

# **AVIOM<sup>®</sup>**

## ***AV-M8*** *Mic Input Module*

## **User Guide**

---

P/N 9310 1018 0001F rev 2.00  
© 2009 Aviom, Inc.

**PRO**  
**16<sup>®</sup>**



## Certifications

ETL/cETL Listed

EMC: EN 55013, EN 55020, SAA AS/NZS 1053

Conforms to: IEC 60065, EN 60065, UL 6500-2001

Certified to: CAN/CSA E60065, KET1

RoHS Status: Pb-free



## Notice of Rights

All rights reserved. No part of this document may be reproduced or transmitted in any form or by any means—electronic, mechanical, photocopy, recording, or otherwise—without written permission of Aviom, Inc.

## Trademarks

Aviom, A-Net, the A-Net icon, Pro16, Pro64, and Virtual Data Cable are trademarks of Aviom, Inc.

All other trademarks are the property of their respective owners.

© 2009 Aviom, Inc. All rights reserved.

Information subject to change without notice.



# 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: 10°C to 50°C (50°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.

---

### CAUTION:

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

### IMPORTANT:

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

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

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

## Aviom, Inc. Limited Warranty

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

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

If a defect is discovered, first write or call Aviom, Inc. to obtain a Return Authorization number. No service will be performed on any product returned without prior authorization. Aviom, Inc. will, at its option, repair or replace the product at no charge to you. The product must be returned during the warranty period, with transportation charges prepaid to Aviom, Inc., 1157 Phoenixville Pike, Suite 201, West Chester, PA 19380. 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](http://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.

This manual and its contents are copyrighted by Aviom, Inc. All rights are reserved by Aviom, Inc. This document may not, in whole or in part, be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form without prior written consent from Aviom, Inc.

The software and/or firmware contained within Aviom products is copyrighted and all rights are reserved by Aviom, Inc.

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

<b>Welcome</b> . . . . .	1
<b>Package Contents</b> . . . . .	1
<b>Features</b> . . . . .	1
<b>Conventions Used in this Document</b> . . . . .	2
Button Presses . . . . .	2
Using Personal Mixers. . . . .	2
Cat-5 Cables . . . . .	2
A-Net Distributors . . . . .	2
<b>Front Panel Components</b> . . . . .	3
<b>Rear Panel Components</b> . . . . .	5
<b>Compatibility</b> . . . . .	7
<b>Pro16 Series Systems</b> . . . . .	8
<b>About A-Net</b> . . . . .	8
<b>Compatibility with Pro64</b> . . . . .	9
<b>About Category 5</b> . . . . .	9
<b>Cat-5 Cables</b> . . . . .	10
Cable Lengths . . . . .	10
<b>AC Line Conditioning</b> . . . . .	12
<b>Power Supplies</b> . . . . .	12
<b>Mounting the AV-M8</b> . . . . .	12
<b>Rack Mounting</b> . . . . .	13
<b>The EtherCon Connector</b> . . . . .	14
<b>Cleaning and Maintenance Information</b> . . . . .	14
<b>Panel Descriptions</b> . . . . .	15
<b>AV-M8 Front Panel</b> . . . . .	15
<b>Audio Inputs</b> . . . . .	15
Mic-Level Inputs . . . . .	15
Line-Level Inputs . . . . .	16
Pad. . . . .	16
Gain Settings . . . . .	16
Phantom Power Switch . . . . .	16
Low Cut Filter (Rolloff) . . . . .	17
<b>AV-M8 Rear Panel</b> . . . . .	17
Power Connector . . . . .	17
<b>Rear-Panel Ventilation</b> . . . . .	18
<b>Stereo Link Switch</b> . . . . .	18
<b>Power LED</b> . . . . .	18
<b>ADAT Digital I/O</b> . . . . .	19
Clock Source . . . . .	19
<b>A-Net Connections</b> . . . . .	20
A-Net Out . . . . .	20
A-Net Expansion . . . . .	20
<b>Connecting Audio</b> . . . . .	21
<b>Wiring a Euroblock</b> . . . . .	21
<b>Connecting an Unbalanced Source</b> . . . . .	22
<b>Setting Gain</b> . . . . .	24

<b>Labeling a Channel</b> . . . . .	<b>25</b>
<b>Stereo Link</b> . . . . .	<b>25</b>
<b>A-Net Connections</b> . . . . .	<b>27</b>
Series Connection of A-Net Devices . . . . .	27
Parallel A-Net Routing . . . . .	27
Using an A-Net Distributor . . . . .	27
<b>Extending A-Net Cable Runs</b> . . . . .	<b>28</b>
<b>Audio Networks</b> . . . . .	<b>29</b>
<b>8-Channel Systems</b> . . . . .	<b>29</b>
<b>Digital Splits</b> . . . . .	<b>29</b>
<b>Combining Two AV-M8 Modules</b> . . . . .	<b>30</b>
<b>32-Channel Systems</b> . . . . .	<b>33</b>
A-Net Expansion . . . . .	33
32-Channel Examples . . . . .	34
32 Channels Send . . . . .	34
16 Channels Send and Return . . . . .	37
<b>Adding More Audio Outputs</b> . . . . .	<b>38</b>
Expanding a Network . . . . .	39
<b>Specifications.</b> . . . . .	<b>40</b>
<b>Dimensions.</b> . . . . .	<b>42</b>
<b>Block Diagram</b> . . . . .	<b>44</b>
<b>Warranty Registration</b> . . . . .	<b>48</b>



# Welcome

Thank you for purchasing the **AV-M8 Mic Input Module**, a member of Aviom's Pro16® Series of digital products. All Pro16 products are powered by A-Net®, Aviom's proprietary data transmission protocol designed especially for the unique demands of live streaming audio. This User Guide is designed to familiarize you with your new product and to have your system up and running in no time.

## Package Contents

Check the contents of the shipping box carefully before making connections and continuing with installation.

The contents of the AV-M8 Mic Input Module box include:

- One AV-M8 Mic Input Module
- One IEC power cable for the AV-M8
- Eight Euroblock plugs
- Mounting flanges and rack-mount ears
- User Documentation

## Features

The 8-channel AV-M8 Mic Input Module is designed to be used with mic-level or line-level sources in a Pro16 audio network.

AV-M8 Mic Input Module Features:

- Eight audio input channels
- Mic/line input on channels 1-2
- +48 volt phantom power per channel
- 85Hz low cut rumble filter per channel
- Pad on channels 1-2
- DIP switch gain settings
- Stereo Link DIP Switches
- Euroblock terminal block connectors
- ADAT® I/O expansion ports for 16-channel operation
- Internal or ADAT clock sources
- EtherCon® connectors for A-Net® In/Out
- Removable, reversible mounting flanges and rack-mounting ears

Two AV-M8 units can be combined using the ADAT link to create a single 16-channel A-Net stream that can be transmitted to Pro16 mixers or output modules.

# Conventions Used in this Document

## Button Presses

When indicating a button on the front panel of the A-16II Personal Mixer, a special typeface is used. For example, “when selecting a Preset, press the **RECALL** button, followed by a numbered button”.

## 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 A-16II, and A-16R.

When referring to the use of the personal mixers in a system in general, the terms **A-16II Mixer** or **Personal Mixer** are used to describe a case where a standard A-16II Personal Mixer or a rack mounted A-16R Personal Mixer (with/without the optional A-16CS Control Surface) can be used.

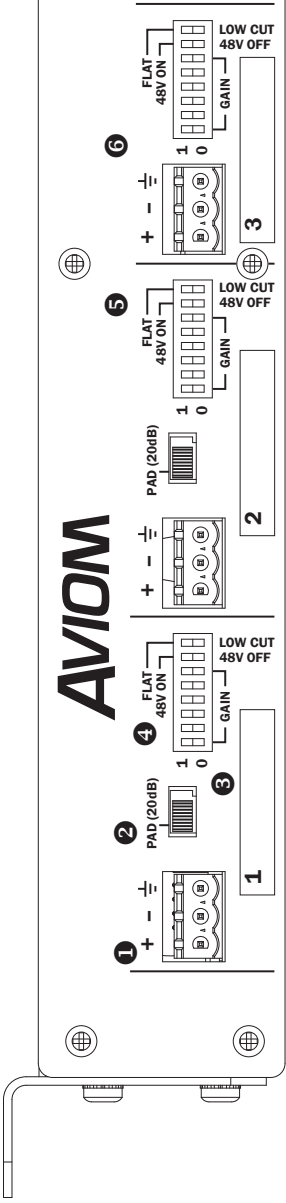
## Cat-5 Cables

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.

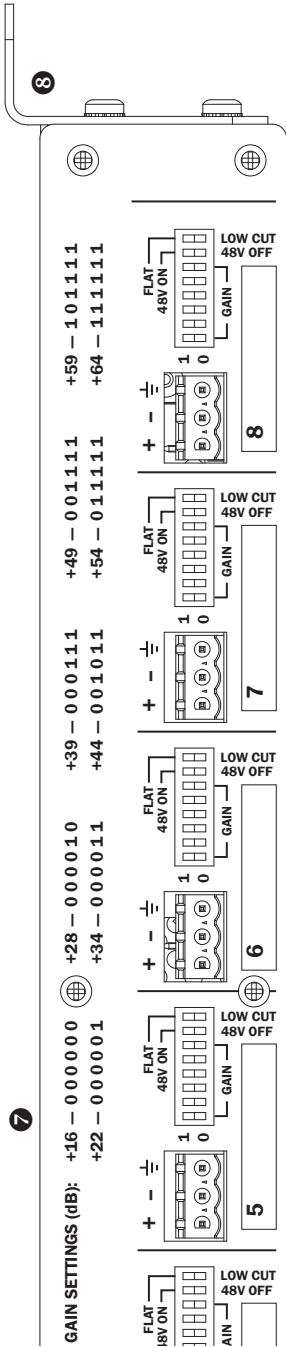
## A-Net Distributors

The A-16D and A-16D Pro A-Net Distributors are referred to generically as *A-Net Distributors*.

