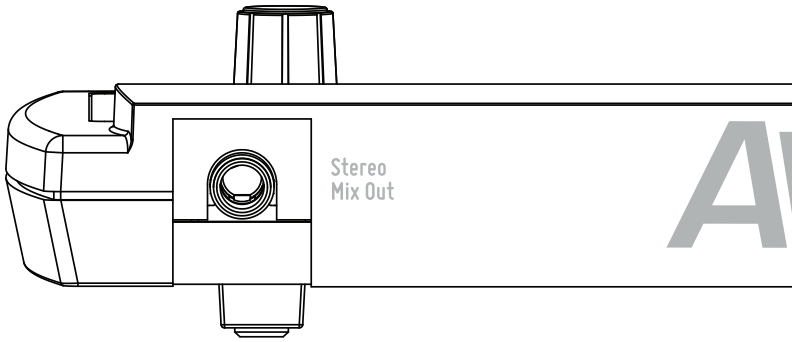
The A320 has a 1/4-inch stereo mix out that can be used as a headphone or line-level output.

Connecting to the Stereo Mix Output

The A320 has a 1/4-inch TRS output dedicated to the stereo mix coming from the Personal Mixer. The output can be connected to headphones, earbuds, or the line-level input of a wireless transmitter system.

Headphones and Earbuds

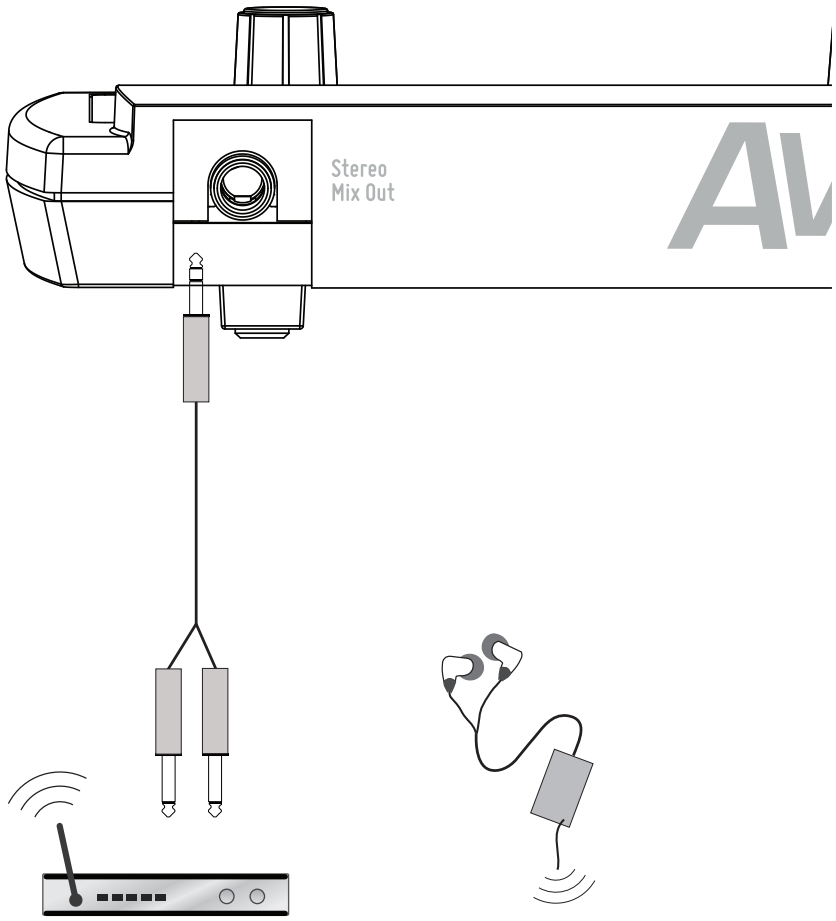
Connect headphones or wired earbuds to the A320. For best performance, choose low impedance headphones or earbuds whenever possible. High impedance devices will not harm the A320, but note that the mix output level may be lower with these devices. For devices with an 1/8-inch TRS jack an optional 1/4-to-1/8-inch adapter is required.



Connect headphones or earbuds to the Stereo Mix Out jack.

Stereo Wireless In-Ear Systems

The A320's Stereo Mix Out may be connected to the left/right inputs of a wireless transmitter used for in-ear monitoring. A Y-cable that splits the TRS (tip-ring-sleeve) stereo output of the A320 to a pair of TS (tip-sleeve) mono left and right outputs is required. Note that the connection from the left and right TS cables is unbalanced. If the inputs to the wireless transmitter are XLR only, a special cable may need to be made. Consult the transmitter's documentation for information about properly connecting unbalanced signals to its balanced XLR inputs.

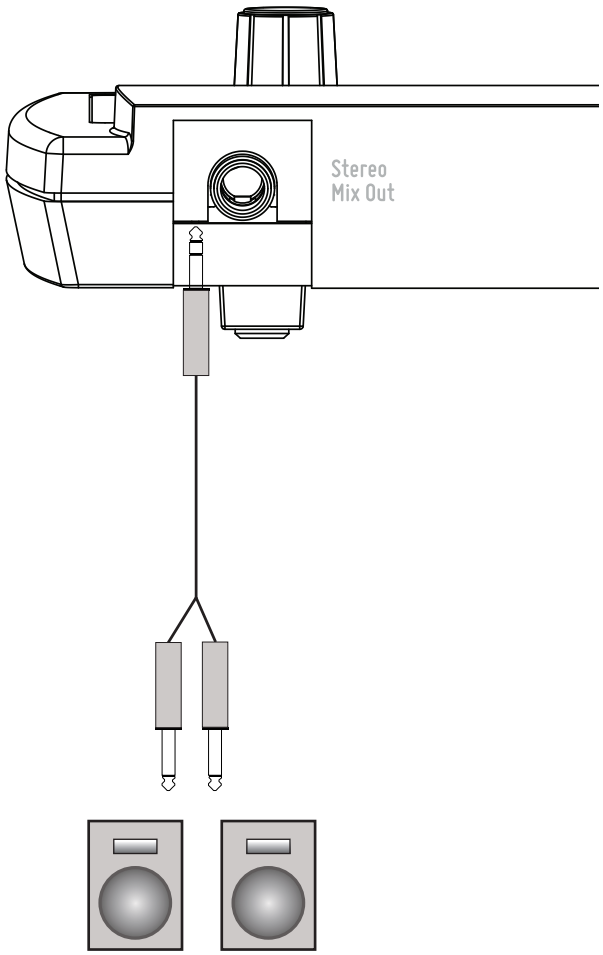


The Stereo Mix Out can be connected to a wireless in-ear transmitter with a Y-cable.

If you need to create a custom adapter cable, note that the TRS tip connector carries the left audio signal, the ring carries the right signal, and the sleeve provides ground for both. The left and right signals are unbalanced in this case.

Stereo Speakers

The Stereo Mix Out may be connected to a set of powered stereo monitor speakers using a Y-cable that splits the TRS stereo output to a pair of TS mono left and right outputs.



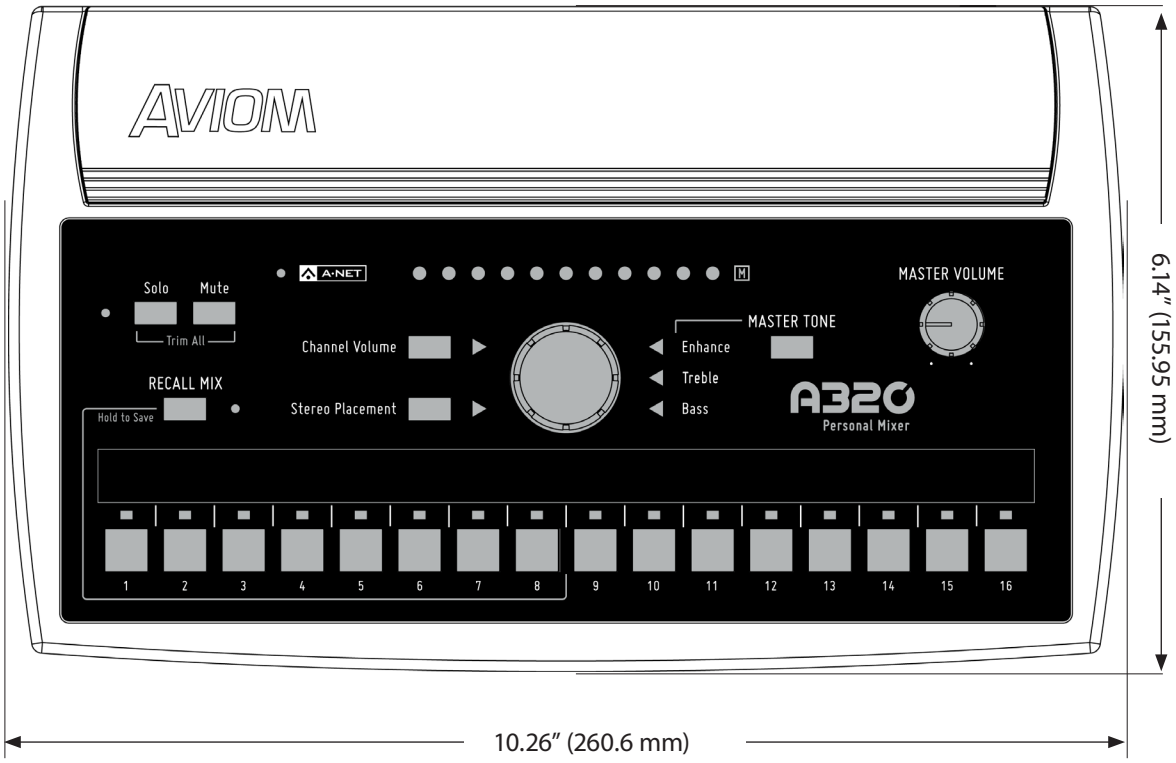
A Y-cable is required to connect the A320 to stereo powered speakers.

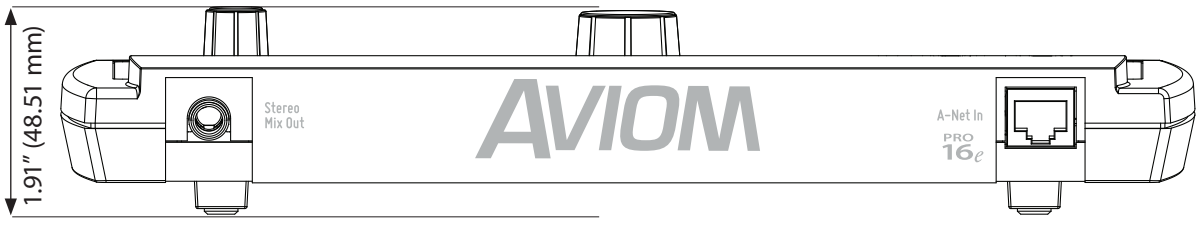
If the powered speakers have XLR inputs, a custom cable may be required. Check the powered speaker's documentation for information about properly connecting the unbalanced left and right signals from the A320 Stereo Mix Out to the balanced inputs of the powered speakers.

Specifications

Audio Output	1/4" TRS stereo, headphone or line level;
Stereo Mix Output, Headphone/Line	Tip: Audio Left; Ring: Audio Right; Sleeve: Ground
A-Net I/O	1 A-Net In, RJ45 connector; Supports Pro16 and Pro16e
D/A Conversion	44.1/48kHz, 24-bit
Stereo Operation	Stereo Link, per channel pair; Set at the input module; Variable pan per mono channel or pan/spread per stereo channel pair
Headphone Output	275 mW per side into 50 Ohms (both sides driven)
Headphone Output Impedance	5 Ohms
Freq. Response	3Hz-22kHz +0.2dB/-3dB at 50 Ohms
THD +N	< 0.003%
Signal to Noise (unweighted)	-106dB (measured with zero data into all channels)
Latency	0.880 msec (measured from analog input to analog output)
A-Net Cables	Use shielded Cat-5e (or better) to stay below the CISPR 22 Class B, ICES-003, and FCC 47 CFR Part 15 Class B emissions limits.
A-Net Cable Length	400 feet (122 m)
A-Net Pro16e Protocol	Supports original Pro16 16-channel data; Supports Power Over A-Net
Power	24 VDC, 0.5 amp; Power is supplied over the Cat-5 cable when connected to an Aviom A-Net Distributor
Dimensions	10.26" (260.6 mm) wide x 6.14" (155.95 mm) deep; 1.91" (48.51 mm) high
Weight	1.3 lb. (0.59 kg)
Options	MT-1a Mic Stand Mount (uses 6-32 1/4-inch screws); EB-1 Extension Bracket;

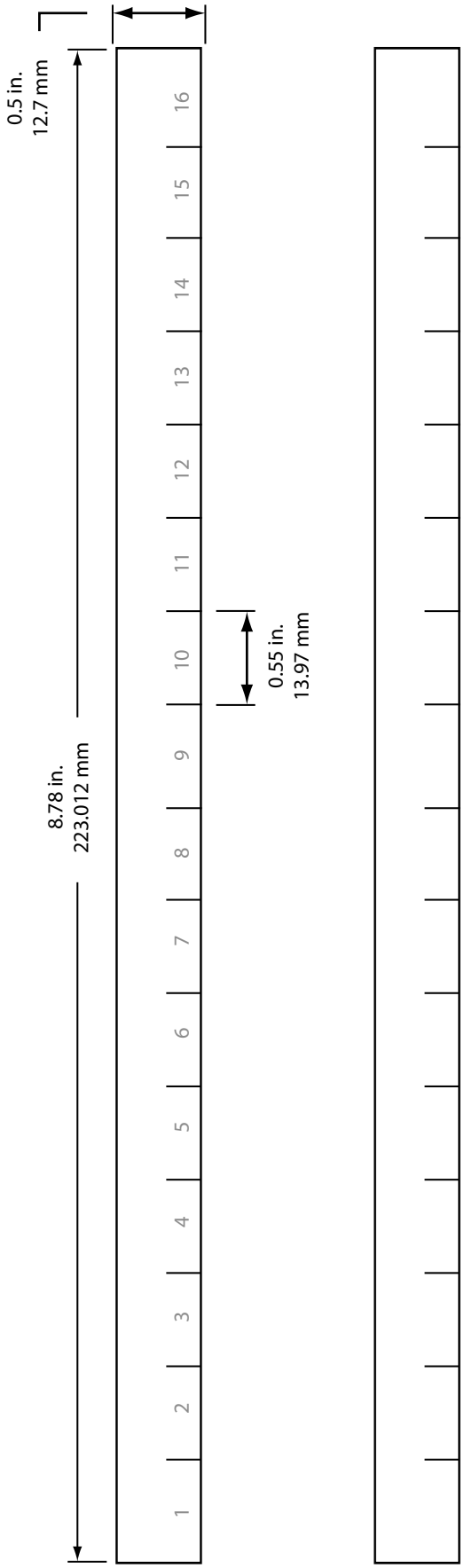
Dimensions


AVIOM
A-NET
M
Solo
Mute
Trim All
RECALL MIX
Hold to Save
Channel Volume
Stereo Placement
MASTER TONE
Enhance
Treble
Bass
MASTER VOLUME
A320
Personal Mixer
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
6.14" (155.95 mm)
10.26" (260.6 mm)


1.91" (48.51 mm)
Stereo
Mix Out
AVIOM
A-Net In
PRO
16e

Mixer Label

Use this template as a starting point for creating custom Personal Mixer labels for the A320. It is shown actual size.



Cat-5 Cable Pinout

The tables below detail the two wiring pinout variations for Cat-5 cables. When making custom cables, either pinout can be used, but both ends of a cable must use the same wiring pattern.

T568A

RJ45 Pin	Wire Color	
1	White/Green	
2	Green	
3	White/Orange	
4	Blue	
5	White/Blue	
6	Orange	
7	White/Brown	
8	Brown	

T568B

RJ45 Pin	Wire Color	
1	White/Orange	
2	Orange	
3	White/Green	
4	Blue	
5	White/Blue	
6	Green	
7	White/Brown	
8	Brown	

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Symbols

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X

Y

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 _____ Product Serial Number _____

Model _____ Product Serial Number _____

Model _____ Product Serial Number _____

Model _____ Product 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

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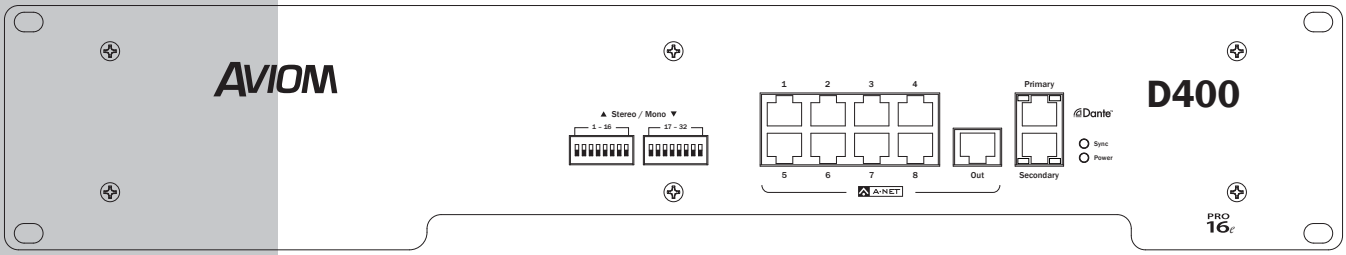

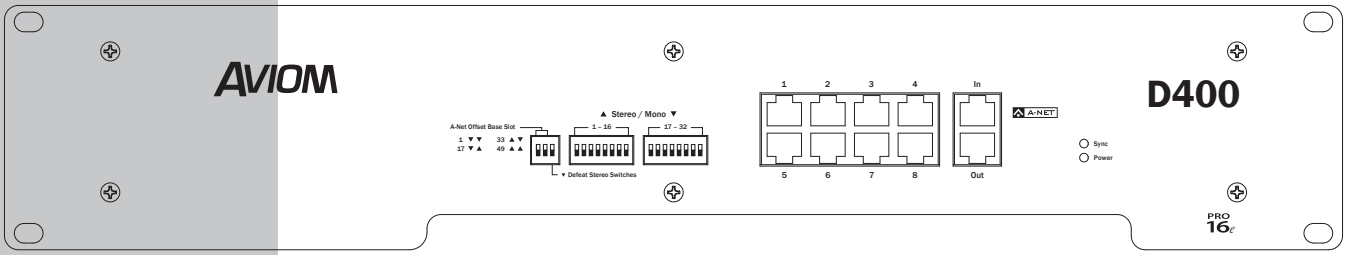

D400-Dante

D400

A-Net Distributor

User Guide

9310 1033 0001F rev 1.0

PRO 16® PRO 16e® A-NET®

READ THIS FIRST

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or third prong are provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. The apparatus shall be connected to a Mains power outlet with a protective grounding/earthing connection.
16. Where the Mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in this manual.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous" voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.

WARNING!

TO REDUCE THE DANGER OF ELECTRICAL SHOCK DO NOT REMOVE COVERS.

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.

To avoid the hazard of electrical shock, do not handle the power cord with wet hands.

Replace fuse with same type and rating.

Operating Temperature: 0˚C to 40˚C (32˚F to 104˚F)

Risque de choc électrique – ne pas ouvrir. Pour réduire le risque de feu ou de choc électrique, ne pas exposer cet équipement à la pluie ou la moisissure. Pour réduire le risque de choc électrique, ne pas retirer le couvercle. Pièces non remplaçables par l'utilisateur. Confier la réparation à une personne qualifiée. Attention – utiliser seulement un fusible de rechange de même type.

Cet appareil est conforme à la section 15 de la norme FCC. Son fonctionnement est soumis aux conditions suivantes : (1) cet équipement ne doit pas causer des interférences nocives, et (2) cet équipement doit accepter toute interférence captée incluant les interférences pouvant causer des opérations indésirables.

Cet appareil numérique de Classe B est conforme à la norme NMB-003 du Canada.

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.

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.

Certifications

EMC: EN55103-1:2009
EN 55103-2: 2009
EN 55022:2006 / CISPR 22:1997
CAN/CSA-CEI/IEC CISPR 22:02
FCC 47 CFR, Part 15

Safety: UL 62368-1 Ed 2.0
Testing done to UL 62368-1 first edition
Can/CSA C22.2 62368-1

ETL/cETL Listed and RoHS Compliant

✓ **Note:** For connections to Personal Mixers shielded Cat-5e (or better) cable must be used to stay below the CISPR 22 Class B, ICES-003, and FCC 47 CFR Part 15 Class B emissions limits. Unshielded Cat-5e cable may be used on all other connections.

Notice of Rights

Trademarks

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 opened or modified in any way; if the product serial number has been damaged, modified, or removed; or if the original Quality Assurance label 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. 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.

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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.

Warranty Information

Please record the following information for future reference:

Your Authorized Aviom Dealer:

Name: _____

Address: _____

_____

_____

Phone: _____

Serial Numbers of Your Aviom Products: _____

_____

_____

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.

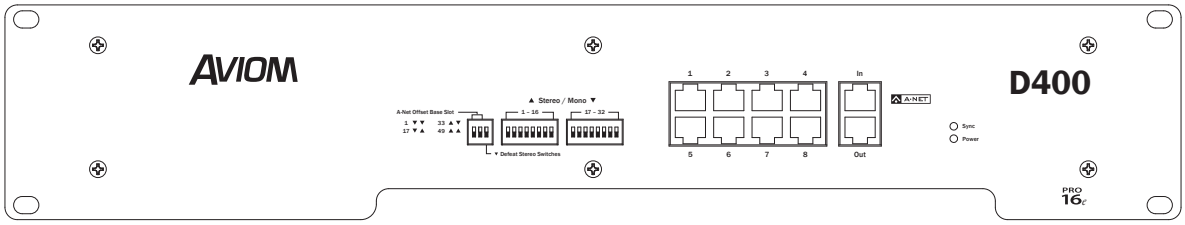
Although every effort has been made to ensure the accuracy of the text and illustrations in this manual, no guarantee is made or implied as to the accuracy of the information contained within.

Table of Contents

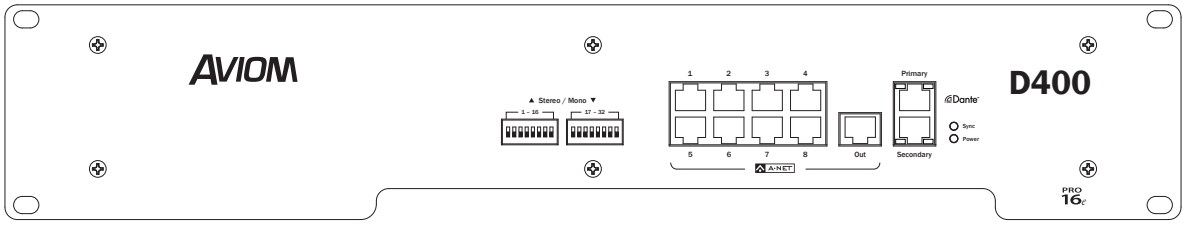
D400 and D400-Dante

*Thank you for purchasing the Aviom **D400** and/or **D400-Dante A-Net Distributor**. This User Guide is designed to familiarize you with your new product's features and to have your personal mixing system up and running as quickly as possible.*

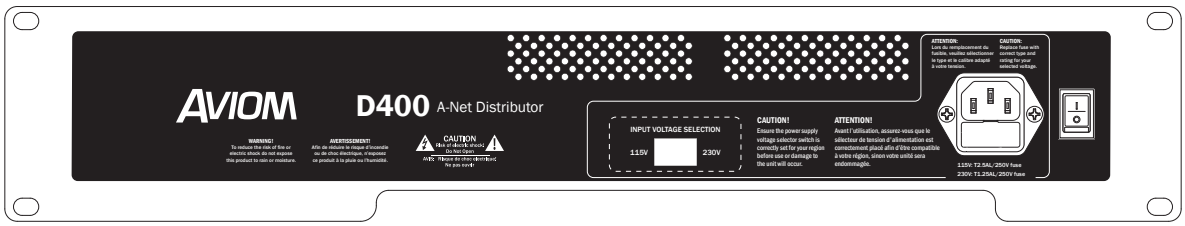
Two versions of the D400 are available: the standard D400 includes a Pro16e® A-Net® input, compatible with all Pro16® Series and Pro16e-capable devices; the D400-Dante offers Dante Primary and Secondary inputs for connectivity to a Dante™ digital audio network.



The front panel of the D400



The front panel of the D400-Dante



The rear panel of the D400 and D400-Dante are identical.

Conventions Used in this Document

Using Personal Mixers

When referring to the use of the Personal Mixers in a personal mixing system in general, the term ***Personal Mixer*** is used to describe a case where an A360 Personal Mixer, A320 Personal Mixer, or legacy A-16II or A-16R Personal Mixers can be used.

Cat-5 Cables

In most cases Cat-5e, Cat-6, and Cat-6e cables can be interchanged. When speaking about interconnections between components in a system, the term ***Cat-5*** is used generically to indicate the use of any of the applicable cable types.

A-Net Distributors

The D800, D800-Dante, D400, D400-Dante, as well as the legacy A-16D, and A-16D Pro A-Net Distributors are referred to generically as ***A-Net Distributors***. All are used to copy an A-Net digital signal and split it into multiple copies so that devices may be connected in parallel. In a case where either the D400 or D400-Dante version of the product may be used, the text will reference the ***D400***. In a case where either the D800 or D800-Dante version of the product may be used, the text will reference the ***D800***.

Button Presses

When instructed to press a specific button, move a switch, or when referring to a specific port, jack, etc., on a product, a special font style is used. For example, "Connect a Cat-5 cable to the **A-Net In** port."

Slots

Audio channels from analog input devices or digital console cards connected to the network are referred to as ***slots***. There are a total of 64 slots in an A-Net network.

Package Contents

The D400 (or D400-Dante) A-Net Distributor box includes:

- One A-Net Distributor
- IEC power cable
- Documentation

Options for your personal mixing system include:

- Cat-5e/Cat-6 interconnect cables
- D800, D800-Dante, D400, or D400-Dante A-Net Distributors
- A360 Personal Mixers
- A320 Personal Mixers
- A-16II Personal Mixers
- Dante Controller software, available free from the Audinate website

A Warranty Registration can be 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.

About A-Net

A-Net® is a proprietary high-speed data transmission protocol developed by Aviom, capable of sending and receiving high-quality digital audio using readily available Cat-5 cables.

A-Net is based on the physical layer of Ethernet, a Local Area Network (or LAN) technology. This provides A-Net with a mature and robust base on which to build. However, it is important to note that A-Net devices are not compatible with Ethernet devices.

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

- Virtually no latency; analog in to analog out is always less than one millisecond
- No ground loops
- Easy cabling using readily available components
- An unlimited number of A-Net devices can be used in a system
- Ease in spanning long distances between system components

There are two versions of Pro16 A-Net: the original Pro16 A-Net signal carries sixteen channels of digital data while the enhanced Pro16e® version of A-Net is capable of carrying up to 64 channels of digital audio data. Like standard Pro16 A-Net, Pro16e is a point-to-point digital audio protocol.

Pro16e A-Net data is intended for use with the A360 and A320 Personal Mixers which can take advantage of the higher network channel count that Pro16e provides.

Compatibility

The D400 and D400-Dante A-Net Distributors are compatible with Pro16, Pro16e, and Pro64 A-Net devices as detailed below.

Pro16 Products

The **A-Net Out** from the following Pro16 devices may be connected to the D400's **A-Net In** port:

- AN-16/i v.2 Input Module
- AN-16/i-M Mic Input Module
- AV-M8 Mic Input Module
- Aviom16/o-Y1 A-Net Card for Yamaha® devices
- AN-16/o v.4 Output Module
- AV-P2 Output Module
- D800 or D800-Dante A-Net Distributors
- Third-Party Pro16 A-Net digital console cards

Legacy Products:

- AN-16/i Input Module
- A-16II Personal Mixer
- A-16R Rack-mount Personal Mixer
- A-16D and A-16D Pro A-Net Distributors

Pro64 Products

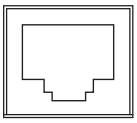
Adding the ASI A-Net Systems Interface to a Pro64® digital snake or audio network allows Pro64 channels to be translated into Pro16 data. The ASI separates the 64-channel Pro64 stream into four 16-channel Pro16 outputs, each of which can be assigned any combination of the available active Slots within the Pro64 network. Any of the four Pro16 A-Net outputs from the ASI may be connected to the **A-Net In** on the D400.

The ASI's Pro16 A-Net outputs can also be connected to the **A-Net In** on the AN-16/i v.2 Input Module when creating a personal mixing system that uses the enhanced Pro16e version of A-Net for increased channel count.

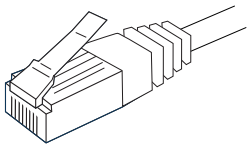
About Category 5

The term Category 5 (also referred to as Cat-5) is broadly used to describe a type of high performance network cabling used for data transmission purposes to connect computer networks and other devices. A standard 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 Cat-5 female RJ45 jacks.

A variation of the cable, called Category 5e (or Cat-5e), has largely replaced Cat-5 in the field; it uses additional twists in the cable's wire pairs to reduce interference in high-speed network applications. Additional wire pair variations are found in Cat-6 and Cat-6e cables, typically used with gigabit networking devices.



RJ45 Jack



Cat-5e Cable

Cat-5 Cables

Although the D400 (or D400-Dante) A-Net Distributor's eight front panel **A-Net Out** ports will operate properly with unshielded Cat-5e cable, when connecting these outputs to Personal Mixers shielded Cat-5e (or better) cable must be used to stay below the CISPR 22 Class B, ICES-003, and FCC 47 CFR Part 15 Class B emissions limits. Unshielded Cat-5 cable may be used on all other connections.

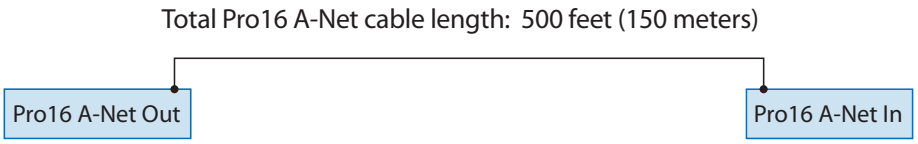
For fixed or permanent installations, you have the option of running Cat-5 cables inside walls and terminating them with readily available wall panel connectors that include the RJ45 jack. (Solid wire is recommended for permanent installations.) A Cat-5 cable wiring pinout table is included at the end of this document. See page 40.

