AVIOM®

A-16R
Personal Mixer

A-16cs
Control Surface for A-16R

User Guide

PRO
16®

A·NET®

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, KETI

RoHS Status: Pb-free

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.

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 ($\overline{}_{\overline{}}$) 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.

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

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

Table of Contents

Welcome

Thank you for purchasing the **A-16R Personal Mixer**, and **A-16CS Control Surface** both of which are members 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.

Features

The A-16R and A-16CS provide a host of professional features designed to make the system flexible in a variety of music and audio situations.

The A-16R rack-mounted Personal Mixer can be used with all of Aviom's Pro16 A-Net devices and can be connected to third-party products such as console cards that support the Pro16 A-Net protocol.

A-16R Personal Mixer Features:

- Sixteen Channel select buttons with dual LEDs
- Dedicated Recall, Group, Solo, and Mute buttons
- Sixteen user Preset memory locations
- Pan/Spread control with LED readout
- Channel volume control with LED level readout
- Master Volume, Treble and Bass controls
- Stereo Mix In with volume control
- Balanced XLR and TRS outputs on the rear panel
- Balanced stereo insert points on the rear panel
- MIDI save and recall of user Presets
- MIDI remote mixing control
- A-Control jack accepts the optional A-16CS Control Surface
- Stereo/Mono operation

A-16CS Remote Control Surface Features:

- Controls all front-panel functions on the A-16R
- Sixteen Channel select buttons with dual LEDs
- Dedicated Recall, Group, Solo, and Mute buttons
- Pan/Spread control with LED readout
- Footswitch jack for Preset Up/Down control
- Can be mounted on the optional MT-1 mic stand mount

System Options:
- A-16D A-Net Distributor
- A-16D Pro A-Net Distributor
- MT-1 mic stand mount for the A-16CS Control Surface

Conventions Used in this Document

Button Presses

When indicating a button on the front panel of the A-16R Personal Mixer or A-16CS, a special typeface is used. For example, "when selecting a Preset, press the Rᴇᴄᴀʟʟ button, followed by a numbered button".

Using Personal Mixers

It is possible to create a personal monitor system using any combination of Aviom Personal Mixer products. In some cases the information in this document can refer to either the table-top version of the Personal Mixer, or the rack-mounted A-16R version.

When using the A-16R Personal Mixer with the optional A-16CS Control Surface, many of the same buttons and functions are available.

When referring to the use of the mixers in a Personal Monitor Mixing System in general, the terms *A-16 Mixer* or *Personal Mixer* are used to describe a case where a standard A-16 or A-16II Personal Mixer, the A-16CS Control Surface, or a rack mounted A-16R Personal Mixer 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*.

Optional Remote Control

When using the A-16R in a monitor system, the A-16CS Control Surface can be used as an optional remote control device. This enables the A-16R to be placed in a remote location while at the same time providing the user with complete control over their monitor mix environment.

It is important to note that the A-16R front panel has a switch that selects whether the front panel buttons and knobs of the A-16R *or* the A-16CS Control Surface will be used for editing. The Remote/Local switch must be in the LOCAL position to use the front panel controls or to send/receive MIDI SysEx data. The Remote/Local switch should be in the REMOTE position when the A-16CS is being used.

A-16R Master Volume Control

When using an A-16CS Control Surface with an A-16R it is also important to note that the position of the Master Volume knob on the A-16R rack sets the total volume output for the unit. The A-16CS Control Surface simply offsets that master volume setting, allowing for precise system gain setup.

Switching from remote to local control with the REMOTE/LOCAL switch may cause an increase in the overall volume, since this removes the A-16CS Control Surface from the signal path.

Package Contents

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

The A-16R Personal Mixer box contains:

- One A-16R Personal Mixer
- DC Power supply
- User documentation

Also included within this document is a Warranty registration page. Be sure to fill out the form and return it to Aviom, Inc. via mail or fax as soon as possible.

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, <u>do not </u>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.
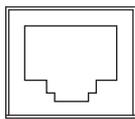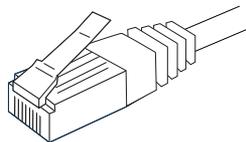
RJ45 Jack   Cat-5 Cable

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-16R Personal Mixer) in your system as well as for cable runs between each additional Pro16 A-Net compatible device in your system.

Up to 500 feet of Cat-5e cable can be used to connect each system component

AN-16/i Input Module

AN-16/o Output Modules or Personal Mixers

Infinite number of A-Net components
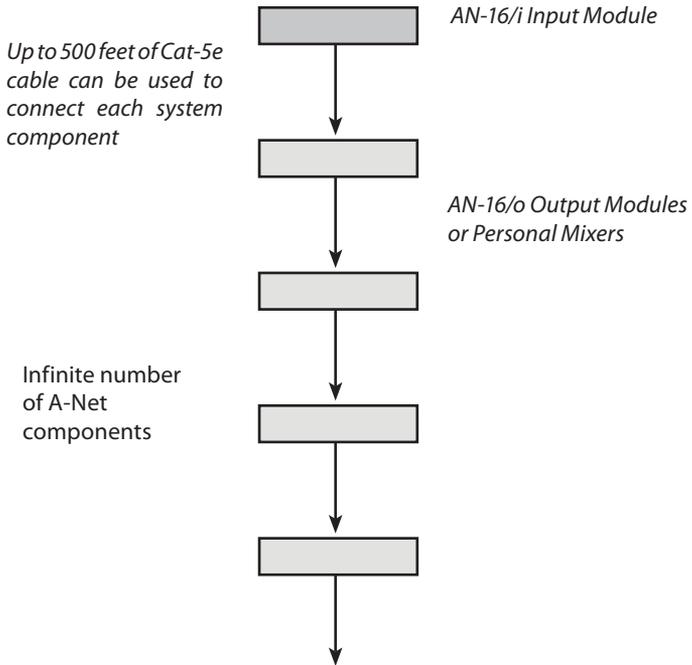
Your cable length performance will be affected by a number of factors including the quality of the cables used, and the number of devices such as cable couplers used or passive wall panel interconnections in use. Use Cat-5e cable for best performance wherever possible. Stranded or solid Cat-5e cable 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 A-Net cable length can be 500 feet (150 meters) ———→

| Pro16 Input | System Bridge | | System Bridge | Pro16 Output |

A-Net Out   *A-Net In*
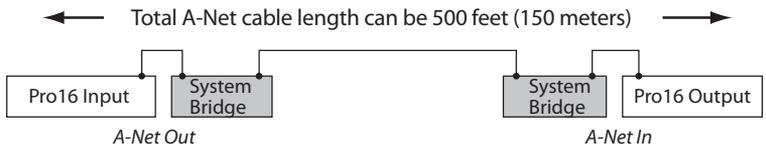
Total cable length calculations include cables used top connect I/O modules to System Bridges.

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

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

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

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

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

Power Supply Polarity
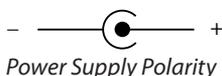
Note that polarity of the plug found on the DC power supply needs to match that of the original power supply that came with your Aviom equipment. Aviom products use a center positive power supply. The outer contact is negative, the inner contact is positive. (*See the diagram above.*)

Cleaning and Maintenance

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

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

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

Installing the A-16R in a Rack

The A-16R Personal Mixer is designed to be installed in a standard 19-inch audio equipment rack. This design is both for easy transportation of the units and for protection in a permanent installation. Each unit takes up one standard rack space (19 inches wide by 1.75 inches high). Optionally, you can place the units on a table top or other flat surface such as a shelf.

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

To rack mount the A-16R Personal Mixer, 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 A-16R Personal Mixer directly above or below other rack-mounted gear that produces high levels of heat, such as power amps.

Channel Labels

For writing channel information or names on the A-16R Personal Mixer (or A-16CS) label surface or "scribble strip", we suggest using a china marker or other easily removed marking device. A china marker is designed for marking on plastic, metal, glass, wood, and paper. These are available at most office supply outlets. Avoid the use of permanent markers. Optionally a strip of removable artist's tape can be used instead of writing directly on the product's surface.
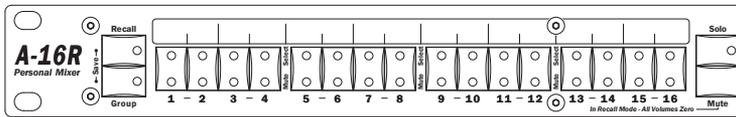
Mixer Label Strip above the channel select buttons

To clean the label area on the A-16R Mixer or A-16CS, use a soft clean cloth to remove most types of temporary marking materials. For difficult-to-remove types of marking devices, a cotton swab moistened with a drop of rubbing alcohol can be used. Use the minimum amount possible to remove the writing.

