AVIOM[®]



User Guide

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Certifications

ETL/cETL Listed

EMC:

Conforms to:

Certified to:

RoHS Status:

EN 55013, EN 55020, SAA AS/NZS 1053 IEC 60065, EN 60065, UL 6500-2001 CAN/CSA E60065, KETI Pb-free

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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.
- 17. The box within a box symbol (I) indicates that the external power supply is double insulated.



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.

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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.

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Welcome

Thank you for purchasing the **Aviom A-16D Pro A-Net**[®] **Distributor** for use with the Pro16[®] Monitor Mixing System and audio networking products. This User Guide is designed to make the installation and setup of your new product quick and easy.

Package Contents

The A-16D Pro A-Net Distributor box includes:

- One A-16D Pro A-Net Distributor
- One IEC removable power cord
- User Documentation

Overview

The A-16D Pro A-Net Distributor is designed to distribute the A-Net signal from any Pro16 A-Net product via industry-standard Cat-5e cables. Each A-16D Pro accepts one A-Net input and provides eight A-Net outputs with embedded DC power and one unpowered A-Net Thru output.

The A-16D Pro A-Net Distributor enables parallel connection of A-Net devices, simplifying stage, studio, and audio network setups.

A-16D Pro Features:

- Easily distribute A-Net from a central location or from other A-Net Distributors
- One A-Net input, eight A-Net outputs, one A-Net Thru connection
- Power Personal Mixers via the Cat-5e cable
- A-Net activity LED on the main input
- Multiple A-16D Pro distributors can be used in a system

Compatibility

The A-16D Pro A-Net Distributor can be used with:

- A-16II Personal Mixer
- A-16R rack-mounted Personal Mixer
- A-16D A-Net Distributor
- AN-16/i Input Module
- AV-M8 Input Module
- AN-16/i-M Mic Input Module
- Y1 A-Net Interface Card for use with Yamaha® consoles
- AN-16/o Output Module
- AV-P2 Output Module
- Third-party Pro16 console interface cards

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 A-Net Distributors, Personal Mixers, and output modules are compatible with Pro64 and the ASI. Pro16 input modules and console interface cards cannot send their data into a Pro64 network.

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 system's A-Net input module or console interface card to each A-Net device connected to the system.

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

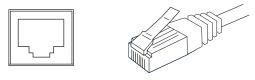
- Virtually no latency
- No ground loops
- · Easy cabling using readily available components
- An unlimited number of A-Net devices can be used in a system
- Ease in spanning long distances between system components
- ✓ Note: While the Cat-5e cables and connectors used on your Aviom products look like typical computer Ethernet network connections, <u>do not</u> connect computers, routers, or other home and business networking equipment to your Aviom products.

About Category 5

Category 5 (also 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.

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



RJ45 Jack

Cat-5 Cable

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.)

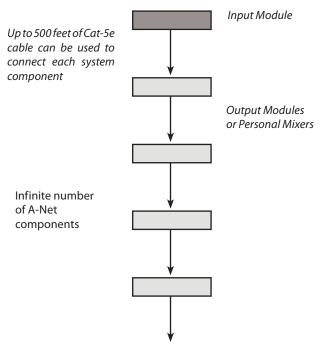
In addition to standard Cat-5e cables, Category 6 (Cat-6) cables can also be used.

✓ Note: When purchasing Cat-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 (approximately 150 meters) in length between devices. The maximum cable length specification applies to the cable connected between the AN-16/i Input Module and the first Pro16 output module (or Personal Mixer) in your system as well as for cable runs between each additional Pro16 A-Net

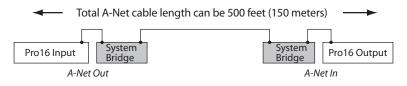
compatible device in your system.



The distance between each A-Net device can be up to 500 feet (150 meters).

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.



The maximum cable distance includes all passive devices such as System Bridges in the calculation.

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).

Installing in an Equipment Rack

The A-16D Pro 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 two standard rack spaces (19 inches wide by 3.5 inches high).

The rack ears on each side of the device are designed to support the weight of the A-16D Pro. Each rack ear contains holes for two screws per side. Always support the unit with all four screws.

The rear panel of the A-16D Pro also includes mounting holes for adding rear support. Support the rear of the A-16D Pro if it is mounted in a rack that will be transported frequently to avoid flexing the case of the product.