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

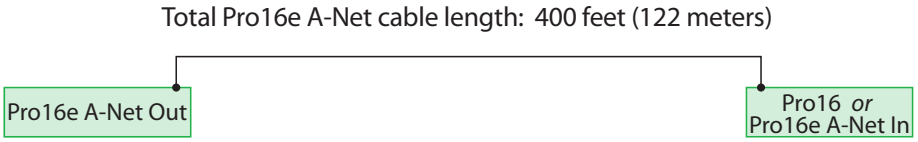
✓ **Note:** When purchasing Category 5 cables, be sure to buy only standard Cat-5 cables, not those sold as *crossover* cables. A crossover cable is used for file transfer between two computers and is not compatible with your Aviom equipment.

Cable Lengths

For Pro16 applications—connecting one **Pro16** device to another—the Cat-5 cables used with your Aviom products may be up to 500 feet (approximately 150 meters) in length between devices. For example, connecting an AN-16/i-M Mic Input Module to an AN-16/o V.4 Output Module is a Pro16-to-Pro16 connection.



When using **Pro16e**—such as the **A-Net Out** from an AN-16/i v.2 to *any other* Pro16 or Pro16e device—Cat-5 cables may be up to 400 feet (approximately 122 meters) in length between compatible devices due to the larger amount of data being transmitted to accommodate Pro16e's higher channel count.

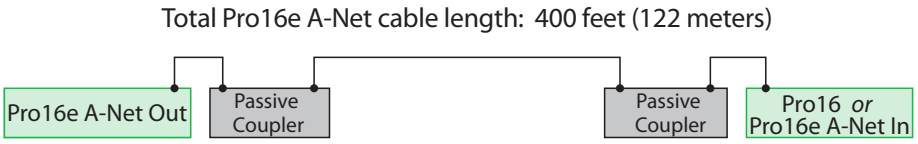


The maximum cable length specification applies to the total cable length between an **A-Net Out** port on one device and the **A-Net In** port on the next A-Net capable device in your system.

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

Stranded or solid Cat-5 cable may be used; stranded cable is easier to deploy on a stage while solid core cable provides slightly better maximum distance performance. Solid core wire is typically used in permanent installations in walls and across ceilings.

When using the optional SB4 System Bridge with Pro16 and Pro16e devices, the cable length specification applies to the *total* cable length between the two active A-Net devices being connected with the passive System Bridge, plus all cables. This is also true when using a passive inline coupler to extend cable lengths.



Pre-made cables in a variety of lengths and colors are available at most computer outlets. Cables may 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 the maximum cable length performance can be compromised by using inline couplers or other passive connection devices.

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).

Cleaning and Maintenance Information

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.

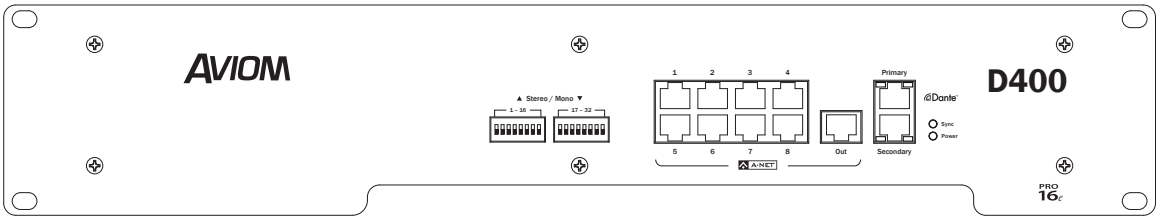
✓ **Note:** Never use solvents or abrasive cleaners on the finished surfaces of your Aviom products.

D400 A-Net Distributor

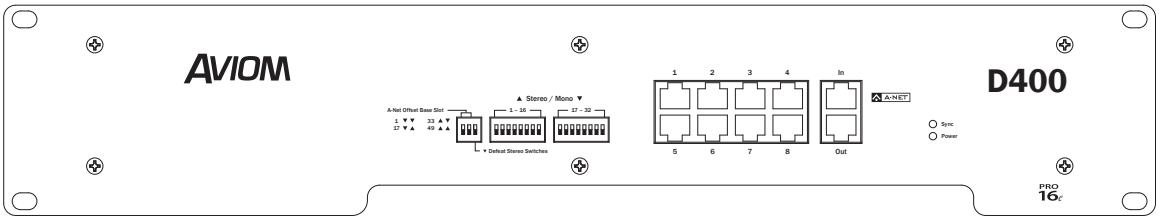
Aviom's series of D400 A-Net® Distributors provides support for parallel connections of up to eight Pro16® devices, including the A360, A320, and legacy A-16II and A-16R Personal Mixers.

Overview

Two versions of the D400 are available. The standard D400 includes a Pro16e® A-Net input, compatible with all Pro16 Series and Pro16e-capable devices. The D400-Dante A-Net Distributor offers connectivity for a Dante™ digital audio network, allowing up to 32 channels to be assigned from a Dante audio network to A360 and A320 Personal Mixers. Each unit has eight A-Net ports that supply both digital audio data and DC power to connected Personal Mixers.



D400-Dante front panel

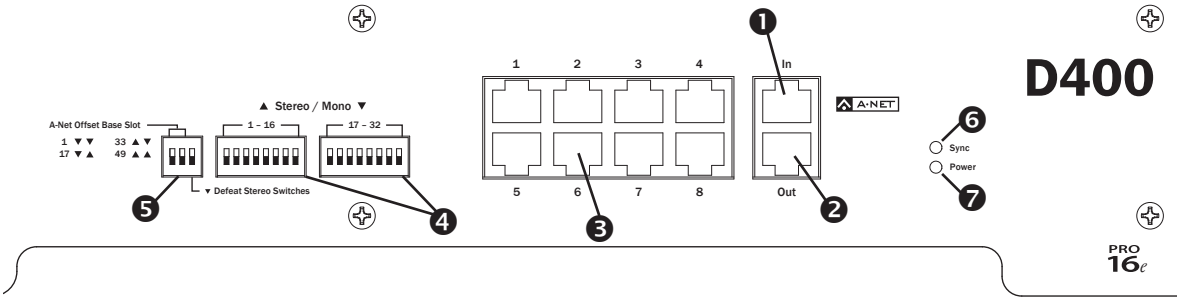


D400 front panel

An unlimited number of D400, D400-Dante, D800, and D800-Dante A-Net Distributors can be used in an A-Net network. For more information on system setup, see page 29.

D400 Front Panel

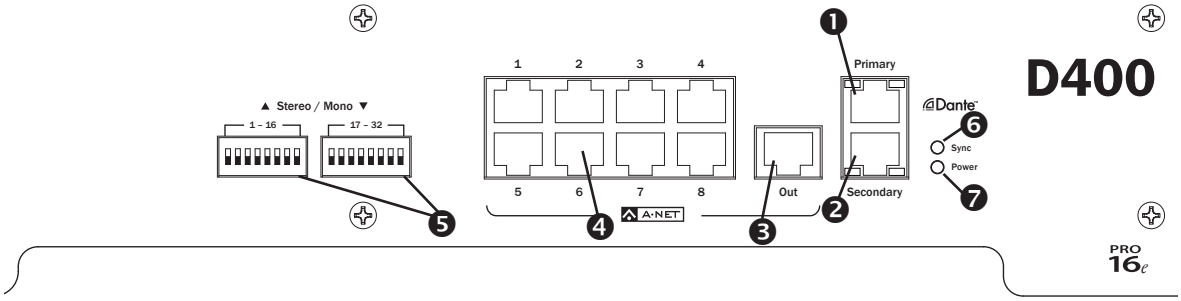
The A-Net version of the D400 A-Net Distributor has the following features.



	Function
1	Pro16e A-Net In
2	A-Net Out, unpowered
3	A-Net outputs 1-8, with DC power for Personal Mixers
4	Stereo link DIP switches, slots 1-16 and 17-32
5	A-Net Offset Base Slot and Defeat Stereo Links DIP switches
6	Sync LED
7	Power LED

D400-Dante Front Panel

The Dante version of the D400 A-Net Distributor has the following features.



	Function
1	Dante Primary port, with LEDs
2	Dante Secondary port, with LEDs
3	A-Net Out, unpowered
4	A-Net outputs 1-8, with DC power for Personal Mixers
5	Stereo link DIP switches, 1-16 and 17-32
6	Sync LED
7	Power LED

A-Net In, D400

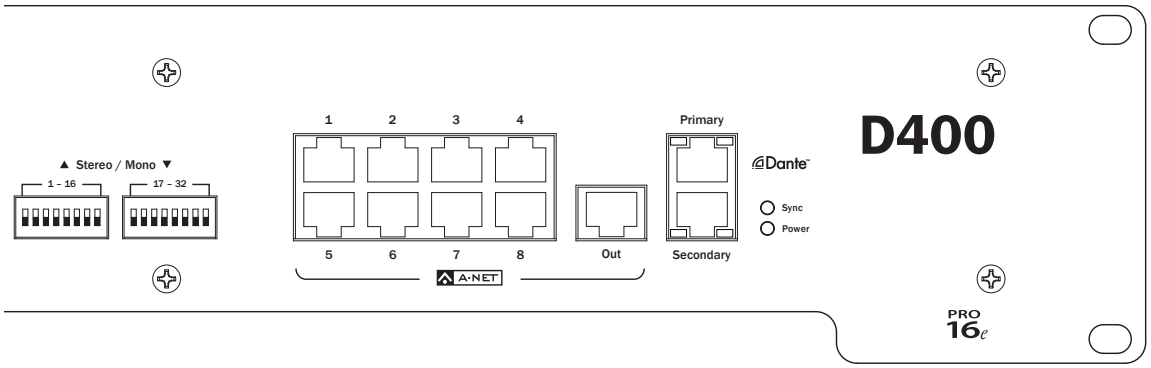
The **A-Net In** port is available only on the D400 A-Net Distributor. It can accept the A-Net digital data coming from the **A-Net Out** port of any Pro16 or Pro16e device. Pro16 data has a maximum of 16 channels; Pro16e data has a maximum of 64 total channels.

The A-Net digital data connected to the D400 can come from:

- a single Pro16 analog input module such as the AN-16/i-M Mic Input Module
- a single Pro16e analog input module such as the AN-16/i v.2 Input Module
- a maximum of four AN-16/i v.2 Input Modules cascaded together
- one Pro16 analog input module and up to three AN-16/i v.2 Input Modules
- a single Pro16 A-Net console card
- one Pro16 console card and up to three AN-16/i v.2 Input Modules
- the A-Net Out from another A-Net Distributor
- a single Pro16 output from a Pro64 ASI A-Net System Interface
- a single Pro16 output from a Pro64 ASI A-Net System Interface and up to three AN-16/i v.2 Input Modules

Dante Connections, D400-Dante

The Dante interface on the D400-Dante A-Net Distributor has two gigabit network ports labeled **Primary** and **Secondary**. The Dante **Secondary** port can be configured to be a pass-through port or a redundant copy of the **Primary** port. The D400-Dante supports sample rates of 44.1kHz and 48kHz coming from the Dante network. No sample rate converters are available on the D400-Dante.



The D400-Dante has two Dante jacks, Primary and Secondary.

Dante Primary Port

Use the **Primary** port on the D400-Dante as the default connection to a Dante network. The Dante RJ45 jacks include two LEDS. The yellow LED indicates an active 1GB network connection; the green LED indicates network activity.

The D400-Dante can have a maximum of 32 Dante sources assigned to it. Routing channels requires the Dante Controller application, available from Audinate. The D400-Dante will retain its Dante channel assignments across power cycles.

For additional Dante system setup information see page 23.

Dante Secondary Port

On the D400-Dante, the Secondary port can be configured to be a redundant or daisy chain connection to the Dante network. This function is set up from within the Dante Controller application on a per-device basis. The default setting is Switched (daisy chain); the Redundant setting requires a Dante network set up with multiple managed 1GB switches. Configuring port settings requires the Dante Controller software available from the Audinate website.

A-Net Ports 1 to 8

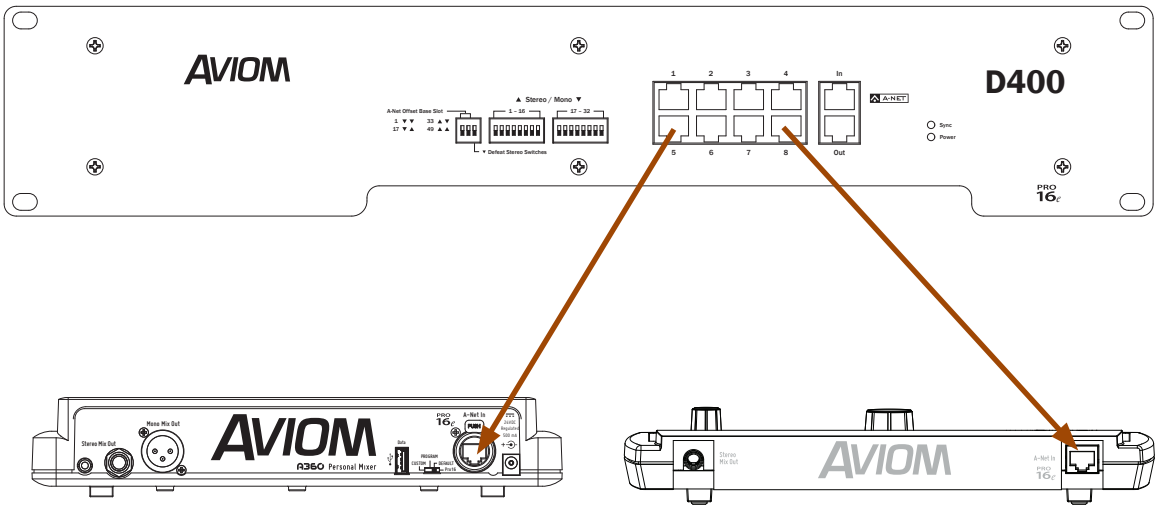
The eight A-Net ports (labeled 1-8) on the front panel of the D400 and D400-Dante A-Net Distributors provide a copy of the digital data connected to the unit's A-Net or Dante input to the devices connected to each port. Each A-Net (1-8) port also supplies DC power that can be used to power a Personal Mixer product over the Cat-5 cable, eliminating the need for a local power supply.

✓ **Note:** The DC power supply in the D400 and/or D400-Dante can power only one Personal Mixer per Cat-5 cable per A-Net port.

Personal Mixing systems using more than 16 inputs always pass all network slots to all A-Net ports on the D400 and D400-Dante regardless of the type of Personal Mixer connected to the port. Legacy A-16II Personal Mixers will use network slots 1-16 only and will ignore slots 17 and above.

When using the standard D400 with up to four input devices (maximum 64 network slots), the A320 Personal Mixer uses the first 32 channels of the network and will ignore network channels 33-64. Each A360 Personal Mixer in a system can use any active network slot from 1-64; its mix channel buttons can be mapped as needed using the free A360 Channel Manager software available from the Aviom website (www.Aviom.com).

When a D400-Dante is used, the A320 Personal Mixer uses the first 32 channels of the network in sequential order, while the A360 can use any active network slot from 1-32 in any order by creating custom channel configurations using the A360 Channel Manager software.



Each A-Net port can power one Personal Mixer.

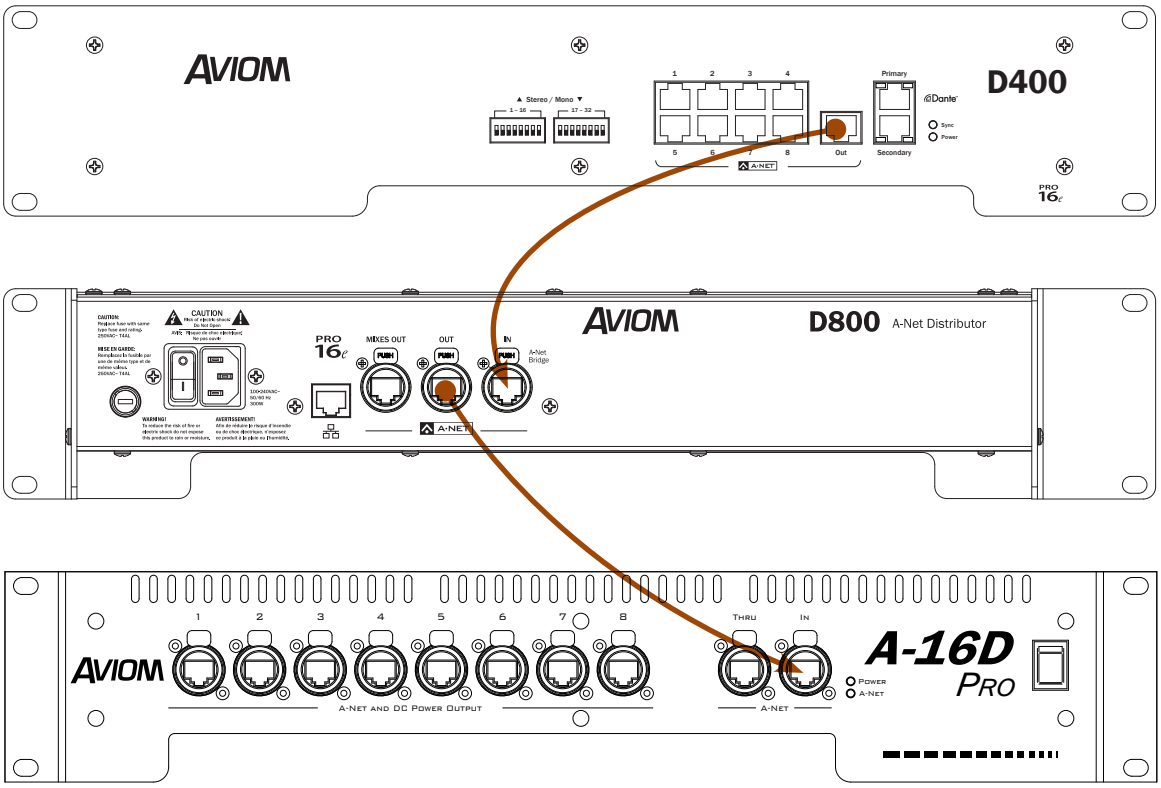
Pro16 devices such as the legacy A-16II and A-16R Personal Mixers can make use of only network slots 1-16 and will ignore network slots 17-64. The A-Net Offset Base Slot DIP switches on the D400 can be used to select a different set of 16 network slots to be routed to the A-Net Out ports. Note that these switches affect all eight A-Net ports simultaneously. See page 16 for more information about using the A-Net Offset Base Slot function.

A-Net Out

The **A-Net Out** port on the D400 and D400-Dante provides an exact copy of the distributor's digital input. It can be used to expand a system by connecting it to the **A-Net In** port on another A-Net Distributor. Note that this is an unpowered output that carries the same data as the eight DC-powered A-Net (1-8) outputs. It can also be used to add a ninth Personal Mixer to a system, as long as the Personal Mixer is capable of using an external DC power supply.

The **A-Net Out** port on the standard D400 always provides an exact copy of the network slots connected to its **A-Net In** port and is not affected by the DIP switch settings for the A-Net Offset Base Slot and/or Defeat Stereo Switches features.

The following example shows an expanded system with a D400-Dante connected to a D800 and A-16D Pro A-Net Distributor.



An expanded network using a D400, D800, and A-16D Pro allows up to 24 Personal Mixers to be connected.

An unlimited number of A-Net Distributors may be used to create a personal mixing system. Simply connect A-Net Out to A-Net In.

Stereo Link DIP Switches

Stereo pairs are a powerful feature that allow two channels to be accessed from a single mix channel button on the A360 and A320 Personal Mixers. The two blocks of 8 DIP switches on the front panel of the D400 and D400-Dante can be used to link pairs of adjacent network channels/slots.

On the D400-Dante, the stereo links must be set up at the A-Net Distributor; stereo links are created after the incoming Dante data is converted to A-Net. Push a DIP switch to the up position to link a pair of channels. Stereo links always use an odd/even pair (1-2, 15-16, 31-32, etc.) of network slots. Changes may be made at any time; all Personal Mixers update immediately to reflect the changes.

Typically, most users will set up stereo links at the system's input device(s). On the standard version of the D400 the user has the option of creating stereo pairs at *either* the input device or on the D400 front panel. A bypass DIP switch—**Defeat Stereo Switches**—is included that will bypass all stereo link settings on the D400's front panel. Its default position is *down* (front panel switches bypassed) assuming that the personal mixing system's input devices are providing the stereo links.

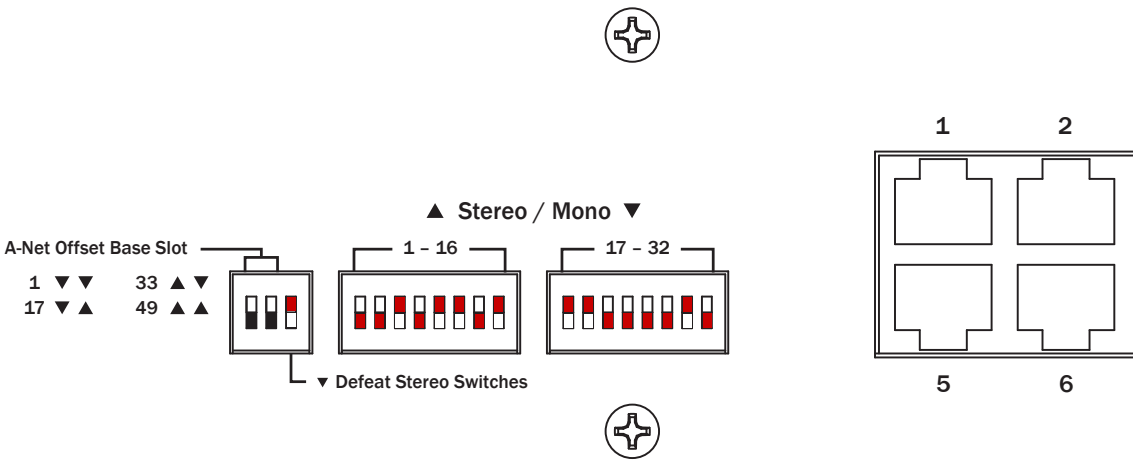
DIP Switch Block 1

DIP Switch	Down	Up
1	Mono	Stereo Link Slots 1-2
2	Mono	Stereo Link Slots 3-4
3	Mono	Stereo Link Slots 5-6
4	Mono	Stereo Link Slots 7-8
5	Mono	Stereo Link Slots 9-10
6	Mono	Stereo Link Slots 11-12
7	Mono	Stereo Link Slots 13-14
8	Mono	Stereo Link Slots 15-16

DIP Switch Block 2

DIP Switch	Down	Up
1	Mono	Stereo Link Slots 17-18
2	Mono	Stereo Link Slots 19-20
3	Mono	Stereo Link Slots 21-22
4	Mono	Stereo Link Slots 23-24
5	Mono	Stereo Link Slots 25-26
6	Mono	Stereo Link Slots 27-28
7	Mono	Stereo Link Slots 29-30
8	Mono	Stereo Link Slots 31-32

Any combination of the Stereo Link DIP switches may be used; all Personal Mixers will update automatically to reflect the changes.



This example shows stereo links set up on the D400 for network slots 5-6, 9-10, 11-12, and 15-16 in block #1. Network slots 17-18, 19-20, and 29-30 are stereo in block #2 (switch handles are shown in red).

Any combination of the Stereo Link DIP switches may be used; in the up position, stereo links are transmitted over A-Net to all Personal Mixers in the network. Be sure to set the **Defeat Stereo Switches** DIP Switch to the ***up*** position to make use of the local Stereo Link settings made with the hardware switches on the front panel of the D400.

A-Net Offset Base Slot

On the D400, the **A-Net Offset Base Slot** feature allows you to choose the starting channel to be output from the A-Net Out ports to all connected Personal Mixers. It can be used with the A360 and A320, as well as legacy A-16II Personal Mixers. This feature is useful in high channel count systems (with up to 64 inputs) and/or multiple A-Net Distributors where you want to have different network slots assigned to different players in a performing ensemble. Incoming A-Net slots are rearranged before being sent to the connected Personal Mixers; the Stereo Link switches are implemented *after* the base slot selection.

The A-Net Offset Base Slot feature only applies to the eight powered A-Net (1-8) outputs on the D400; the unpowered **A-Net Out** is not affected and always passes an exact copy of all incoming A-Net data. Four settings are possible:

DIP Switch Setting	Channel Offset
▼ ▼ **Down-Down**	Default; Channel 1 = Mixer Button 1
▼ ▲ **Down-Up**	Channel 17 = Mixer Button 1
▲ ▼ **Up-Down**	Channel 33 = Mixer Button 1
▲ ▲ **Up-Up**	Channel 49 = Mixer Button 1

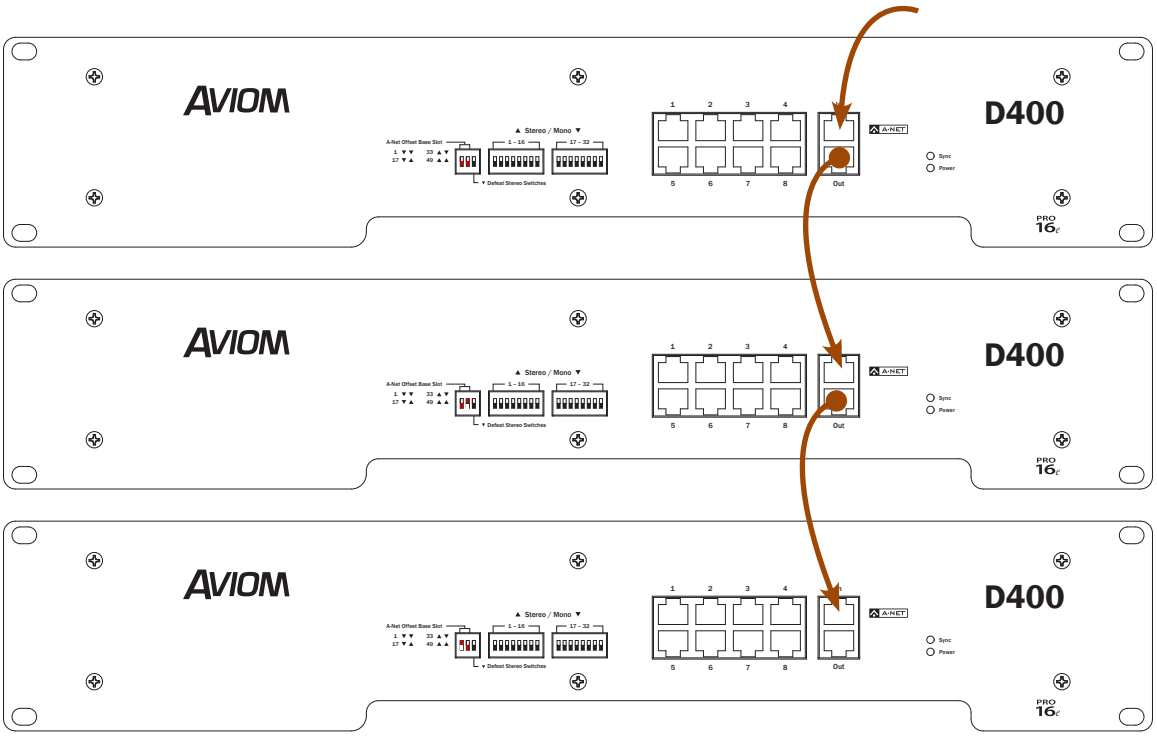
Channel Mapping

The following table shows how the various A-Net Offset Base Slot DIP switch settings map channels to the Personal Mixers. In this simple example all channels are mono.

Mixer Button	Network Slot - Mono			
	▼ ▼	▼ ▲	▲ ▼	▲ ▲
1	1	17	33	49
2	2	18	34	50
3	3	19	35	51
4	4	20	36	52
5	5	21	37	53
6	6	22	38	54
7	7	23	39	55
8	8	24	40	56
9	9	25	41	57
10	10	26	42	58
11	11	27	43	59
12	12	28	44	60
13	13	29	45	61
14	14	30	46	62
15	15	31	47	63
16	16	32	48	64

Up to four unique zones of 16-channel monitor mixes can be created using this feature.

This example shows a system using three D400s where each unit provides a different set of 16 A-Net slots to the Personal Mixers, creating a three-zone personal mixing system from an incoming 48-channel A-Net stream.



Each D400 uses a different 16-channel bank of the incoming A-Net data.

The first D400 outputs network slots 1-16 to the Personal Mixers, the second D400 outputs slots 17-32, and the third D400 is set to output slots 33-48.

Stereo Channels

This table shows how stereo channels are handled when the A-Net Offset Base Slot feature is used in a system with 32 or more input sources. Any combination of stereo and mono channels may be used when designing a personal mixing system, so it's important to understand how the stereo links affect the audio routing.

The example shows every mix channel button with a stereo channel assignment.

Mixer Button	Network Slot - Stereo			
	▼ ▼	▼ ▲	▲ ▼	▲ ▲
1	1-2	17-18	33-34	49-50
2	3-4	19-20	35-36	51-52
3	5-6	21-22	37-38	53-54
4	7-8	23-24	39-40	55-56
5	9-10	25-26	41-42	57-58
6	11-12	27-28	43-44	59-60
7	13-14	29-30	45-46	61-62
8	15-16	31-32	47-48	63-64
9	17-18	33-34	49-50	1-2
10	19-20	35-36	51-52	3-4
11	21-22	37-38	53-54	5-6
12	23-24	39-40	55-56	7-8
13	25-26	41-42	57-58	9-10
14	27-28	43-44	59-60	11-12
15	29-30	45-46	61-62	13-14
16	31-32	47-48	63-64	15-16

In the example above, when both A-Net Offset Base Slot switches are down, changing the assignment for mix channel button #6 from stereo to mono would route only slot 11 to the mix channel; slot 12 would be unused.