A-16R Front Panel
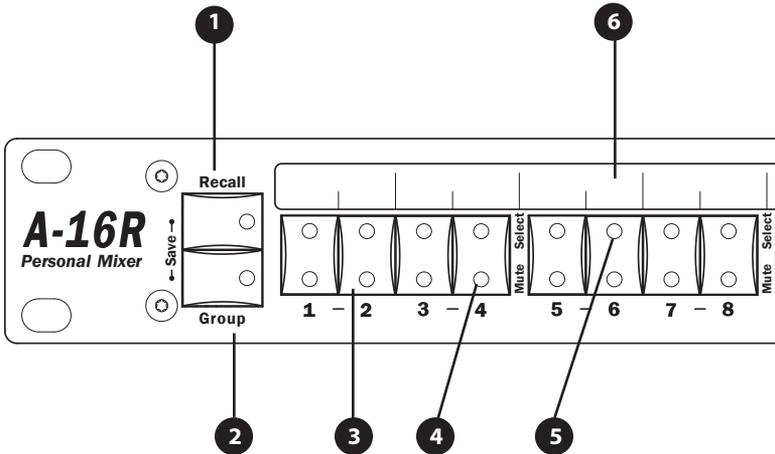
1	Recall button (for Save, hold Recall and Group)
2	Group button
3	Channel or Preset select button (depends on mode)
4	Channel Select LED
5	Channel Mute LED
6	Label strip
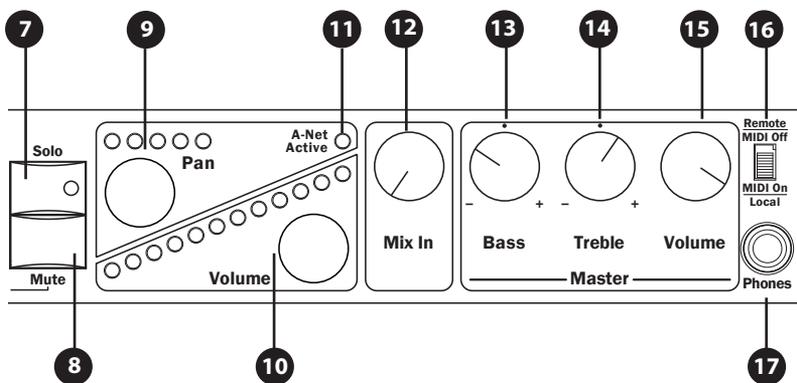
7	Solo button
8	Mute button
9	Channel Pan control and LEDs
10	Channel Volume control and LEDs
11	A-Net Active LED
12	Mix In volume control
13	Bass tone control
14	Treble tone control
15	Master volume control
16	Remote/Local MIDI on/off switch
17	Headphone output

A-16R Rear Panel
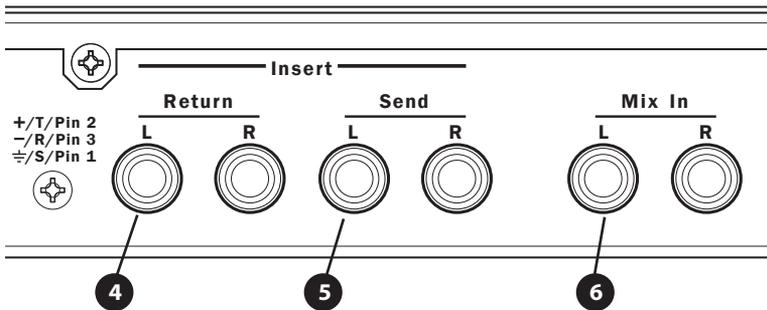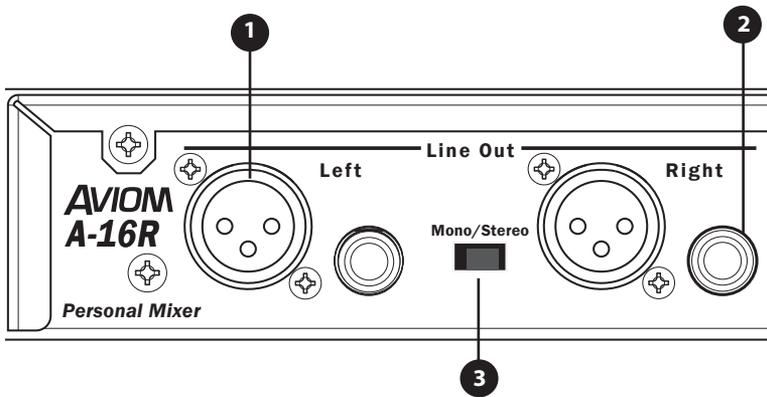
1	XLR balanced outputs
2	TRS balanced outputs
3	Mono/Stereo output switch
4	Balanced stereo insert Return
5	Balanced stereo insert Send
6	Stereo auxiliary Mix Input
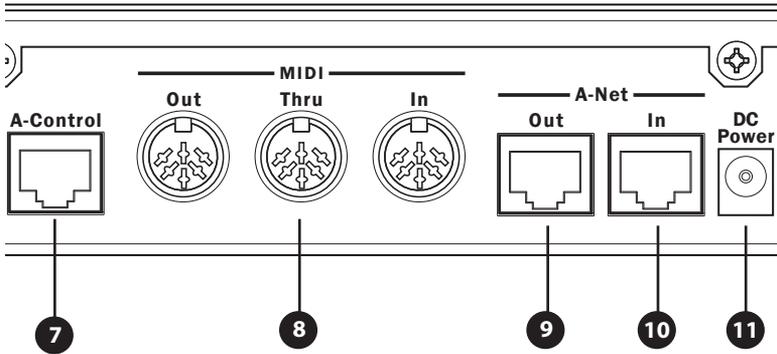
7	A-Control (for A-16CS remote controller)
8	MIDI In, Out, Thru connections
9	A-Net Out
10	A-Net In
11	DC power connection

A-16CS Front Panel
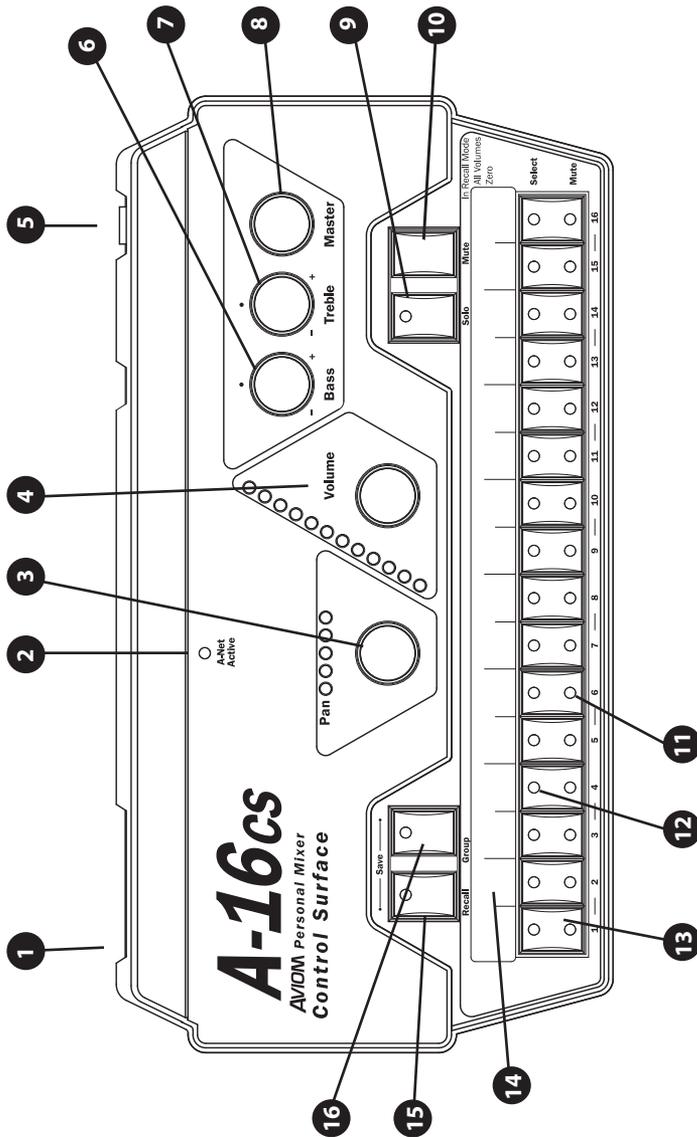
1	A-Control In jack (rear panel)
2	A-Net Active LED
3	Channel Pan control and LEDs
4	Channel Volume control and LEDs
5	Footswitch jack (rear panel)
6	Bass tone control
7	Treble tone control
8	Master volume control
9	Solo button
10	Mute button
11	Channel Mute LED
12	Channel select LED
13	Channel or Preset select button (depends on mode)
14	Label strip
15	Recall button (for Save, hold RECALL and GROUP)
16	Group button

A-16CS Rear Panel

Monitor System Setup

Configuring a Pro16 monitor mixing system requires only a few steps. Start with all devices turned off. When all power, network, and audio connections have been made, you can then power up all the components in your system. Power up the personal mixers and any amplifiers or powered speakers last to avoid unwanted pops or noises.