To rack mount the A-16D Pro, 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.

EtherCon Connector

Some Aviom products use EtherCon[®] Cat-5 connectors. The Neutrik EtherCon connector is a dual RJ45 type connector. It can receive a standard Cat-5e cable or a cable fitted with the special heavy-duty EtherCon connector.

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

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

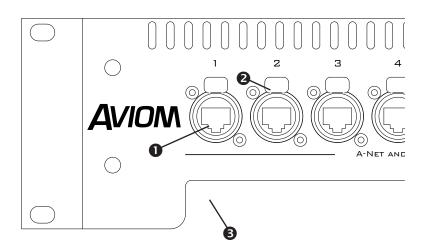
Cleaning and Maintenance Information

The exterior of your Aviom products should be cleaned with a dry, soft, lintfree 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.

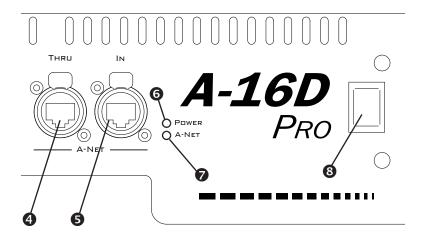
✓ Note: Never use solvents or abrasive cleaners on the finished surfaces of your Aviom products.

A-16D Pro Front Panel



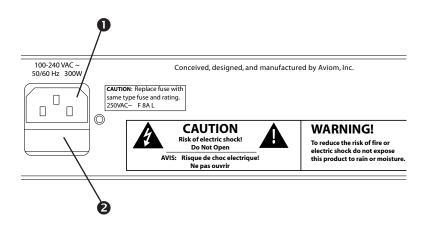
	Function
1	A-Net outputs 1-8, with DC power for Personal Mixers
2	EtherCon Cat-5 connector; press tab to release
3	Cable pass-through — cables can pass under the unit to reach connections in the rear of a rack.

A-16D Pro Front Panel



	Function
4	A-Net Thru, EtherCon
5	A-Net Input, EtherCon
6	Power LED indicator
7	A-Net LED indicator
8	AC power on/off switch

A-16D Pro Rear Panel



	FUNCTION
1	AC Power connection, IEC
2	Fuse holder

A-16D Pro A-Net Distributor

The A-16D Pro is designed to create a network of parallel A-Net devices. The A-Net signal appearing at the input of the A-16D Pro is distributed to each of the eight outputs on the front panel. Devices are connected in parallel rather than in serial fashion.

A-16D Pro Front Panel

There are three types of A-Net connectors on the front of the A-16D Pro A-Net Distributor.

The A-Net IN jack accepts the A-Net signal coming from *any* A-Net device. This is most likely to be an A-Net input module when creating a monitor mixing system.

Each A-Net **O**ut sends an exact copy of the input signal in parallel to the eight outputs. Each jack also supplies DC power that can be used to power a Pro16 Personal Mixer product over the Cat-5 cable, eliminating the need for a local power supply.

An A-Net Thru jack allows multiple A-16D Pro Distributors to be daisy chained together. You can expand a monitor mixing or audio distribution system to have more than eight parallel powered outputs by using as many A-16D Pro A-Net Distributors as required.

The connections on the A-16D Pro front panel can use standard Cat-5 cables or cables equipped with the Neutrik EtherCon[®] Cat-5 connector. The EtherCon connector is an XLR-style connector similar to a mic connector. EtherCon connectors offer a locking mechanism and increased protection for the Cat-5 cable jacks and I/O connections.

Front Panel LED Indicators

The front panel's A-Net Input jack contains two LEDs. The red LED indicates that the A-16D Pro is powered on. The green LED blinks to indicate that a valid A-Net signal is plugged into the Input jack.

Connecting an A-16D Pro

In a monitor mixing system containing one input module (analog or digital console card) and a number of Personal Mixers, the A-16D Pro A-Net Distributor sits between the input module and the Personal Mixers.

A-Net Input

When using the A-16D Pro A-Net Distributor, daisy chain linking of Personal Mixers can be eliminated. Up to eight Personal Mixers (A-16II or A-16R) can be connected directly to the A-Net outputs on the front of the A-16D Pro.

To connect the A-16D Pro, connect a Cat-5e cable from the **A-N**ετ **O**υτ on the Pro16 input module to the **A-N**ετ IN on the A-16D Pro A-Net Distributor.