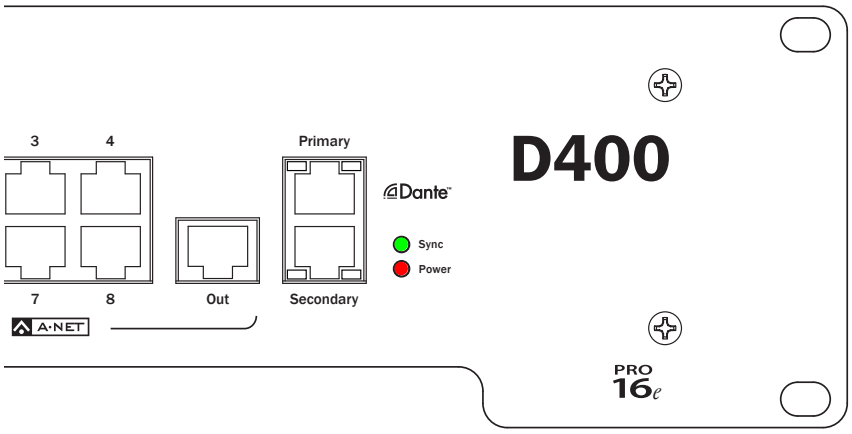
Sync LED

The front panel **Sync** LED lights green on the A-Net version of the D400 A-Net Distributor when a valid A-Net stream is connected to the unit's **A-Net In** port.

On the D400-Dante version of the product, the front panel **Sync** LED will light green when the unit is connected to a Dante network *and* is receiving a valid clock signal over the network.

Power LED

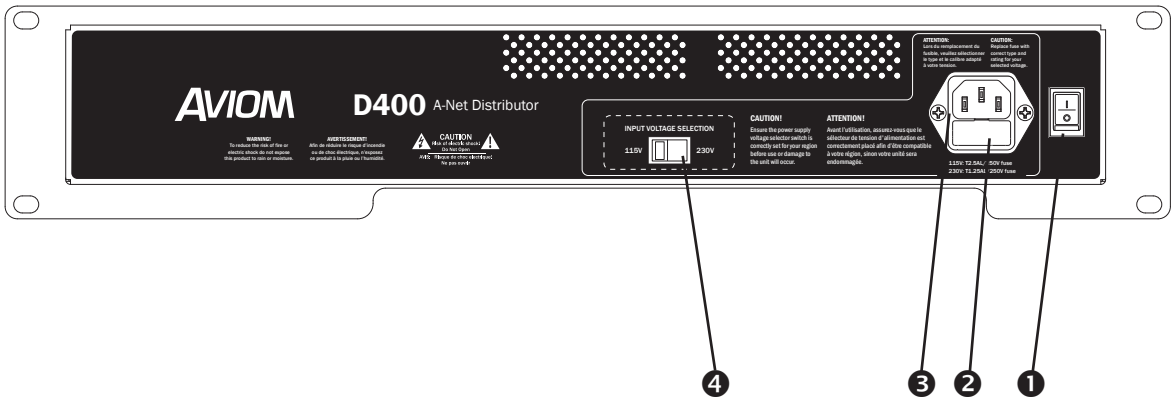
The red **Power** LED indicates that the D400 or D400-Dante is powered on.



Sync (green) and **Power** (red) LEDs on the D400 and D400-Dante front panel

D400 Rear Panel

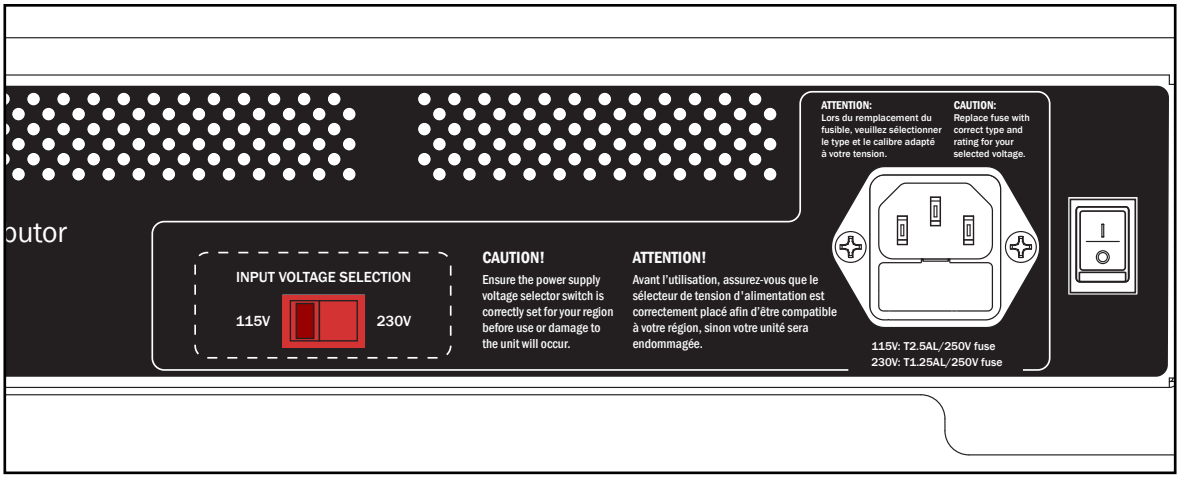
The rear panel features are found on both the standard and Dante versions of the D400.



	Function
1	Power On/Off switch
2	Fuse holder
3	AC Power connection, IEC
4	Input Voltage Selection switch

Power Supply

The rear panel of the D400/D400-Dante A-Net Distributor contains a standard IEC power input for the unit. The power supply in the D400 can be set for 115V or 230V operation at rates from 50 to 60 Hz by using the red **Input Voltage Selection** switch in the center of the rear panel. (See the illustration below.)



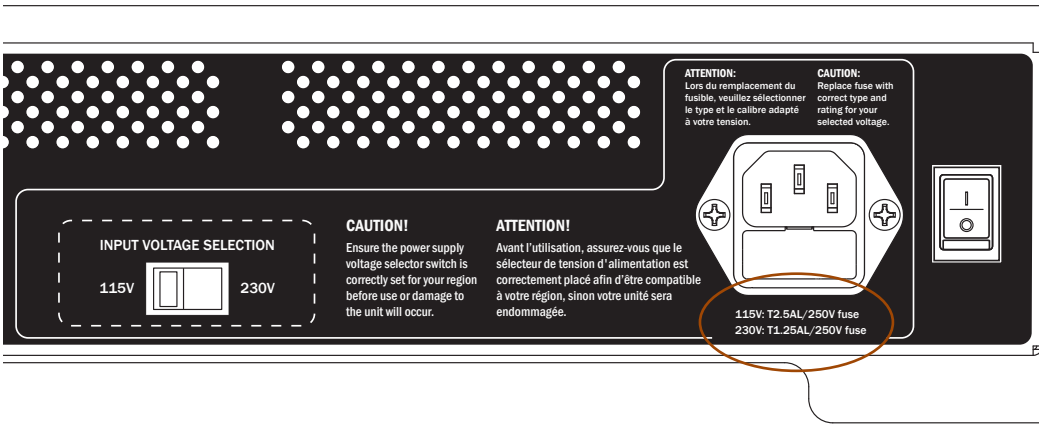
Set the D400 for the proper voltage prior to use.

CAUTION: The D400 must be set for the proper input voltage for your region before use or damage to the unit will occur.

Replaceable IEC cables for AC power systems throughout the world are available from many electronics dealers. Avoid using cable adapters whenever possible. Replacement cables must provide an earth ground connection.

Fuse

The D400's power supply fuse is contained in the IEC power connector assembly. To change a fuse, first unplug the unit from the AC wall receptacle. Remove the fuse access panel to reveal the fuse. Always replace the fuse with one of the same rating for the input voltage being used. For 115V operation use a fuse rated **T2.5AL/250V**; for 230V operation use a fuse rated **T1.25AL/250V**.



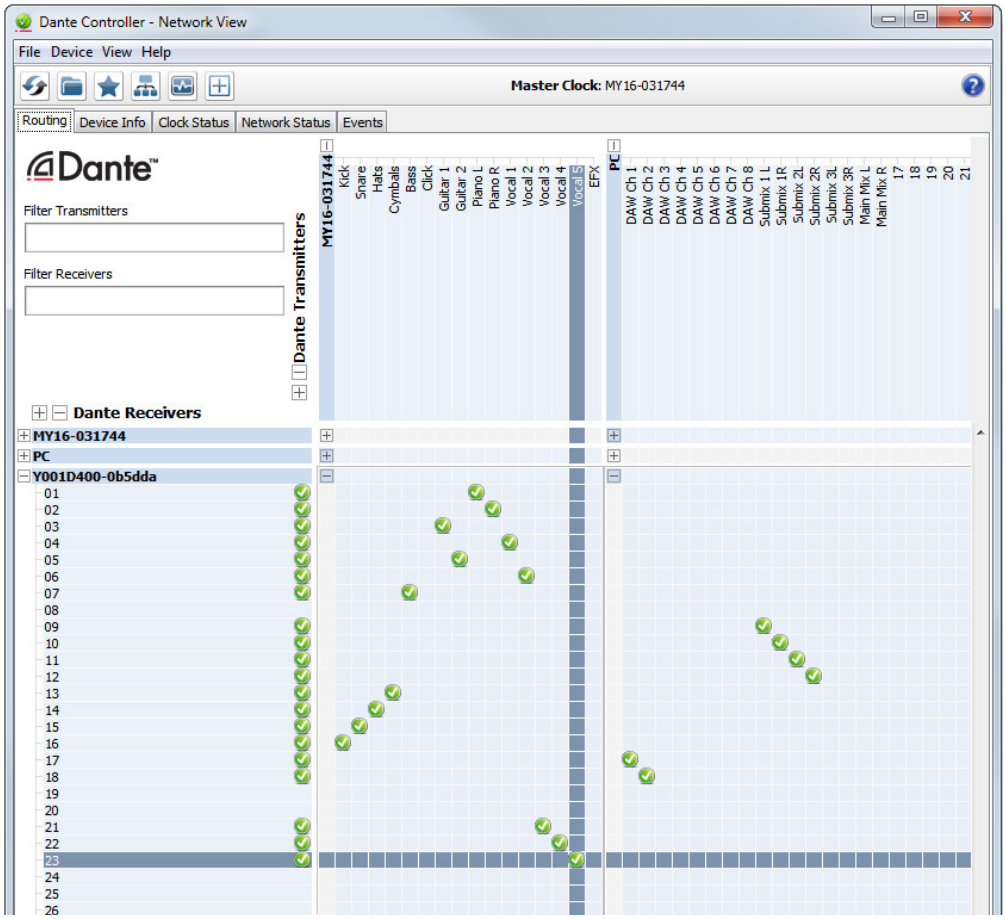
Always replace the fuse with one rated for the input voltage in use.

Dante Setup

The D400-Dante requires some additional signal routing configuration using Audinate's Dante Controller software.

Routing Channels

Any active audio resource in a Dante network may be routed to the D400-Dante A-Net Distributor. Routing channels requires the Dante Controller software, available from the Audinate website (www.audinate.com). It can be run on either Mac or PC computers. Complete documentation for the software is available from Audinate.



The Dante Controller routing grid is used to assign channels to any device in the network.

The main window of the Dante Controller software is essentially an X/Y grid that allows a channel from one Dante device to be routed to another. Devices that transmit are shown horizontally across the top of the grid; receiving devices are in the vertical column along the side. Open or close any device's Transmit or Receive panel by clicking the plus or minus sign (+/-) next to its name.

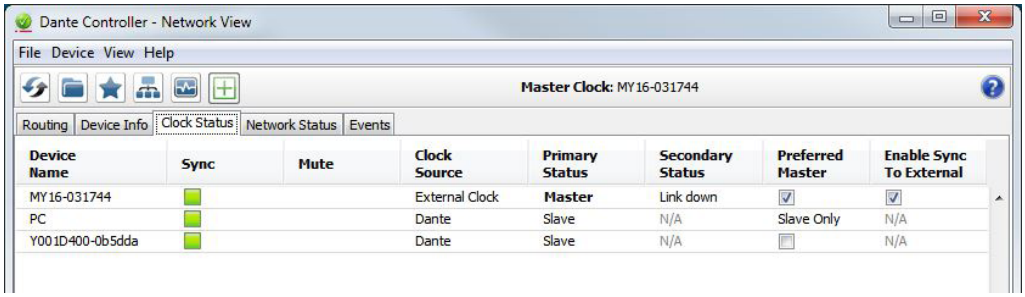
Use the mouse to activate or deactivate a channel by clicking in a cell. A green check mark symbol indicates a valid connection. Once channels are configured for your application, the Dante Controller software application can be closed, and the computer can be removed from the network if desired. Channel transmit/receive settings are stored within each Dante device until they are changed using the Dante Controller software. The Dante Controller software allows you to save a network-wide configuration preset which allows routings to be backed up, changed and recalled as needed.

✓ **Note:** Each Dante device in a network is unique, and the channel routings created using Dante Controller are saved within the Dante devices themselves. These routings will need to be recreated if any Dante device is replaced with an identical device because the original unit was removed for maintenance or repair.

Devices with built-in Dante channel routing capabilities, such as Yamaha CL and QL Series digital consoles, can assign channels to Dante devices from within the console's user interface and may not require the Dante Controller application.

Clock Status

The Network View of Dante Controller contains a Clock Status tab that displays network clock source and sync settings.

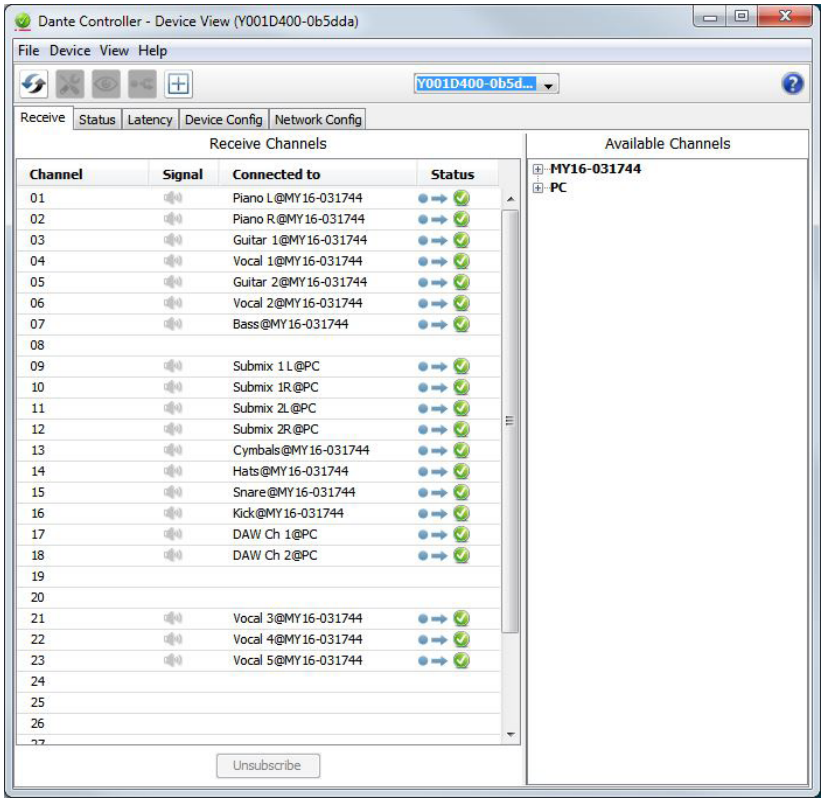


A Dante network always has one device designated as the Master Clock source.

You have the option of assigning one device in your Dante network to be the Preferred Master; this device will be the source of the network clock as long as the device is powered on and connected to the other devices in the network. Click the **Preferred Master** check box to assign this function to a device.

Device View

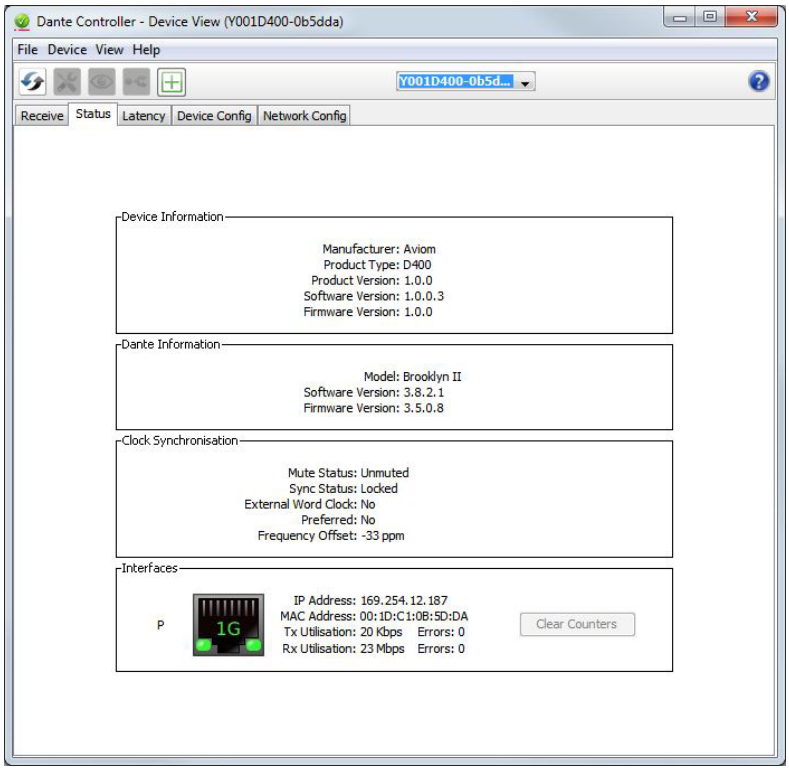
Opening the Device View for any Dante device in the network will display a tabbed view of additional settings for the device. There is an overview of the device's firmware, its transmit and receive settings, as well as settings for the sample rate and redundancy.



The Receive tab shows Dante channels assigned to the D400.

Status Tab

Choose the Status tab of the Device View to display the current firmware and other manufacturer-related information.

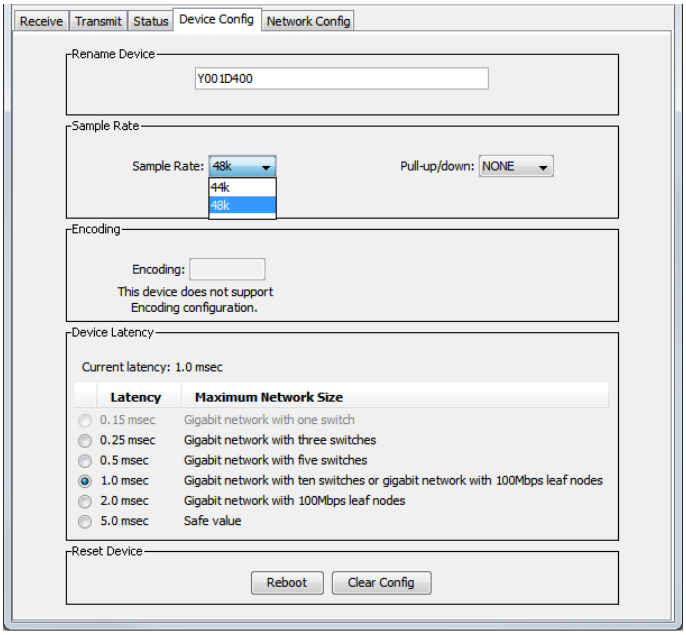


The Status view for the D400-Dante displays its current firmware as well as network connection status.

There are no user-configurable settings in the Status tab for the D400-Dante.

Device Config Tab

The settings for Sample Rate and Device Latency are found within the Device Config tab. Note that each device in a Dante network has a separate setting for Sample Rate. While it is possible to have devices with different sample rates in the same network, you cannot patch Dante channels between devices with mismatched sample rates.

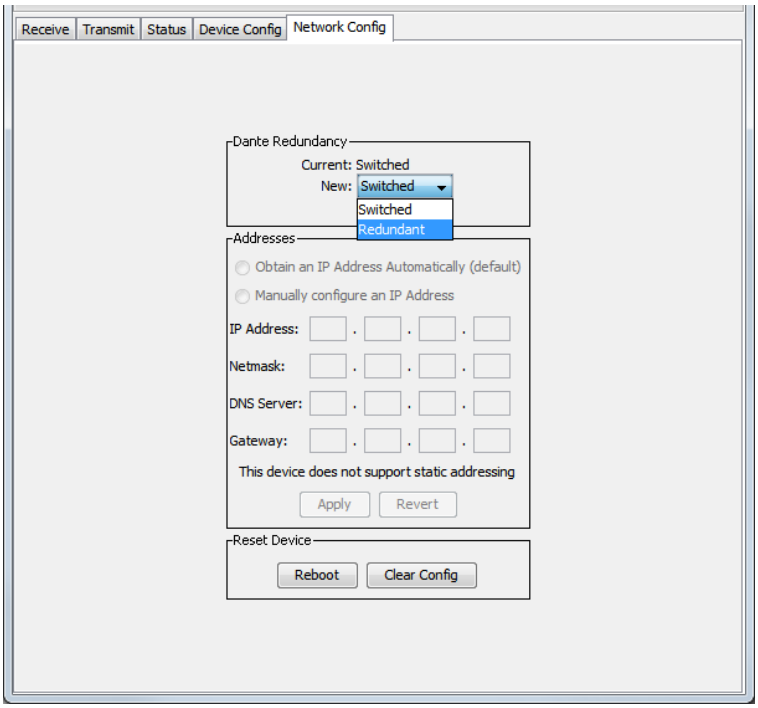


Choose a sample rate from the drop-down menu for each network device.

To change the sample rate for the D400-Dante, select a new rate from the drop-down menu. Use the radio buttons in the Device Latency section to choose a latency value that best matches the network you have set up. The D400-Dante is compatible with sample rates of 44.1 and 48kHz. The D400-Dante does not contain sample rate converters.

Network Config Tab

The settings for the D400-Dante's Primary and Secondary ports are found within the Network Config tab of the Device View. Two settings are available in the drop-down menu. When set to **SWITCHED**, both ports are identical; Dante devices can be daisy chained. When set to **REDUNDANT**, the Secondary port will serve as a redundant copy of the data appearing at the Primary port. Note that using the Redundant setting requires that the network be configured using a pair of gigabit switches.



Choose either Switched or Redundant from the drop-down menu.

Refer to the Audinate Dante Controller user guide for additional information about using this software as well as setting up a redundant Dante network.

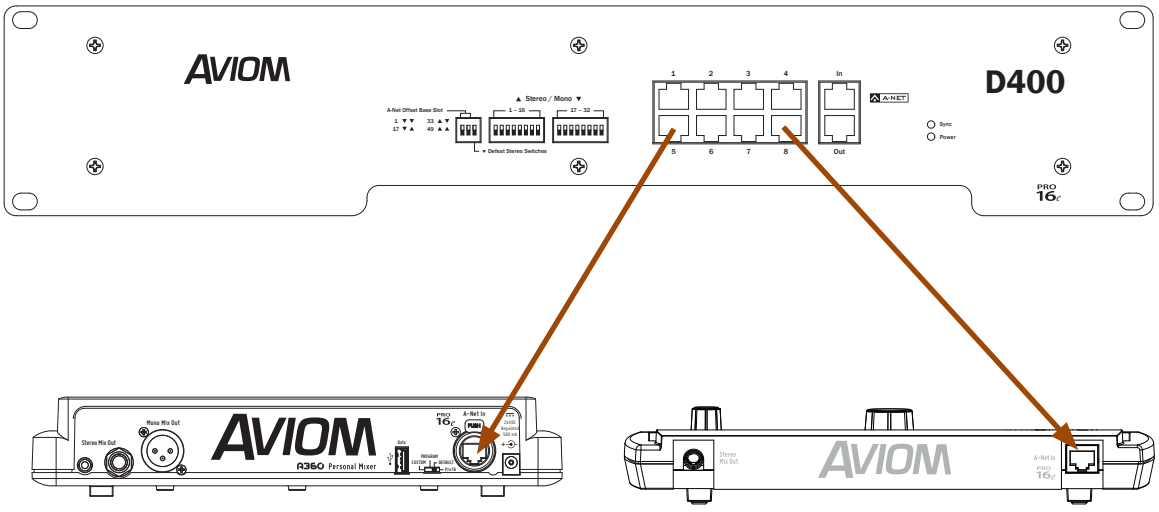
Personal Mixing Systems

A personal mixing system can be configured with a variety of input sources including analog, digital console cards, Dante network devices and Dante-enabled digital mixing consoles. Up to eight Personal Mixers (A360, A320, A-16II or A-16R) can be connected per D400 or D400-Dante. This section shows some typical personal mixing system configurations.

Connecting Personal Mixers

To connect a Personal Mixer to the D400 or D400-Dante:

- Connect a Cat-5e cable from one of the eight powered A-Net ports on the A-Net Distributor to the **A-Net In** port on the Personal Mixer.
- DC power is supplied automatically to the Personal Mixer—no external DC power supply is required.
- Any combination of A360, A320, A-16II and A-16R Personal Mixers may be used.



Connect an **A-Net** (1-8) port on the D400 or D400-Dante to the **A-Net In** on an A360, A320, A-16II, or A-16R Personal Mixer.

✓ NOTE: For connections from the D400 and D400-Dante to Personal Mixers, shielded Cat-5e (or better) cable must be used to stay below the CISPR 22 Class B, ICES-003, and FCC 47 CFR Part 15 Class B emissions limits.

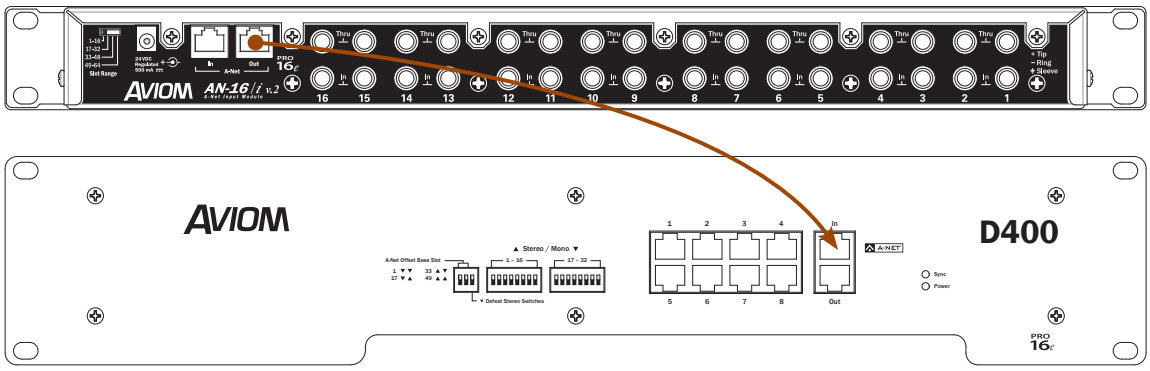
Unshielded Cat-5e (or better) cable may be used on all other connections.

The A-Net outputs on the D400 and D400-Dante can be connected to any A-Net compatible device, including other A-Net distributors, allowing flexible routing and system configurations as well as virtually unlimited system expansion.

16-Channel Personal Mixing Systems

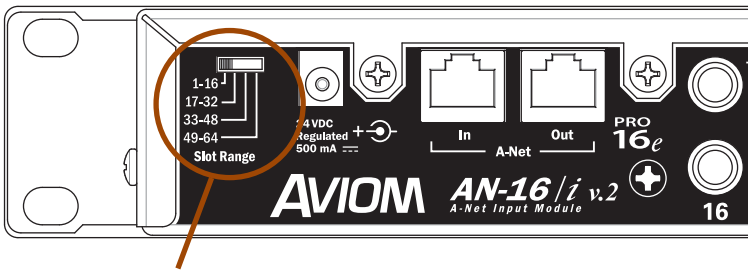
Analog Input

This system uses one D400 and a single analog input device or digital console card; 16 total network slots are available to the Personal Mixers. To configure, connect the **A-NET OUT** on the input device to **A-NET IN** on the D400.



A-NET OUT on the analog input device is connected to **A-NET IN** on the D400.

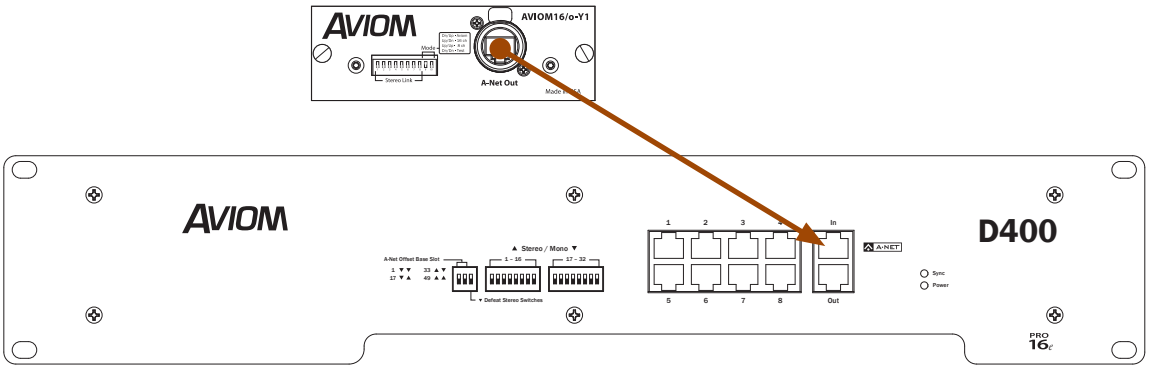
The **A-NET OFFSET BASE SLOT** DIP switches on the D400 should be set to the default 1-16 setting (down, down). Assign stereo links as needed. When using a single AN-16/i v.2 Input Module, be sure to set its rear panel **SLOT RANGE** switch to **1-16**.



The Slot Range must be set to **1-16** for 16-channel systems.

Digital Console Card

This system uses a single console card and one D400 A-Net Distributor. A compatible Pro16 digital console card from any of Aviom's technology partners may be substituted for the Y1 Yamaha card shown in the diagram. Connect **A-Net Out** on the console card to **A-Net In** on the D400 with a standard Cat-5 cable.