# Front Panel Components



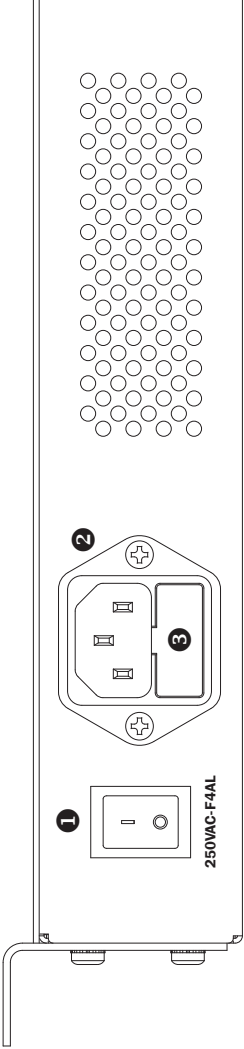
1. Euroblock Audio Input
2. Pad On/Off (Channels 1-2 only)
3. Channel Label
4. DIP Switch Gain Settings
5. Phantom Power (+48 Volts) and Low Cut Filter Switches
6. Standard Channel (no Pad)



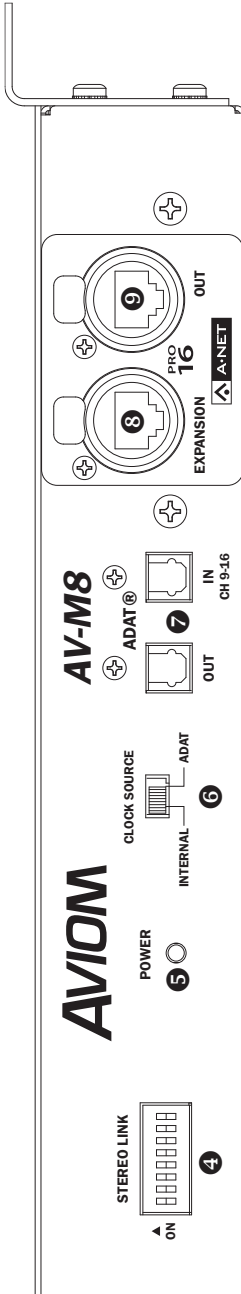
## 7. Gain Settings Table

## 8. Removable Mounting Flanges

# Rear Panel Components



- 1. Power Switch
- 2. IEC Power Inlet
- 3. Fuse Compartment



4. Stereo Link DIP Switches
5. Power LED
6. Clock Source Switch
7. ADAT I/O
8. A-Net Expansion EtherCon Jack
9. A-Net Out EtherCon Jack

# Compatibility

The AV-M8 can be used in a Pro16 system with the following Pro16 products:

- AV-P2 Output Module
- AN-16/o Output Module
- A-16R Personal Mixer
- A-16II Personal Mixer
- A-16D A-Net Distributor
- A-16D Pro A-Net Distributor
- Y1 A-Net card for use with Yamaha® consoles
- AN-16/i Input Module
- AN-16/i-M Mic Input Module
- AN-16SBR System Bridge

The AV-M8 is also compatible with all third-party products that support the Pro16 A-Net specification.

- ✓ **NOTE:** The AV-M8 cannot be connected to Pro64® products or systems using the Pro64® A-Net specification.

# Pro16 Series Systems

A complete Pro16 Series audio network system consists of at least one Pro16 input module connected to a Pro16 output device such as the AN-16/o Output Module, AV-P2 Output Module, or A-16II Personal Mixer. Many configurations are possible by using additional input modules and/or Personal Mixers and output modules.

## About A-Net

The Pro16® version of A-Net® is a high-speed data transmission protocol capable of sending and receiving high-quality digital audio using readily available Cat-5 cables. A-Net is a proprietary technology developed by Aviom.



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.

As used in the Pro16 series products, the A-Net signal carries sixteen channels of digital data from the Pro16 input module (AN-16/i, AN-16/i-M, or compatible console card) to each A-Net device connected to the system.

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

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



# Compatibility with Pro64

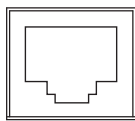
Many Pro16 products can be connected to a Pro64® A-Net system with the addition of the ASI A-Net Systems Interface. The ASI translates Pro64 A-Net data into Pro16 data and separates the 64-channel Pro64 stream into up to four 16-channel Pro16 outputs, depending on the Pro64 sample rate being used.

Only Pro16 devices that have an A-Net In port such as Personal Mixers, A-Net Distributors, and output modules are compatible with Pro64 and the ASI. Pro16 input modules and console cards cannot send their data into a Pro64 network.

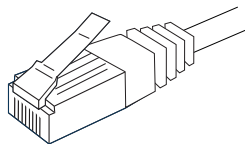
## About Category 5

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

**Use Cat-5e Unshielded Twisted Pair (UTP) cables or better for all A-Net applications.**



RJ45 Jack



Cat-5 Cable

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

# Cat-5 Cables

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

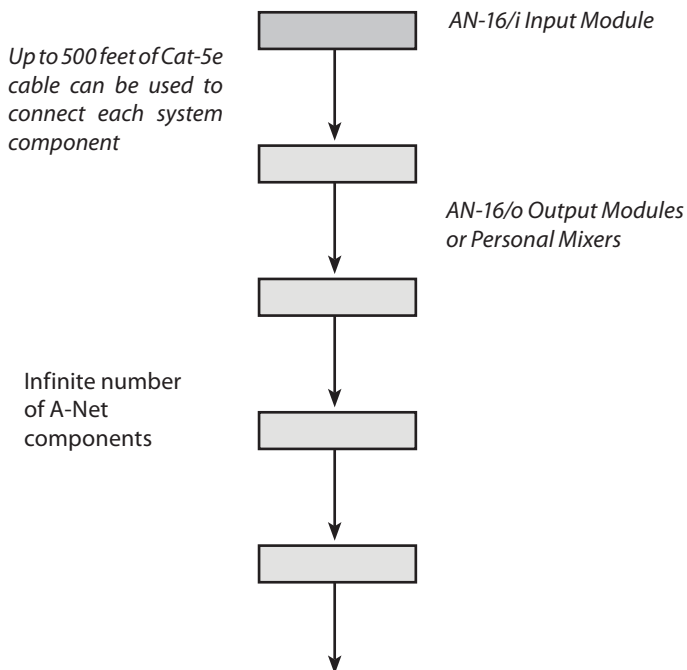
For fixed or permanent installations, you have the option of running Cat-5 cables inside walls and terminating them with readily available wall panel connectors that include the RJ45 jack. (Solid wire is recommended for permanent installations.)

In addition to standard Category 5e cables, Category 6 (Cat-6 and Cat-6e) 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. A crossover cable is not compatible with your Aviom equipment.

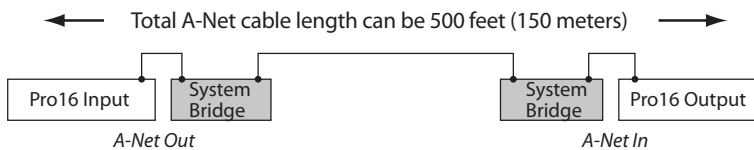
## Cable Lengths

Cat-5e cables used with your Aviom products can be up to 500 feet (150 meters) in length between devices. The maximum cable length specification applies to the cable connected between the A-Net input module and the first Pro16 output device (such as an A-16II Personal Mixer) in your system as well as for cable runs between each additional Pro16 A-Net compatible device in your system.



Your cable length performance will be affected by a number of factors including the quality of the cables used, and the number of devices such as cable couplers used or passive wall panel interconnections in use. Use Cat-5e cable for best performance wherever possible. Stranded or solid Cat-5e cable can be used.

When using the optional AN-16SBR System Bridge, the cable length specification applies to the *total* cable length between the two A-Net devices being connected with the AN-16SBR System Bridge. This is similar to what happens when using an inline coupler to extend cable lengths.



Total cable length calculations include cables used to connect I/O modules to System Bridges.

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

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

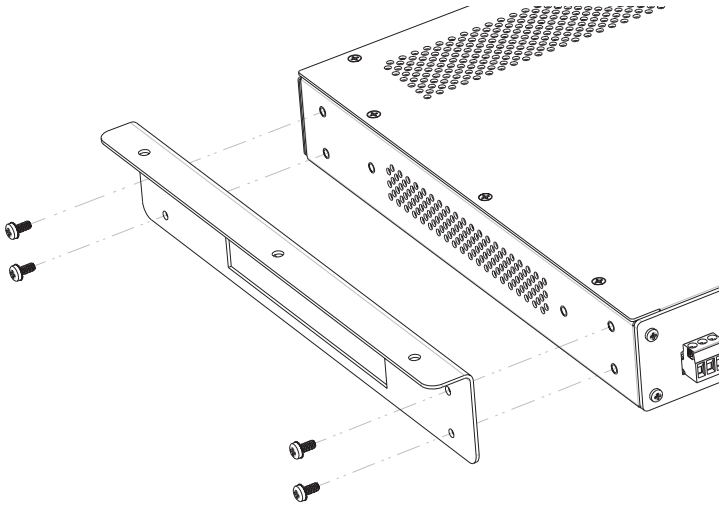
The power supply in your Aviom product is a universal switching type. It is capable of working with voltages from 90 to 240 volts AC. This means that a separate power supply is not needed to use the products with the AC power systems found in most countries. You should always use the IEC power cable that shipped with your product.