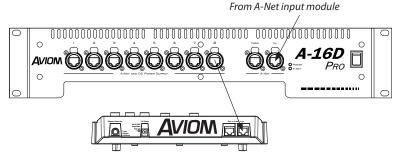
As with all A-Net compatible devices, the cable length between compatible components can be up to 500 feet (150 meters) long.

A-Net Outputs

The eight A-Net outputs on the A-16D Pro A-Net Distributor carry the same 16-channel digital signal. You can use any A-Net output to connect a Personal Mixer or Pro16 output module.

To connect a Personal Mixer:

- Connect a standard Cat-5e cable from one **A-N**ET **O**UT on the A-16D Pro A-Net Distributor to the **A-N**ET IN jack on the Personal Mixer.
- DC power is supplied automatically to the first connected Personal Mixer—no external DC power supply is required.
- Connect additional Personal Mixers using Cat-5e cables from an available A-Net Out on the A-16D Pro A-Net Distributor to the A-Net Input on the Mixer.



Connect A-Net Out on the A-16D Pro to A-Net In on a Personal Mixer.

Once the Personal Mixer is connected to the A-Net signal chain, any audio patched to the A-Net input module can be mixed in the Personal Mixer. Refer to the User Guide that came with your Personal Mixer for additional information about using the mixing features of the Pro16 Monitor Mixing System.

The A-Net outputs on the A-16D Pro can be connected to any A-Net compatible device, allowing flexible routing and system configurations as well as virtually unlimited system expansion.

To add a Pro16 output module such as the AN-16/o or AV-P2, simply connect **A-NET O**UT from the A-16D Pro to **A-NET IN** on the output module.

A-Net Thru

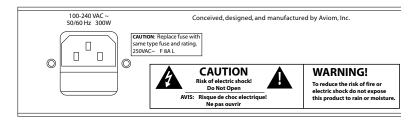
The A-Net Thru jack provides an easy way to expand a system. The 16-channel A-Net signal appearing at the Thru jack is an exact copy of the A-Net input signal. There is no power supplied to this jack, however.

A-16D Pro Rear Panel

The rear of the A-16D Pro A-Net Distributor contains the standard IEC power input for the unit. The main power supply in the A-16D Pro is a switching type, compatible with the variety of electrical systems in use worldwide.

The A-16D Pro can operate with input voltages from 100 to 240 volts and at rates from 50 to 60 Hz. 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.

The A-16D Pro power supply fuse is contained in the power connector assembly. To change a fuse, first unplug the unit form the wall receptacle. Remove the fuse access panel to reveal the fuse. Always replace the fuse with one of the same rating.



Always replace the fuse with one of the same rating.

Powering a Personal Mixer Remotely

There are a number of advantages to adding power for a Personal Mixer at the A-Net distribution point.

- No DC power supply is needed at the performer's location
- Multiple discrete DC power supplies are replaced with a single AC power connection.
- The A-Net distributor can be located near a convenient source of AC power.
- A one-cable solution for supplying A-Net and DC power to a personal mixing location is possible.

To power a Personal Mixer via the Cat-5 cable:

- Connect the A-Net cables as described previously between system components (from the A-Net input module to the A-16D Pro).
- Connect a Cat-5e cable from a powered A-Net output on the A-16D Pro to the **A-Net IN** on the Personal Mixer.
- The Personal Mixer's A-Net Active LED will light to indicate that a valid A-Net signal is present.
- Continue connecting up to eight Personal Mixers in this manner.
- ✓ Note: The DC power supply in the A-16D Pro can power only one Personal Mixer. If you start a daisy chain from a Personal Mixer that is powered from an A-16D Pro, each additional Personal Mixer unit in the daisy chain will need a source of DC power.

Each Personal Mixer that is powered remotely no longer needs a DC power supply connected to its rear panel. If this happens accidently, however, note that you cannot harm the system. the extra power source is ignored.

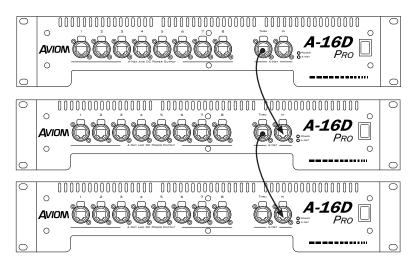
Expanding a Pro16 System

Any number of Pro16 A-Net devices can be used in a system. This includes A-16D Pro A-Net Distributors. To expand a system, additional A-16D Pro Distributors can be connected to any available A-Net Output, such as the outputs on Personal Mixers, output modules, the Pro64 ASI, or on other A-16D Pro units.