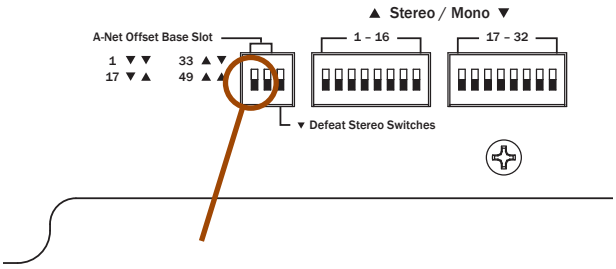


A-Net Out from the console card is connected to **A-Net In** on the D400.

The **A-Net Offset Base Slot** DIP switches on the D400 should be set to the default slots 1-16 setting. Assign stereo links as needed. Stereo links may be created on the console card or on the D400.

About A-Net Offset Base Slot

The A-Net Offset Base Slot DIP switches on the D400 are used to select which bank of 16 channels should be mapped onto the Personal Mixer's channel buttons. For 16-channel systems, these DIP switches should be set to Slot range 1, both switches down. Setting the DIP switches to any other range will route non-existent network channels to the Personal Mixers.



Set the Base Slot to "**1**" for 16-channel systems.

Stereo Links

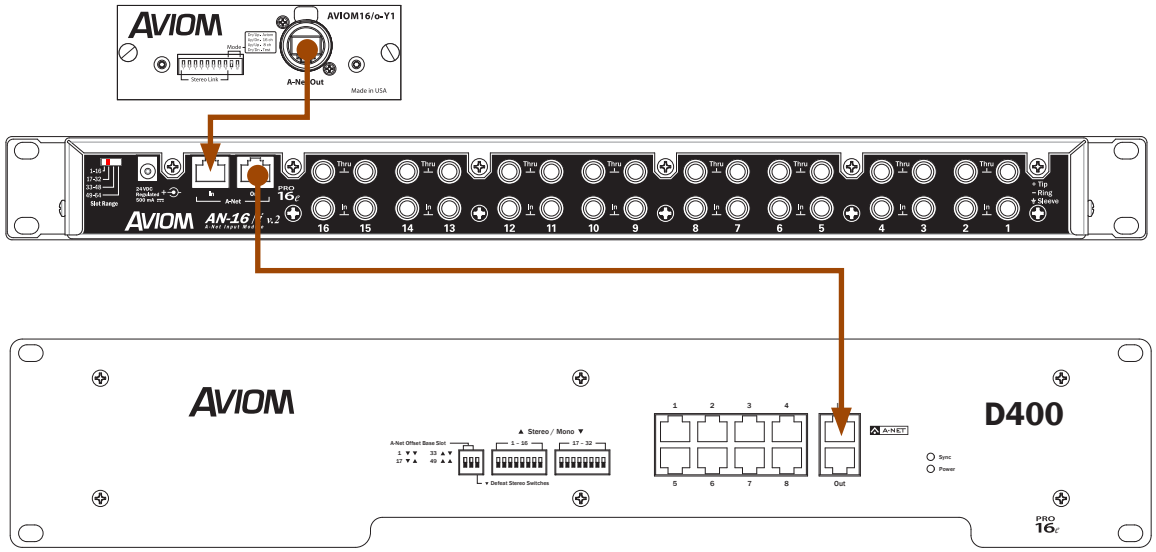
The D400 and D400-Dante have a set of front-panel Stereo Link DIP switches that are capable of linking adjacent odd/even channel pairs in the A-Net stream. You have the option of using the stereo link switches on the network's input device (analog input module or digital console card) *or* on the D400. If the stereo links are set at the network's input device, set the **Defeat Stereo Switches** DIP switch in the down position; links from the D400's front panel are ignored.

32 Channels - Analog & Digital Inputs

This hybrid system uses one digital console card plus one analog AN-16/i v.2 Input Module to provide up to 32 inputs to the network when connected to the A-Net version of the D400. The console card provides slots 1-16 of the network; the AN-16/i v.2 Input Module provides slots 17-32.

To configure this system:

- Connect **A-Net Out** on the console card to **A-Net In** on the AN-16/i v.2 with a Cat-5 cable.
- Set the **Slot Range** switch on the AN-16/i v.2 to **17-32**.
- Connect a Cat-5 cable from **A-Net Out** on the AN-16/i v.2 to **A-Net In** on the D400.
- Set Stereo Links as needed on the console cards and/or AN-16/i v.2.
- Connect Personal Mixers to the D400's front panel A-Net ports.
- If desired, create custom channel maps for A360 Personal Mixers with the free A360 Channel Manager software.



The **A-Net Out** from the console card connects to the analog input module's **A-Net In** port. The Pro16e **A-Net Out** on the AN-16/i v.2 connects to **A-Net In** on the D400.

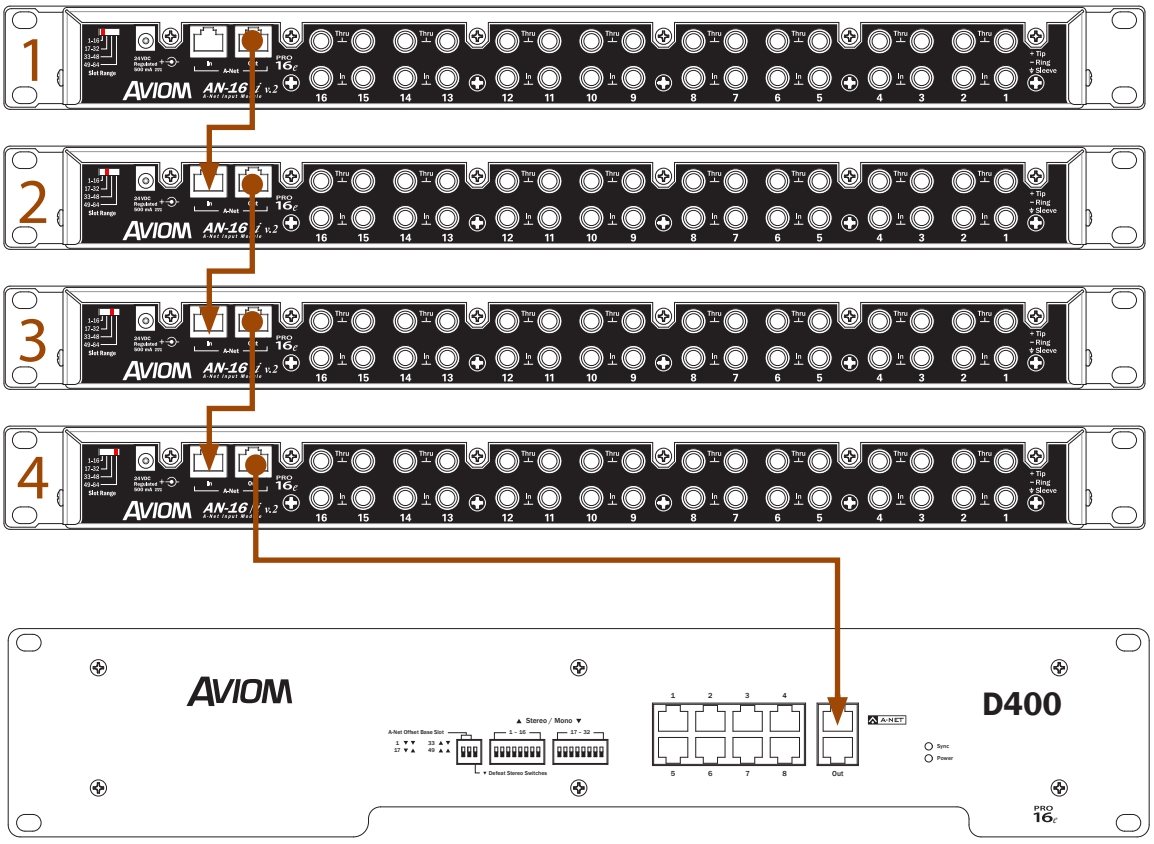
✓ **Note:** If A-16II Personal Mixers will be used with A320 and A360 Personal Mixers in this type of network, it is important to note that the A-16II will ignore network slots 17 and above. Make sure you assign audio sources that are critical for users of the A-16II to slots 1-16 of the network.

32-64 Channels - Analog Inputs

Up to four analog input devices may be connected to a D400 by cascading the A-Net ports on the input devices. The first input device in the system (Input Module 1 in the diagrams) can be substituted with an original AN-16/i Input Module, AN-16/i-M Mic Input Module, or a digital console card. By default these devices supply network slots 1-16.

To configure this system:

- Set the **Slot Range** switch on AN-16/i v.2 Input Module #1 to **1-16** (not required if using a legacy analog input device or a console card).
- Connect **A-Net Out** on device #1 to the **A-Net In** on AN-16/i v.2 Input Module #2 with a Cat-5 cable.
- Set the **Slot Range** switch on AN-16/i v.2 Input Module #2 to **17-32**.
- Connect **A-Net Out** on device #2 to **A-Net In** on AN-16/i v.2 Input Module #3.
- Set the **Slot Range** switch on AN-16/i v.2 Input Module #3 to **33-48**.
- Connect **A-Net Out** on device #3 to **A-Net In** on AN-16/i v.2 Input Module #4.
- Set the **Slot Range** switch on AN-16/i v.2 Input Module #4 to **49-64**.
- Connect **A-Net Out** on device #4 to the **A-Net In** on a the D400.



Four analog input modules create a 64-channel network.

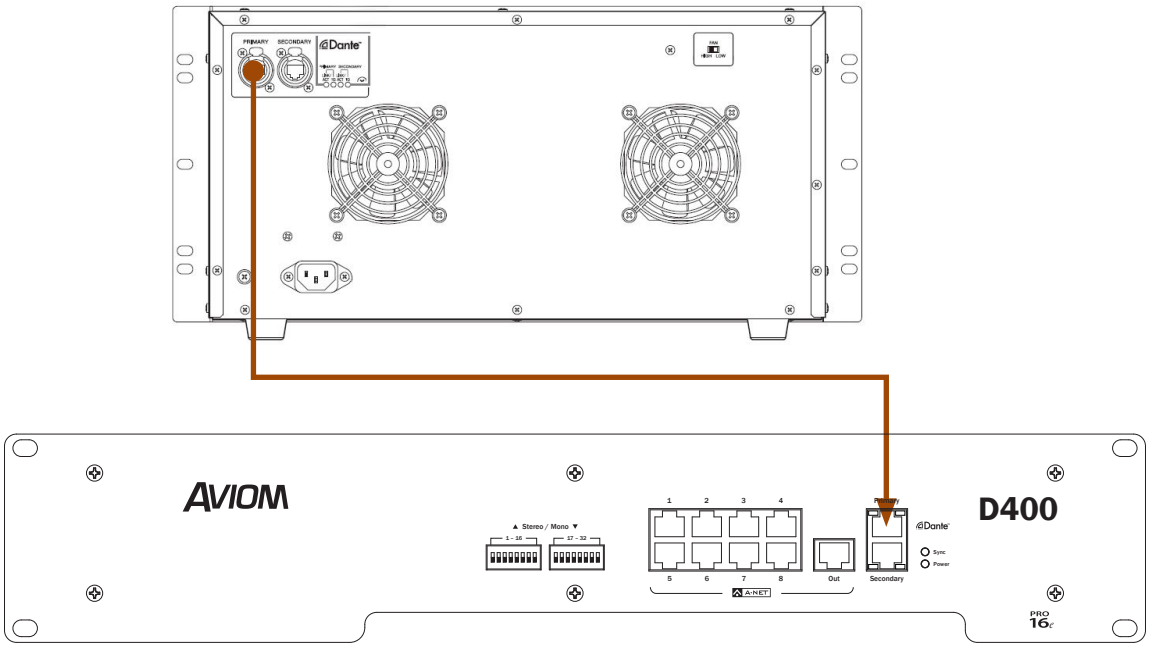
A360 Personal Mixers can be configured to use any of the active network slots by using A360 Channel Manager software; the A320 can use only slots 1-32 and will ignore slots 33-64.

Dante Systems

A Dante-enabled mixing console or audio network can be connected to the D400-Dante to provide up to 32 channels from the Dante network to Personal Mixers.

To configure this system:

- Connect a Cat-5 cable from the Dante network to the Dante **Primary** port on the D400-Dante's front panel.
- In the Dante Controller software, set the D400-Dante to operate at the same sample rate as the other devices in the Dante network (44.1 or 48kHz).
- Confirm that the D400-Dante is set for the proper Dante topology—**Switched** or **Redundant**—as defined by your Dante network's setup.
- Route up to 32 Dante network channels from transmitting devices to the D400-Dante using the Dante Controller software.
- Set stereo links as needed using the DIP switches on the front panel of the D400-Dante.
- Connect Personal Mixers to the front-panel A-Net ports of the D400-Dante.



Connect a Cat-5 cable from a Dante device to the Dante **Primary** port on the D400-Dante.

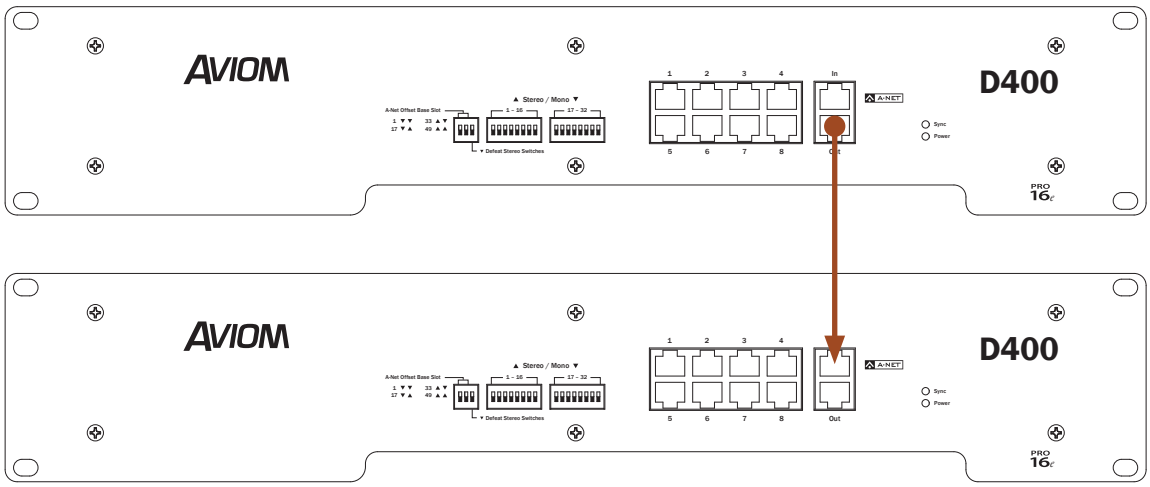
Additional Dante devices can be added as needed by connecting them via the **Secondary** port on the D400-Dante.

Expanding a Personal Mixing System

Any number of Pro16 A-Net devices can be used in a personal mixing system, including multiple A-Net Distributors. To expand a system, additional A-Net Distributors can be connected to any available **A-Net Out** port on a Pro16 device. In a Dante system, only one Dante-enabled A-Net Distributor is required; systems can then be expanded by adding non-Dante versions of the A-Net Distributor.

Using Multiple A-Net Distributors

A-Net Distributors can be cascaded. To add another D400 to a system, simply connect a standard Cat-5 cable from the **A-Net Out** of the first D400 to the **A-Net In** on the second D400. See the following diagram (the first D400 in the diagram can be a D400-Dante if the input sources are coming from a Dante network).



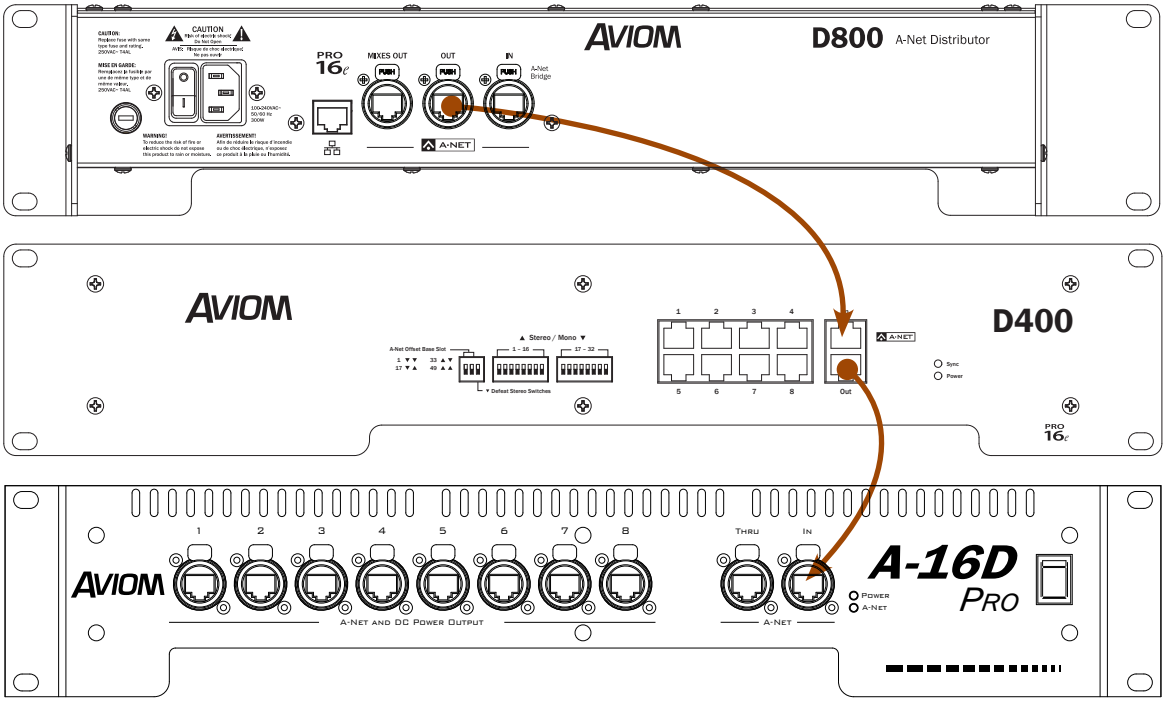
Connect **A-Net Out** on the first D400 to **A-Net In** on a second D400 to expand a system.

Two D400s connected in a daisy chain provide sixteen powered A-Net outputs. Any number of D400 A-Net Distributors can be connected to provide additional expansion by connecting the **A-Net Out** jack of one D400 to the next distributor's **A-Net In** jack. Cat-5 cables can be up to 400 feet (120 meters) long between devices.

Using the D400 With the D800 and A-16D Pro

A D800 (or D800-Dante) may be used along with an A-16D Pro A-Net Distributor in the same system. Connecting a D400 and/or an A-16D Pro after a D800 allows up to 64 network slots to be transmitted to every port on each A-Net Distributor; use this as the default patching method if you are using A320 and A360 Personal Mixers. Up to 64 inputs may be made active in the network by using analog input devices, console cards connected to an SB4 System Bridge and D800, or a Dante network.

To connect a D800 A-Net Distributor to a D400 and an A-16D Pro A-Net Distributor, patch a Cat-5 cable from the **A-Net Out** port on the D800 or D800-Dante's rear panel to the **A-Net In** on the front panel of the D400. Patch another cable from **A-Net Out** on the D400 to **A-Net In** on the A-16D Pro A-Net Distributor.



Connect **A-Net Out** to **A-Net In** to expand a network.

All network slots (up to 64) are available at each of the A-Net Distributor's outputs. Connect Personal Mixers as needed. The legacy A-16II and A-16R Personal Mixers will use network slots 1-16 only and will ignore slots 17-64. A320 Personal Mixers will use slots 1-32 of the network, ignoring slots 33-64. The A-Net Offset Base Slot DIP switches can be used to select specific content ranges to be used by A320 and/or A-16II Personal Mixers.

A360 Personal Mixers can make use of any active slot. Any A360 Personal Mixers connected to a D400 or A-16D Pro cannot use the Network Mix Back or iOS features; these are unique to the D800 A-Net Distributors.

Expand the system further with another A-16D Pro by connecting **A-Net Thru** on the first A-16D Pro to **A-Net In** on the second.

✓ **Note:** The half-rackspace A-16D A-Net Distributor may be substituted for the A-16D Pro.

D400 and D400-Dante A-Net Distributor Specifications

Common Specifications

A-Net Out to Personal Mixers	Eight RJ45 connectors, powered
A-Net Out	Pro16e A-Net; RJ45 connector, unpowered
LEDs	Power On (red); Network Sync (green)
Stereo Link	Two 8-position DIP switch blocks (1-16, 17-32)
A-Net Cables	Personal Mixer Connections: Shielded Cat-5e (or better) cable must be used to stay below the CISPR 22 Class B, ICES-003, and FCC 47 CFR Part 15 Class B emissions limits. Unshielded Cat-5e cable may be used on all other connections.
Output Voltage for Personal Mixers	24VDC, 0.5 amp Transmitted over the Cat-5e cable
Power Supply	Internal, IEC connector
Input Voltage	100-120 VAC or 200-240 VAC (with selector switch); 50-60Hz @220 W max
AC Fuse Types	115V range: T2.5AL/250V 230V range: T1.25AL/250V
Dimensions	19" (482.6 mm) wide x 7.386" (187.6 mm) deep; 2U, 3.5" (88.9 mm) high
Weight	12.0 lbs (5.44 kg)

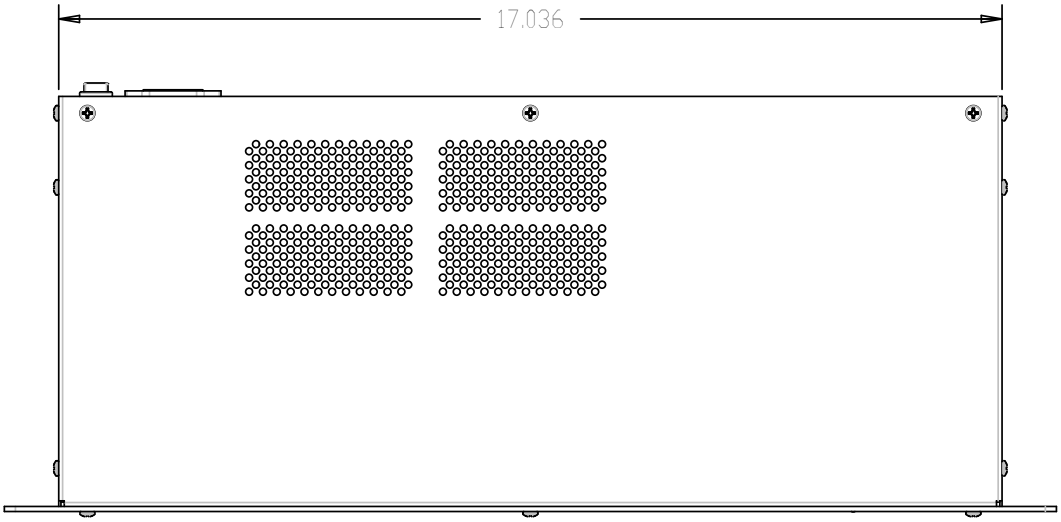
D400 A-Net Distributor Specifications

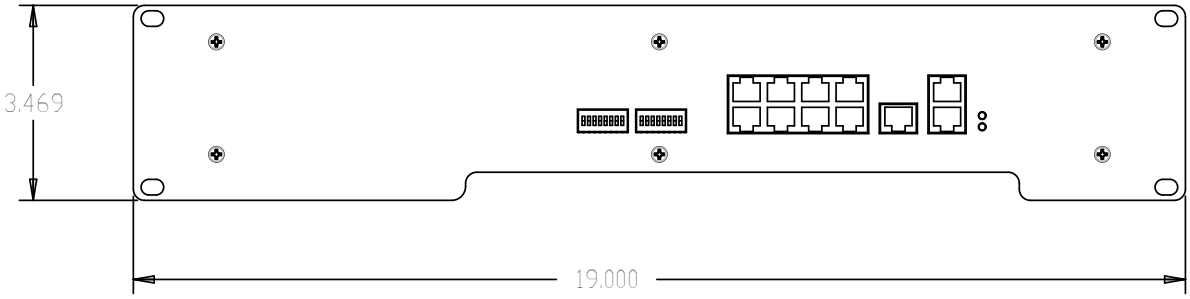
A-Net Input	Pro16 or Pro16e A-Net; RJ45 connector
A-Net Offset Base Slot	2-position DIP switches select the starting channel that Personal Mixers will receive from the network (1, 17, 33, or 49)
Defeat Stereo Switches	Chooses between local (front panel) stereo links (up) or network stereo links (down)

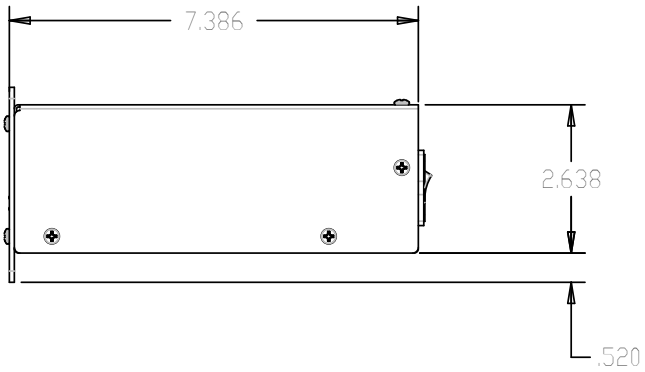
D400-Dante A-Net Distributor Specifications

Dante Interface	32 channels (44.1/48kHz Sample Rate)
Dante Primary I/O	RJ45 connector
Dante Secondary I/O	RJ45 connector
Dante LEDs	Network Activity (green); 1GB Network Connection Active (yellow)

Dimensions







Cat-5 Cable Pinout

The tables below detail the two wiring pinout variations for Cat-5 cables. When making custom cables, either pinout can be used, but both ends of a cable must use the same wiring pattern.

T568A

RJ45 Pin	Wire Color	
1	White/Green	
2	Green	
3	White/Orange	
4	Blue	
5	White/Blue	
6	Orange	
7	White/Brown	
8	Brown	

T568B

RJ45 Pin	Wire Color	
1	White/Orange	
2	Orange	
3	White/Green	
4	Blue	
5	White/Blue	
6	Green	
7	White/Brown	
8	Brown	

Index

Symbols

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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 _____ Product Serial Number _____

Model _____ Product Serial Number _____

Model _____ Product Serial Number _____

Model _____ Product Serial Number _____

Date Purchased _____

Dealer Name _____

Dealer Location _____

_____

Your Name _____

Address _____

Address _____

City _____

State/Province _____

Zip/Postal Code _____

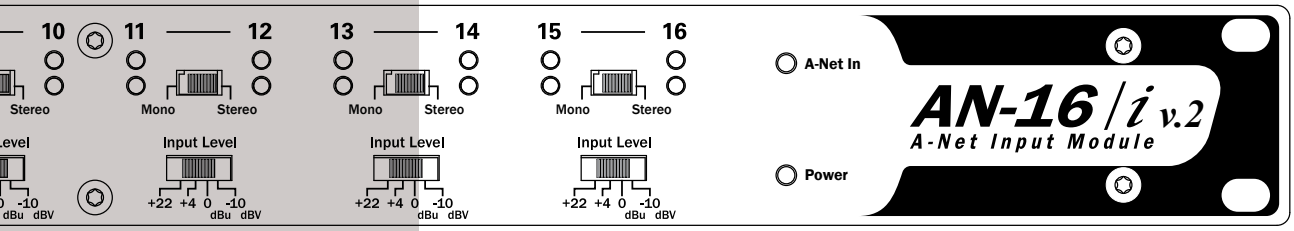
Country _____

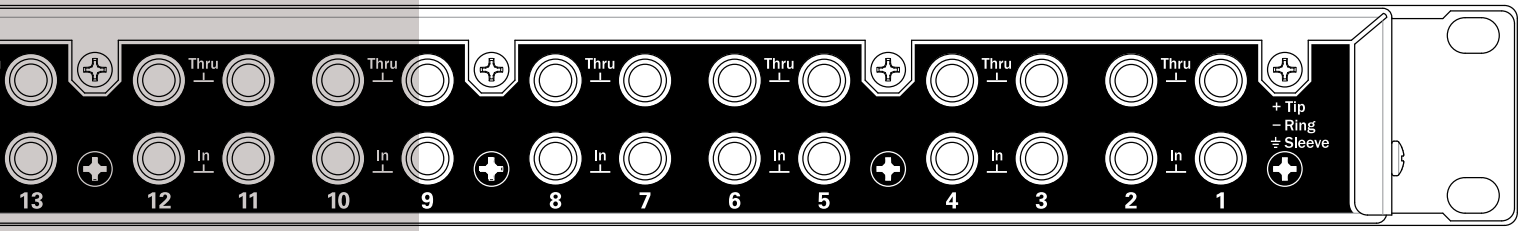
Email Address _____

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

AVIOM®

1157 Phoenixville Pike, Suite 201 • West Chester, PA 19380 USA
Voice: +1 610.738.9005 • Fax: +1 610.738.9950 • www.Aviom.com





AVIOM®

AN-16/i v.2

Input Module

User Guide

9310 1026 0001F rev 1.1

PRO 16® PRO 16e® A-NET®

READ THIS FIRST

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or third prong are provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. No on/off power switches are included in the system. The external power supply should be used to control power to an Aviom device. This power supply should remain readily operable.
16. The solid line over dashed line symbol (⎓) indicates that the input voltage must be a DC voltage.
17. The box within a box symbol (⧈) indicates that the external power supply is double insulated.

WARNING!

TO REDUCE THE DANGER OF ELECTRICAL SHOCK DO NOT REMOVE COVERS.

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.

To avoid the hazard of electrical shock, do not handle the power cord with wet hands.

Replace fuse with same type and rating.

Operating Temperature: 0˚C to 50˚C (32˚F to 122˚F)

Risque de choc électrique – ne pas ouvrir. Pour réduire le risque de feu ou de choc électrique, ne pas exposer cet équipement à la pluie ou la moisissure. Pour réduire le risque de choc électrique, ne pas retirer le couvercle. Pièces non remplaçables par l'utilisateur. Confier la réparation à une personne qualifiée. Attention – utiliser seulement un fusible de rechange de même type.