## Mounting the AV-M8

The AV-M8 Mic Input Module is designed to be surface mounted to the underside of a tabletop or similar flat surface. It can also be installed in a standard 19-inch audio equipment rack, using the optional rack-mount ears. Rack ears can be attached to the front or rear of the AV-M8. Each AV-M8 unit takes up one standard rack space (19 inches wide by 1.75 inches high).

The mounting flanges as well as the rack ears are designed to support the weight of the AV-M8 without additional hardware. The mounting flanges can be reversed easily using a Phillips head screwdriver. Each mount contains holes for two screws per side. Always support the unit with all four screws.

Allow adequate ventilation when mounting the AV-M8 in any enclosed space to avoid damage to the product caused by overheating.



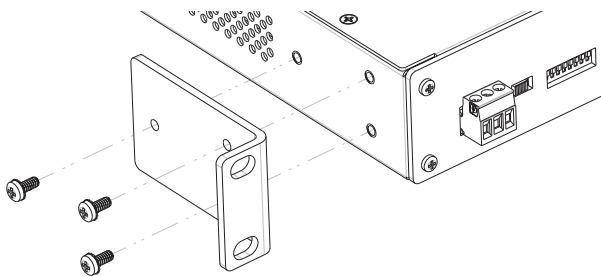
To add the mounting flanges to the AV-M8, align the holes in the flange to those in the side of the AV-M8.

## Rack Mounting

To rack mount the AV-M8 Mic Input Module, attach the rack-mount ears using the supplied Phillips screws. The rack ears can be attached to the front or rear of the AV-M8. Next, position the AV-M8 in the equipment rack at the desired location. Use standard rack-mounting screws (10-32 size) to attach the AV-M8 to your rack hardware. Tighten all four screws firmly, but avoid overtightening.

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

Always allow adequate ventilation for devices mounted in equipment racks. Avoid placing your AV-M8 directly above or below other rack-mounted devices that produce high levels of heat, such as power amps.



The rack-mount ears can be used to mount the AV-M8 in a standard 19-inch equipment rack. Always use all three screws when mounting the rack-mount ears to the AV-M8 to avoid damaging the unit.

## The EtherCon Connector

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

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

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

## 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.

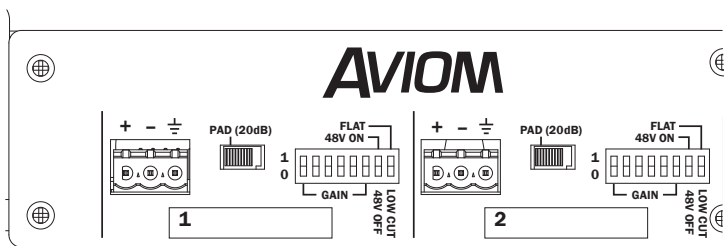
# Panel Descriptions

This section explains the basic layout of the front and rear panels of your new Aviom product. The diagrams on the previous pages can be used as a quick visual guide to the location of the components of the AV-M8 mentioned in this section.

## AV-M8 Front Panel

The front panel of the AV-M8 contains eight individual channel input strips. All input channels can be used with mic-level sources; inputs 1 and 2 include a Pad switch to allow line-level sources to be used.

The inputs on the AV-M8 use 5.0 mm Euroblock connectors and can accept balanced or unbalanced audio signals. Male Euroblock jacks are provided.



The AV-M8 channel input strips

## Audio Inputs

The numbered channel strips on the AV-M8 front panel correspond to the eight analog audio inputs.

### Mic-Level Inputs

The AV-M8 is designed to accept microphone-level signals from dynamic or condenser microphones. Phantom power (+48V) is available on each channel for use with condenser mics.

## Line-Level Inputs

The AV-M8's channels 1 and 2 are designed to accept line-level audio signals. Channels 3-8 may also be used for a line-level input, but clipping may occur if the signal level is too hot. If adjusting the input gain setting using the DIP switches does not eliminate the clipping, use the pad, found on channels 1-2 only.

The eight inputs on the AV-M8 are automatically assigned to A-Net channels 1-8. When using two AV-M8 units, audio from the second AV-M8 is routed to A-Net channels 9-16 when the units are cascaded using the ADAT® optical connections.

- ✓ **Note:** Do not connect guitars or other high impedance sources to the AV-M8 mic-level inputs. Use a direct box to convert a guitar or bass pickup's signal to mic level.

## Pad

Channels 1 and 2 feature a pad with an on/off switch. Use the pad when connecting line-level audio sources to the AV-M8. Move the switch to the left to engage the pad. When engaged, the pad lowers the initial input level by 20dB.

## Gain Settings

Each channel's gain setting can be set individually using the first six DIP switches in the input strip. Gain setting combinations are silk screened on the front panel of the AV-M8 for reference.

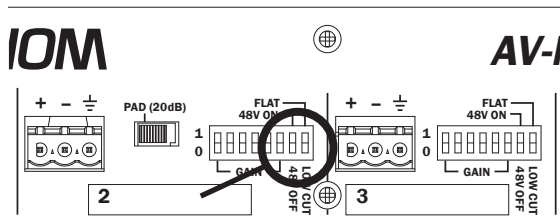
The AV-M8 input has a gain range of +16dB to +64dB (without pad).

## Phantom Power Switch

Phantom power for condenser mics is provided on each channel. Engaging the **48V ON** DIP switch for a channel delivers +48 Volts to the input jack on the front panel of the AV-M8. Move the DIP switch to the up position to activate the phantom power on a channel.

- ✓ **Note:** Avoid using phantom power with line-level audio devices. Also, some ribbon microphones may be damaged by incorrect use of the phantom power switch. Refer to the documentation that came with the microphone for additional information.





Phantom power (left) and Low Cut filter DIP switches

## Low Cut Filter (Rolloff)

Within the DIP switch block used for gain settings is the Low Cut filter switch. It provides a low frequency rolloff at 85Hz that can be used to minimize low frequency artifacts such as vibration noise and rumble. Move the switch to the down position to engage the rolloff. In the up position (marked **FLAT**), the low cut filter is not engaged; the audio signal passes through the circuit unchanged.

## AV-M8 Rear Panel

The rear panel of the AV-M8 Mic Input Module contains the AC power connector (with fuse), power LED, A-Net connections, stereo link DIP switches, clock source selection, and the ADAT® optical I/O.

## Power Connector

The AV-M8 Mic Input Module uses an internal switching-type power supply. This type of power supply can be used worldwide with a wide range of AC wall current output voltages (100-240VAC). When travelling internationally, you do not need to replace the power supply in countries where voltages are different. You may, however, need plug adapters to allow the power supply to be connected to wall outlets in some countries, since many countries use different physical plug layouts for their power systems. Optionally, the detachable IEC power cord can be replaced with one that matches the local power system.

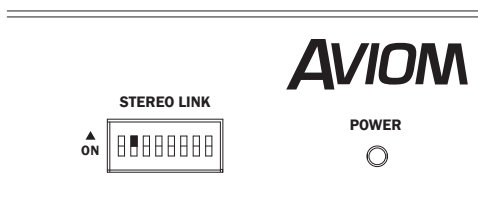
## Rear-Panel Ventilation

To the right of the power connections are a series of ventilation holes that help keep the AV-M8 cool. Do not block or alter the ventilation holes in any way.

## Stereo Link Switch

The AV-M8 Mic Input Module's Stereo Link feature provides an easy solution for stereo input sources such as CD/DVD players, computer sound card audio outputs, etc. The Stereo Link switch turns a pair of adjacent channels on the AV-M8 into a stereo channel pair that can be controlled as a single source on the Pro16 Personal Mixer products (the A-16II and A-16R) or the AV-P2 Output Module.

Channels are grouped in pairs—Channels 1 and 2, Channels 3 and 4, etc.—when using the stereo link feature. Stereo pairs are always made from an odd-even pair.

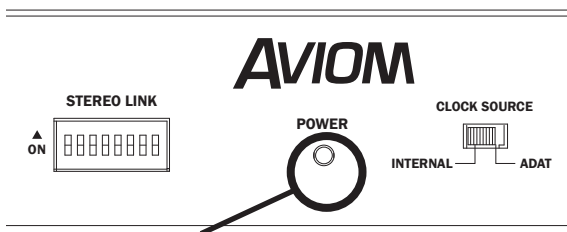


Engage a Stereo Link by pushing the DIP switch to the up position. In this diagram channels 3-4 are linked (shown in black).

When using the AV-M8 Input Module with AN-16/o Output Modules, the setting of the Stereo Link switch will have no effect.

## Power LED

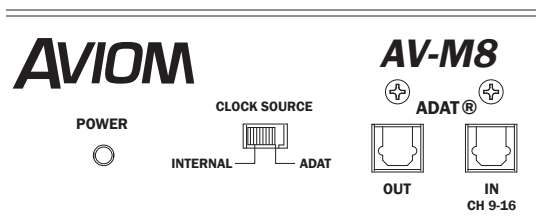
The center of the AV-M8 Mic Input Module rear panel interface contains the Power LED. This indicator shows that power is connected to the unit. When the AV-M8 is powered up, a valid A-Net signal is being generated.