Power Connection

Connect the DC power supply to the A-16R Personal Mixer unit. Plug the power supply into an available AC power outlet. The Personal Mixer will be on as long as it is plugged into a working electrical outlet.

No on/off power switches are included on the A-16R. If you would like to control the on/off state of your units, simply connect the power supplies to a power strip with an on/off switch and use that as a system power switch.

DC power for the A-16R Personal Mixer can optionally be supplied from a Pro16 A-Net distributor, eliminating the need for the power supply at the mixer's location. Refer to the documentation provided with the A-Net distributor for more system setup information.

✓ **NOTE:** The optional A-16CS Control surface gets its power from the A-16R when the A-Control jacks are connected via a Cat-5 cable. No power supply is required.

System Connections

A single Cat-5e cable is required to connect each A-Net compatible device in your system. Connect a Cat-5e cable from the **A-NET OUT** jack on the input module to the **A-NET IN** jack on the first Personal Mixer.

Connect additional A-16R Personal Mixers with a Cat-5e cable from the **A-NET OUT** jack on the first Personal Mixer to the **A-NET IN** jack on the next Personal Mixer. (Repeat this process for each additional Personal Mixer unit in your system.) Connecting the Personal Mixers in this manner is referred to as a series connection, also known as a daisy chain.

When using the A-16CS Control Surface with the A-16R for remote mix control, connect a Cat-5e cable from the A-16R A-Control jack to the A-Control input on the rear panel of the A-16CS.

Any combination of A-16II and A-16R Personal Mixers as well as other Pro16 output devices can be used to create a system.

From A-Net input module
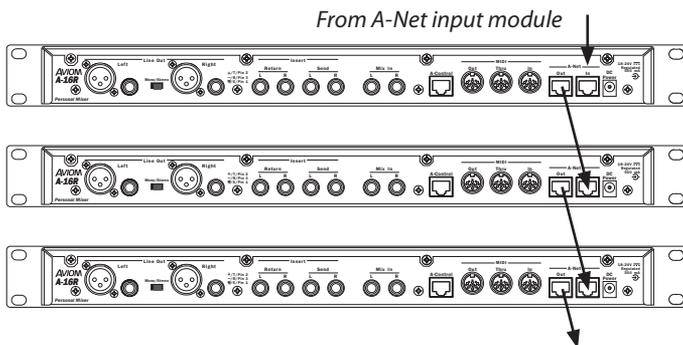
Connect A-Net Out to A-Net In to make a daisy chain.

A-Net can also be distributed in parallel by using an A-Net Distributor. This can eliminate daisy chained A-Net connections.

Audio Connections

Plug headphones or in-ear monitors into the A-16R Personal Mixer's front panel Headphone jack. If you use powered stage monitors, spot monitors, or wireless in-ear monitors, connect the XLR or TRS Line output jacks on the rear panel of the A-16R Personal Mixer to the inputs of your audio device.

Before powering up the system, turn the Master Volume control on the A-16R Personal Mixer to its minimum setting (full left) to ensure that unwanted high-volume audio is not accidentally sent into your monitors when the system is powered up. The Master Volume control is on the right side of the Personal Mixer, next to the Bass and Treble controls.

If you are using the A-16CS Control Surface, make sure that the A-Control cable is connected and that the REMOTE/LOCAL switch on the front panel of the A-16R is in the REMOTE position.

Labeling the Channels

The A-16R Personal Mixer has a convenient label strip (also called a "scribble strip") right on the front panel. Use a non-permanent marker to write the name of the instrument or audio source appearing on each channel in the label area. Optionally, apply removable artist's tape to the label strip prior to labeling each Personal Mixer.

A convenient MS Excel format label strip template, available on the Aviom website, can be used to print out text labels for the A-16R and optional A-16CS Control Surface from a computer.

✓ **NOTE** Use only non-permanent marking devices on the label surface to avoid permanently marring the surface.

Powering Up

As when powering up any audio gear, it's best to turn on all system components in the safest possible order to minimize the risk of damage to system components and your hearing. Start by turning on devices such as mic preamps, mixers, keyboards, and effects processors. Follow this by turning on power amps, or anything that applies power to speakers, headphones, etc.

In the case of the Personal Monitor Mixing System, you should power up your main audio mixer, effects devices, and keyboards first. Follow this by powering up your A-Net input module and then all connected Personal Mixers.

Lastly, turn on any power amps, powered monitor speakers, in-ear monitors, etc., that are part of the monitor system.

Basic Navigation

When the A-16R is powered up, Preset 1 is automatically selected. On the Personal Mixer, one channel is always selected for editing. You can tell that a channel is selected because the upper LED in its button is lit.

Each channel button has two LEDs, an upper and a lower. The red upper LED indicates that the channel is selected; you can change its volume and panning. You can also solo or mute the channel using the dedicated **SOLO** and **MUTE** buttons on the A-16R Personal Mixer front panel (or from the A-16CS).

The upper LEDs will also light in combination if a channel is stereo linked or is part of one of the three available Groups. (More info on Groups appears later.)

The lower yellow LED in each channel button indicates the channel's mute status. A lit yellow LED indicates that the channel is muted. Any number of channels can be muted.

Operational Modes

When using the A-16R Personal Mixer, you will be in one of the following modes:

- **Mix Mode** — Here you can change channel and mix settings such as volume, mute, and panning; you'll spend most of your time in this mode.
- **Recall Mode** — When activated by the RECALL button, the row of sixteen channel buttons are used to select one of the sixteen available mixes saved as Presets.
- **Group Mode** — Used when creating Groups or editing existing Groups. This is activated by pressing the GROUP button. The channel select buttons are used to add or delete channels from a Group.
- **Solo Mode** — When the SOLO button is pressed, the selected channel (or Group) is audible while the rest of the mix is muted.
- **Save Mode** — This mode is activated by pressing and holding both the RECALL and GROUP buttons. When both buttons are held down, the Save Mode is active. Pressing any numbered channel button while still holding this button combination will save your current mix to that Preset location.

✓ **NOTE:** A Preset is saved when the numbered channel button is *released*.

Before You Start Editing

When using the A-16R, it is important to note that only one device can control the mix settings of the A-16R at a time.
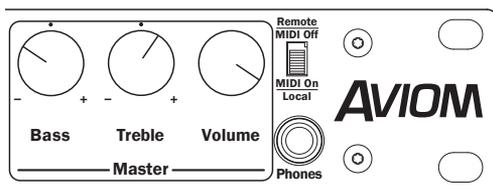
Place the Remote/Local switch in the Remote position when using the A-16CS.

Some important points to keep in mind:

- Set the Remote/Local switch to the Lᴏᴄᴀʟ position to use the front panel of the A-16R for editing and save/recall of Presets. MIDI can also be used for changing mix parameters and for Preset save/recall. (The A-16CS is disabled.)
- Set the Remote/Local switch to the Rᴇᴍᴏᴛᴇ position to use an A-16CS Control Surface to remotely control the A-16R. Editing mixes and save/recall of your Presets only works from the A-16CS in this case. MIDI is disabled.
- Only the Mix In knob on the A-16R rack will function when the Remote/Local switch is set to the Rᴇᴍᴏᴛᴇ position. This is an analog control.

When using an A-16CS with an A-16R the settings of the Bass, Treble, and Master Volume knobs are independent. Switching mix control between the Local and Remote settings can cause unexpected changes in volume and EQ if the settings of the knobs are not similar. Remember that the master Volume on the A-16R sets to total mix level.