Cet appareil est conforme à la section 15 de la norme FCC. Son fonctionnement est soumis aux conditions suivantes : (1) cet équipement ne doit pas causer des interférences nocives, et (2) cet équipement doit accepter toute interférence captée incluant les interférences pouvant causer des opérations indésirables.

Cet appareil numérique de Classe B est conforme à la norme NMB-003 du Canada.

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.

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.

Certifications

EMC: EN55103-1:2009
EN 55103-2: 2009
EN 55022:2006 / CISPR 22:1997
CAN/CSA-CEI/IEC CISPR 22:02
FCC 47 CFR, Part 15

Safety: UL 60065, 7th Edition, Rev.: 09/21/2012;
CAN/CSAC22.2 No. 60065:03 (R2012)

ETL/cETL Listed and RoHS Compliant

Notice of Rights

Trademarks

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 opened or modified in any way; if the product serial number has been damaged, modified, or removed; or if the original Quality Assurance label 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. 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.

Warranty Information

Please record the following information for future reference:

Your Authorized Aviom Dealer:

Name: _____

Address: _____

_____

_____

Phone: _____

Serial Numbers of Your Aviom Products: _____

_____

_____

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.

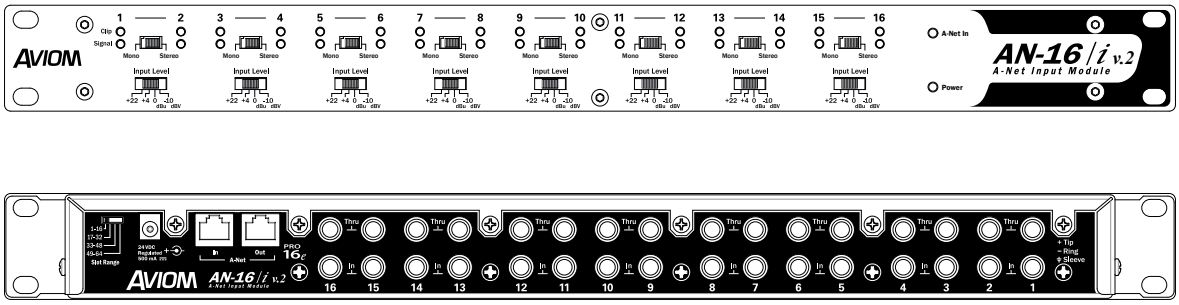
To fulfill warranty requirements, your Aviom product should be serviced only at an authorized Aviom service center. The Aviom serial number label must appear on the outside of the unit, or the Aviom warranty is void.

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.

Table of Contents

AN-16/i v.2 Input Module

*Thank you for purchasing the **Aviom AN-16/i v.2 Input Module**. This User Guide is designed to familiarize you with your new product's features and to have your Pro16® or Pro16e™ system up and running as quickly as possible.*



Features

The AN-16/i v.2 is part of Aviom's Pro16® Series of products; it can be combined with Pro16 and Pro16e devices to create personal mixing systems, digital snakes, and audio distribution systems for applications in live performance, broadcast, and recording.

The AN-16/i v.2 Input Module's main features include:

- Sixteen balanced line-level 1/4-inch TRS jacks for audio input connections
- Sixteen balanced 1/4-inch TRS jacks for audio Thru connections
- High quality A-to-D conversion at 48kHz, 24-bit
- Adjustable input level switches per channel pair
- Eight stereo channel Link switches
- Signal and Peak LEDs on each channel
- A-Net® In and A-Net Out jacks
- 4-position Slot Range switch for Pro16e applications

Conventions Used in This Document

AN-Series

The AN-16/i v.2 Input Module, original AN-16/i Input Module, AN-16/i-M Mic Input Module, and AN-16/o v.4 Output Module are referred to generically as the ***AN-Series*** of products.

When describing audio network configurations, the AN-16/i-M Mic Input Module and most Pro16 console interface cards can be substituted anywhere the AN-16/i is used.

Using Personal Mixers

It is possible to create an audio distribution and personal monitor system using any combination of Aviom AN-Series and Personal Mixer products, including the A360, A320, A-16II, and A-16R.

When referring to the use of the Personal Mixers in a system in general, the term ***Personal Mixer*** is used to describe a case where an A360 Personal Mixer, A320 Personal Mixer, A-16II Personal Mixer, or A-16R Rack-mount Personal Mixer can be used.

Cat-5 Cables

In most cases unshielded (UTP) Cat-5e, Cat-6, and Cat-6e cables can be interchanged. When speaking about interconnections between components in a system, the term ***Cat-5*** is used generically to indicate the use of any of the applicable cable types.

A-Net Distributors

The D800, D800-Dante, D400, D400-Dante, A-16D and A-16D Pro A-Net Distributors are referred to generically as ***A-Net Distributors***. In a personal mixing system, A-Net Distributors are used to copy an A-Net digital signal and split it into multiple copies so that devices may be connected in parallel.

Package Contents

The AN-16/i v.2 Input Module box includes:

- AN-16/i v.2 Input Module
- DC Power supply for the AN-16/i v.2
- Documentation

Options for your system include:

- Cat-5e/Cat-6 UTP interconnect cables
- SB4 System Bridge
- Aviom Personal Mixer products such as the A360 Personal Mixer, A320 Personal Mixer, A-16II Personal Mixer, or A-16R Rack-mount Personal Mixer for creating a monitoring system
- Pro16 output devices such as the AN-16/o v.4 Output Module or AV-P2 Output Module
- D800, D800-Dante, D400, D400-Dante, A-16D and/or A-16D Pro A-Net Distributors

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. Warranty info may also be submitted on the Aviom website, www.Aviom.com.

About A-Net

A-Net® is a proprietary high-speed data transmission protocol developed by Aviom, capable of sending and receiving high-quality digital audio using readily available Cat-5 cables.

A-Net is based on the physical layer of Ethernet, a Local Area Network (or LAN) technology. This provides A-Net with a mature and robust base on which to build. However, it is important to note that A-Net devices are not compatible with Ethernet devices.

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

- Virtually no latency; analog in to analog out is always less than one millisecond
- No ground loops
- Easy cabling using readily available components
- An unlimited number of A-Net devices can be used in a system
- Ease in spanning long distances between system components

There are two versions of Pro16 A-Net: the original Pro16 A-Net signal carries sixteen channels of digital data while the enhanced Pro16e® version of A-Net is capable of carrying up to 64 channels of digital audio data. Like standard Pro16 A-Net, Pro16e is a point-to-point digital audio protocol.

Pro16e A-Net data is intended for use with the A320 and A360 Personal Mixers which can take advantage of the higher network channel count that Pro16e provides.

Compatibility

The AN-16/i v.2 Input Module is compatible with Pro16, Pro16e, and Pro64 A-Net devices as detailed below.

Pro16 Products

The following Pro16 and Pro16e products may be connected to the AN-16/i v.2 **A-Net Out**:

- A360 Personal Mixer
- A320 Personal Mixer (requires and A-Net Distributor for power)
- A-16II Personal Mixer
- A-16R Rack-mount Personal Mixer
- D800 A-Net Distributor
- D800-Dante A-Net Distributor
- D400 A-Net Distributor
- D400-Dante A-Net Distributor
- A-16D A-Net Distributor
- A-16D Pro A-Net Distributor
- AN-16/o v.4 Output Module
- AV-P2 Output Module
- Another AN-16/i v.2 Input Module

✓ **Note:** The AN-16/i v.2 Input Module's Pro16e A-Net Out is not compatible with the original A-16 Personal Mixer, discontinued in 2004. Some A-16R Personal Mixers produced prior to the release of the Y1 A-Net Card are also not compatible.

The **A-Net Out** from the following Pro16 devices may be connected to the AN-16/i v.2 Input Module's **A-Net In** port:

- AN-16/i v.2 Input Module
- AN-16/i Input Module
- AN-16/i-M Mic Input Module
- AV-M8 Mic Input Module
- Aviom16/o-Y1 A-Net Card for Yamaha® devices
- D800, D800-Dante, D400, D400-Dante, A-16D and A-16D Pro A-Net Distributors
- Third-Party Pro16 A-Net console cards

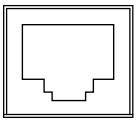
Pro64 Products

Adding the ASI A-Net Systems Interface to a Pro64® digital snake or audio network allows Pro64 channels to be translated into Pro16 data. The ASI separates the 64-channel Pro64 stream into up to four 16-channel Pro16 outputs, depending on the Pro64 sample rate being used. Any of the four Pro16 A-Net outputs from the ASI may be connected to the A-Net In on the AN-16/i v.2.

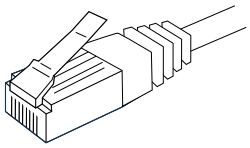
About Category 5

The term Category 5 (also referred to as *Cat-5*) is broadly used to describe a type of high performance network cabling used for data transmission purposes to connect computer networks and other devices. A standard 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 Cat-5 female RJ45 jacks.

A variation of the cable, called Category 5e (or Cat-5e), has largely replaced Cat-5 in the field; it uses additional twists in the cable's wire pairs to reduce interference in high-speed network applications. Additional wire pair variations are found in Cat-6 and Cat-6e cables, typically used with gigabit networking devices. **Use Unshielded Twisted Pair (UTP) cables for all A-Net applications.**



RJ45 Jack



Cat-5e Cable

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

Cat-5 Cables

Any standard Category 5e (Cat-5e) UTP cable may be used with your Aviom products. 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.

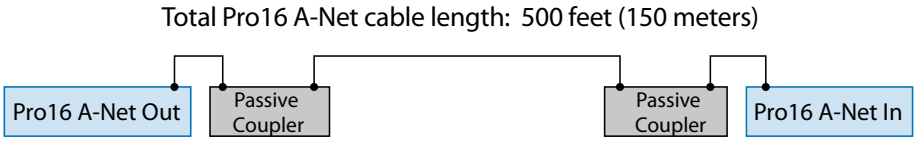
For fixed or permanent installations, you have the option of running Cat-5 cables inside walls and terminating them with readily available wall panel connectors that include the RJ45 jack. (Solid wire is recommended for permanent installations.)

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

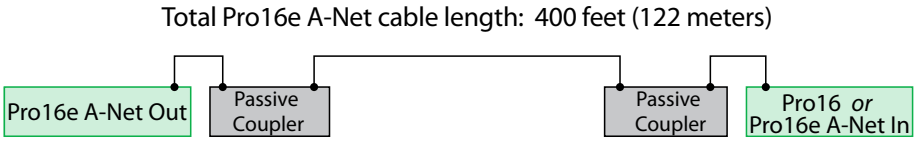
✓ **Note:** When purchasing Category 5e cables, be sure to buy only standard Cat-5e UTP cables, not those sold as crossover cables. A crossover cable is used for file transfer between two computers and is not compatible with your Aviom equipment.

Cable Lengths

For Pro16 applications—connecting one **Pro16** device to another—the Cat-5e cables used with your Aviom products may be up to 500 feet (approximately 150 meters) in length between devices. For example, connecting an AN-16/i-M Mic Input Module to an AN-16/o Output Module is a Pro16-to-Pro16 connection.



When using **Pro16e**—such as the A-Net Out from an AN-16/i v.2 to *any other* Pro16 or Pro16e device—Cat-5e cables may be up to 400 feet (approximately 122 meters) in length between compatible devices due to the larger amount of data being transmitted to accommodate Pro16e's higher channel count.



The maximum cable length specification applies to the total cable length between an **A-Net Out** port on one device and the **A-Net In** port on the next A-Net capable 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 passive devices such as cable couplers or passive wall panel interconnections in use.

Stranded or solid Cat-5e cable may be used; stranded cable is easier to deploy on a stage while solid core cable provides slightly better maximum distance performance. Solid core wire is typically used in permanent instillations in walls and across ceilings.

When using the optional AN-16SBR System Bridge with Pro16 and Pro16e devices, the cable length specification applies to the *total* cable length between the two active A-Net devices being connected with the passive AN-16SBR System Bridge, plus all cables. This is also true when using an inline coupler to extend cable lengths.

Pre-made cables in a variety of lengths and colors are available at most computer outlets. Cables may 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 the maximum cable length performance can be compromised by using inline couplers or other passive connection devices.

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).

Power Supplies

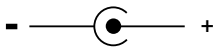
Your Aviom product uses a DC power supply that has a two-prong power cord. The prongs on the power supply are identical, meaning that there is no need to orient the plug in a specific direction in the power outlet. Some products with two-prong power cords have polarized plugs that can only be inserted into an electrical outlet one way.

The power supply that is shipped with your Aviom product is a universal switching type. It is capable of working with voltages from 90 to 240 volts AC. This means that a separate power supply is not needed to use the products with the AC power systems found in most countries. You should always use the power supply that shipped with your product. When travelling, you may need plug adapters to use the power supply with the AC outlet plug shape variations in use throughout the world.

Should you need to replace the power supply that came with your product, we recommend using only a power supply that meets the following specifications.

Type	Switching	
Input Voltage	90-240 volts	50/60Hz 30VA
Output	24Vdc	0.5A
Polarity	Outer = negative; Inner = positive	
Plug Size	2 mm	

Note that polarity of the plug found on the DC power supply needs to match that of the original power supply that came with your Aviom equipment. Aviom products use a center positive power supply. The outer contact is negative, the inner contact is positive.



Power Supply Polarity

Installing in an Equipment Rack

The AN-16/i v.2 Input Module is designed to be installed in a standard 19-inch audio equipment rack. This design is both for easy transportation of the unit and for protection. Each unit takes up one standard rack space (19 inches wide by 1.75 inches high).

The rack ears on each side of the device are designed to support the weight of the AN-16/i v.2 without additional hardware. Each rack ear contains holes for two screws per side. Always support the unit with all four screws.

To rack mount the AN-16/i v.2, 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.

You may want to use 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 Pro16 product directly above or below other rack-mounted devices that produce high levels of heat, such as power amps.

Cleaning and Maintenance Information

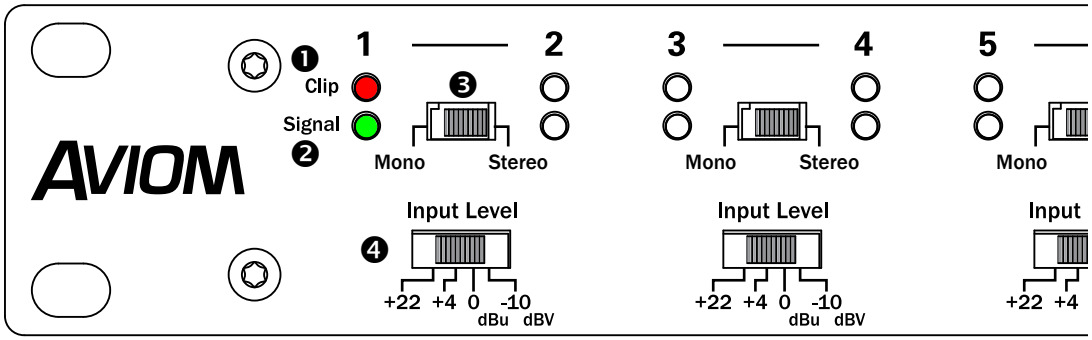
The exterior of your Aviom products should be cleaned with a dry, soft, lint-free cloth. For tougher dirt, you can use a cloth slightly dampened with water or with a mild detergent.

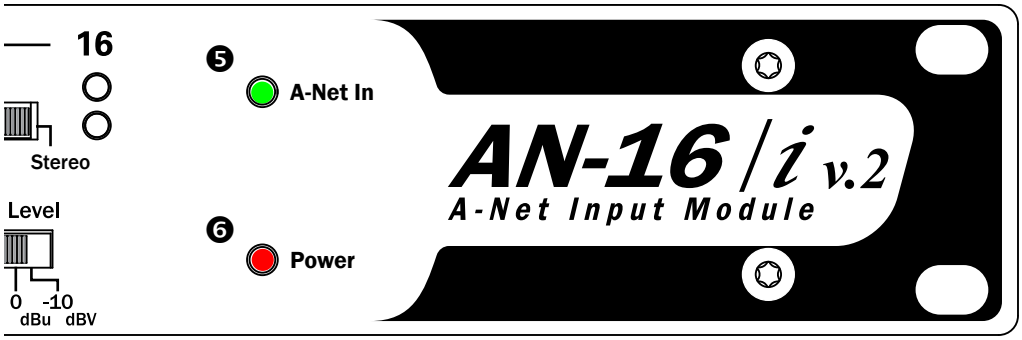
When cleaning your Aviom products, never spray cleaners directly onto the product surfaces. Instead, spray a small amount of the cleaning solution onto a clean cloth first. Then use the dampened cloth to clean the product.

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

AN-16/i v.2 Front Panel

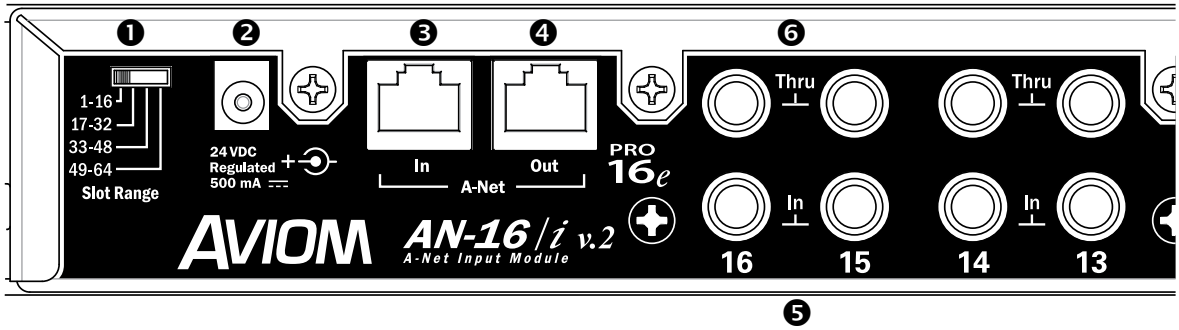
Use the following diagrams to become familiar with the components of the front and rear panels of the AN-16/i v.2 Input Module.





	Function
1	Clip LED, red – Lights when the audio signal is 3dB below full scale (0dB)
2	Signal Present LED, green – Lights to show that an audio signal is present on a channel
3	Stereo Link Switch – In the left position, each channel is mono; in the right position, the channels are linked as a stereo pair
4	Input Level Switch – Selects one of four available operating levels; selectable for each channel pair
5	A-Net In LED, green – Indicates that the AN-16/i v.2 is receiving a valid A-Net signal from another Pro16 device
6	Power LED, red – Indicates that the AN-16/i v.2 is powered on

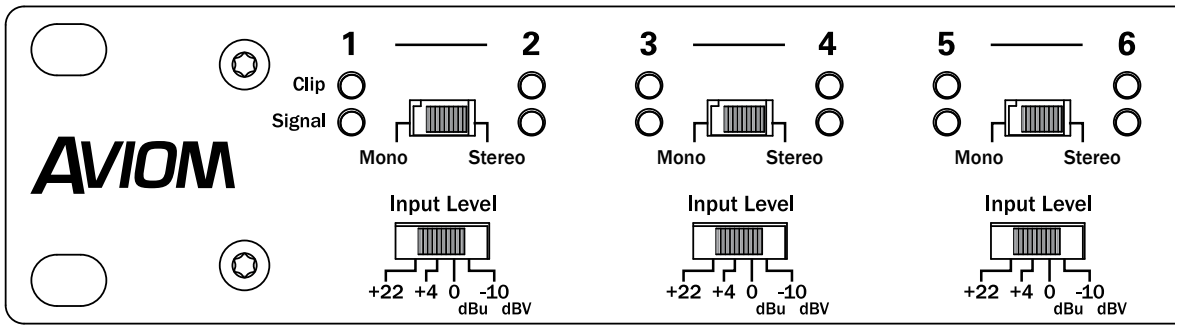
AN-16/i v.2 Rear Panel



	Function
1	Slot Range Switch – Sets the 16-channel network Slot Range into which the unit will transmit its inputs
2	DC Power Jack – Connect the DC power supply here
3	A-Net In Jack – Connect the A-Net Out of another Pro16 or Pro16e device here
4	A-Net Out Jack – Connects to the A-Net In of a Pro16 or Pro16e A-Net compatible device
5	Analog Audio Input – TRS balanced 1/4-inch jack accepts any balanced/unbalanced line-level audio signal
6	Thru Jack – A copy of the balanced/unbalanced analog audio from the Audio In jack

AN-16/i v.2 Features

This section explains the basic layout of your new Aviom product and its functions.



The front panel of the AN-16/i v.2 contains the channel information, Mono/Stereo link switches, Signal Present LEDs, Clip LEDs, A-Net In and Power indicators, and the Input Level switches.

Channel LEDs

The numbered Channels on the AN-16/i v.2 front panel correspond to the sixteen line-level analog audio inputs on its rear panel. They are grouped together in pairs—Channels 1 and 2, Channels 3 and 4, etc. Each channel contains two LEDs, one showing that there is an audio signal present, and another used to indicate that the input to a channel is causing audio clipping. Signal and Clip LEDs appear directly beneath the channel numbers.

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 the AN-16/i v.2 and being converted to A-Net.

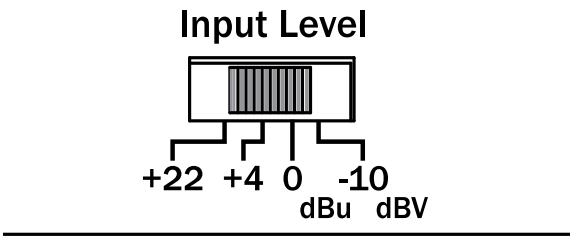
The upper LED is marked **Clip**. It will light if a signal reaches a point that is within 3dB of full scale (0dB). In general, you want to operate the system so that the Clip LED lights only occasionally (the transients of percussive sources will typically peak for a few milliseconds, for example). If the LED is on constantly, you should either lower the level of the source audio coming into the AN-16/i v.2 or try different Input Level settings.

Input Level Switch

The AN-16/i v.2 has been designed to accept a wide range of professional and semi-professional audio levels. There are four Input Level gain settings available. Changes to the input level on the AN-16/i v.2 front panel affect a pair of channels at a time.

The four levels are +22dBu, +4dBu, 0dBu, and -10dBV. To select the proper Input Level setting, choose the Input Level position that most closely matches the maximum output level of the audio gear being connected to the AN-16/i v.2 rear panel TRS jacks.

As a general guideline, try the +22dB setting for the output of professional mixing consoles; use the -10dBV setting for devices such as consumer MP3 devices and CD/DVD players.



The AN-16/i v.2 has four input level options per channel pair.

To maximize the signal-to-noise ratio when setting up your Aviom products it is important to understand how the input and output settings on these products interact. Proper calibration and gain staging with all devices in an audio system is essential. The AN-16/i v.2 Input Module has four input gain range settings: +22dBu, +4dBu, 0dBu, and -10dBV, accommodating a wide range of input signal sources. Choose the setting that allows maximum input signal level without clipping.

The AN-16/i v.2 has a maximum input level of +22dBu. Signal levels above +22dBu will clip the input stage of the device and cause digital distortion.

The selected input gain setting on the AN-16/i v.2 front panel changes the headroom available for the input signal, but remember that the maximum input level will always be +22dBu regardless of the selection. See the table below.

AN-16/i v.2 Input Level Setting	Clip Point
-10dBV	+4dBV
0dBu	+14dBu
+4dBu	+18dBu
+22dBu	+22dBu

With the input gain switch set to 0dBu, for example, input signals ranging from -∞ to +14dBu in level can be used without clipping. A +14dBu signal level will be transmitted to all line-level output modules as a full-code signal. Signals above +14dBu will clip the input stage of the AN-16/i v.2, and that clipped audio data will be sent downstream to all Pro16 output modules and Personal Mixers. There are two options if a signal level above +14dBu needs to be connected to the AN-16/i v.2 input: attenuate (lower) the output level of the device feeding the AN-16/i v.2 channel input to eliminate clipping, or choose another input setting. In this situation using the +4dBu setting provides more headroom, allowing a maximum signal level of +18dBu to be used.

Check the specifications of your audio gear if you are unsure about its maximum output level. Although you won't harm the AN-16/i v.2 or your audio devices by using an incorrect level setting, you do want to avoid distorting the audio that passes through the system.

Mono/Stereo Link Switch

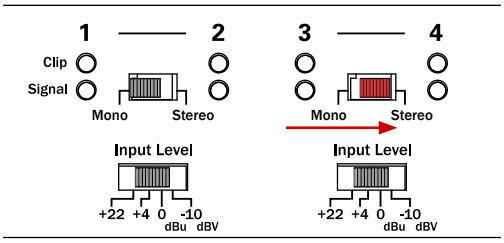
The AN-16/i v.2 Input Module provides an easy solution for stereo input sources such as mixer sub-groups, keyboards, DSP effects device outputs, computers, and MP3 or CD/DVD player outputs when incorporating the AN-16/i v.2 into a personal mixing system.

There are eight stereo link switches on the front panel of the AN-16/i v.2. They can be used in any combination, as your needs require. The Mono/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 Mono/Stereo link switch is used to turn a pair of adjacent channels into a stereo channel that can be controlled as a single source on the Pro16 series of Personal Mixers, including the A360 and A320 Personal Mixers. A-16II and A-16R Personal Mixers treat a stereo pair as adjacent linked channels. The A360 nd A320 Personal Mixers can use stereo channels in two ways: in Pro16 mode where adjacent channels are treated as they are on the A-16II and A-16R, or in Default or Custom mode where the incoming stereo pair is assigned to a single mix channel button. For more information on using stereo sources with the A360 and A320, see page 32.

When using the AN-16/i v.2 Input Module with Pro16 output modules to create a digital snake or audio distribution network, the setting of the Mono/Stereo switch will have no effect.

The default setting, Mono, with the switch to the left, allows independent control of each input channel from Personal Mixers connected to the system. To link channels together as a stereo input, move the Mono/Stereo link switch to the right to the **STEREO** position. Moving the switch to the **STEREO** position causes all Personal Mixers connected to the system to instantly update their channel status (except when an A360 Personal Mixer is set for Custom mode).



Channels 1 and 2 are mono; channels 3-4 are stereo linked.

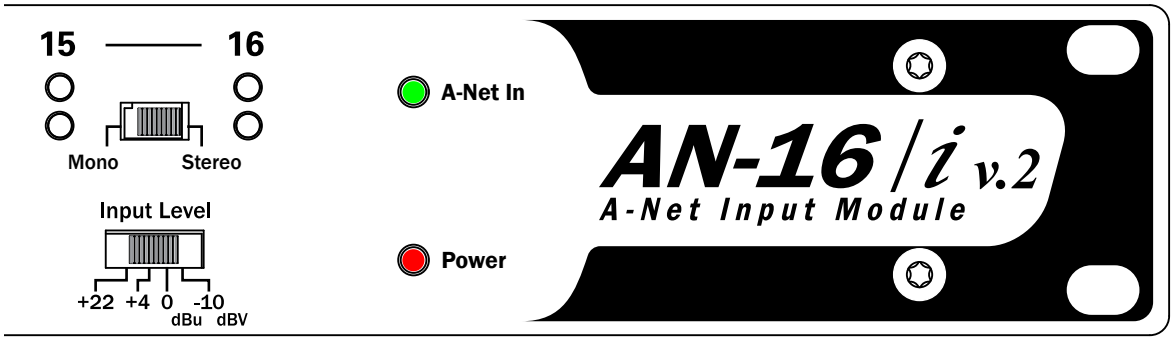
Using Stereo Links

Some things to keep in mind about linked channels:

- The position of the Mono/Stereo link switch does not affect the audio in Pro16 output modules such as the AN-16/o v.4.
- Linking channels affects all Personal Mixers connected to the system.
- Channels cannot be unlinked at the Personal Mixer.
- 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 v.2 front panel.
- Changes to the Mono/Stereo link status can be made on the fly, with audio running through the system; all Personal Mixers update immediately (except A360 Personal Mixers in Custom mode).
- The Stereo link status is not stored when you save a mix preset on the A360, A320, A-16II, or A-16R Personal Mixers. Links are created at the input device.
- Changing the channel link status will affect Groups you have created on Personal Mixers in some cases.
- Audio may change as a result of changes made to the stereo link status, which may be evident on the A360 Personal Mixer which has more per-channel controls. When changing from mono to stereo, for example, the Pan setting will change from its current state to a default full stereo spread. Audio settings for the right channel of the stereo pair—channel volume, reverb, and tone—are inherited from the left channel.

Power and A-Net LEDs

The right side of the AN-16/i v.2 Input Module contains the **Power** LED. When the AN-16/i v.2 is powered up, a valid A-Net Out signal is always being generated. The **A-Net In** LED lights whenever a valid A-Net signal from a compatible Pro16 device is connected to the rear-panel **A-Net In** port.

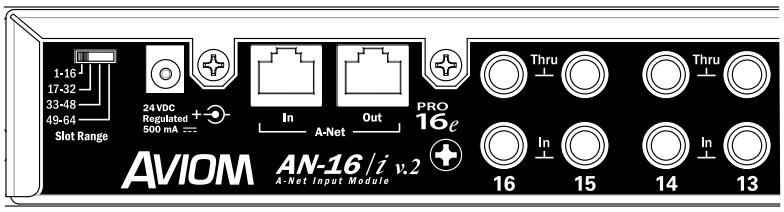


The A-Net In LED lights only when another A-Net device is connected to the A-Net In port on the rear panel.

AN-16/i v.2 Rear Panel

On the rear of the AN-16/i v.2 Input Module you will find the DC power connector, A-Net connections, Slot Range switch, sixteen balanced TRS analog audio inputs, and the sixteen audio Thru jacks.

Signal routing into and out of the AN-16/i v.2 Input Module has been designed to be extremely flexible, allowing the AN-16/i v.2 to integrate into virtually any audio environment.



AN-16/i v.2 rear panel connections

Power Connector

The AN-16/i v.2 Input Module comes with a switching-type power supply. This type of power supply can be used with a wide range of AC wall current outputs. This means that 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.)

A-Net Connections

Two A-Net connections appear on the rear panel of the AN-16/i v.2; they are marked **A-Net In** and **A-Net Out**.