A dedicated A-Net Thru jack on the front panel of the A-16D Pro allows multiple units to be cascaded.

To add another A-16D Pro to a system, simply connect a standard Cat-5 cable

from the **A-NET THRU** of the first A-16D Pro to the **A-NET IN** on the second A-16D Pro. See the following diagram.



Connect A-Net Thru to A-Net In to expand a system.

The example above shows three A-16D Pro Distributors connected in a daisy chain. This provides twenty-four powered A-Net outputs. Any number of A-16D Pro Distributors can be connected to provide additional expansion by connecting the A-Net Thru jack to the next Distributor's A-Net In jack.

In fact, the A-16D Pro A-Net Distributor can be connected at *any* point in a system. There is no rule that requires the distributors to be located in the same physical location. Use an A-Net output from a Personal Mixer or Pro16 output module as a parallel distribution and expansion point if needed.

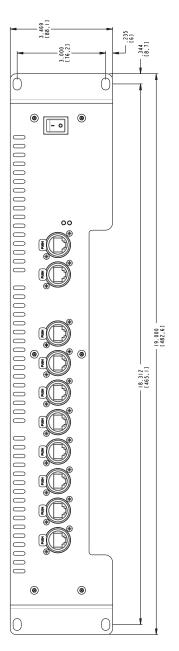
Digital Splits

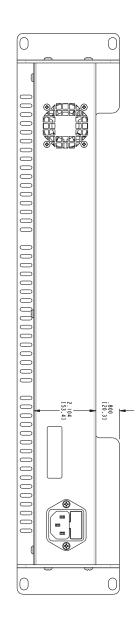
The A-16D Pro can be used to create a digital split when using A-Net input and output modules to create a digital snake or audio distribution network. By patching the A-Net Out from an A-Net input module or the Pro64 ASI A-Net Systems Interface into an A-16D Pro, an eight-way digital split can be created. By connecting A-Net output modules such as the AN-16/0 Output Module to the A-Net Out jacks on the A-16D Pro distributor, sets of sixteen discreet audio channels can be delivered to output modules for recording, mixing, broadcast, cameras, etc.

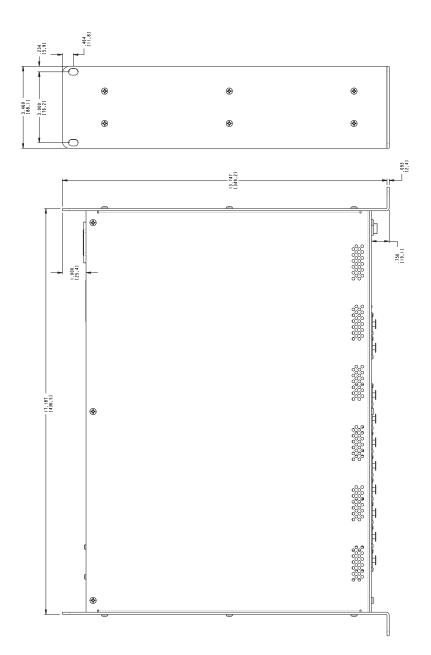
A-16D Pro Specifications

One EtherCon RJ45 connector		
One EtherCon RJ45 connector, unpowered		
8 EtherCon RJ45 connectors, powered (DC)		
Power On; A-Net Active		
16 channels of digital audio over Cat-5e cable		
uses unshielded Cat-5e UTP (or better) cable		
Internal, universal switching type		
100-240VAC, 50-60Hz, 60W		
18-24 VDC, 0.5 amp		
transmitted over the Cat-5e cable		
< 0.880 msec (measured from analog input to analog output)		
19″ (482.6 mm) wide x 14.25″ (362 mm) deep; 2U, 3.5″ (88.9 mm) high		
12.0 lb. (5.44 kg)		
All Aviom products are designed and manufactured in the USA.		

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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 Number	Product Serial Number
Model Number	Product Serial Number
Model Number	Product Serial Number
Model Number	Product Serial Number
Date Purchased	_
Dealer Location	
Your Name	
Address	
Address	
City	
State/Province	
Zip/Postal Code	
Country	
Email Address	

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