Global Controls

The three knobs in the upper right section of the A-16R Personal Mixer affect your overall mix volume and tone directly. The Bass, Treble, and Master volume controls are always active, regardless of the state of the current mix or selected Preset. These are analog controls and their settings are not stored as part of a mix preset.

Tone Controls

Use the Bass and Treble controls to change the overall balance of bass or treble frequencies in your mix. These controls affect the entire mix, not the individual channels.

The default position for the Bᴀss and Tʀᴇʙʟᴇ knobs is at 12 o'clock. To add more low frequencies to your monitor mix, turn the Bᴀss knob to the right of the 12 o'clock position. To remove lows, turn the knob counterclockwise past the center. To change the high-frequency content, follow the same procedure; turn the Tʀᴇʙʟᴇ knob right to add highs, left to diminish them.
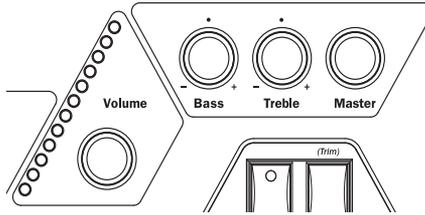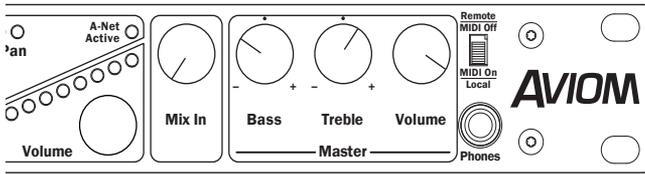
The global Bass, Treble, and Master volume controls on the A-16R and A-16CS

When the A-16R **Remote/Local** switch is in the Remote position, the Tone Control settings can be changed from the A-16CS Control Surface.

The Bass and Treble EQs in the Personal Mixer are both shelving type. There is +/-12dB of cut or boost available for each.

The shelving Bass EQ has a corner frequency of 160Hz. The Treble EQ is also a shelving type, with a 9kHz corner frequency.

Master Volume

The overall mix volume is controlled by the **Master** volume control on the A-16R. This is an analog control. Turn it counterclockwise for a full off setting. As a general suggestion, start with the Master volume knob at a low setting, about 9 or 10 o'clock to start. Raise the volume slowly from that point to a comfortable listening level.

The A-16CS Master Volume knob scales the volume set on the A-16R front panel. This allows the engineer to set a maximum volume level for the A-16R mix, which is especially handy for situations where the A-16R is connected to a power amp and speaker.

✓ **Note:** Always use caution when adjusting any audio system component to avoid potential hearing damage.

Button Behaviors

There are various combinations of lighted and unlighted buttons on the A-16R Personal Mixer. Here is an overview:

- Channel buttons have two LEDs, an upper and lower. The upper button is red and indicates that the channel is selected. The lower button is yellow; it indicates that the channel is muted. Channel buttons will light solid or flash.
- The Recall button has one red LED. It flashes when the Recall button is pressed, indicating that you can now select a mix Preset by touching any numbered button 1-16.
- There is one LED in the Group button. When the Group button is pressed, the LED flashes. This indicates that you can now build or edit a Group.
- The Recall and Group buttons will both flash when held down simultaneously. This is the Save Mode, as indicated by the connecting graphic above the two buttons on the front panel.
- When a mix Preset is saved, all sixteen channel buttons will flash briefly to confirm the Preset save operation.
- The Solo button has one LED. It will light when pressed, indicating that the selected channel or Group is now being auditioned with all other channels being muted. Two Solo modes are available.
- The Mute button has no LED in it. Pressing the Mute button with a channel selected will cause that channel's lower (yellow) LED to light.

There is also one special button combination, the Recall button followed by the Mute button. When used together this combination serves a twofold function:

- When starting from scratch to create a mix, use this function to set all sixteen channels to zero volume and all pans to the center settings.
- If there is a sudden change in the audio volume coming through the monitor system, this button combination silences all audio channels instantly.

Making a Mix

Set the global tone controls—Bᴀss and Tʀᴇʙʟᴇ—to about 12 o'clock. This is the default EQ setting; no boost or cut is applied to the audio mix.

Set the Mᴀsᴛᴇʀ volume knob on the A-16R Personal Mixer to a low setting, about 9 or 10 o'clock should be safe. Send audio into the system; this could be a band playing live or audio from a multi-track audio device. Raise the levels Personal Mixer to a comfortable level after you have audio playing through the system.

Mixing involves setting pan, volume, and mute status for each channel, and then saving this setup as a Preset so that you can recall your custom mix later.

The user interface is quite simple to understand. As with many digital mixers, the Personal Mixer has many channels, but only one set of controls that are shared by all the channels. A channel is selected by pressing one of the numbered channel buttons on the Personal Mixer's front surface. When a channel is selected, the red LED in the channel's button will light to indicate that it has been selected and is ready to be edited.

The procedure to edit a channel involves only two steps:

- Select the channel you want to change.
- Edit the volume, panning, or mute status.

That's it. Each channel of the mixer can be edited by following the same simple steps.

Setting Channel Volume

When you change the volume of a channel on the A-16R (or A-16CS), the LEDs in the Volume section of the mixer will indicate the level in real time. When a new channel is selected, its current volume is instantly indicated on the LEDs. When no LEDs are lit, channel volume is at its minimum setting.

To make changes to a channel:

- Select a channel by pressing its numbered button—the button's upper LED will light.
- Rotate the Vᴏʟᴜᴍᴇ knob to the right to increase the volume, to the left to lower the volume

There are twenty-four visible volume steps available in the Volume LEDs. Each LED lights at two levels—one at half brightness, the other at full brightness.

Setting Pan

The Pan indicator is made up of five LEDs. The center LED is green. The LEDs on either side of center are red. As you turn the Pᴀɴ knob, the LEDs will light in various combinations. At either end of the display only one LED will be lit to indicate that the channel is panned full left or right.

When using stereo linked channels, the LEDs light in different patterns, using a pair of LEDs on either side of the display to indicate the width of the stereo field. When the stereo image has been collapsed to mono, only the center green LED will be lit. In this case the stereo input will be heard as mono.

✓ **Nᴏᴛᴇ:** If you have connected the output of the Personal Mixer to a mono audio system or speaker, the pan position is irrelevant.

Continue this process of setting volume and pan until all the channels have been added to the mix.

At this point you should have a basic mix playing in your headphones, IEM, speakers, etc. You can continue to make changes in real time as your needs require. Remember that changes to channel volume and pan setting affect the selected channel only. The selected channel always has its red LED lit.

Linking Channels

For stereo input sources such as keyboards, CD players, submixes, etc., Pro16 input modules provide a convenient method of controlling these two-channel sources. It's called a Stereo Link.

Linking two channels is done from the input module. Each pair of inputs has a corresponding Link switch. When the switch is positioned to the left, the two channels are independent. When the switch is moved to the right, the channels become linked. Only adjacent channels can be linked (channels 1 and 2, channels 3 and 4, etc.).

When channels are linked, they act as one source on the Personal Mixer and A-16CS Control Surface. When you select either of the two linked channels on the Personal Mixer, both channel LEDs will light, indicating that they are linked at the input module. Volume changes affect both channels simultaneously.

Channels that are linked at the input module will appear linked on every Personal Mixer connected to the system. You can link or un-link channels as needed, even while audio is running through the system. All connected Personal Mixers update immediately.

The Spread Control

When two channels are linked, they no longer have separate pan controls. With the channel link comes a new feature, called Spread. The Spread control varies the stereo image of the two linked channels from full stereo to mono. This allows you to position stereo sources in your mix by controlling the width of the stereo image.

Spread changes the panning of the left and right channels simultaneously. Instead of having two channels panned 100% left and right, Spread allows the channels to be panned to 60% left and right, for example.

The Effect of the Spread Control

Spread turns this:

into this, for example:

When you adjust the Pan control with a stereo-linked channel selected, the Pan LEDs show the width of the stereo spread that is currently set. Multiple LEDs light to indicate the compression of the image from full stereo to mono.

Solo Functions

Solo a Channel

While working with a mix, you may want to listen to a particular channel by itself to check a part, locate or solve a problem, confirm a pan location, etc. To do this you can use the Solo mode. Solo lets you listen to the selected channel alone without disturbing the rest of the mix. Two types of Solo mode are available; one functions on a channel by channel basis, the other (called Held Solo) remains in force until the user exits it.

Solo mode works on the currently selected channel or Group. To use Solo, first select the channel you want to hear alone. Its red button LED should be lit. Now press the Solo button—the channel is now heard solo without permanently changing the current mix.