A-Net In

The **A-Net In** port accepts the Pro16 or Pro16e A-Net data from another A-Net compatible device. Any A-Net data connected to this port will be merged with the digital data generated by the AN-16/i v.2 and output as a single Pro16e data stream intended for use with the A360 Personal Mixer. It is important to set the Slot Range switch to the correct position on each AN-16/i v.2 in a system when making use of the data merging capabilities provided by the A-Net In port. When creating a system that has only 16 or fewer inputs, the A-Net In port will not be used; in this case the Slot Range switch must be set to **1-16**.

Use any standard Cat-5e cable for connections between devices. Remember that the maximum cable length between devices is 400 feet (122 meters).

See page 31 for additional information about setting up Pro16e personal mixing systems with the A320 and/or A360 Personal Mixer.

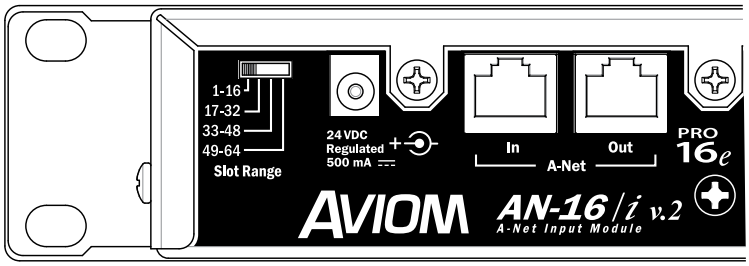
A-Net Out

The **A-Net Out** port sends the merged Pro16e A-Net data (up to 64 channels total) from the AN-16/i v.2 to an A-Net compatible device such as A-Net Distributors, Personal Mixers, or AN-16/o v.4 Output Module. See page 26 for information about configuring personal mixing systems; see page 38 for digital snake setup.

When a proper A-Net connection between the AN-16/i v.2 Input Module and a Pro16 Personal Mixer or output module exists, the A-Net LED on the receiving device will light.

Slot Range Switch

The enhanced version of Pro16 A-Net, Pro16e, allows up to 64 channels of audio data to be made available to A360 and/or A320 Personal Mixers in a single data stream. The A320 Personal Mixer can use the first 32 network slots and will ignore inputs above 33. Each AN-16/i v.2 in a system may be set to provide one of four banks of channels: 1-16, 17-32, 33-48, or 49-64. The Slot Range switch on the AN-16/i v.2 determines which bank of channels each device's TRS balanced inputs will be assigned to as the data streams are merged.



The Slot Range switch has four bank settings.

For a 16-channel system set the switch to **1-16**; this setting is compatible with A360, A320, A-16II, and A-16R Personal Mixers and the AN-16/o v.4 and AV-P2 Output Modules.

✓ **Note:** Pro16 devices, including A-16II and A-16R Personal Mixers, and the AN-16/o v.4 and AV-P2 Output Modules cannot use any channel data beyond the 1-16 range.

For Pro16e personal mixing systems of 32 channels and above, each AN-16/i v.2 in a system must be set to a unique Slot Range. Set the first AN-16/i v.2 to Slot Range **1-16**. Connect its **A-Net Out** port to the **A-Net In** port on the second AN-16/i v.2. Set the Slot Range on this AN-16/i v.2 to **17-32**. The A-Net Out of this AN-16/i v.2 now provides a 32-channel Pro16e A-Net Stream.

The following table shows how the daisy chain connection of one through four AN-16/i v.2 Input Modules can create a 64-channel Pro16e stream.

AN-16/i v.2	Set its Slot Range to:	A-Net Out is:
1 *	1-16	16 channels
2	17-32	32 channels
3	33-48	48 channels
4	49-64	64 channels

** A Pro16 device—original AN-16/i, AN-16/i-M, Y1 A-Net card, or a third-party console card—may be substituted for the first AN-16/i v.2; a legacy device automatically defaults to Slot Range 1-16.*

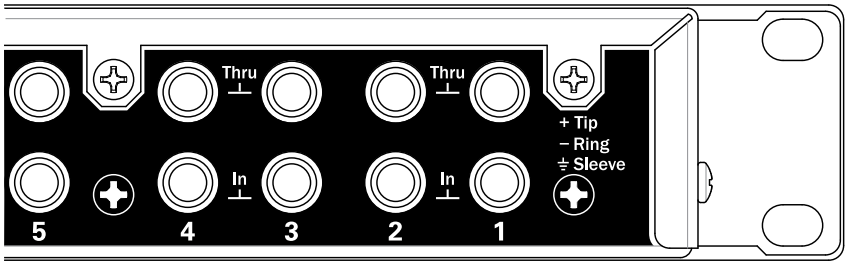
Connect up to four AN-16/i v.2 Input modules in this manner. Connect the **A-Net Out** of the final AN-16/i v.2 in the device chain to an A-Net Distributor or A360 Personal Mixer. The order in which the AN-16/i v.2 Input Modules are connected does not matter, but each *must* be set to a unique Slot Range. See page 35 for additional Pro16e system setup details. If two devices are set to the same slot range the last device in the input module chain's audio will be heard.

Channel Input Jacks

The rear panel of the AN-16/i v.2 Input Module contains sixteen analog input jacks (labeled **In**). These jacks can accept balanced (TRS) or unbalanced (TS) signals on ¼-inch plugs.

Balanced signals are found on many professional audio devices. The ¼-inch connector used for balanced audio connections on the AN-16/i v.2 has three conductors: the tip, the ring, and the sleeve (sometimes referred to as TRS). Balanced wiring is ideal for keeping noise out of the audio signal from sources such as radio frequency interference (sometimes called "RF").

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



Input and Thru jacks are TRS balanced.

Channel Thru Jacks

The sixteen balanced audio **Thru** jacks on the AN-16/i v.2 provide the user with an exact copy of the signal plugged into the **In** jack just below it. This can be used as a way to insert the AN-16/i v.2 Input Module into a signal path without giving up audio patching flexibility or for creating multi-zone personal mixing systems.

See page 24 for information about configuring a system with and without effects processing; see page 30 to learn how to set up a multi-zone personal mixing system.

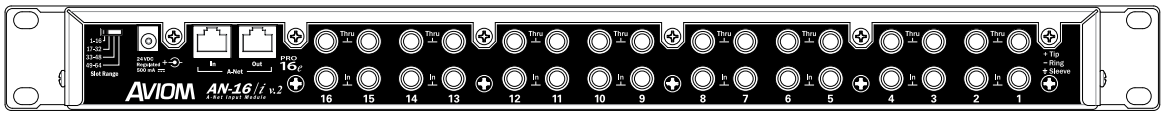
Connecting Audio

The are many ways to get audio into the AN-16/i v.2 Input Module for processing. Depending on your application— stage, studio, 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.

Connections on the AN-16/i v.2 Rear Panel

There are two rows of balanced TRS connectors marked **In** and **Thru** on the rear of the AN-16/i v.2 Input Module.

The audio in connections on the AN-16/i v.2 accept balanced or unbalanced ¼-inch cables. The AN-16/i v.2 Input Module can accept a wide variety of signal levels; gain settings are changed on the front panel of the AN-16/i v.2 per channel pair.



AN-16/i v.2 rear panel connections

The audio design of the AN-16/i v.2 allows you to connect it at virtually any point in your existing audio system. The AN-16/i v.2 can accept audio coming from:

- Mixing console main mix outputs
- Mixing console direct outputs
- Mixing console insert sends only
- Mixing console insert send and return loops
- Mixing console group or bus outputs
- Line-level output from mic preamps
- Line-level outputs from keyboards and other music devices
- MP3, CD, or DVD players
- Digital Audio Workstations (DAWs)
- Computer sound outputs
- DSP effects processors
- Video devices, cameras, etc.

The built-in audio Thru connections allow source signals to be connected to the AN-16/i v.2 Input Module first before being connected to a mixing console to allow maximum patching flexibility.

Connecting a Mixing Console to the AN-16/i v.2

Almost any line-level audio output can be used with the AN-16/i v.2. Depending on the topology of your particular mixing console (hardware or virtual as part of a DAW), 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 mixing console. That is, each channel on the console has its own dedicated direct output jack that sends an exact copy of the audio signal present in each channel out of the console without interrupting the signal being sent to the main part of the console.

If your mixing console has direct outputs available, a cable from each channel that you want to be part of the personal mixing system or audio network is connected to one of the AN-16/i v.2 inputs. A maximum of sixteen direct outputs can be plugged into a single AN-16/i v.2 Input Module.

✓ **Note:** For best results, set the direct output to be pre-fader rather than post-fader so that changes an engineer makes in the process of mixing do not affect the signal levels being sent to the AN-16/i v.2.

Insert Send/Return Points

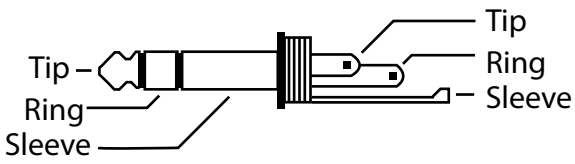
The insert loop on an audio mixing console is typically used as a means of extending the processing capabilities of the mixing console on a channel-by-channel basis. An effects device such as a compressor can be added to the channel so that only that specific channel is affected by the processing.

An insert on a mixing console consists of a *Send* and a *Return*. The Send is used to get the channel's audio out of the console and into the effects processor. The processed signal coming from the effects device goes back to the console via the Return path.

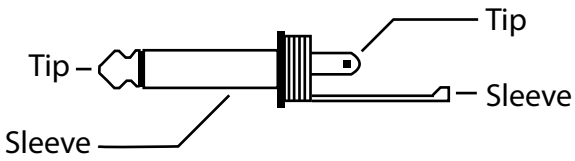
The physical jack layout of an effect Send/Return loop on a console varies depending on the model and manufacturer. Two types are common: a single TRS jack, and discrete Send and Return jacks.

TRS Inserts

Some mixing consoles use a single jack to perform both send and return functions. In this case the jack would use tip-ring-sleeve (TRS) wiring, with one of the signal wires performing the Send function, the other being used for the Return. Both Send and Return share the common ground wire. For TRS inserts, it is common to use a "Y" cable, one that has a TRS plug on one end and then a split into two mono tip-sleeve (TS) cables on the other.

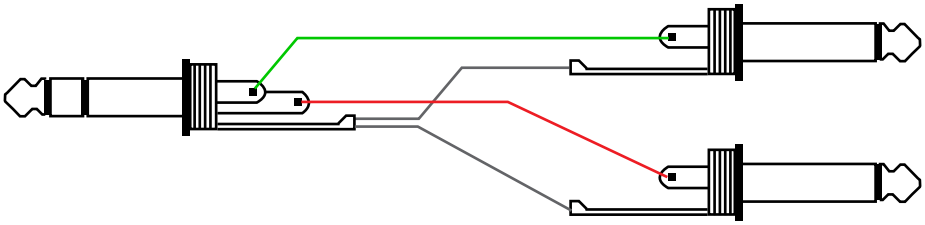


Tip Ring Sleeve (TRS) plug



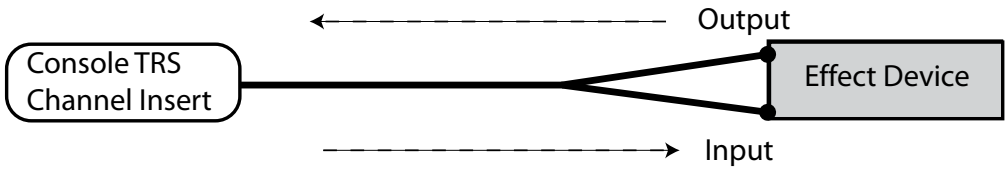
Tip Sleeve (TS) plug

A typical insert cable is wired as seen below:



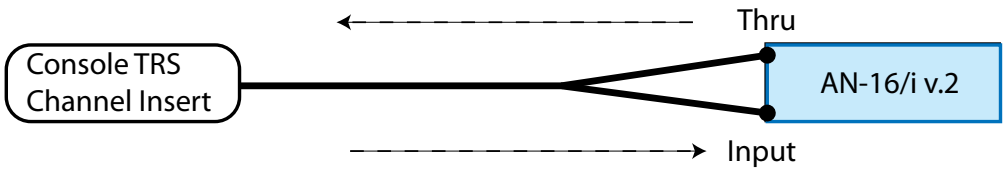
Insert cable wiring

Using a TRS insert, the DSP effects device would have the insert Send cable plugged into its input and the insert Return cable plugged into its output. This wiring completes the signal loop without interrupting the audio being played though the console.



Audio flows from the console insert point into the effect device and then back to the console using a Y-cable.

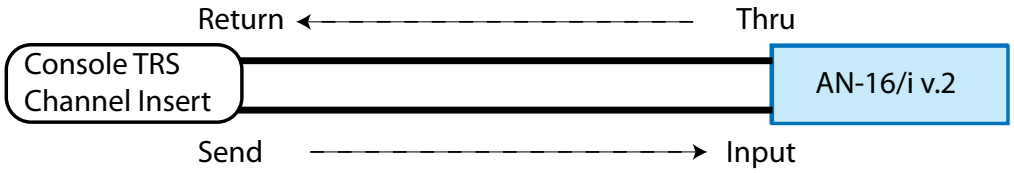
To use the AN-16/i v.2 with this insert layout, both the **In** and **Thru** jacks on the AN-16/i v.2 are used. The main console's Insert Send should be plugged into the **In** jack on the AN-16/i. v.2 The **Thru** jack on the AN-16/i v.2 is used to return the signal to the console, completing the audio loop. In this case the AN-16/i v.2 Input Module acts like an effects device, but it has no audible effect and does not change the audio signal in any way.



Audio flows from the TRS console insert point into the AN-16/i v.2 and then back to the console.

Discrete Insert Send and Return Jacks

If a mixing console uses separate jacks for its insert Send and Return functions, the cable connections are much more obvious. The Send from the insert point on the console is connected to the AN-16/i v.2 **In** jack. A cable from the **Thru** jack on the AN-16/i v.2 is connected to the **Return** jack on the console to complete the loop. Both balanced and unbalanced versions of this wiring exist on mixing consoles. Consult your mixing console's documentation for additional information; use balanced cables if the option exists.



Audio flows from the Send jack of the console insert point into the AN-16/i v.2 and then back into the console via the Insert Return jack.

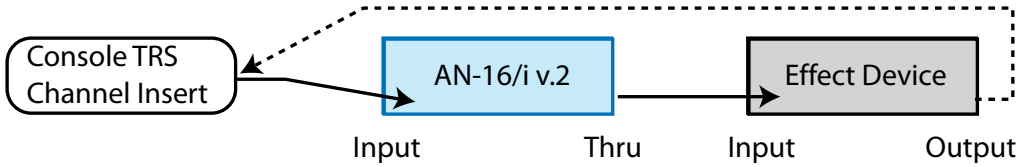
Adding Effects

Console insert points offer a convenient way to patch audio into the AN-16/i v.2 Input Module. But, there are times when the insert send/return points will be needed for use with a DSP effect processor such as a compressor. There are some optional ways of both getting audio into the AN-16/i v.2 and patching in effects devices.

A-Net Audio Without the Effect

- Connect the console insert Send to an input on the AN-16/i v.2.
- Connect the AN-16/i v.2 **Thru** jack from the same channel as above to the input of the effect processor.
- Connect the output of the effect processor to the console's insert Return jack.

The Send/Return loop on the console is complete. The audio sent thru the Aviom input module is *not* processed by the effect device.



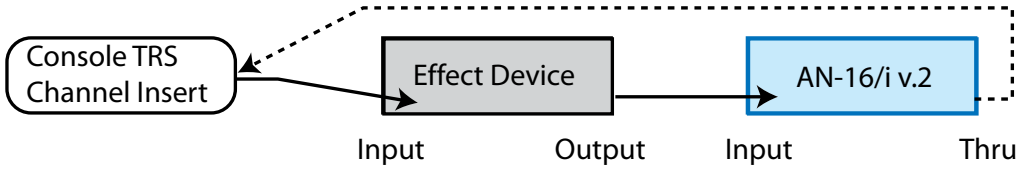
Audio flows from the console insert point into the AN-16/i, then into the effect device, and returns to the console.

A patch bay may simplify this patching.

A-Net Audio With the Effect

- Connect the console insert Send to the input on the effect device.
- Connect the output of the effect processor to an input on the AN-16/i v.2.
- Connect the Thru jack from the same channel as above to the console's insert Return.

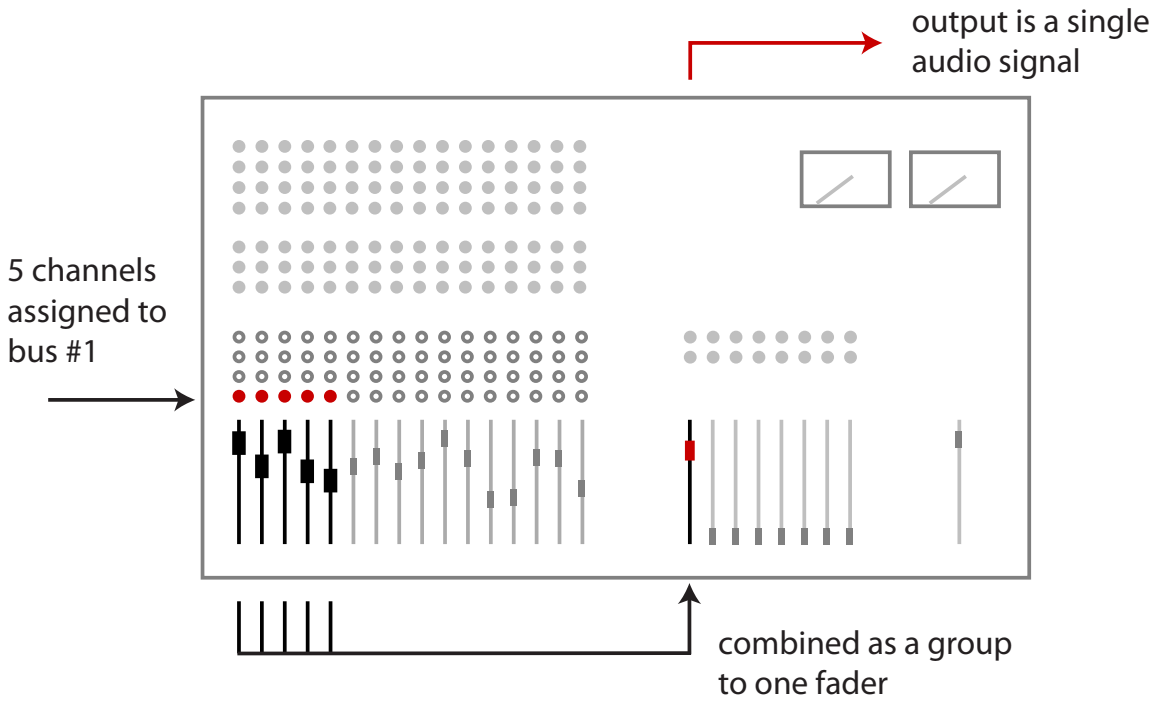
Audio passing through the Aviom input module is heard *with* the effect processing.



Audio flows from the console insert point into the effect device, then into the AN-16/i, and returns to the console.

Submixing

When creating a personal mixing system it is important to consider exactly what content should be sent to the performers. Most performers will not need every element of a drum mix, for example. Instead, providing the kick, snare and a stereo mix of the remaining drum kit elements can provide a better monitoring experience. After all, the performer's job is to play and sing, not engineer a mix. An overly complex set of channels actually defeats some of the benefits of a user-controlled monitor mix.



Five channels are combined and can be output as a single channel of audio.

As an example, all the channels of the mixing console devoted to drums can be assigned to a bus. The relative mix of all the components of the drum kit 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. Patching the output of that bus into the AN-16/i v.2 allows the performers to hear the submix on a single channel of a personal mixing system and control its level in their mix.

Stereo Submix

A stereo submix with panning can be created by using a pair bus outputs. Stereo submixes preserve the left-right positioning information for a group of related channels (drums, singers or horns, for example) and can more accurately reproduce the spatial relationships between the elements of a live mix. This allows the performers to make a mix that more closely replicates the performing ensemble's physical layout while at the same time allowing them to monitor at a lower listening level because each element can be heard more clearly.

Signals for the stereo group 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 source audio is then set by using the mixing

console's Pan knobs. To get an element of the group into only the right side of the submix, its pan knob should be turned to the fully clockwise position. The left/right outputs of the submix get connected to two input channels on the AN-16/i v.2 where the channels can be linked as a stereo pair; performers mix and monitor the submix in stereo on their Personal Mixers.

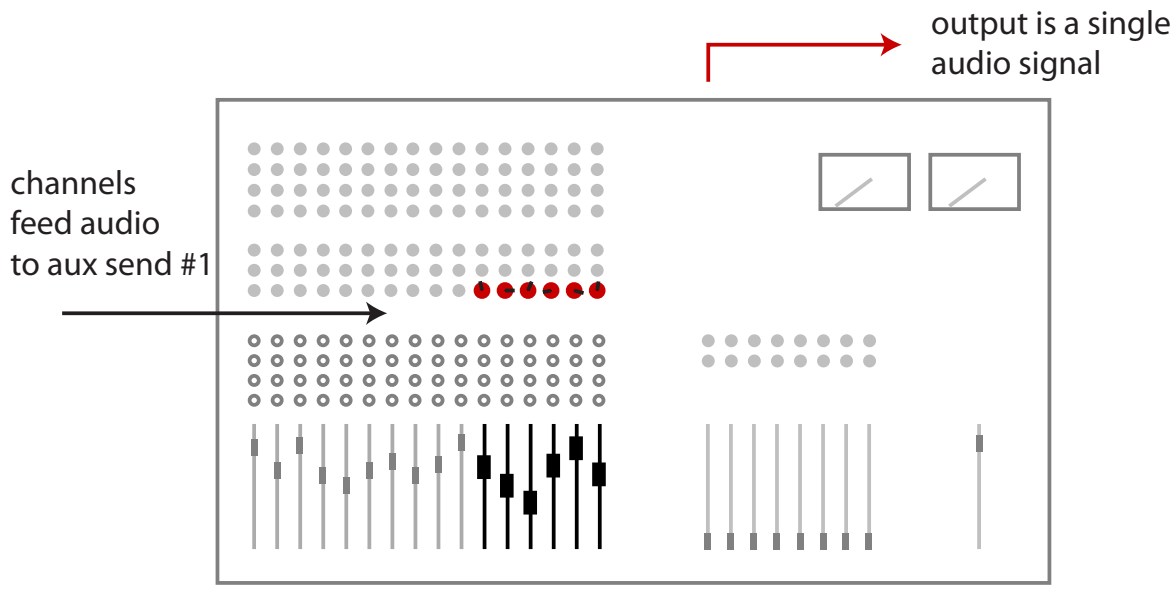
Aux Sends (Effects Sends)

An Auxiliary Send (also called an Aux Send or effects send) is typically used on mixing console to send the signal from one or more channels 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 mixing console; 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 line-level audio sources with the AN-16/i v.2 Input Module.

The method for using an Aux Send to create a source for 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. Choose pre-fader if the option exists so that an engineer's changes to a channel's volume will not change the level going into a personal mixing system. The number of independent audio signals that can be sent to the AN-16/i v.2 Input Module via Aux Sends will depend upon the design of the mixing console you are using.

The following diagram shows multiple mixing console channels sending various amounts of signal to one aux send; the output of the aux send is connected to one input on the AN-16/i v.2 Input Module.



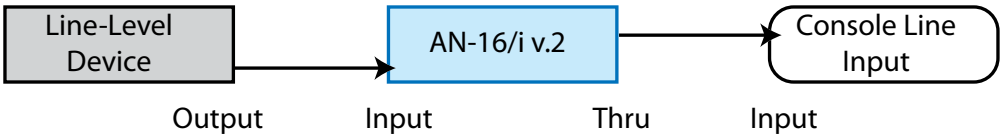
An pre-fader Aux Send allows each channel to be routed to an output independent of the channel fader level.

Line-level Devices

In addition to connecting a traditional mixing console, there are numerous other audio sources that can be used with the AN-16/i v.2. There is no requirement that your audio sources be connected to a mixing console first.

Using some creative patching, you'll find numerous ways to get audio into a personal mixing or audio distribution system. Here are a few examples:

- Connect the stereo outputs of multiple CD/DVD/MP3 players to inputs on the AN-16/i v.2 Input Module to distribute a variety of music programs to multiple rooms. No mixing console is needed.
- Patch a drum machine output, metronome, or line output from a computer or DAW into the AN-16/i v.2 to provide a click track for musicians.
- Connect multiple keyboards directly to the AN-16/i v.2. Then patch the Thru jacks on the AN-16/i v.2 to the main mixing console inputs.
- Connect outputs from stereo guitar processors or amp simulators.
- Virtual drums can be connected directly into the AN-16/i v.2 Input Module before being connected to a mixing console.



A line-level device is connected to the input module before being connected to the console's line input.

Patching devices into the AN-16/i v.2 *before* they get plugged into the mixing console can save configurable console outputs that may be needed for other purposes.

Configuring Monitor Systems

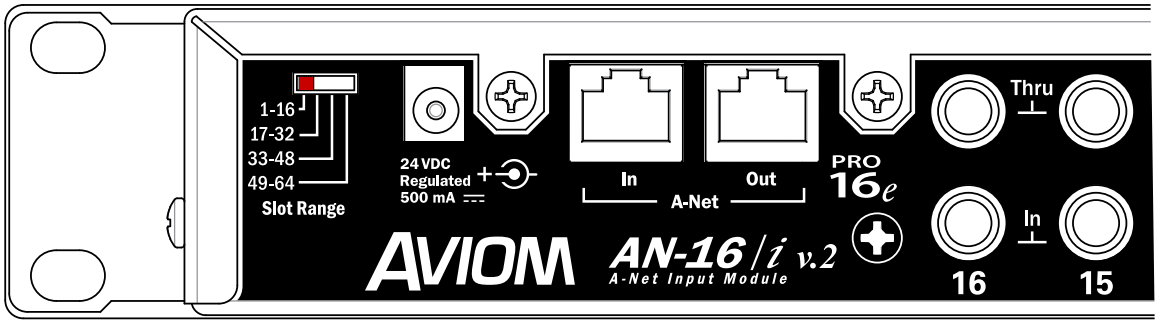
Aviom's A360, A320, A-16II, and A-16R Personal Mixers are powerful tools designed to improve the monitoring experience for performers on stage and in the studio. The A-16II and A-16R use the Pro16 version of A-Net and support a maximum of 16 channels. The A360 and A320 Personal Mixers are compatible with the legacy Pro16 version of A-Net and also supports the higher channel count enhanced version of A-Net called Pro16e, which is capable of creating a network pool of up to 64 total channels that can be used to deliver customized monitor mix content to a performer on a per-mixer basis.

Pro16 Personal Mixing Systems

When creating a simple 16-channel personal mixing system that will be used with A360, A320, A-16II and/or A-16R Personal Mixers (in any combination), only one AN-16/i v.2 Input Module is required. Up to sixteen channels of audio content are connected to the balanced TRS line-level inputs of the AN-16/i v.2, which digitizes the audio and turns it into an A-Net stream for distribution to the Personal Mixers.

Rear Panel Setup

On the rear panel of the AN-16/i v.2 set the **Slot Range** switch to the left, to the position marked **1-16**. This assigns the incoming audio signals to the first sixteen slots of the A-Net stream. For personal mixing systems with 16 or fewer channels this is the only setting that should be used. Slot Range switch settings of **17-32**, **33-48**, and **49-64** are ignored by the A-16II and A-16R Personal Mixers as well as the AN-16/o v.4 and AV-P2 Output Modules. The A320 ignores any network inputs from 33-64.

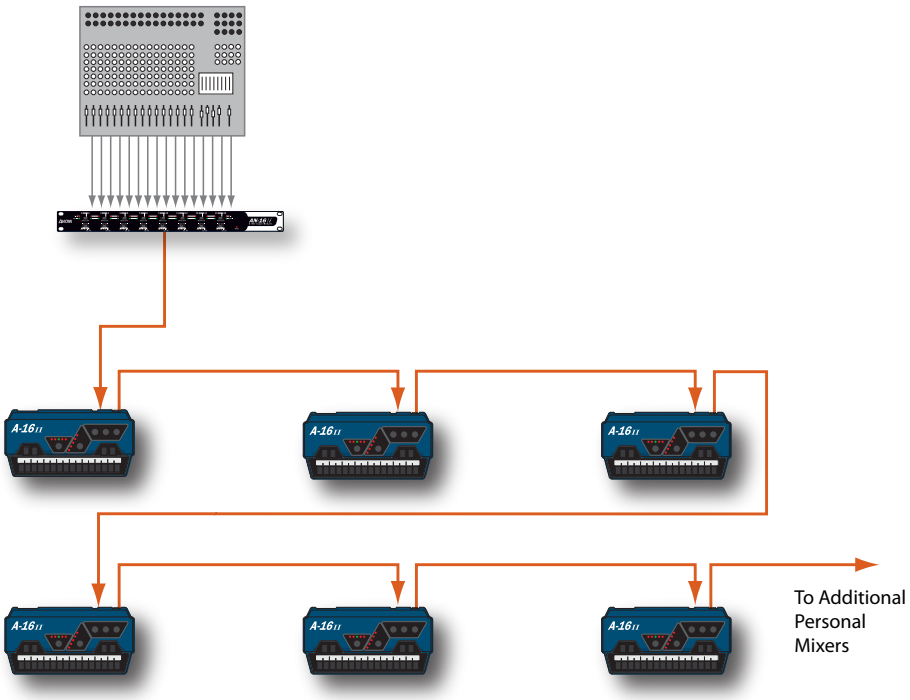


A 16-channel application requires the Slot Range switch to be set to the 1-16 position.

Connect the audio sources to the balanced TRS audio inputs 1 through 16 as needed. The input sources will appear on the Personal Mixers in the same order.