When the Power LED is lit, the AV-M8 is outputting A-Net.

## ADAT® Digital I/O

The AV-M8 includes digital I/O designed to allow two AV-M8 modules to be linked together, creating a single 16-channel A-Net stream. ADAT® Lightpipe® digital connections are used, allowing simple plug-and-play operation when creating a 16-channel system.



ADAT Clock Source (left) and digital I/O connections (right)

Two Lightpipe connections are provided, In and Out, as well as a clock source switch that allows the Pro16 network clock source to be set to internal clock or to the clock imbedded within the ADAT digital signal.

Cables for the ADAT I/O use standard, readily-available Toslink® connections. Lightpipe cables of up to three meters in length can be used.

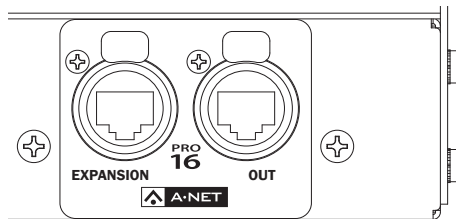
## Clock Source

The Clock Source switch selects either the internal A-Net clock or the clock imbedded within the ADAT digital signal as the network clock. When only one AV-M8 is used, the clock source should be set to Internal. When using two AV-M8 modules to create a 16-channel A-Net stream, the AV-M8 receiving ADAT data should be set to use the ADAT clock.

The ADAT clock received at the ADAT In port is not available at the ADAT Out port. Do not link more than two AV-M8 units via Lightpipe.

## A-Net Connections

Two Pro16 A-Net® connections are provided on the rear panel of the AV-M8 Mic Input Module. There is one A-Net Out port and one A-Net Expansion port.



Connect A-Net Out on the AV-M8 to the A-Net In on a Pro16 monitoring or output device. Use A-Net Expansion for creating networks of up to 32 channels using only one Cat-5e cable.

### A-Net Out

The A-Net Out port sends eight channels of digital A-Net data from the AV-M8 to an A-Net compatible device such as the AN-16/o Output Module, A-16II, A-16R, or AV-P2 Output Module. Use a standard Cat-5e cable or one outfitted with a Neutrik EtherCon connector.

The A-Net Out port will transmit a 16-channel A-Net stream when two AV-M8 modules are cascaded via the ADAT optical connections.

### A-Net Expansion

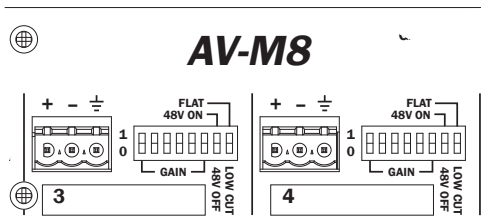
The A-Net Expansion port is used when creating an audio network of up to 32 channels. Using the A-Net Expansion port allows up to 32 channels of A-Net data to travel down a single Cat-5e cable up to 500 feet (150 meters) to/from compatible Pro16 units.

# Connecting Audio

The audio inputs on the AV-M8 Mic Input Module can accept mic-level signals from dynamic or condenser mics and line-level signals from balanced or unbalanced sources via the Euroblock jacks.

## Wiring a Euroblock

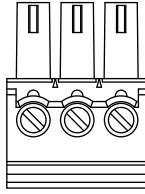
Euroblock connectors provide an easy, solder-free way of making audio connections to the AV-M8. Only a small flat-blade screwdriver is required to make connections. Aviom suggests adding solder to each bare wire on a mic cable to stop the wire strands from unwinding.



AV-M8 input channel strips

To connect a balanced microphone or line-level device to the input channels of the AV-M8:

1. Strip the insulating jacket of the cable back about .75 inch (18 mm) to reveal the individual hot, cold, and ground wires within.
2. Remove a small amount of each individual wire's insulation (approximately .25 inch, 6 mm).
3. Apply a small amount of solder to each bare wire (called "tinning").
4. On the 5.0 mm Euroblock male plug, use a small screwdriver to loosen and open the sockets that will receive the individual wires.
5. Insert the individual hot (+), cold (-), and ground wires into the matching sockets on the Euroblock plug.
6. Tighten the screws on the wire sockets to secure the individual wires.
7. Plug the completed Euroblock plug into the desired input channel.



The Euroblock plug, showing the screws that hold the individual wires in place (left to right), hot (+), cold (-), and ground

## Connecting an Unbalanced Source

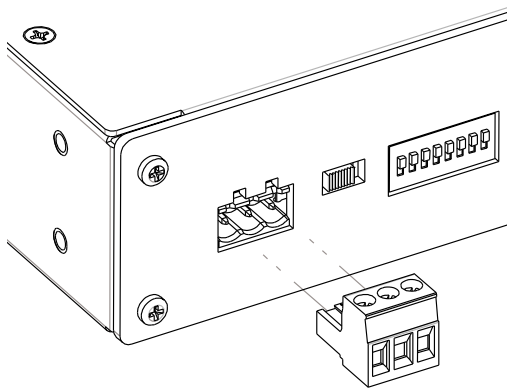
Unbalanced audio sources such as CD players, computer audio outputs, etc., can be connected to the AV-M8 audio inputs. Connections can use single-conductor or two-conductor shielded cable.

To connect an unbalanced line-level device to the input channels of the AV-M8 using single-conductor shielded cable:

1. Strip the insulating jacket of the cable back about .75 inch (18 mm) to reveal the individual hot and ground wires within.
2. Remove a small amount of each individual wire's insulation (approximately .25 inch, 6 mm).
3. Apply a small amount of solder to each bare wire.
4. On the Euroblock plug, use a small screwdriver to loosen and open the sockets that will receive the individual wires.
5. Insert the audio cable's hot (+) wire into the matching socket on the Euroblock plug.
6. Insert the audio cable's ground wire into the matching socket on the Euroblock plug.
7. Tighten the screws on the wire sockets to secure the individual wires.
8. Plug the completed Euroblock plug into the desired input channel. (Note that the (-) socket on the Euroblock plug is not used.)

To connect an unbalanced line-level device to the input channels of the AV-M8 using two-conductor shielded cable:

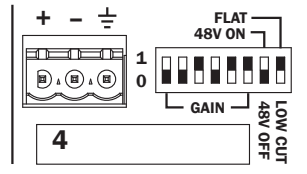
1. Strip the insulating jacket of the cable back about .75 inch (18 mm) to reveal the individual hot, cold, and ground wires within.
2. Remove a small amount of each individual wire's insulation (approximately .25 inch, 6 mm).
3. Apply a small amount of solder to each bare wire.
4. On the Euroblock plug, use a small screwdriver to loosen and open the sockets that will receive the individual wires.
5. Insert the audio cable's hot (+) wire into the matching socket on the Euroblock plug.
6. Insert the audio cable's cold (-) wire into the matching socket on the Euroblock plug.
7. Insert the audio cable's ground wire into the matching socket on the Euroblock plug.
8. Tighten the screws on the wire sockets to secure the individual wires.
9. Plug the completed Euroblock plug into the desired input channel.
10. At the other end of the cable, connect the hot (+) wire to the unbalanced source's hot connector.
11. Connect the cold (-) and ground wire to the unbalanced source's ground connector.



Plug the completed Euroblock connector into the channel's input jack.

# Setting Gain

The following table lists the DIP switch settings for input gain. Move the DIP switch to the up (1) position to activate it.



Move the Gain DIP switches to the up position to engage them. Shown here is a +44 dB gain setting, with no phantom power or filter.

In the gain settings table, “0” indicates the down position and “1” indicates the up position on the DIP switch.

Gain	DIP Switch					
	1	2	3	4	5	6
<b>+16dB</b>	0	0	0	0	0	0
<b>+22dB</b>	0	0	0	0	0	1
<b>+28dB</b>	0	0	0	0	1	0
<b>+34dB</b>	0	0	0	0	1	1
<b>+39dB</b>	0	0	0	1	1	1
<b>+44dB</b>	0	0	1	0	1	1
<b>+49dB</b>	0	0	1	1	1	1
<b>+54dB</b>	0	1	1	1	1	1
<b>+59dB</b>	1	0	1	1	1	1
<b>+64dB</b>	1	1	1	1	1	1

When using the Pad, found on channels 1 and 2 only, the channel’s initial input level is decreased by 20dB relative to the settings shown in the table above.

To use phantom power with a microphone, move the 48V switch to the up position.

The Low Cut filter can be used to eliminate low frequency artifacts. The Low Cut is engaged in the down position; the audio signal is unaltered in the up (Flat) position.



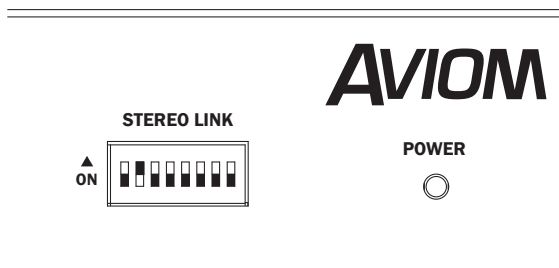
# Labeling a Channel

To label the AV-M8 inputs, use a non-permanent china marker. As an option, use removable artist's tape and a pen or marker to add channel names to the input strips. Office supply stores offer labeling machines that can be used to create more permanent channel labels on plastic-based tape.