You can make changes to volume and panning when a channel is in Solo mode. All changes happen immediately. Consider Solo mode as a temporary state only. You cannot save a Preset with a channel in Solo mode.

Only one channel, linked pair, or Group can be in solo at a time. To exit Solo

mode, simply select another channel or press the **S**ᴏʟᴏ button again.

To select a different channel for auditioning in Solo mode, remember that you must first select the channel and then press the **S**ᴏʟᴏ button to enter Solo mode.
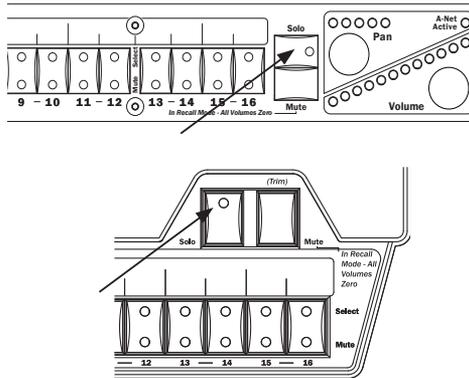
Two solo modes are available, indicated with a solid or flashing LED in the Solo button.

Held Solo Mode

This Solo mode allows channels to be soloed in succession without exiting the Solo Mode. This is in addition to the regular Solo Mode behavior described above that allows the user to exit Solo Mode by pressing any other interface button after soloing a channel. Held Solo Mode is indicated by the flashing of the Solo LED.

To use Held Solo Mode, you must start from Mix Mode (that is, no channels are currently soloed). The Recall, Group, and Solo LED's should be off.

To use Held Solo Mode:
- Press and *hold* the **S**ᴏʟᴏ button.
- While holding down the **S**ᴏʟᴏ button, press and then release any channel button.
- You can now release the **S**ᴏʟᴏ button. (If you release the **S**ᴏʟᴏ button before releasing the channel button, Held Solo will not be engaged.)
- The channel that you pressed is now soloed, and the Solo LED is flashing.
- To solo another channel, press its channel button.
- To exit Held Solo Mode, press the **S**ᴏʟᴏ button again.

You can also exit Held Solo Mode by pressing the Recall, Group, or Mute buttons.

Remember that the Personal Mixer can only enter Held Solo Mode from the normal Mix Mode. If you currently have a channel temporarily soloed (the Solo LED is lit *solid)*, you must exit the single channel Solo Mode (by hitting another channel button or the Solo button) before you can enter Held Solo Mode.

Mute a Channel

The method used for muting channels is similar to that used for the Solo function—first select the channel, then perform an action. There are some differences, however.

- You can mute as many channels as necessary for your application.
- Channels that are muted *can* be saved as part of a mix Preset.

To mute a channel:

- Select the channel first.
- Press the Mute button.
- The yellow LED in the channel button lights.

Additional channels can be muted or unmuted by following the same procedure—first select the channel, then press the Mute button.
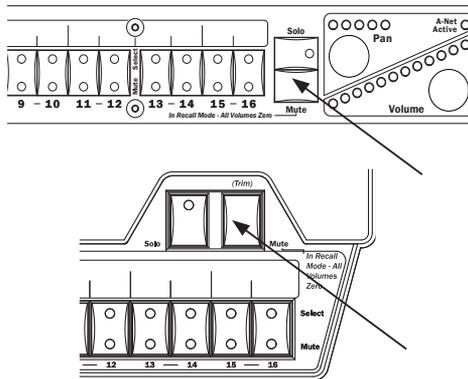
Press the Mute button top toggle a channel's mute state.

Unmute a Channel

Once a channel is muted, you can follow this simple procedure to clear the mute:

- Select the muted channel. (It should have the yellow LED in its button lit.)
- Press the MUTE button.
- The yellow LED will go out.
- To clear mutes on other channels, continue selecting channels, pressing the MUTE button to clear each mute.

Save the Preset with the mutes, if desired.

✓ NOTE: Solo mode will temporarily override a mute. This guarantees that you will always hear the channels you solo. When you exit Solo mode, the channels are returned to their previous state.

Creating Groups

When you need control over more than just a stereo pair of channels as described earlier using the Link function, you can use the Group function to control multiple channels. Up to three Groups can be created and saved per user Preset. This means that every Personal Mixer can have up to forty-eight different Groups stored by using all sixteen user Presets.

A Group can consist of any number of channels, but Groups cannot overlap. That is, one Group cannot contain channels that are part of another Group. Mono or linked stereo channels can be part of a Group.

As you create a Group, the channel volume and pan settings of each channel added to a Group are retained. This helps to keep the overall blend of channels that are part of a Group even while you adjust the Group's overall volume. The VOLUME now control changes the overall level of the Group.

Some examples of Groups in use:

- A Group allows background vocal parts from multiple singers to be adjusted together.
- All the drums in a live drum kit can be combined to a single stereo mix for easy adjustment for the guitar player, while the drummer retains individual control over each drum in his mix.
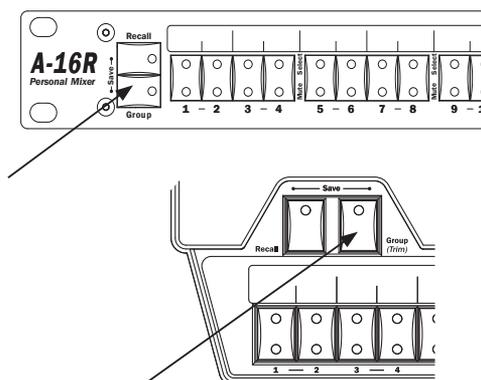
Press the Group button to create or edit a group.

To create a Group:

- Start by selecting a channel that you want to be included in the Group.
- Press the GROUP button on the left side of the A-16R Personal Mixer or A-16CS.
- The red Group LED will begin to flash indicating that you can now edit the Group.
- Double-click the channel buttons to include a channel in the Group.
- Channels that are added to the Group will flash their upper red LED to indicate that they are now part of the Group.

To exit, simply press the GROUP button again. The Group LED goes out and you are returned to your current live mix.

In the current mix, you will now see all channel LEDs associated with a Group light whenever you press a channel button that is included in your Group. The channels now behave as one.

✓ **NOTE:** Remember to save the edited Preset if you want to recall the Preset with the new Group settings later.

Creating Additional Groups

Three Groups can be created and saved in each Preset in a Personal Mixer. Each Group can be created and/or edited as needed while live audio is playing through the system.

The instructions in the previous section describe how to create and save the first Group in a mix. Creating additional Groups follows the same procedure.

Use these steps to create a second and/or third Group.

- Select a channel that is *not* currently part of an existing Group.
- Press the G<small>ROUP</small> button to enter Group Mode. The Group LED will flash.
- Double-click any channels that you want to add to the Group.
- To save the Group, press the G<small>ROUP</small> button again. The flashing LED will go out.

Shortcut: While in the Group edit mode, you can start the process of creating a new Group while editing an existing Group. To do this,

- Press a channel button that is not already part of the current Group being edited. Its red LED will light solid.
- Double-click channels to add them to a new Group.
- Create a third Group by following the same procedure.
- Exit the Group edit mode to save the Groups.
- Save the Preset.

If you try to create more than three Groups, the interface will automatically select one of the existing Groups when you enter Group edit mode. You have the option at this point to edit an existing Group or clear channels that are part of one of the other existing Groups.

✓ **N<small>OTE</small>:** A channel that is already part of one Group cannot be part of any other Group.

Making Changes to a Group

Once you have created a Group, you can edit it in a number of ways. You can add or delete channels from the Group, and change individual channel volume and pan settings.

To change a Group,

- Select a channel that is already part of a Group.
- All channel LEDs that are part of the Group will light.
- Press the G<small>ROUP</small> button to enter the editing mode.
- The Group LED flashes.

Changing Channel Settings Within a Group

While editing a Group, you'll notice that one LED in each Group is lit solid while the other LEDs are flashing. This solid LED indicates the channel currently *selected* for editing. You can change its volume and panning

without affecting the other components of the Group. The changes you make to volume and pan affect only the selected channel, allowing you to change the relative balance of the individual components of your Group. Changes can be made in real time.