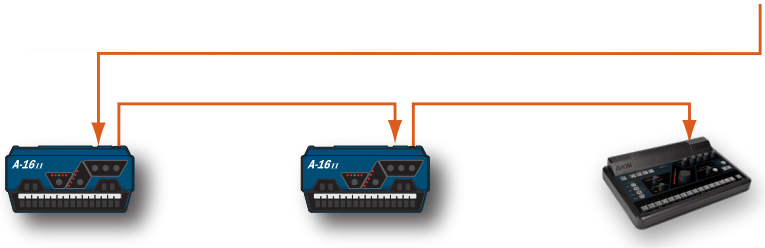
Daisy Chain Personal Mixing System Connections

The digital output from the AN-16/i v.2 **A-Net Out** jack may be connected directly to an A-16II or A-16R Personal Mixer with a Cat-5e UTP (or better) cable to start a personal mixing system. Personal Mixers connected in this manner need to be daisy chained, connecting the **A-Net Out** of the first Personal Mixer to **A-Net In** on the next and so on. There is no practical limit to the number of Personal Mixers that can be connected in this manner. Any combination of the A-16II and A-16R may be used.



A personal mixing system with six A-16II Personal Mixers connected in a daisy chain.

One A360 Personal Mixer may be used in a daisy chain personal mixing system, but because the A360 has only one A-Net connection, it may be used in a daisy chain only if it is placed *last* in the chain. The use of multiple A360 Personal Mixers requires an A-Net Distributor for parallel connections.



One A360 may be used as the last device in a daisy chain.

An A360 Personal Mixer used as the last device in a daisy chain system will require the optional PS-120 Power Supply. The A320 Personal Mixer cannot be used in a daisy chain system because it does not support an external power supply.

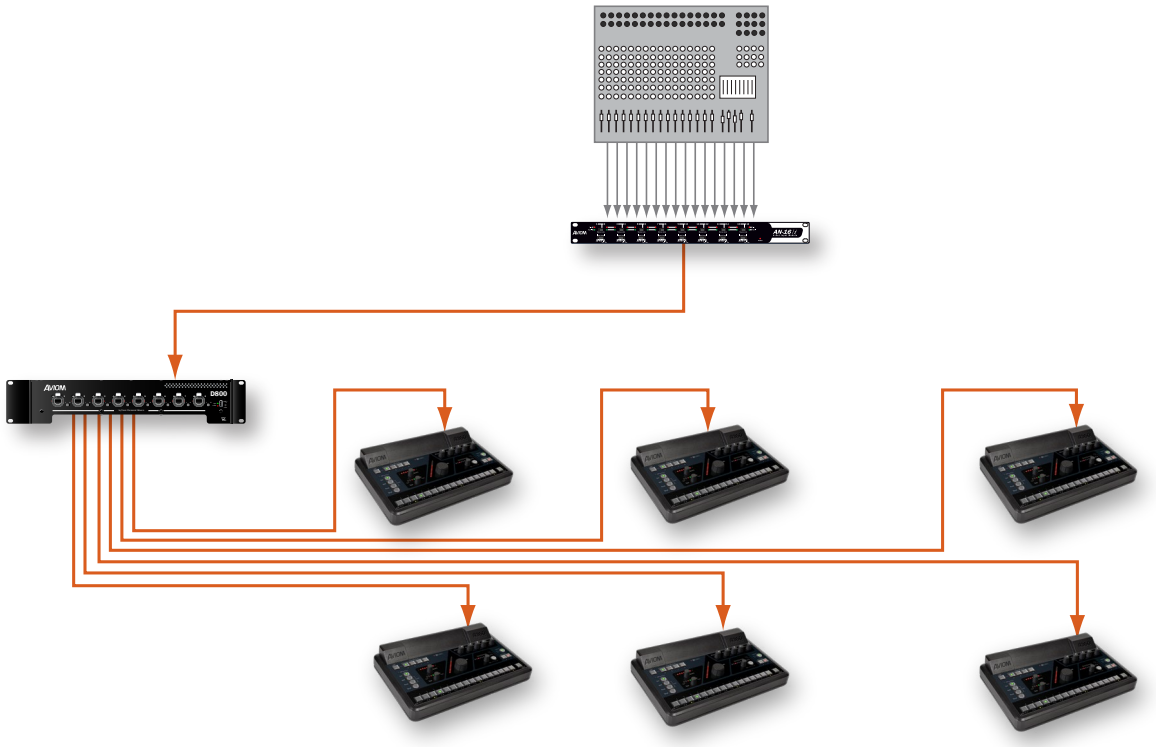
Using an A-Net Distributor

The digital A-Net output from the AN-16/i v.2 may be connected to an A-Net Distributor such as the D800, D800-Dante, D400, D400-Dante, A-16D or A-16D Pro to allow Personal Mixers to be connected in parallel while at the same time being powered over the Cat-5 cable. Using an A-Net Distributor simplifies setup, eliminates the need for local DC power supplies for the Personal Mixers, and cleans up the appearance on stage and in the recording studio.

To use an A-Net Distributor with a personal mixing system:

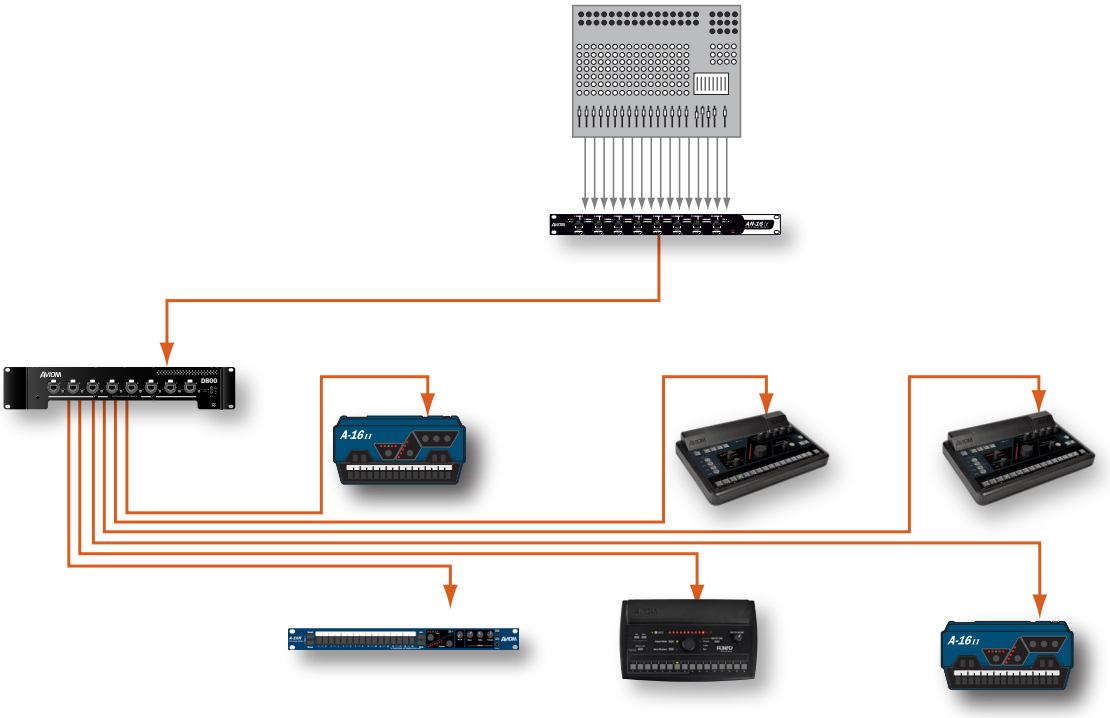
1. Connect a Cat-5 cable from the **A-Net Out** on a AN-16/i v.2 to the **A-Net In** of an A-Net Distributor.
2. From the A-Net Distributor, connect Cat-5 cables from any of its eight parallel A-Net outputs to the **A-Net In** port on a Personal Mixer.

The Personal Mixers will not need local DC power supplies when connected in this manner.



A personal mixing system with six A320 Personal Mixers connected in parallel with a D800 A-Net Distributor.

When using an A-Net Distributor with a Pro16 personal mixing system, any combination of A360, A320 , A-16II, and A-16R Personal Mixers may be used.



The A-Net Distributor can power the A360, A320, A-16II, or A-16R Personal Mixers.

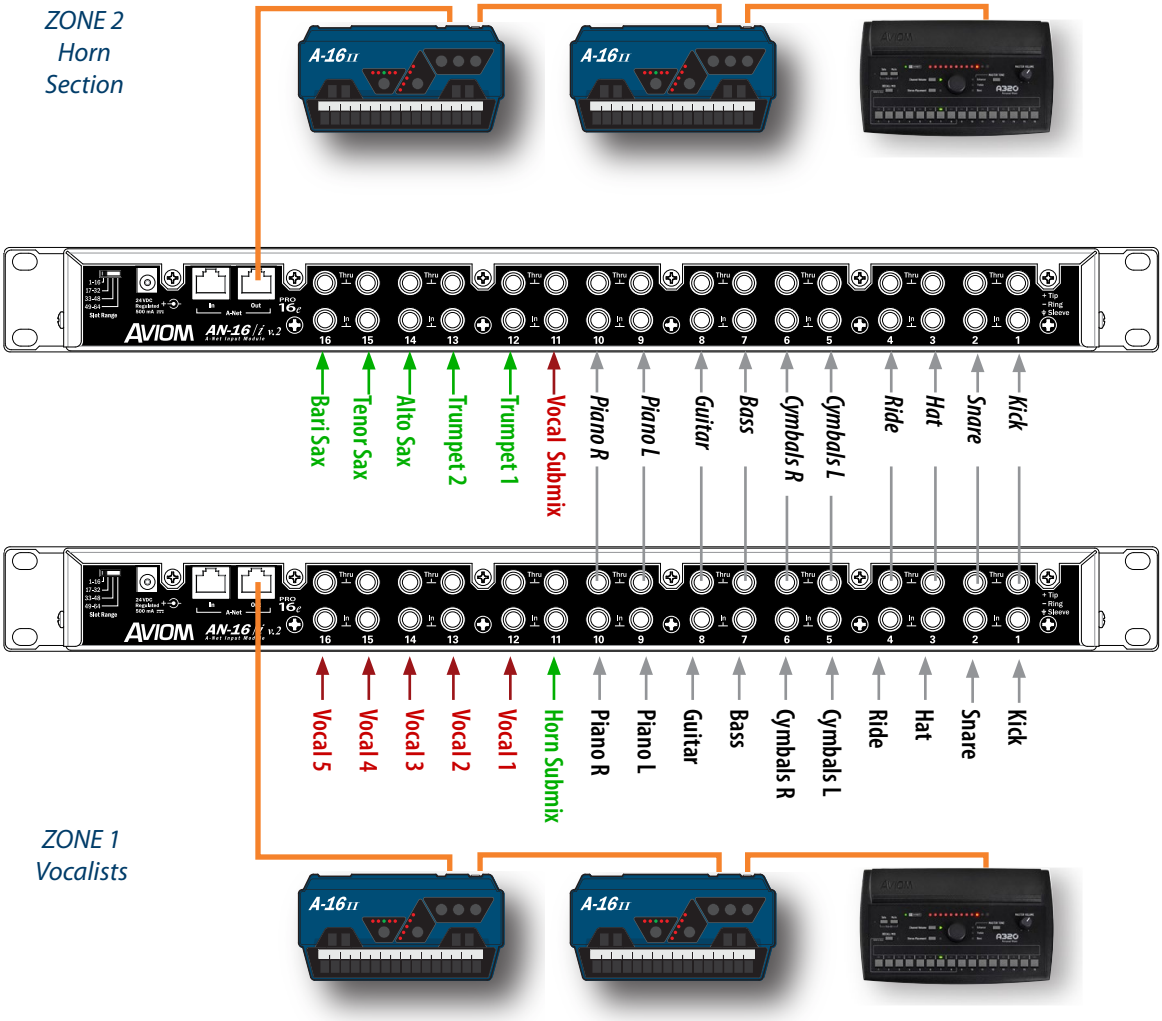
A personal mixing system using an A-Net Distributor can be expanded by adding more A-Net Distributors. Simply connect any available **A-Net Out** port to **A-Net In** on the new distributor.

Multi-Zone 16-Channel Monitor Systems

Creating a personal mixing system with two or more mix zones is a simple way to provide customized monitor content to the various parts of an ensemble using A-16II and A-16R Personal Mixers. For example, take an ensemble that has five singers plus a five-piece horn section. The singers want to have each voice appear on a separate channel of a Personal Mixer and would prefer a stereo submix of the horns on a pair of channels. The horn players want the opposite; they want each horn on its own channel and a stereo submix of the singers. The remaining elements—guitar, piano, bass, and drums—are common to each mix. A multi-zone system makes that possible.

All that's required to create a multi-zone personal mixing system is one more input module. The **THRU** jacks on each AN-16/i v.2 allow channels common to both mix zones to be patched from the first input module into a second.

In the example below, the first ten channels are common to each zone; those inputs are connected via the **THRU** jacks. The last six channels on each AN-16/i v.2 in each zone are unique.

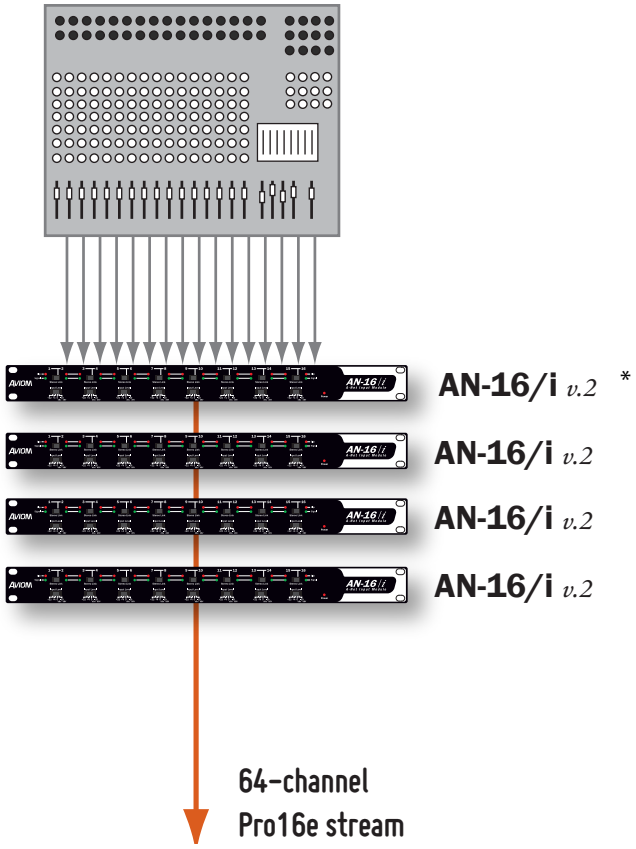


Patching for a typical multi-zone personal mixing system requires two input modules.

Higher Channel Count Personal Mixing Systems

The Pro16e version of A-Net offers increased channel capacity and routing flexibility, allowing more stereo channels to be delivered to performers for a more realistic monitoring experience.

Two or more AN-16/i v.2 Input Modules may be used to create a personal mixing system of up to 64 input sources for use with A360 Personal Mixers. The Pro16e A-Net stream distributed to the A360 Personal Mixers contains all 64 channels and each A360 Personal Mixer may be set to use a unique set of channels chosen from that pool of data. A320 Personal Mixers can make use of the first 32 network slots and will ignore input channels 33-64. A-16II and A-16R Personal Mixers may also be used, but remember that these devices are restricted to using the first 16 network channels.



Four AN-16/i v.2 Input Modules can provide up to 64 audio sources for A360 Personal Mixers to select from.

When using multiple input modules in this manner, each provides one 16-channel bank of content to the network. The Slot Range switches on the rear panel of the AN-16/i v.2 control the bank assignment.

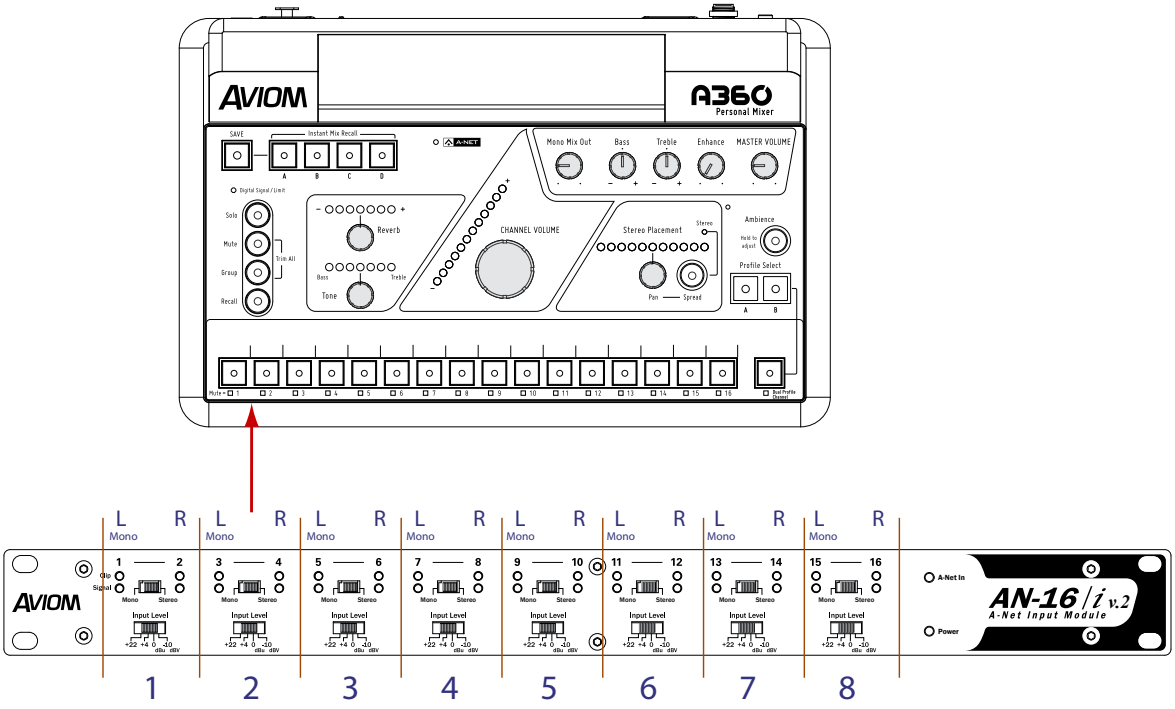
** A Pro16 device—original AN-16/i, AN-16/i-M, Y1 A-Net card, ASI, or a third-party console card—may be substituted for the first AN-16/i v.2; a legacy device automatically defaults to Slot Range 1-16.*

Channel Mapping on the A360 and A320

To accommodate the higher channel count provided by Pro16e A-Net, the A360 and A320 can map stereo pairs of network channels to single mixer buttons.

Stereo Input Channels

For Pro16e systems using the A320 and the default channel mapping on A360 mixers, input module channels should generally be viewed as channel pairs, similar to a stereo channel on a mixing console or DAW. Thus channel 1 and channel 2 on an input module are the left and right halves of what will become channel button 1 on an A360 or A320 Personal Mixer. (Input channels 3 and 4 map to channel button 2, channels 5 and 6 to channel button 3, and so on.)



Inputs are treated as stereo pairs; audio sources connected to input jacks 3 and 4 become the second stereo pair when linked. They map to channel button 2 on an A360 or A320 Personal Mixer.

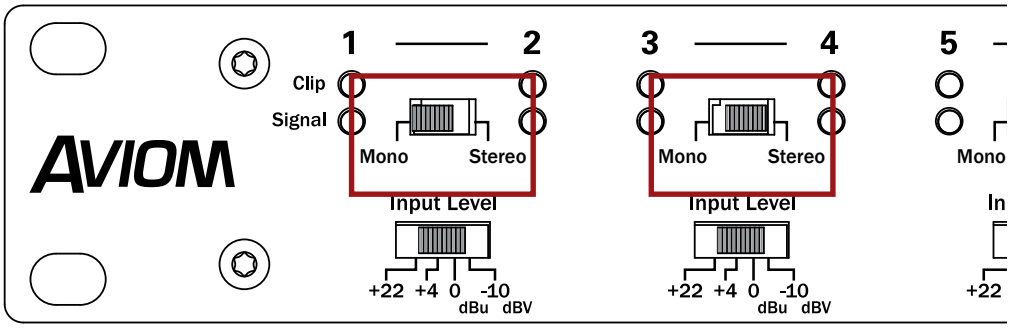
To link a pair of input channels on an AN-16/i v.2 move the front panel Mono/Stereo switch to the **Stereo** position. The link is instantly transmitted throughout the network to all devices. Link switches may be changed at any time; updates are immediate. Remember that the input devices control the stereo linking; Personal Mixers cannot link channels locally.

How Stereo Links Work

When channels are stereo linked on the input module, both channels appear on the A360 as a stereo pair, using one mix channel button. The table shows the default mapping of 32 input sources to an A360.

AN-16/i v.2		Default A360/A320 Channel	
Bank	Channel	If Stereo	If Mono
1-16	1	**1** *(left)*	**1**
	2	**1** *(right)*	*Ignored*
	3	**2** *(left)*	**2**
	4	**2** *(right)*	*Ignored*
	5	**3** *(left)*	**3**
	6	**3** *(right)*	*Ignored*
	7	**4** *(left)*	**4**
	8	**4** *(right)*	*Ignored*
	9	**5** *(left)*	**5**
	10	**5** *(right)*	*Ignored*
	11	**6** *(left)*	**6**
	12	**6** *(right)*	*Ignored*
	13	**7** *(left)*	**7**
	14	**7** *(right)*	*Ignored*
	15	**8** *(left)*	**8**
	16	**8** *(right)*	*Ignored*
17-32	1	**9** *(left)*	**9**
	2	**9** *(right)*	*Ignored*
	3	**10** *(left)*	**10**
	4	**10** *(right)*	*Ignored*
	5	**11** *(left)*	**11**
	6	**11** *(right)*	*Ignored*
	7	**12** *(left)*	**12**
	8	**12** *(right)*	*Ignored*
	9	**13** *(left)*	**13**
	10	**13** *(right)*	*Ignored*
	11	**14** *(left)*	**14**
	12	**14** *(right)*	*Ignored*
	13	**15** *(left)*	**15**
	14	**15** *(right)*	*Ignored*
	15	**16** *(left)*	**16**
	16	**16** *(right)*	*Ignored*

If the channels are *not* stereo linked, then only the odd (left) input module channel is utilized by the A360 or A320, and the even (right) input module channel is ignored (but may be used by A-16II mixers in the system or by A360 Personal Mixers that are running in Pro16 mode).



Inputs 1-2 are set to mono while inputs 3-4 are linked as a stereo pair.

For many Pro16e systems, the AN-16/i v.2 is better viewed as an input module with 8 stereo input channels rather than just 16 channels. This approach ensures predictable results and avoids any unexpected channel reassignment on the Personal Mixer as a result of a stereo link switch being changed on an input module. Stereo sources greatly benefit the performer. Keeping stereo keyboards, guitar processors, and submixes stereo preserves spatial information and allows a more accurate monitoring environment for the performer.

Beyond the Default Channel Mapping

Custom mode on the A360 in conjunction with the A360 Channel Manager software can be used to assign the network's input sources to the 16 mix channels, Dual Profile Channel and One-Touch Ambience buttons on each A360 Personal Mixer in a system, providing a custom channel layout for every performer. The table below shows a sample channel map for an A360 using Custom mode that includes stereo and mono sources.

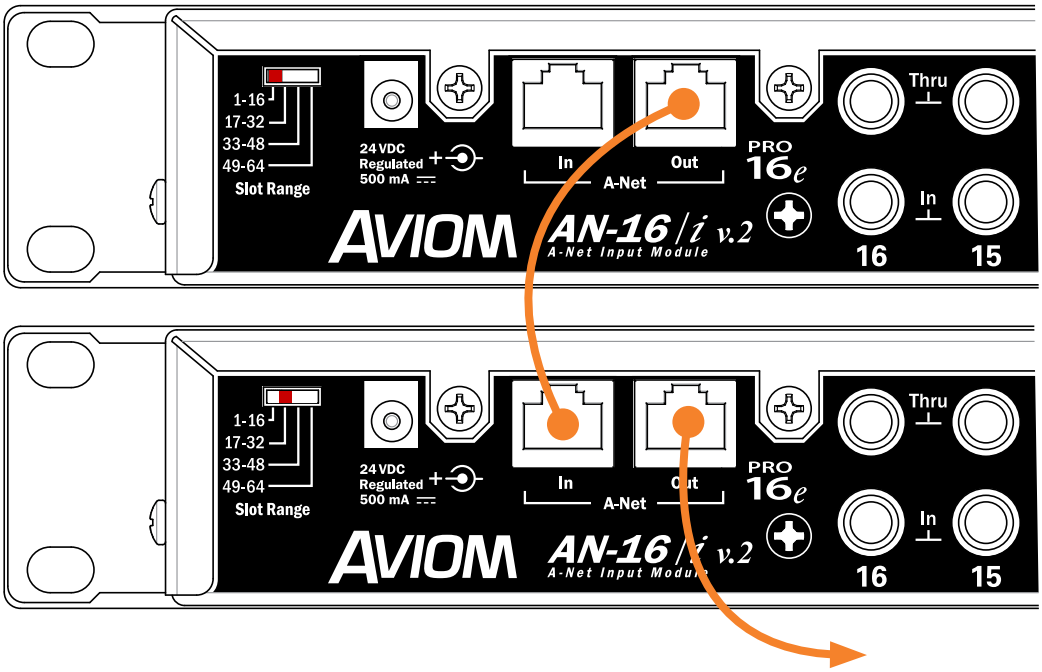
A360 Channel Button	Slot Assignment	Source Name
1	1	Kick
2	2	Snare
3	7/8	Toms *Stereo*
4	11/12	Cymbals *Stereo*
5	17	Bass
6	31/32	Elec. Guitar 1 *Stereo*
7	15/16	Elec. Guitar 2 *Stereo*
8	9	Acoustic Guitar
9	23/24	Piano *Stereo*
10	21/22	Keyboards *Stereo*
11	35	Lead Vocal 1
12	40	Lead Vocal 2
13	37/38	Bkd. Vocals *Stereo*
14	49	Spare Mic
15	25/26	DAW Playback *Stereo*
16	5	Click Track
Dual Profile Channel	51/52	Video Playback *Stereo*
Ambience	Onboard Mic	A360 mic

Rear Panel Setup for Pro16e Systems

When creating a Pro16e personal mixing system it is important that the **Slot Range** switch on each input module be set correctly. This switch assigns the incoming audio signals for each AN-16/i v.2 in use to a specific Slot Range within the Pro16e A-Net stream.

32-Channel Example

Using two AN-16/i v.2 Input Modules provides up to 32 mono or 16 stereo sources to A360 Personal Mixers. The 32-channel Pro16e A-Net stream created by this setup appears at the **A-Net Out** on the *second* AN-16/i v.2. The first AN-16/i v.2 should be set to Slot Range **1-16**; the second AN-16/i v.2 should be set for **17-32**. Connect a Cat-5e UTP cable from **A-Net Out** on the first AN-16/i v.2 to **A-Net In** on the second AN-16/i v.2 Input Module.



Set the Slot Ranges to 1-16 and 17-32 on the input modules.

Connect a Cat-5e cable from its **A-Net Out** to the **A-Net In** of an A-Net Distributor and then connect Cat-5 cables from the distributor to the A360 and/or A320 Personal Mixers.

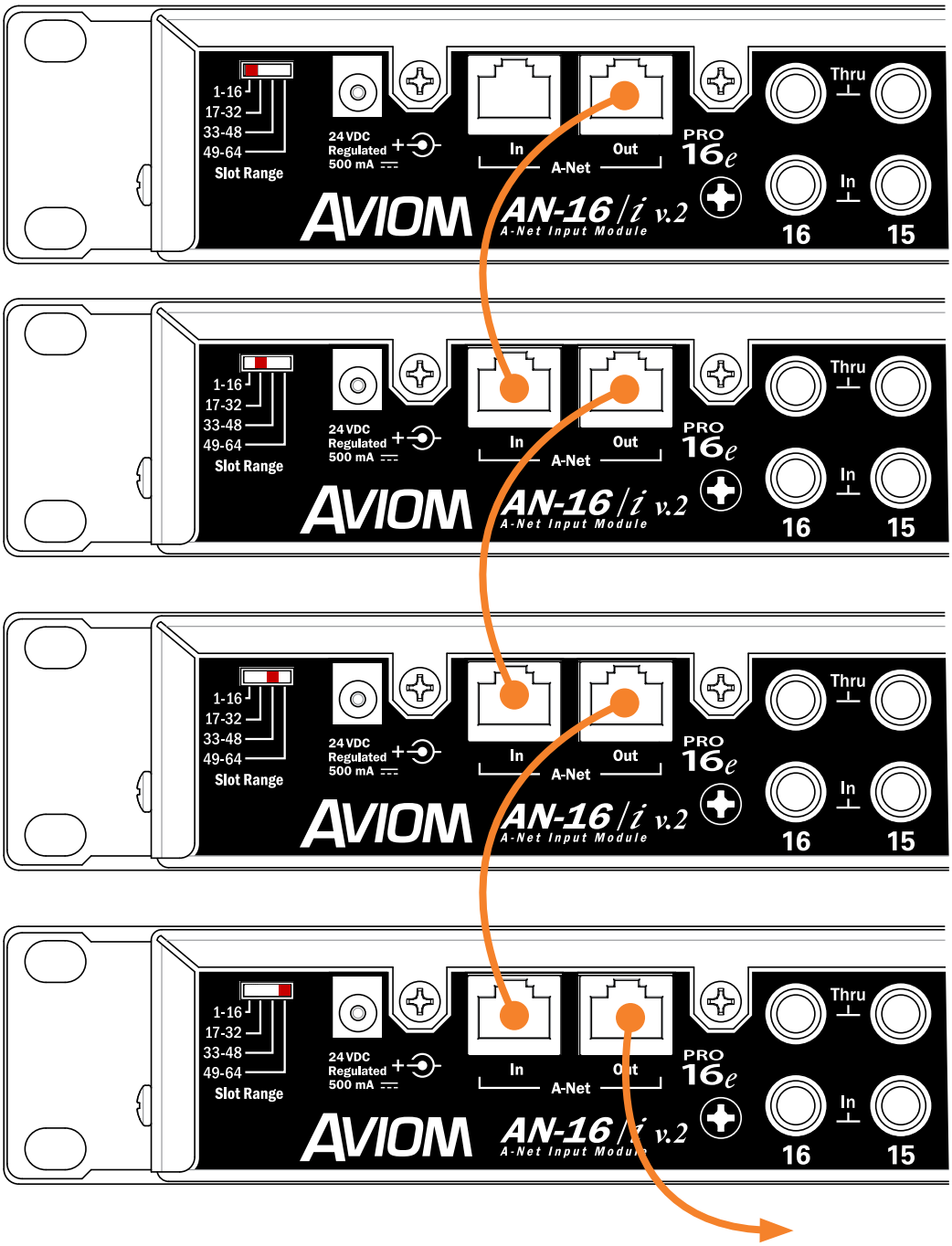
Connect audio sources to the AN-16/i v.2 audio inputs and then set the stereo link switches as needed per channel pair.