## Stereo Link

There are eight Stereo Link DIP switches on the front panel of the AV-M8. When using a single AV-M8, only the first four Stereo Link switches can be used; each controls one pair of channels. When two AV-M8 units are cascaded using the ADAT optical link to create a 16-channel A-Net stream, only the stereo link switches on the primary AV-M8 unit (the one whose A-Net Out is being used) affect the A-Net signal. Stereo link information does not pass over the ADAT® optical expansion interface.

Stereo links can be used in any combination, as your needs require. Stereo links always affect adjacent channels (for example, channels 1 and 2, channels 7 and 8, etc.).



This example shows channels 3 and 4 stereo linked. (The DIP switch is in the up position. Switch handles are shown in black.)

The default setting, with the switch in the down position, allows independent control of each mono input channel from Pro16 Personal Mixer or AV-P2 products connected to the system. To link channels together as a stereo pair, move the Stereo Link DIP switch upwards. Moving the switch to the up position causes all AV-P2 devices and Personal Mixers connected to the system to instantly update their channel status. (This includes the optional A-16CS Control Surface, used with the A-16R.)

Some things to keep in mind about linked channels:

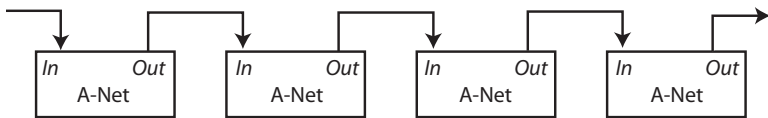
- The position of the Stereo Link switch does *not* affect the audio in the AN-16/o Output Module.
- Linking channels affects *all* Pro16 Personal Mixers and/or AV-P2 output modules connected to the system.
- Any combination of stereo and mono channels can be used.
- If you want to control two input channels as a stereo source, they must be connected to an odd and even pair of channels.
- Changes to the Stereo Link status can be made on the fly, with audio running through the system.
- All Personal Mixers and AV-P2 units will instantly update their channel status if the Stereo Link switch position is changed for any channel pair.
- Link status is not saved when you create a Preset on A-16II or A-16R Personal Mixers.
- Changing the channel link status may affect Groups you have created on A-16II and A-16R Personal Mixers.

# A-Net Connections

In a simple Pro16 system, the easiest connection method uses what is called a *daisy chain*. That is, each A-Net device is connected in series. The first device in the chain receives the A-Net signal from the Pro16 input module such as the AN-16/i Input Module or a compatible Pro16 console card. Each successive A-Net compatible device gets its A-Net connection from the A-Net Out jack of the device preceding it in the chain.

## Series Connection of A-Net Devices

The diagram below illustrates a series connection of A-Net devices.



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

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

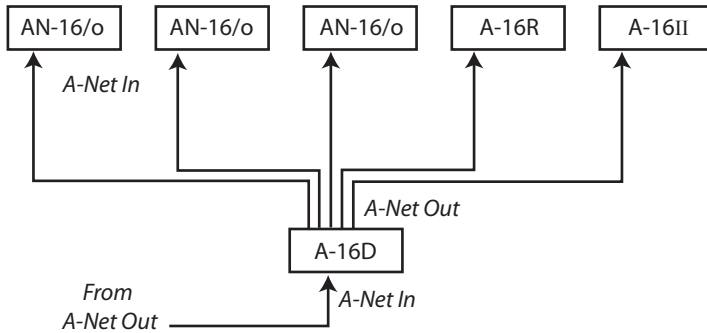
A parallel A-Net connection solves that problem. By using the optional A-16D or A-16D Pro A-Net Distributor, parallel A-Net connections are possible. In fact, any combination of series and parallel connections can be used to solve even the most complex audio routing problems.

## Parallel A-Net Routing

Connecting A-Net devices in parallel involves the addition of an A-Net distributor. Any number of A-Net distributors can be added, creating an infinite number of digital splits.

### Using an A-Net Distributor

A variety of A-Net compatible components are shown connected in parallel to an A-Net Distributor in the diagram below.



The A-Net signal from the Distributor is connected to each A-Net compatible device with a Cat-5e cable. Removing one A-Net device has no effect on the other A-Net outputs being used.

When designing an A-Net system, Pro16 modules can be connected in any order; simply connect A-Net Out to A-Net In as needed.

## Extending A-Net Cable Runs

To span distances longer than maximum specified for a single A-Net cable (500 feet, 150 meters), the A-16D (or A-16D Pro) A-Net Distributor can be used as a signal repeater. Simply insert the A-16D or A-16D Pro into the A-Net stream at the 500-foot point and the A-Net signal will be refreshed. Another 500 feet/150 meters of cable can then be added. This process can be repeated as many times as required to extend cables. In fact, any Pro16 device will refresh the A-Net signal and allow another 500-foot cable run between it and the next Pro16 device.

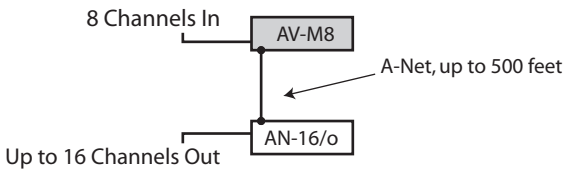
For long distance applications, fiber optic cable can be used to span distances up to 50 miles (80 km) with the use of devices called *media converters*. A media converter changes the Cat-5 Ethernet-based A-Net signal to a fiber optical signal at the source location and then back to Cat-5 at the destination.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

# Audio Networks

Pro16 A-Net input and output modules can be combined to create audio networks of up to 64 audio channels with unlimited expansion.

## 8-Channel Systems

The most basic A-Net based system uses one input module connected to one output module or Personal Mixer. For example, the AV-M8 can be connected to an AN-16/o Output Module to deliver eight discrete line-level audio signals to a mixing console, recording system, etc., or to an A-16II, A-16R, or AV-P2 for outputs as a mono or stereo signal.



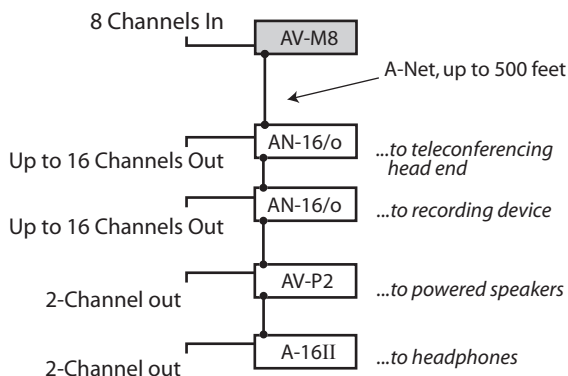
Connect A-Net Out on the AV-M8 to the A-Net In on any compatible device. The eight audio channels from the AV-M8 appear as channels 1-8 on the output module.

## Digital Splits

A-Net allows far more flexibility than just the simple configuration outlined above. In fact, any number of Pro16 A-Net devices can be connected to a single input module. This allows the creation of infinite numbers of digital signal splits, with each additional A-Net device capable of being located up to 500 feet (150 meters) away.

Splits can be used to send exact digital copies of the audio signals from the input module to a live sound mixing console, a recording system, audio machine room, and a live television broadcast facility simultaneously with no signal degradation.

To add digital copies, or “splits,” to a system, simply connect an A-Net Out to the A-Net In on Pro16 output modules or Personal Mixers. The following diagram shows one such system using a variety of Pro16 devices connected in series.

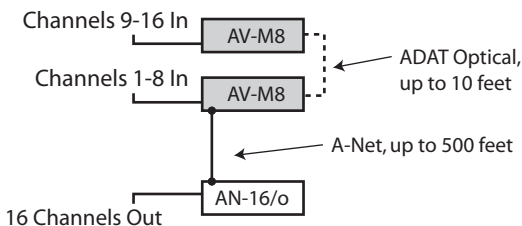


One AV-M8 is shown connected to four A-Net devices.

Remember that the AV-M8 is an 8-channel device. In the diagram above, only channels 1-8 on the Pro16 output devices will have audio signals present. Cascading two AV-M8 modules with the ADAT link will provide 16 channels.

## Combining Two AV-M8 Modules

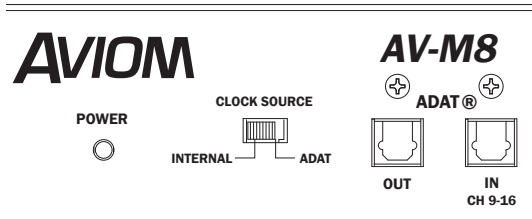
To create a single 16-channel A-Net stream, two AV-M8 units can be combined using the ADAT optical link and a Toslink optical cable.



Two AV-M8 units can be combined to send a single 16-channel A-Net stream to any compatible Pro16 device.

When creating a 16-channel A-Net stream with two AV-M8 modules, only one A-Net output is available. In this configuration, one AV-M8 is the primary and the other a secondary device. The primary AV-M8 will be the one on which the A-Net Out port is used. There are no switches or software to configure;

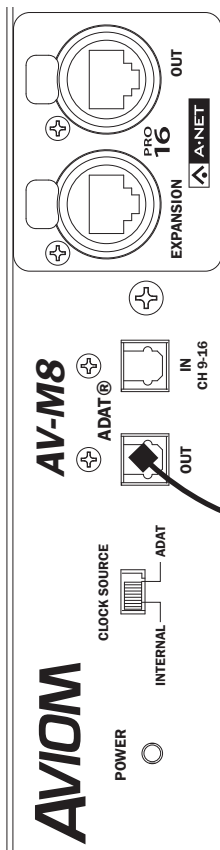
simply choose one of the devices as primary and connect a Cat-5e cable to the A-Net Out port on that module.