To select a different channel in a Group for editing, press one of the flashing LEDs (don't double-click it). The new selection will light its LED solid, while the previously selected channel will start to flash. Continue making changes as needed. Remember, volume and pan changes only affect the channel whose LED is lit solid. Press the **G**ROUP button again to exit Group Mode. Save the mix Preset.
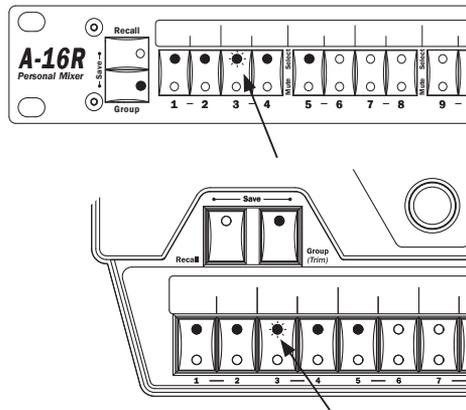
One channel in a Group is always available for editing, indicated by a flashing LED; press any other channel in the Group to change its pan or volume.

Removing Channels From a Group

When in the Group edit mode (the Group LED is flashing), changes can be made to the channels included in existing Groups. To remove a channel from a Group, simply double-click the channel that you want to remove. The flashing LED will go out. To add other channels to a Group, double-click them. When you have double-clicked to remove all channels that were previously part of the Group you're editing, the Group will no longer exist. You need at least two channels to have a valid group.

Exit the Group edit mode by pressing the **G**ROUP button again. The LED in the Group button will go out. This saves your changes to the Group. Save the mix Preset to retain the settings for recall later.

Some points to note about Groups:

- Up to three Groups can be created per Preset.
- Groups are relative only to the Personal Mixer that they are created on.
- Groups you create on one Personal Mixer do not affect other Personal Mixers being used in a system.

Remember that although you have edited and saved changes to a Group, you must still save the Preset if you want to recall the Preset with the new Group configuration intact.

Muting Groups

Groups can be muted if necessary while creating a mix or editing. The procedure is the same as for muting a single channel. To mute a Group:

- First select one of the channels that is part of the Group.
- The upper (red) LED in each channel button that is part of a Group will be lit solid.
- To mute the Group, press the Mute button.
- The lower (yellow) LEDs in all channel buttons contained in the Group will light, indicating that the channels are now muted.
- Unmute the Group by pressing the Mute button again while the Group is still selected.

✓ **Note:** The mute status of your Groups is saved as part of a Preset.

Saving a Preset

It's important to remember that your mix is not saved if you should power the system down unless you store the mix as a Preset. You need to save a Preset to a memory location to be able to recall it later. The channel buttons serve as memory location buttons when in Save mode.

To save a Preset:

- Hold down the RECALL and GROUP buttons, found to the left of the label strip on the A-16R and in the upper left side of the A-16CS.
- While still holding the RECALL and GROUP buttons, press the channel button (1 through 16) corresponding to the memory location where you want the mix to be stored.
- Release the channel button to store a Preset; you will see all the channel LEDs flash as confirmation of the save operation.
- Release the RECALL and GROUP buttons after selecting a location.

If you want to store the same mix to multiple memory locations, you can press memory location buttons as needed while the RECALL and GROUP buttons are being held down. A copy of the mix will be saved to each memory location.

Remember to save your new mix as a Preset to a memory location before turning the system off. Unsaved edits to mix settings are not retained when the A-16R is powered off.

✓ NOTE: When using the A-16CS with the A-16R it is important to note that the Presets are stored in memory inside the A-16R and not in the A-16CS.

What Gets Saved

When you save a Preset the following information is saved:

- Channel volumes
- Channel pan settings
- The Mute status of all channels
- Channel Groups (up to three) and Group volume settings
- The current active channel, linked pair, or Group

One channel is always selected on a Personal Mixer, and this info is stored with the mix Preset. By selecting a specific channel prior to saving a Preset you can always have your favorite channel ready for real-time editing when the Preset is recalled.

Information Not Saved With a Preset

When saving a Preset the following information is *not* saved:
- Master Volume level on A-16R and A-16CS
- Master Bass and Treble tone control settings
- Auxiliary Mix In level
- Remote/Local switch position on the A-16R
- Setting of the rear-panel Mono/Stereo switch on the A-16R
- Stereo Link information set at the A-Net input module

Note also that the system does not remember if the optional A-16CS Control Surface is connected to the A-Control jack on the rear panel of the A-16R.

Verify a Mix Preset Location

When creating and editing mix Presets, it is useful to know which Preset was the last one to be stored in order to avoid overwriting Presets accidentally. When preparing to save a mix in the A-16R or A-16CS, the software will display the last mix Preset that was recalled when the Recall and Group buttons are held simultaneously. The red LED in the channel button that corresponds to the last recalled Preset will light as long as these two buttons are held.

A-16R Rear Panel

On the rear of the A-16R Personal Mixer you will find the A-Net connectors, the power supply input, insert points, auxiliary mix input jacks, MIDI I/O, the A-Control connector, and the XLR and TRS line-level audio outputs.

A-16R rear panel

A-Net Connectors

There are two A-Net connectors on the rear of the Personal Mixer.

The A-Net **In** jack on the A-16R accepts
- the A-Net signal coming from the A-Net input module if the A-16R is the *first* Pro16 device in the system, or
- the digital A-Net signal coming from the A-Net Out jack of another Personal Mixer, or
- the digital A-Net signal coming from the A-Net Out jack of a Pro16 A-Net output module such as the AN-16/o, or
- the A-Net Out signal from an A-16D or A-16D Pro A-Net Distributor

A-Net Out and A-Net In

The A-Net **Out** jack on the A-16R is used to connect another Pro16 A-Net device. This will send the same sixteen audio channels being transmitted by the A-Net input module to the next A-Net device so that another unique monitor mix can be created. An unlimited number of A-Net devices can be connected in series using this method. Any A-Net device, including A-Net Distributors can be connected.

Cat-5e cables between Pro16 A-Net devices can be up to 500 feet (150 meters) in length each.

DC Power Input

Connect the DC power supply to the jack on the rear of the A-16R Personal Mixer. Use only power supplies designed for your Aviom products.

When using the optional A-16D or A-16D Pro A-Net Distributor products, power can be supplied to the A-16R from a remote location eliminating the need for the local DC power supply. Consult the distributor products's documentation for additional setup information.

Audio Outputs

The audio outputs on the rear of the A-16R Personal Mixer can be used with any device that can accept a line-level audio input, such as wireless in-ear monitor transmitters, powered speaker systems, amplifiers, and recording devices. Balanced stereo and dual-mono outputs are available. Both XLR and 1/4-inch TRS jacks are available.

Both sets of audio outputs (XLR and 1/4-inch) can be connected at the same time and routed to different audio devices. For example, a subwoofer could be connected to one set of outputs and a standard powered speaker system to the other.

Stereo Operation

The XLR and TRS balanced line outputs on the rear panel of the A-16R Personal Mixer are independent of the front-panel headphone output signal. The mix appearing at each set of outputs is the same, but the setting of the Mono/Stereo switch only affects the rear-panel outputs.
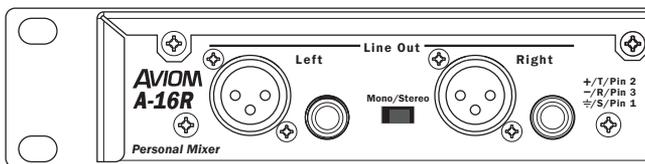
XLR and TRS Line Out

Mono Operation

As mentioned previously, only the rear-panel audio outputs are affected by the Mono/Stereo switch. The headphone output on the front panel of the A-16R is always stereo. This allows the listener to have a stereo headphone mix while at the same time using a mono subwoofer to enhance low-end response. As an example, when performing live, a drummer can connect

headphones to the front panel headphone output of an A-16R while at the same time the audio signal is connected to a mono power amp and crossover combination being used to create a bass shaker system in the platform he is sitting on.

To use a mono amplifier, powered speaker, subwoofer, etc., connect a standard audio interconnect cable (TRS or XLR type) from the audio output on the rear of the A-16R to the audio input on your mono device. For best results, set the Mono/Stereo switch to the *Mono* position.

Unbalanced audio devices can be connected to the A-16R Personal Mixer by using standard guitar-type (or tip-sleeve) cables.