✓ **Note:** When adding the AN-16/i v.2 to an existing Pro16 system to expand the system's channel count for use with A360 and A320 Personal Mixers, the original input device in the system defaults to Slot Range 1-16. Connect the original input device's **A-Net Out** to the **A-Net In** on the AN-16/i v.2 and set the AN-16/i v.2 to Slot Range **17-32**.

64-Channel Example

Four AN-16/i v.2 Input Modules can provide up to 64 mono or 32 stereo sources to a personal mixing system using A360 Personal Mixers. Set the first AN-16/i v.2 to Slot Range **1-16**, the second AN-16/i v.2 to **17-32**; set the third input module to Slot Range **33-48** and the fourth to **49-64**.

Connect Cat-5e cables as shown in the example from **A-Net Out** on the first AN-16/i v.2 to **A-Net In** on the subsequent AN-16/i v.2 modules.

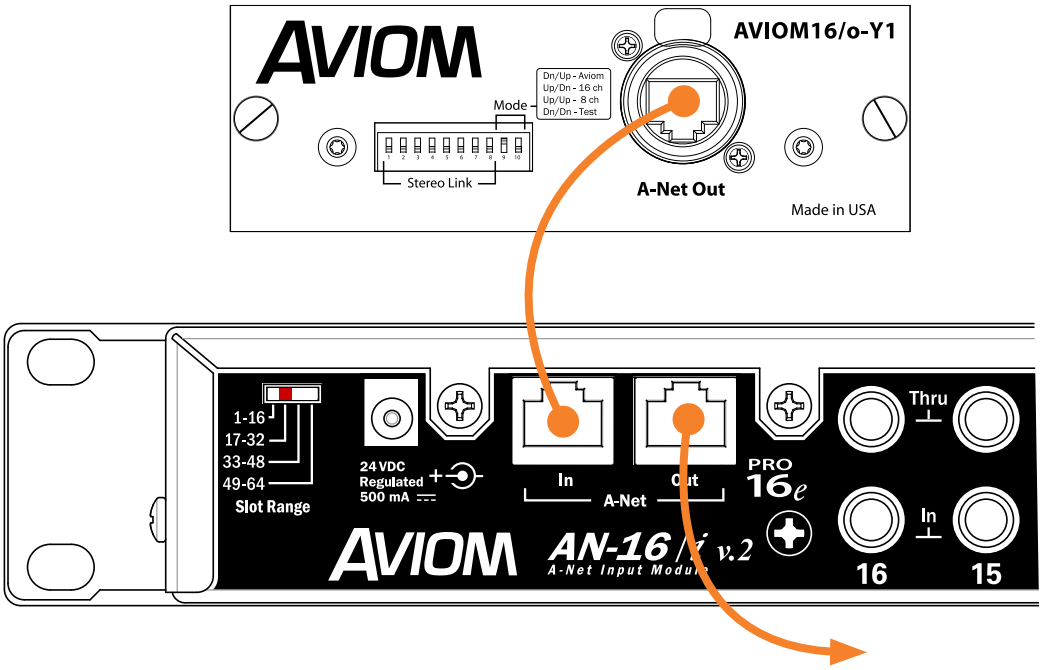


Slot Ranges and Cat-5 cabling for a 64-channel personal mixing system

Once the Cat-5 cables are configured as shown in the example, the 64-channel Pro16e stream created by this setup appears at the **A-Net Out** on the last (fourth) AN-16/i v.2. Connect a Cat-5e cable from its **A-Net Out** to the **A-Net In** on an A-Net Distributor such as the A-16D Pro and then connect Cat-5 cables from the distributor to the A360 Personal Mixers.

Using Legacy Input Hardware

The ***first*** input device in a daisy chain of input devices may be a legacy Pro16 input module (e.g., original AN-16/i or AN-16/i-M Mic Input Module) or console card (e.g., Aviom's Y1 card for Yamaha® devices or a partner card). These channels are automatically assigned to channels 1-16, and other AN-16/i v.2 Input Modules in the system must be set to Slot Range 17-32, 33-48, and/or 49-64.



A legacy device such as a digital console card defaults to Slot Range 1-16 when connected to an AN-16/i v.2.

To use a legacy Pro16 device in a Pro16e personal mixing system:

1. Connect a Cat-5 cable from the **A-Net Out** on the legacy device to **A-Net In** on the AN-16/i v.2 input Module.
2. Set the AN-16/i v.2 Slot Range to **17-32**.
3. To add more channels, connect additional AN-16/i v.2 Input Modules with Cat-5 cables in the same manner; set their Slot Ranges to **33-48**, and/or **49-64**.

At this time, there is no ability to connect multiple legacy Pro16 input devices, including console cards, to create expanded channel count for A360 and A320 Personal Mixers. Systems with digital consoles may use a single Pro16 A-Net card but must use analog outputs from the console to connect to AN-16/i v.2 Input Modules for additional channels and a Pro16e stream.

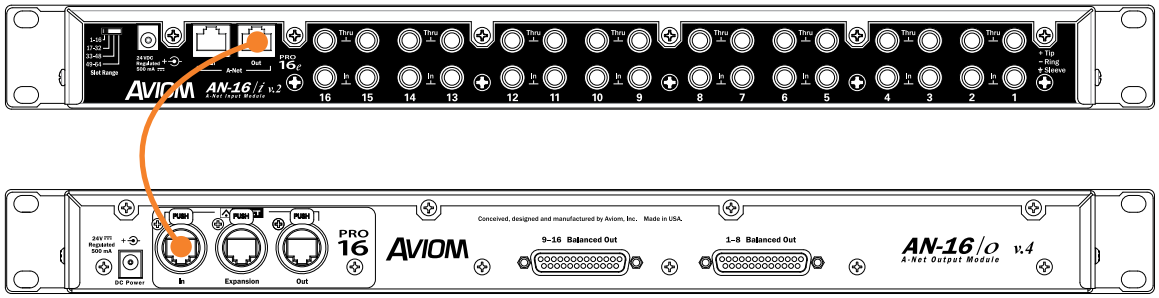
Digital Snakes

Combining Pro16 input and output modules allows multi-channel audio to be easily distributed over long distances using a single Cat-5 cable. Up to 64 channels may be distributed in a variety of configurations. Pro16's plug-and-play simplicity allows digital snakes to be easily reconfigured, adding to their flexibility.

Basic Digital Snake Configuration

When designing a digital snake using Pro16 devices, each input module will be paired with an output module. There is a one-to-one correspondence between inputs and outputs. A source connected to input channel #1 on an input module appears at output channel #1 on the output module. No matrix patching or channel routing is possible.

The most basic digital snake uses a single AN-16/i v.2 Input Module paired with one AN-16/o Output Module. On the AN-16/i v.2 set its Slot Range switch to the **1-16** position. Then simply connect the **A-Net Out** on the AN-16/i v.2 Input Module to the **A-Net In** on the AN-16/o v.4 Output Module.

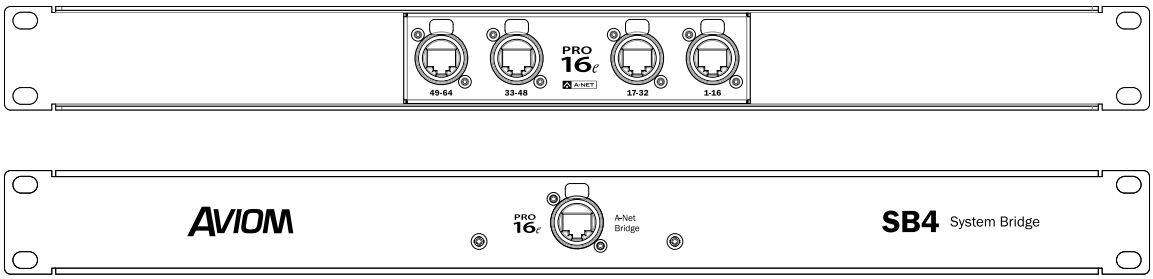


A basic 16 x 0 digital snake sends 16 line-level sources over one Cat-5 cable.

This configuration would be called 16 x 0, or 16 sends and no returns. The Cat-5 cable used between the input and output devices may be up to 400 feet (122) meters) in length.

System Bridge

The SB4 System Bridge is used to simplify the Cat-5 wiring when configuring Pro16 digital snakes. This passive device takes four Pro16 or Pro16e A-Net streams and enables all four streams to be transported over a single Cat-5 cable. In a typical digital snake this will be the longest cable, so the SB4 offers substantial savings in the amount of cable used as well as the time and labor to connect it.



SB4 System Bridge front and rear panels are shown.

The SB4 has four A-Net ports on the rear (labeled **A**, **B**, **C**, and **D**) and a **Bridge** port on the front. Each rear panel port supports one input/output pair of A-Net devices.

Digital Snake - 16 x 16

To configure a 16 x 16 (16 Sends, 16 Returns) digital snake, two AN-16/i v.2 Input Modules and two AN-16/o v.4 Output Modules are used, connected via the System Bridge.

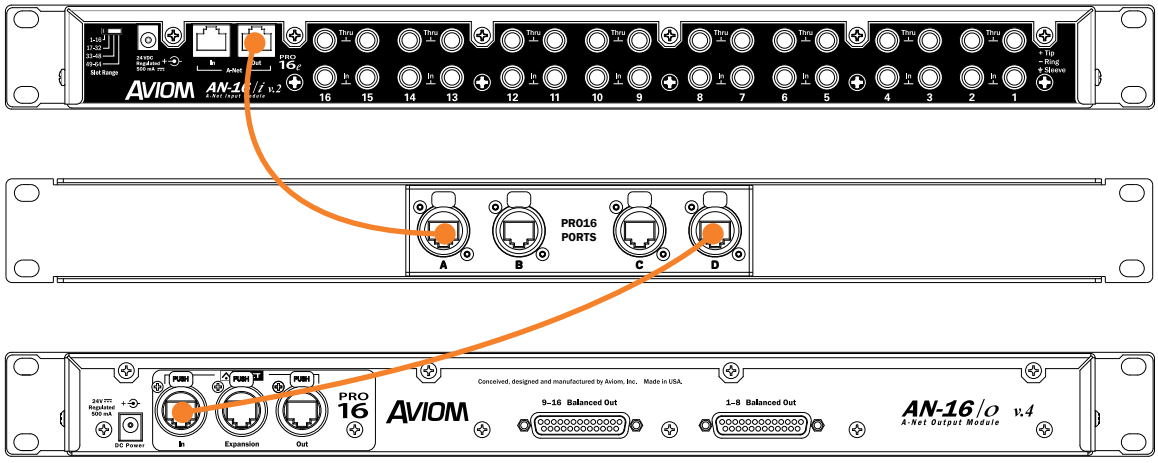
Setup On Stage

Place the following on stage:

- one AN-16/i v.2 Input Module
- one AN-16/o v.4 Output Module
- one SB4

Make these connections:

1. Set the **SLOT RANGE** switch on the AN-16/i v.2 Input Module to **1-16.**
2. Connect the **A-NET OUT** of the AN-16/i v.2 to port **A** on the System Bridge.
3. Connect the **A-NET IN** of the AN-16/o v.4 Output Module to port **D** on the System Bridge.



Cat-5 connections on stage for the 16 x16 digital snake are shown.

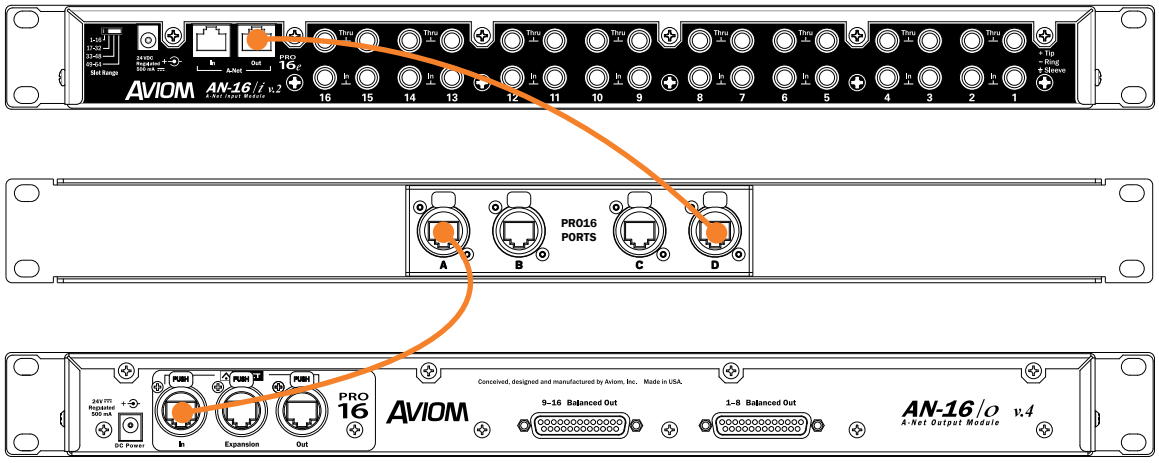
Setup at Front-of-House (FOH)

Place the following at front-of-house:

- one AN-16/i v.2 Input Module
- one AN-16/o v.4 Output Module
- one SB4

Make these connections:

1. Set the Slot Range switch on the AN-16/i v.2 Input Module to **1-16.**
2. Connect the **A-Net Out** of the AN-16/i v.2 to port **D** on the System Bridge.
3. Connect the **A-Net In** of the AN-16/o v.4 Output Module to port **A** on the System Bridge.
4. Finally, connect the stage to the FOH position with a Cat-5 cable connected between the two **Bridge** ports on the System Bridges.



The FOH configuration

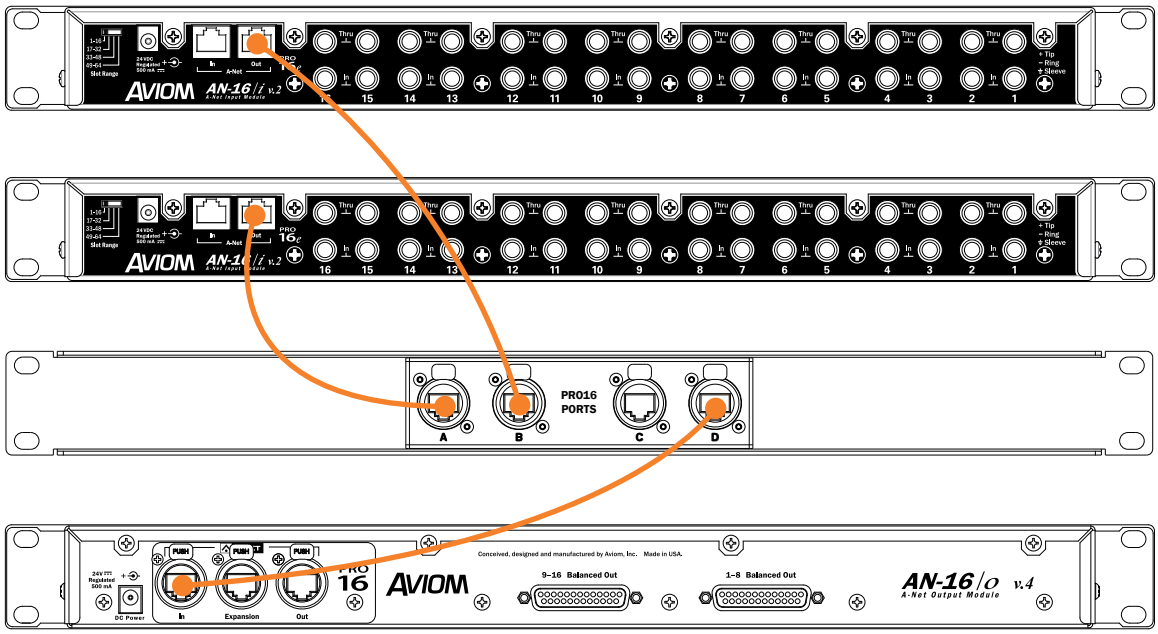
✓ **Note:** Remember that the maximum cable distance must not exceed 400 feet (122 meters) measured from the AN-16/i v.2 on stage to the AN-16/o v.4 at FOH.

Digital Snake - 32 x 16

Adding 16 more inputs to the 16 x16 digital snake configuration is simple; one more AN-16/i v.2 is added on the stage and another AN-16/o Output Module is required at front-of-house.

Starting with the 16 x16 configuration described previously, make these connections:

1. On stage, make sure that the Slot Range switch is set to **1-16** on the AN-16/i v.2 being added.
2. Connect the **A-Net Out** of the AN-16/i v.2 Input Module to port **B** on the System Bridge.
3. At front-of-house, connect the **A-Net In** of the AN-16/o v.4 Output Module to port **B** on the System Bridge.



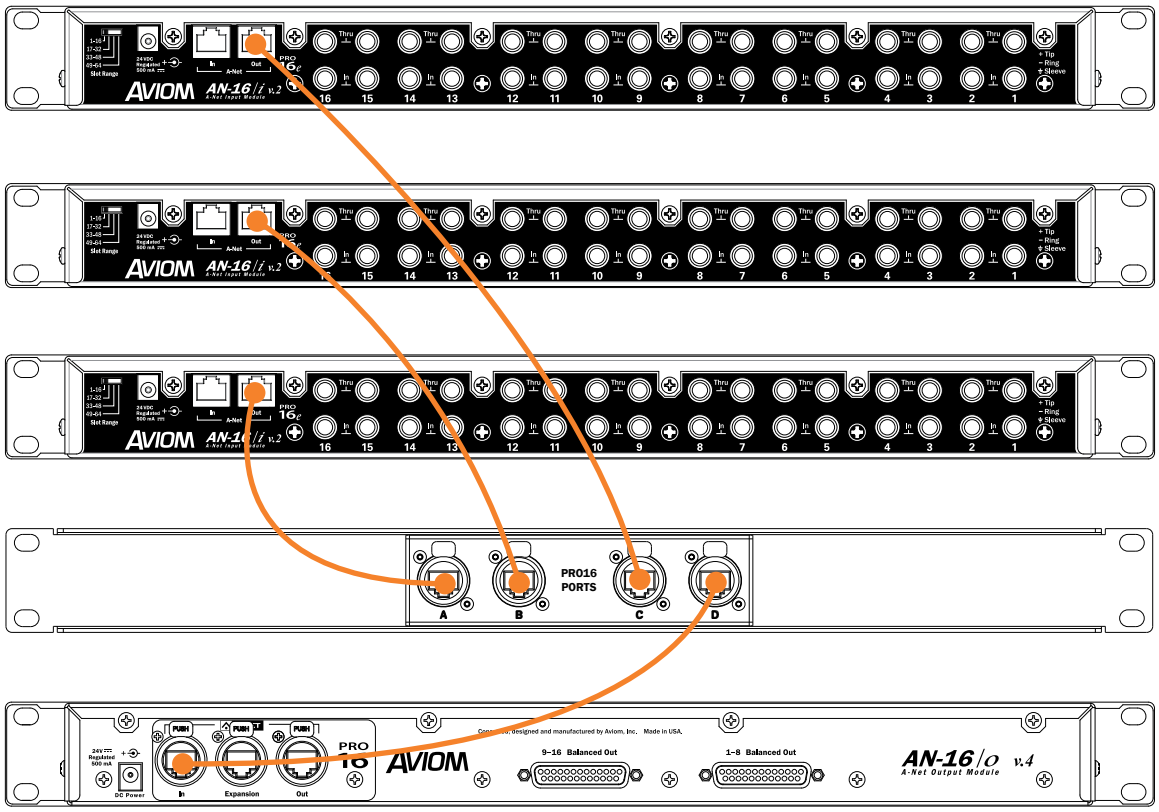
This shows the Cat-5 patching for the 32 x 16 configuration on stage.

Digital Snake - 48 x 16

To increase the digital snake to its maximum size using all four ports of the System Bridge, one more AN-16/i v.2 is added on the stage connected to another AN-16/o Output Module at front-of-house.

Starting with the 32 x16 configuration described previously, make these connections:

1. On stage, make sure that the Slot Range switch is set to **1-16** on the AN-16/i v.2 being added.
2. Connect the **A-Net Out** of the AN-16/i v.2 Input Module to port **C** on the System Bridge.
3. At front-of-house, connect the **A-Net In** of the AN-16/o v.4 Output Module to port **C** on the System Bridge.



Cat-5 patching for the 48 x 16 configuration on stage

✓ **Note** The AN-16/i v.2 Input Modules shown in the preceding diagrams may be replaced with any compatible Pro16 input module or console interface card.

Adding Audio Outputs - Splits

The A-Net Out ports on the AN-16/o v.4 Output Modules are not used when configuring and patching a digital snake system (with or without a System Bridge). This allows additional output modules to be added as needed to suit a variety of audio situations, creating a digital split—an exact copy of the digital audio sent to the device via A-Net.

Any Pro16 A-Net compatible product that has an **A-Net In** port can be connected to an **A-Net Out** port of a device used in a digital snake. This includes:

- AN-16/o v.4 Output Module
- AV-P2 Output Module

To add a split:

1. First start by configuring the digital snake according to your basic needs (16 x 16, or 32 x 16, etc.).
2. Connect a Cat-5e cable from the **A-Net Out** port of the AN-16/o v.4 Output Module whose audio you wish to copy to the **A-Net In** port on the AN-16/o v.4 Output Module being used for the split.

✓ **Note:** The Cat-5e cable connected to the output device used for the digital split may be up to 400 feet (122 meters) in length for Pro16e devices or up to 500 feet (150 meters) if Pro16 A-Net devices are connected.

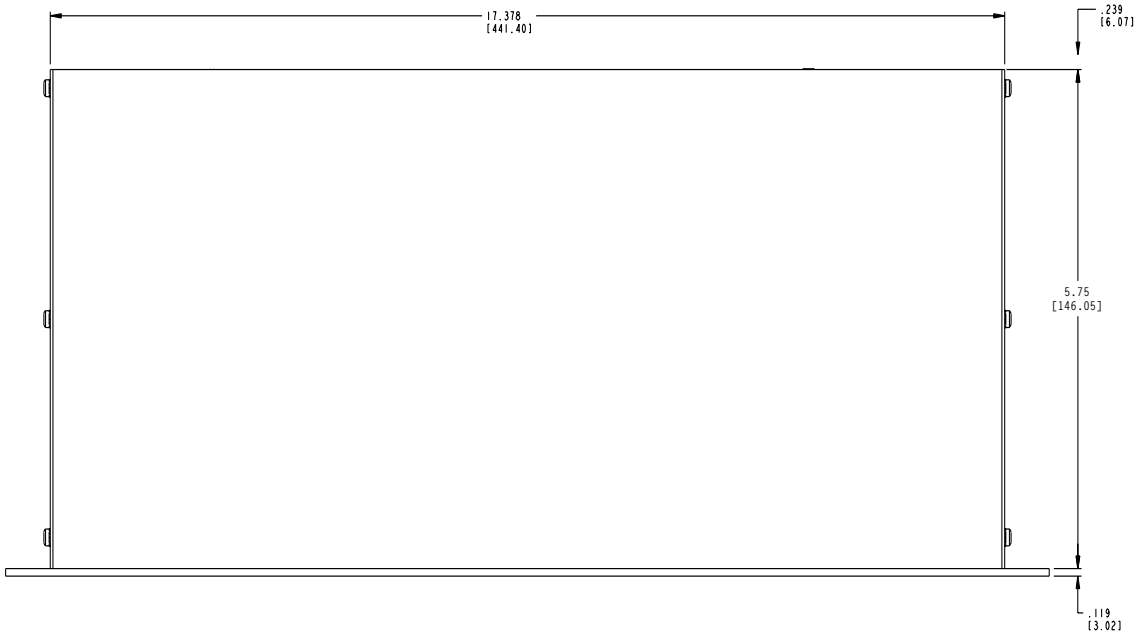
In a digital snake application a Personal Mixer may also be added to create a monitor station, quality control checkpoint, recording feed, etc. An A-Net Distributor may be required for some applications. Compatible products include:

- A360 Personal Mixer
- A320 Personal Mixer
- A-16II Personal Mixer
- A-16R Rack-mount Personal Mixer

Specifications

Audio Inputs	16, balanced line-level
TRS Inputs	Tip: Audio +; Ring: Audio -; Sleeve: Ground
TRS Thru	Tip: Audio +; Ring: Audio -; Sleeve: Ground
A/D Conversion	48kHz, 24-bit
Input Level / Gain Settings	+22dBu, +4dBu, 0dBu, -10dBV 4-position gain switch, per channel pair
Metering	Two LEDs per channel; green: Signal Present, red: Clip;
Stereo Operation	Stereo link, per channel pair; Two-position switch (Mono, Stereo)
Maximum Input Level	+22dBu
Input Impedance	17.8k ohms
Frequency Response	4Hz-22kHz +0.2dB/-3dB
THD +N	< 0.003%
Crosstalk	-90dB
Signal to Noise (unweighted)	90dB typical, A/D to D/A; Measured from AN-16/i v.2 to AN-16/o Output Module
Bit Error Rate (BER)	10^{-12}
Digital Output	1 A-Net Out; RJ45 connector
Digital Input	1 A-Net In; RJ45 connector
A-Net Pro16e Slots	4-position Slot Range switch assigns the A-Net output to occupy Slots 1-16, 17-32, 33-48, or 49-64
A-Net	Uses unshielded Cat-5e UTP (or better) cable
A-Net Cable Length	400 feet (122 m)
Latency	<0.880 msec (measured from analog input to analog output)
Power Supply **Input Voltage** **Output Voltage** **Plug Size**	External, DC, universal switching type 100-240 volts, 50/60Hz, 30VA 18-24 VDC, 0.5 amp 2 mm
Dimensions	19" (482.6 mm) wide x 5.75" (146 mm) deep; 1U high
Weight	6.8 lb. (3.08 kg)
Options	SB4 System Bridge; used to combine up to four A-Net streams for transmission over one Cat-5e cable
All Aviom products are designed and manufactured in the USA.	

Dimensions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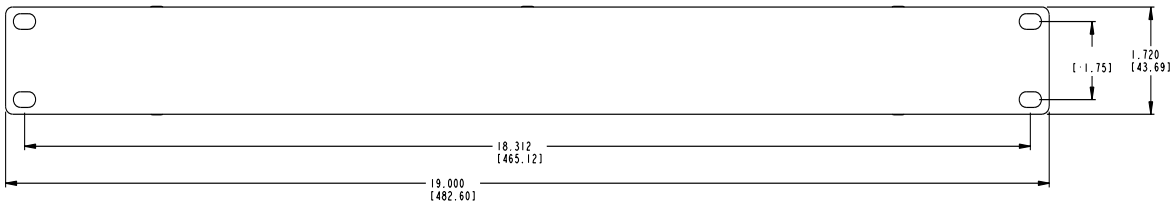
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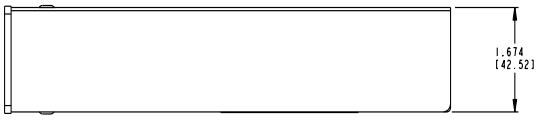
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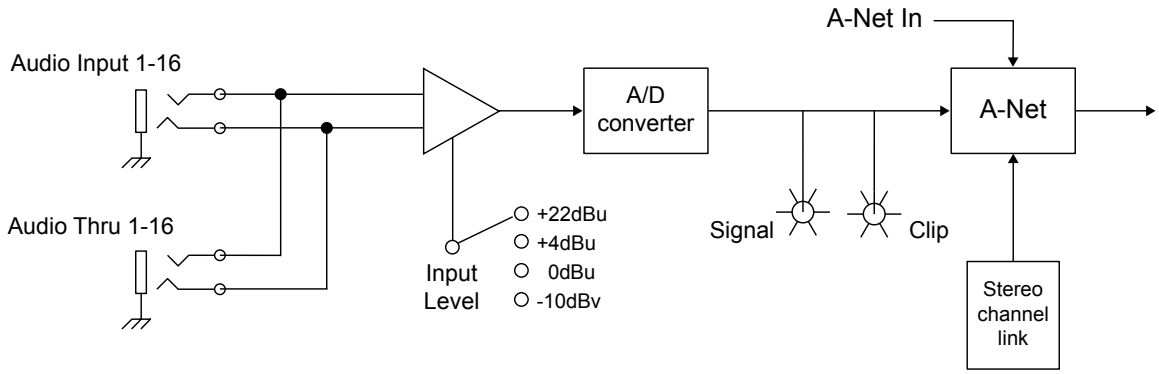
Block Diagram



Cat-5 Cable Pinout

The tables below detail the two wiring pinout variations for Cat-5 cables. When making custom cables, either pinout can be used, but both ends of a cable must use the same wiring pattern.

T568A

RJ45 Pin	Wire Color	
1	White/Green	
2	Green	
3	White/Orange	
4	Blue	
5	White/Blue	
6	Orange	
7	White/Brown	
8	Brown	

T568B

RJ45 Pin	Wire Color	
1	White/Orange	
2	Orange	
3	White/Green	
4	Blue	
5	White/Blue	
6	Green	
7	White/Brown	
8	Brown	

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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 _____ Product Serial Number _____

Model _____ Product Serial Number _____

Model _____ Product Serial Number _____

Model _____ Product Serial Number _____

Date Purchased _____

Dealer Name _____

Dealer Location _____

_____

Your Name _____

Address _____

Address _____

City _____

State/Province _____

Zip/Postal Code _____

Country _____

Email Address _____

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