ADAT Clock Source (left) and digital I/O Toslink connections (right)

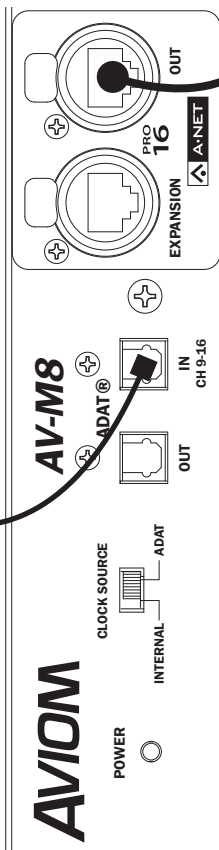
To create a 16-channel A-Net stream:

1. Connect up to 16 audio signals as desired to the two AV-M8 units.
2. Select one of the units to be the primary device; this device will have its A-Net Out port connected to a compatible Pro16 Personal Mixer or output module's A-Net In. (This device provides A-Net channels 1-8.)
3. Use a Toslink optical cable to connect **ADAT Out** on the secondary AV-M8 to **ADAT In** on the primary AV-M8. (This device provides A-Net channels 9-16.) Leave its Clock Source set to **INTERNAL**.
4. On the primary AV-M8, set the **CLOCK SOURCE** switch to **ADAT**.
5. Set stereo links as required on the primary AV-M8.
6. Connect a Cat-5e cable from the **A-NET OUT** port on the primary AV-M8 to **A-NET IN** on a compatible Pro16 A-Net device.



**Secondary AV-M8**

*Toslink optical cable*



**Primary AV-M8**

*Cat-5e cable*

*16 channels, to Pro16 devices*

In this diagram, two AV-M8 units are connected to create a single 16-channel A-Net stream. The eight channels on the secondary AV-M8 (top) become channels 9-16 in the A-Net stream when connected via the ADAT link to the primary AV-M8. Note that the Stereo Link switches are not used on the secondary AV-M8.



# 32-Channel Systems

Aviom's Pro16 audio networking products work in blocks of 16 channels. Audio networks of 32 channels can be configured as:

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

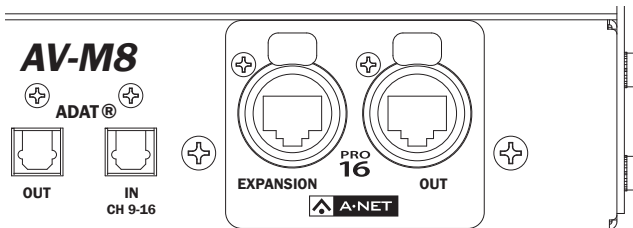
Systems up to 32 audio channels can be configured with no additional hardware by using the built-in A-Net Expansion ports.

For systems larger than 32 channels, Aviom offers the AN-16SBR System Bridge as an option. The System Bridge allows up to four A-Net streams to be combined into a single Cat-5e cable for distribution over long distances.

A 32-channel system is comprised of two pairs of Pro16 Series I/O units, each providing a 16-channel data stream. (Remember that two AV-M8 units cascaded via the ADAT link create a *single* Pro16 A-Net stream.) Since the Pro16 system is modular, you can connect the Pro16 Series units as needed, making any of the configurations mentioned previously available at any time. Simply move and re-patch the units.

## A-Net Expansion

In a 32-channel system, the A-Net Expansion port is used to allow two A-Net data streams to travel down one cable.



The rear panel of the AV-M8 showing the A-Net Out and A-Net Expansion ports

Some points to remember about using the A-Net Expansion ports on the Pro16 Series input and output modules to create an audio network:

- When creating a network with two pair of Pro16 Series units, one A-Net Expansion port will be connected to an A-Net *In* port while the other A-Net Expansion port will be connected to an A-Net *Out* port.

- The A-Net *Out* ports on the Pro16 output modules should be empty when only four Pro16 Series units are being used to create a network. These ports are then available for adding audio splits with additional Pro16 output modules, or for connecting to a Personal Mixer product such as the A-16II or A-16R.
- The cable connecting the two halves of the network (carrying 32 channels of audio) should be connected to one A-Net *In* port and one A-Net *Out* port.
- Do not connect Cat-5e cables carrying expanded system data (more than 16 channels) to an A-Net Distributor or Personal Mixer product.
- The maximum cable length specification of 500 feet (150 meters) applies to the length between an A-Net *In* port and an A-Net *Out* port. Cables used to connect devices via the A-Net Expansion ports must fall within this maximum distance.
- An A-Net Expansion port is *never* connected to another A-Net Expansion port.
- The A-Net Main Out on the AN-16/i-M Mic Input Module is the only A-Net port that works with the Expansion port. The A-Net Aux output carries only local data.

## 32-Channel Examples

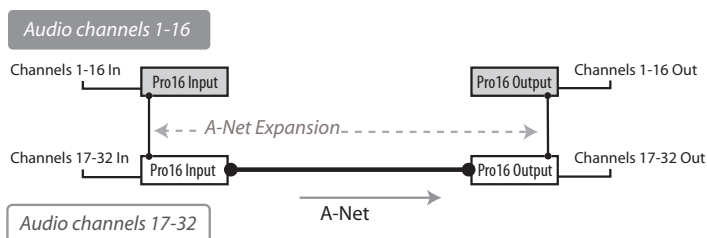
In the following examples, any Pro16 input module can be used. This includes the AV-M8, Y1 console interface card (for Yamaha products), third-party console interface card, AN-16/I, or the AN-16/i-M. Only one device is shown in the illustrations. They are referred to generically as “Pro16 Input Modules.”

A pair of AV-M8 units cascaded via the ADAT link are shown in the diagram as a single input module.

### 32 Channels Send

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

With this configuration, up to 32 analog audio (mic- or line-level) signals are connected as inputs to two Pro16 Input Modules. One input module contains channels 1-16, while the other has channels 17-32.



Two Pro16 input modules configured as 32 x 0

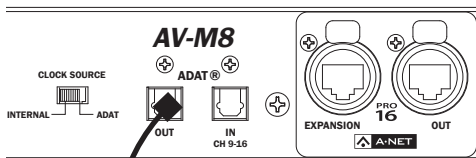
Two Pro16 output devices are connected on the receive side of the audio network. In the diagram, any Pro16 output device can be used. This includes A-16II and A-16R Personal Mixers, as well as AN-16/o and AV-P2 Output Modules.

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

1. Connect the first 16 mic or line-level audio sources to inputs 1-16 on the first Pro16 input module.
2. Connect the second group of 16 audio sources to inputs 1-16 on the second input module.
3. Connect a Cat-5e cable from the **A-NET OUT** port on the first input module to the **A-NET EXPANSION** port on the second input module.
4. Connect a cable from the **A-NET OUT** port on the second Pro16 Series input module and run it to the destination where the Pro16 output modules are located, and plug it into the **A-NET IN** port on the first output module.
5. Connect a Cat-5e cable from the **A-NET EXPANSION** port on the first output module to **A-NET IN** on the second output module.
6. Patch the audio outputs from the two output modules into the desired destinations.

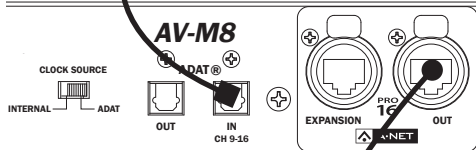
Remember that the maximum cable length between A-Net devices is 500 feet (150 meters). Always use Cat-5e UTP cable.

The diagram that follows shows two pair of 16-channel AV-M8 units configured as primary/secondary using the ADAT optical link.



**Secondary**

*optical cable*



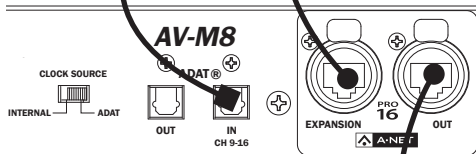
**Primary**

*Cat-5e cable*



**Secondary**

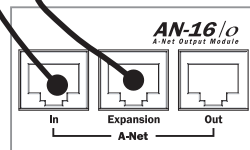
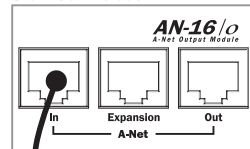
*optical cable*



**Primary**

*Cat-5e cable*

Channels 1-16 Out

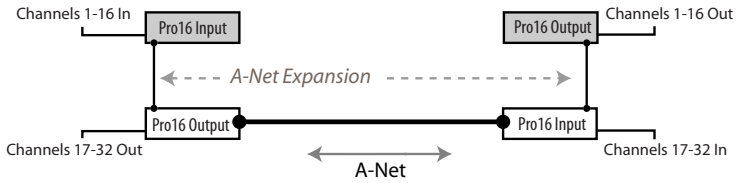


Channels 17-32 Out

Cable connections for a 32 x 0 system

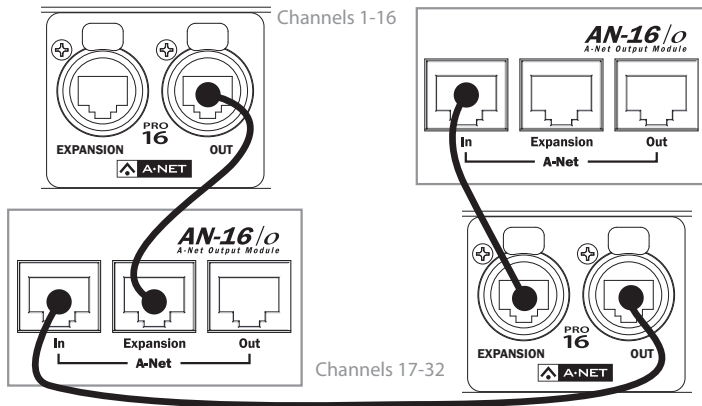
## 16 Channels Send and Return

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



Using this configuration, each side of the audio network has one input module (or pair of AV-M8 units) and one Pro16 output module. Sixteen channels of audio move in each direction over a single Cat-5e cable.