Balanced Inserts

The A-16R is equipped with a stereo insert send/return loop that can be used just like the insert points found in many mixing consoles. The audio signal from the A-16R can be sent to the inputs of an audio processor such as a compressor or limiter. The signal, once processed by the device, is then returned to the A-16R signal path via the Return jacks.
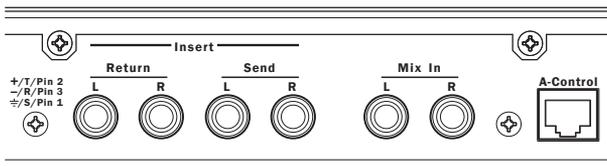
Balanced stereo insert points

The inserts on the A-16R are balanced TRS connections. You can use either balanced or unbalanced audio processors with the A-16R.
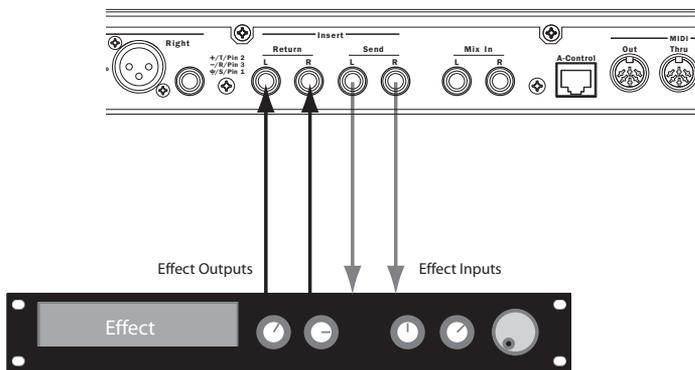
Audio from the A-16R is sent to the effect device's inputs. The processed sound is heard when the signal from the effect is plugged into the A-16R Insert Return jacks.

The audio signal will not be interrupted when a cable is patched into the Insert Send jack. You can use the Insert Send jacks as an additional pair of audio *outputs* as long as no cables are connected to the Insert Return jacks.

Plugging a cable into the Insert Return jack will interrupt the signal heard in the mix outputs (headphones and rear-panel line outputs) and will complete the signal path.

✓ **NOTE:** The insert Send/Return loop includes the auxiliary Mix In signal in the processing path.

Signal Flow

As seen in the diagram below (from left to right):

- A-Net audio is mixed using the A-16R
- Signals from the stereo Mix In jacks are mixed in with the sixteen-channel A-Net mix
- The mix goes to the Insert Send/Return loop
- An effects device processes the mix and returns the result to the A-16R via the Return jack
- The processed signal from the Insert is combined to create the final mix that you hear

16 channels of Audio ➕ **Mix In** ➕ **Insert** ➗ **Main Mix Out**

audio in

EFFECT
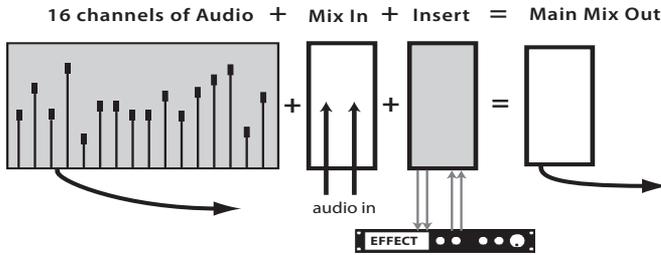
A-16R signal flow

Mix In

The A-16R includes a convenient auxiliary stereo mix input. The input has its own front-panel level control. Signals connected to the Mix In are added to the stereo mix in the analog domain, at the point where the digital mix is converted back to an analog signal.

Insert

+/T/Pin 2	Return		Send		Mix In		A-Control
−/R/Pin 3	L	R	L	R	L	R	
÷/S/Pin 1							
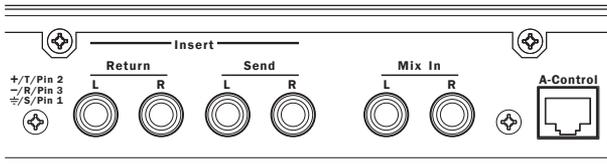
The Mix In jacks accept TRS balanced line-level signals.

Any analog line-level signal can be connected to the Mix In jacks. Some ideas for connected signals to the Mix In jacks include:

- Click Tracks
- Talkback or intercom communications
- Pre-recorded tracks
- Cascading other A-Net mixer outputs
- CD players or other recorded audio devices

The Mix In jacks can accept a wide variety of signal levels without distortion. The connections are balanced TRS jacks.

A-Control

A-Control is a special protocol developed to allow the A-16R to be controlled by a remote device. Only the optional A-16CS Control Surface should be connected to the A-Control jack. The connection uses a standard Cat-5 jack and cable. The A-Control jack supplies power and data to the A-16CS.
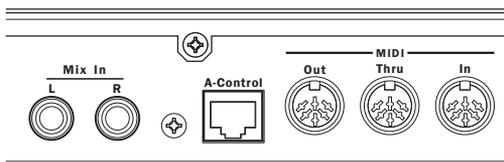
Connect the A-16CS to the A-Control jack.

With an A-16CS connected to the A-Control jack, the A-16R will respond to mix edits and Preset save/recall commands from as far away as 200 feet (60 meters). Note that the LOCAL/REMOTE switch on the front panel of the A-16R must be in the *Remote* position in order for the A-16CS to be recognized.

MIDI I/O

The A-16R can send its Presets to another device via system exclusive (sometimes referred to as SysEx) commands. MIDI is used to save banks of sixteen User Presets as a single file to a remote storage device such as a computer running MIDI sequencer software. Once stored in a remote device, the user's mix Presets can be reloaded into any A-16R that is connected via MIDI.

The MIDI Preset storage feature makes recalling setups for studios, theatres, and touring professionals fast and easy.
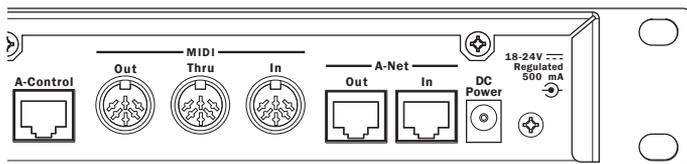
MIDI can be used for mix control and Preset storage.

There are three MIDI jacks found on the rear panel of the A-16R, labelled In, Out, and Thru.

- **MIDI Out** is used to send Preset data from your A-16R to another device capable of recording and storing the SysEx data.
- **MIDI In** is used to control the A-16R mix parameters, or to send recorded SysEx messages from a storage device back into the A-16R
- **MIDI Thru** can be used to daisy-chain MIDI devices. The Thru jack carries a copy of the data appearing at the A-16R MIDI In port.

A-Net In and Out
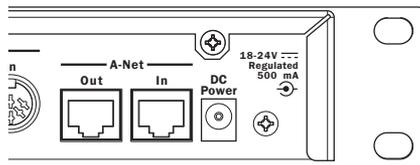
A-Net In and A-Net Out

The A-Net connections on the rear of the A-16R connect the A-16R to your Pro16 network. The **A-Net In** jack accepts signals coming from Aviom's A-Net input modules, compatible third-party console cards, another A-16R, an A-16II Personal Mixer, Pro16 output module, or from an A-16D or A-16D Pro A-Net Distributor.

The **A-Net Out** jack can be used to start a daisy-chain connection. By connecting a standard Cat-5e cable from the A-Net Out jack of the A-16R to the A-Net In of another A-Net compatible device, you can expand your audio network endlessly.

A-16CS Control Surface

Overview

The A-16CS Control Surface is an optional accessory than can be used with the A-16R Personal Mixer. The button layout of the A-16CS is the same as found on the A-16II Personal Mixer.

The main physical differences between the A-16II Personal Mixer and the A-16CS Control Surface are on the rear panel. The A-16CS has no audio outputs. Also missing are the A-Net In and Out connections. Instead, the A-16CS rear panel contains the A-Control connection for communication with the host A-16R and a footswitch jack.

The functions of the A-16CS front panel buttons and knobs are the same as on the A-16R and original A-16II Personal Mixers. For example, to recall a Preset mix, you will still press the Recall button, and then select one of the numbered buttons on the A-16CS to select a saved mix. The A-16CS sends the recall command to the host A-16R where the Preset data is actually stored.

✓ **Note:** Remember that the A-16R front-panel Remote/Local switch must be in the Remote position in order for button presses and knob motions on the A-16CS to be recognized by the host A-16R.

The following descriptions detail the differences between the functions of the A-16CS and the A-16R.

Master Volume

The user's mix volume is controlled by the Master volume control on the A-16CS. But it is important to remember that the A-16R's Master volume control sets the overall maximum loudness, even when the A-16CS Control Surface is connected. Incoming volume messages from the A-16CS Control Surface are scaled by the A-16R front panel volume control.