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



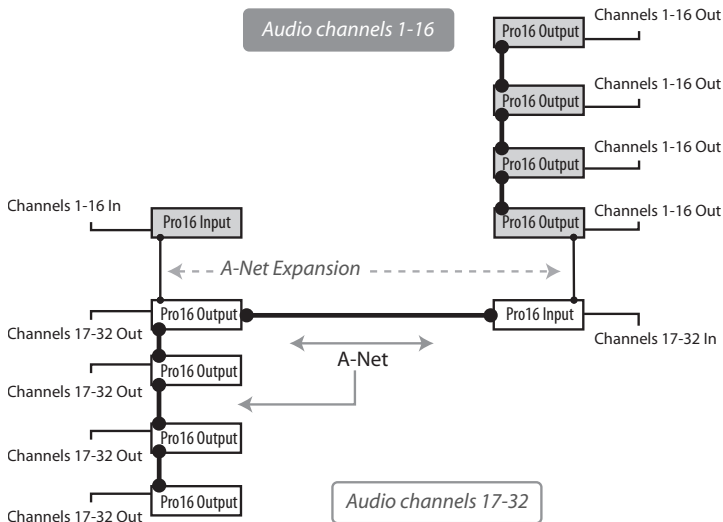
### To configure a 16 x 16 system:

1. Set up one input module (AV-M8, pair of AV-M8s, Y1 card, AN-16/i or AN-16/i-M) and one output module on each side of the network.
2. Connect 16 mic- or line-level audio sources to inputs 1-16 on the first Pro16 Series input module.
3. Connect a Cat-5e cable from the **A-NET OUT** port on the first input module to the **A-NET EXPANSION** port on the first output module.

4. Plug a Cat-5e cable into the **A-NET IN** port on the first output module. This cable will be used to span up to 500 feet/150 meters between the two sides of the network.
5. Connect the cable from the **A-NET IN** port in Step 4 to the **A-NET OUT** port on the second Pro16 Series input module.
6. Connect the second group of 16 audio sources to inputs 1-16 on the second Pro16 Series input module.
7. Connect a Cat-5e cable from the **A-NET EXPANSION** port on the second input module to **A-NET IN** on the second Pro16 output module.
8. Patch the audio outputs from the two output modules into the desired destinations.

## Adding More Audio Outputs

As mentioned previously, the A-Net Out ports on AN-16/o and AV-P2 Output Modules and Personal Mixer products remain available even when creating a bidirectional audio network. This allows additional output modules to be added as needed to suit a variety of audio situations. Any Pro16 A-Net compatible product with an A-Net In can be connected to an A-Net Out port. This flexible routing scheme allows you to send audio to a variety of different locations, and to include Aviom's Pro16 Monitor Mixing System for mic applications.



Digital copies of each 16-channel output stream have been added.

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

**To create an expanded network:**

- First start by configuring the network according to your basic needs (either as 32 x 0, or as 16 x 16).
- Add additional Pro16 output modules by connecting a Cat-5e cable from the **A-Net Out** port on one of the connected modules to the **A-Net In** port on a Pro16 output module that you want to use to expand the system.
- Each additional Pro16 output module that you want to add is connected by patching a Cat-5e cable from **A-Net Out** to the new module's **A-Net In** port.

## Expanding a Network

While the A-16D and A-16D Pro Distributors are not compatible with the data being distributed via the A-Net Expansion ports, you can use an A-16D to add wiring flexibility to your system.

As mentioned in the previous examples, an A-Net Distributor can be connected to any single A-Net Out port to allow parallel distribution of up to eight exact copies of the input data.

The total cable length between A-Net devices is limited to 500 feet, 150 meters.

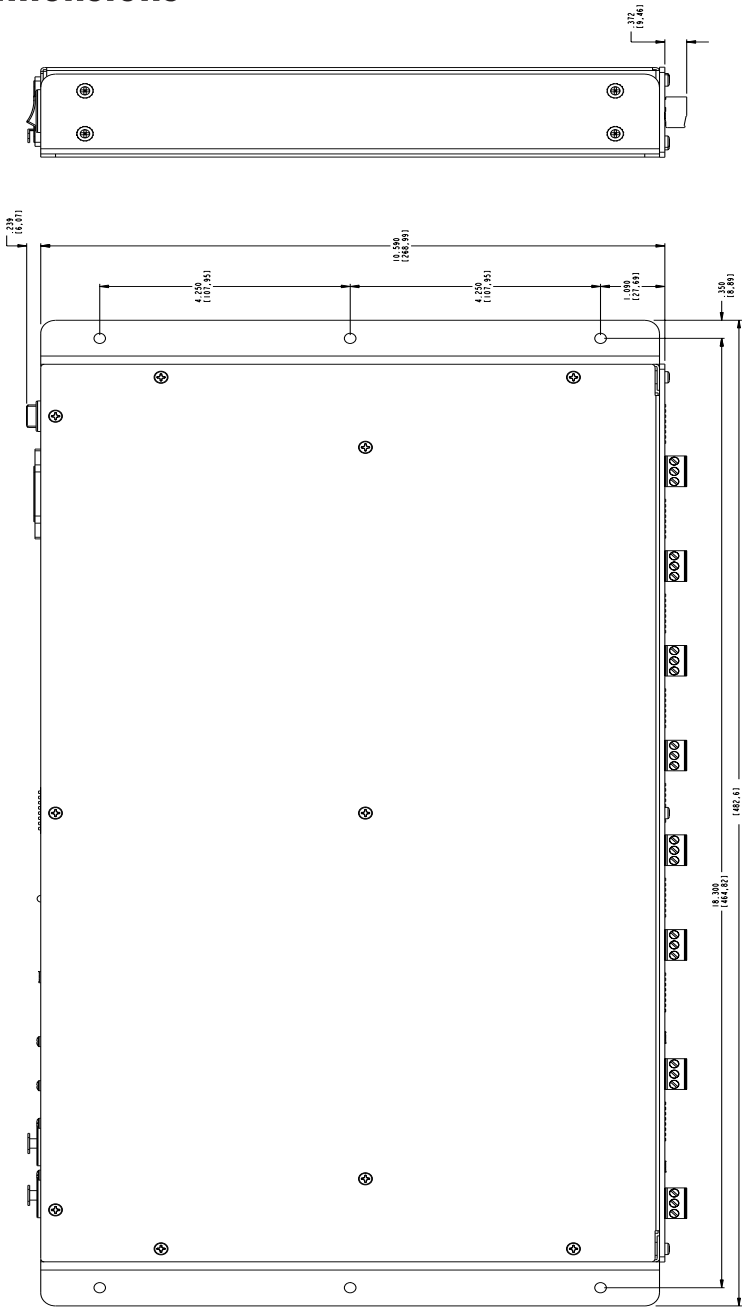
# Specifications

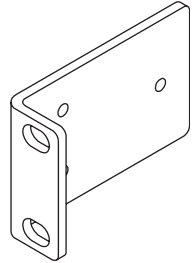
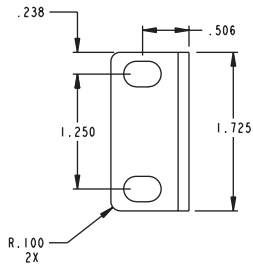
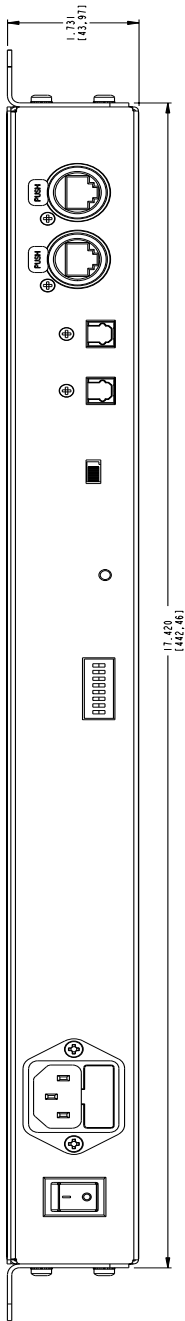
<b>Analog Audio Inputs</b>	6, mic-level
	2, balanced line- or mic-level
	8 female Euroblock connectors, 5.0 mm, panel-mount
	Screw terminals: Audio +; Audio -; Ground
	8 male Euroblock connectors supplied in box
<b>A/D Conversion</b>	48kHz, 24-bit
<b>Gain Settings</b>	+16dB to +64dB (10 settings)
	6-position DIP switch, per channel
<b>Max. Input Level</b>	Mic: -2dBu; Line: +18dBu
<b>Stereo Operation</b>	Stereo Link, per channel pair; two-position switch (Normal, Link)
<b>ADAT</b>	1 ADAT In, 48kHz, 8 channels routed to A-Net Out, Channels 9-16
	1 ADAT Out, 48kHz, 8 channels, routed from analog inputs
<b>Input Impedance</b>	Channels 1-2, without pad: 2.48k ohms Channels 1-2, with pad: 5.63k ohms Channels 3-8: 2.68k ohms
<b>Freq. Response</b>	4Hz–22kHz +0.2dB/-3dB
<b>THD +N</b>	< 0.003%
<b>Crosstalk</b>	-90dB
<b>Signal to Noise (unweighted)</b>	A/D: -105dB
<b>Low Cut Filter</b>	-3dB @ 85Hz, -18dB per octave
<b>Phantom Power</b>	+48 volts, per channel
<b>Pad</b>	20dB, switchable, Channels 1 and 2 only



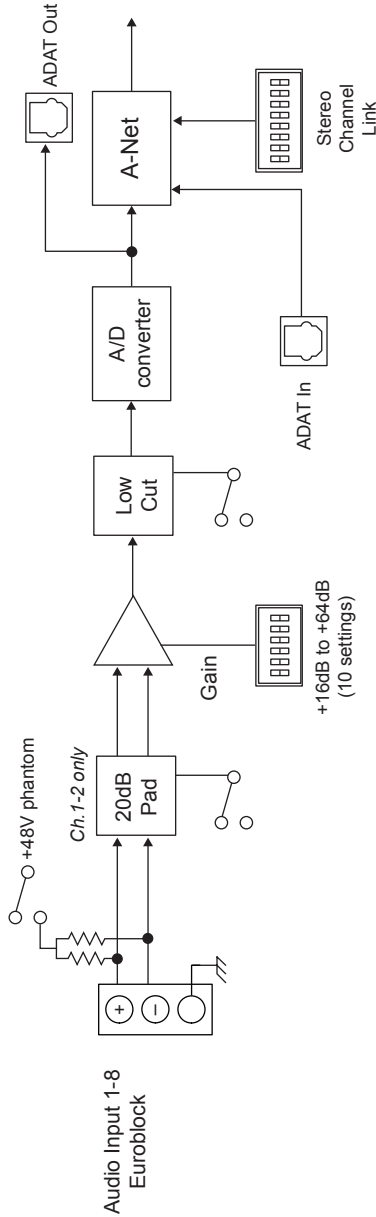
<b>Mic Input</b>	EIN (Equivalent Input Noise): -128dBu
	(Rs = 150 ohms, 20kHz BW, Gain = +60dB)
	CMRR (Common Mode Rejection Ratio): 80dB @ 120Hz (Gain = +60dB)
<b>Bit Error Rate (BER)</b>	10 <sup>-12</sup>
<b>Pro16 A-Net</b>	Out: 1; Expansion: 1; EtherCon® connectors
	A-Net Expansion combines two A-Net streams (32 channels of audio) onto one Cat-5e cable
	Uses unshielded Cat-5e UTP (or better) cable
<b>Latency</b>	<0.880 msec (measured from analog input to analog output)
<b>Power Supply</b>	Internal, universal switching type; IEC jack
<b>Voltage</b>	100-240VAC, 50-60Hz, 60W; Fuse: 250VAC, F4AL
<b>Dimensions</b>	19" (482.6 mm) wide x 9.25" (243.9 mm) deep; 1U high
<b>Weight</b>	8 lb. (3.63 kg)
<i>All Aviom products are designed and manufactured in the USA.</i>	

# Dimensions





# Block Diagram



# Index

## Symbols

32-Channel Systems 20, 33  
+48 Volt 3, 6, 16  
85Hz Low Cut filter 17

## A

A-16CS Control Surface 25  
A-16D 2, 27  
A-16D Distributor 28, 39  
A-16D Pro 2, 27  
A-16D Pro Distributor 39  
A-16II 7, 8, 18, 20, 26  
A-16R 7, 18, 20, 26  
AC current 17  
AC Line Conditioning 8, 9, 12  
ADAT 1, 6, 16, 17, 19, 20, 31, 40  
ADAT In 20  
ADAT Out 20  
Adding More Audio Outputs 38  
Adding Personal Mixers 38  
AN-16/i 7  
AN-16/i-M 7, 34  
AN-16/o 7, 8, 18–20, 29, 35  
AN-16SBR System Bridge 7, 11, 33  
Analog Input 40  
A-Net 1, 8, 18, 29, 38  
A-Net channels 16  
A-Net connections 17  
A-Net Distributor 2, 27  
A-Net Expansion 20, 33, 35, 37, 41  
A-Net, long distance 28  
A-Net Out 20, 35, 38  
    AN-16/i 20  
A-Net signal repeater 28  
AN-Series 33, 35  
ASI A-Net Systems Interface 9  
Audio Inputs 15  
Audio Networks 29  
AV-P2 7, 8, 18, 20, 25, 35

## B

balanced signal  
    connecting 21  
bidirectional 38  
Block Diagram 44

## C

cable length 10  
Cables  
    Lightpipe, Toslink 19  
Cat-5 9, 10, 11  
Cat-5e 2  
    UTP 9  
Cat-5e cable 20  
Cat-5e UTP 41  
Cat-6 2, 10  
Category 5 9  
Category 5e  
    9  
Certifications ii  
Channel  
    Labeling 25  
Cleaning and Maintenance 14  
Clock Source  
    internal, ADAT 19  
Clock Source Switch 6  
Compatibility 7  
computer network 8  
condenser mic 21  
Connecting an Unbalanced Source 22  
Connecting Audio 21  
console card 8, 27  
console interface card 7  
Control Surface 25  
crossover cables 10

## D

daisy chain 27  
Digital I/O 19  
digital split 27  
Digital Split 29  
Dimensions 41, 42  
DIP Switch  
    Gain 24  
Distributor 27, 39  
dynamic mic 21

## E

EtherCon 41  
EtherCon Connector 14  
Ethernet 8

- Euroblock 1, 3, 15, 22
  - size 40
  - wiring 21
  - wiring an unbalanced source 22
- expanded network 39
- Expanding 39
- Expansion 33, 35
  - A-Net 20
- Extending A-Net 28

## F

- fiber optic 28
- Filter 17
- flanges 12
- Flat 24
  - Low Cut Filter 17
- Frequency Response 40
- Front Panel Components 3

## G

- Gain 24
  - DIP Switch 24
- Gain Range 16
- Gain Settings 3, 16
- Gain Settings Table 4, 24
- Group
  - A-16II and A-16R 26
  - Personal Mixers 26
- guitar 16

## H

- high impedance sources 16

## I

- IEC power cable 1, 17
- inline coupler 12
- input gain 24
- Input Impedance 40
- Input Level 40

## L

- Labeling a Channel 25
- LAN
  - Local Area Network 8
- Latency 41
- Lightpipe 19
- Lightpipe, Toslink
  - Cables 19

- line-level
  - connecting 21
- Line-Level Inputs 16
- Linking Channels 26
- Link switch 18, 25
- Local Area Network 8
- long distance A-Net 28
- Low Cut Filter 3, 17, 24, 40
  - Flat 17

## M

- maximum cable length 12, 35
- media converter 28
- mic
  - dynamic or condenser 21
- Mic Input 41
- Mic-Level Inputs 15
- Monitor Mixing System 38
- Mono 26
- mounting flanges 12
- Mounting the AV-M8 12

## N

- network 8
- networking 8
- Neutrik 14
- Neutrik EtherCon. *See* EtherCon

## O

- Output Module 18

## P

- Package Contents 1
- Pad 3, 16, 24, 40
- Pad switch 15
- Panel Descriptions 15
- Parallel A-Net Routing 27
- parallel connection 27
- permanent installation 10
- Personal Mixer 18, 35, 38
  - A-16II, A-16R 25
- Phantom Power 3, 16, 24, 40
- Power Connector 17
- Power LED 18
- power supply
  - plug size 12
- Power Supply 17, 41
- Pro16 1, 7, 8, 20
- Pro16 Monitor Mixing System 38

Pro16 Personal Mixer 18, 25  
Pro16 Series 8  
Pro16 Series products 33, 38  
Pro64 7, 9

## R

rack ears 12  
Rack Mounting 13  
Rear Panel Components 5  
Rear Panel description 17  
RJ45 14  
RJ45 connector 9  
RoHS ii  
Rolloff 17  
router 8  
rumble filter 17

## S

series connection 27  
signal repeater 28  
Specifications 40  
split 27  
Split 29  
stereo channel 18  
stereo input 18, 25  
Stereo Link 18, 26  
System Bridge 7, 33

## T

Toslink 19  
Toslink, Lightpipe  
Cables 19

## U

Unbalanced Source  
wiring Euroblocks 22  
Unshielded Twisted Pair 9  
UPS 12  
UTP 9  
UTP cable 35

## V

Ventilation 13, 18

## W

Weight 41  
Wiring a Euroblock 21

## Y

Y1 7  
Y1 console interface card 34  
Yamaha 7

# Warranty Registration

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

Model Number \_\_\_\_\_ Product Serial Number \_\_\_\_\_

Model Number \_\_\_\_\_ Product Serial Number \_\_\_\_\_

Model Number \_\_\_\_\_ Product Serial Number \_\_\_\_\_

Model Number \_\_\_\_\_ 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<sup>®</sup>**

**1157 Phoenixville Pike, Suite 201 • West Chester, PA 19380**  
**Voice: +1 610.738.9005 • Fax: +1 610.738.9950 • [www.Aviom.com](http://www.Aviom.com)**