The A-16R's front panel master volume control remains active at all times, regardless of the position of the Remote/Local switch. The Master Volume knob allows overall volume adjustments of the main mix level without having to switch to Local mode on the front panel of the unit.This feature allows an engineer to set the maximum safe volume level at the A-16R and know that the user with the A-16CS Control Surface will never be able to exceed that amount.

Note that switching from remote to local control with the Remote/Local switch may cause an increase in the overall volume, since this removes the A-16CS Control Surface from the signal path.

Changing Channel Settings

When the A-16CS Control Surface is used to control an A-16R remotely, all edits made on the A-16CS will be reflected immediately on the A-16R. When you change the volume of a Channel from the A-16CS, the LEDs in the Volume section of the Personal Mixer and A-16CS will move simultaneously and will indicate the level changes in real time.

Saving a Mix From the A-16CS

When creating monitor mixes, you can save your work as a Preset remotely from the A-16CS. The Preset itself is stored in inside the A-16R, not in the A-16CS. This ensures that the mixes you create are always available in the device that is controlling the audio. Also, you can move the A-16CS to another A-16R for remote creation of mixes and Presets without losing any mix information in the original A-16R.

To Save a mix as a Preset:

- Create your mix by setting volume, pan, mutes, and groups as desired.
- On the A-16CS hold down the RECALL and GROUP buttons simultaneously.
- While still holding both buttons, press any numbered channel button.
- The numbered channel buttons flash to indicate that the Preset is stored.

Recalling a Preset From the A-16CS

As mentioned previously, your mixes are stored as Presets inside the A-16R. You can recall a mix Preset remotely from the A-16CS. Or, if the A-16CS is not available, the same Presets can be recalled from the front panel of the A-16R.

To recall a Preset from the A-16CS:

- Press the RECALL button.
- The RECALL button will flash.
- Select a numbered channel button (1 to 16) corresponding to the Preset mix that you want to recall.
- When the channel button is pressed, the mix is recalled and is now available and can be edited if desired.

When a Preset is selected from the A-16CS remote control, the same numbered LED on the front panel of the A-16R will flash briefly to indicate that the preset has been loaded.

Display the Current Preset Number

This function displays the last recalled or saved Preset number when in Save Mode. This is useful when editing Presets to help avoid overwriting a Preset you want to preserve in memory.

In Save Mode the current Preset will blink on the A-16CS channel button LED's. To check the current Preset:

- Hold down the RECALL and GROUP buttons.
- The current Preset number's LED blinks.
- Release the RECALL and GROUP buttons to exit without saving a Preset
- To save a Preset, press any Channel button; the Preset is saved to that location.

When checking the current Preset by using this method, remember that the system does not indicate that the Preset may have been modified. It simply indicates the last Preset recalled or saved.

A-16CS Rear Panel

On the rear panel of the A-16CS Control Surface you will find only two jacks, one for a footswitch, the other for the A-Control input.

A-Control

Communication between the A-16CS and its host A-16R is managed by a proprietary protocol known as A-Control. This allows the remote A-16CS to send commands to the A-16R mixer for creating and editing mixes, and for storing and recalling Presets.

All A-16R front-panel editing commands are available from the A-16CS. You cannot, however control the analog insert send and return jacks or the Mix In level from the A-16CS. These are analog controls.

A single Cat-5e cable is used to connect the A-16CS to the A-16R. Cables can be up to 200 feet (60 meters) in length.

Footswitch Jack

The A-16CS can use any standard dual-pedal footswitch to select Presets stored in the A-16R. When using a dual pedal, the right-side pedal is used to move *forward* through the Preset list. The left pedal is used to move *backward* through the Preset list from the current selection.

For example, if you have just loaded Preset 7 (by pressing the Rᴇᴄᴀʟʟ button followed by the number **7** button), pressing the right pedal once will move to Preset 8. Pressing the left pedal will move down one, returning you to Preset 7. Another press of the left pedal loads Preset 6, and so on. Changes are reflected on the A-16CS and its connected A-16R host.

As with other operations involving the A-16CS, the Rᴇᴍᴏᴛᴇ/Lᴏᴄᴀʟ switch must be in the Rᴇᴍᴏᴛᴇ position in order for the footswitch to be functional. When a Preset is selected via the footswitch, the corresponding numbered button's LED on the front panel of the A-16R will flash to indicate that the Preset has been loaded.

The Footswitch jack uses a TRS connection, designed for dual foot pedals. However, you can substitute a single footswitch (one that has only a tip-sleeve connection) if necessary. The Presets will move *up* only, and will wrap around from Preset 16 to Preset 1 at the end of the Preset list as described previously.

The footswitch can be either a *normally open* or *normally closed* type. The pedal is scanned by the system software to determine which type it is, and to determine what the "up" state of the switch is. The foot pedal should be connected when the system is powered up. If you change pedals while the system is in use, you may need to power cycle the unit if the type of pedal is different.

MIDI

The A-16R supports MIDI communication via system exclusive (SysEx) messages. System Exclusive messages (sometimes referred to as data dumps) are designed to allow compatible devices to send and receive digital data, providing such functions as preset storage and/or parameter editing. System exclusive messages contain device-specific information that allow connected MIDI devices to identify compatible data and ignore data destined for other devices connected in a MIDI network.

On the A-16R the REMOTE/LOCAL switch is used to select the MIDI status:

- In the LOCAL position (down), MIDI is on.
- In the REMOTE position (up), MIDI is disabled.
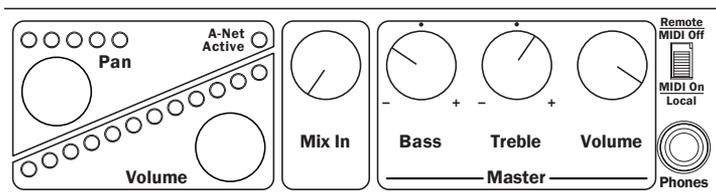
Use the Remote (MIDI Off) position with the A-16CS and the Local (MIDI On) position when controlling the A-16R from a MIDI device.

MIDI Jacks

The A-16R has MIDI In, Out, and Thru jacks on the rear panel to enable the A-16R to be connected to a computer, MIDI interface, keyboard workstation, or other compatible MIDI device.
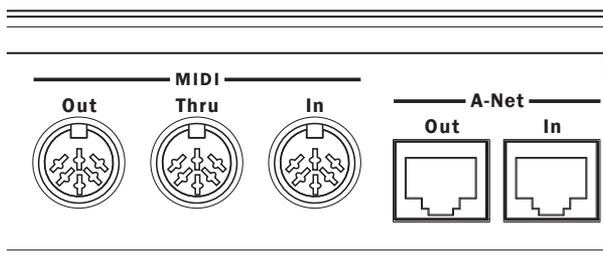
MIDI In, Out, and Thru

MIDI In

Connect the A-16R MIDI In jack to the MIDI output of a device in your MIDI system. The MIDI In jack is used to receive data from an external device. Data received at the MIDI In jack will be echoed to the MIDI Thru jack automatically. This allows multiple A-16Rs or other MIDI devices to be connected in serially (a daisy chain).

MIDI Out

The MIDI Out jack carries MIDI information and commands generated by the A-16R. Connect the A-16R MIDI Out jack to the MIDI In jack on a compatible MIDI recording or storage device.

MIDI Thru

The Thru jack is used when daisy-chaining MIDI devices. Any MIDI information received at the MIDI In jack is passed on to the MIDI Thru jack without alteration. An unlimited number of devices can be connected in this manner without the need for a MIDI Interface or computer.

✓ **Note:** Check that the MIDI cables between your A-16R and MIDI recording devices are properly connected and configured before attempting data transfers.

A-16R MIDI Base Channel

This feature allows the user to assign a MIDI channel to an A-16R, and to check the value of the MIDI base channel that is currently assigned. Sixteen MIDI channels are used; the A-16R can be set to any of the sixteen available channels. The sixteen MIDI channels correspond to the A-16R's channels and buttons, numbered 1 through 16.

MIDI automation allows devices to be controlled from a computer running MIDI sequencing software or from other types of MIDI controllers. To support the use of MIDI automation, it is necessary for the A-16R to respond to channel-specific MIDI messages.

Display the MIDI Base Channel

The display and assignment of a MIDI Channel is accomplished by using the **Remote/Local** switch on the A-16R Personal Mixer's front panel.

To check the currently assigned MIDI base channel:

- Move the REMOTE/LOCAL switch from the Remote position to the Local/MIDI position.
- Note that one of the Channel LEDs will blink for a few seconds. The Channel LED that is blinking corresponds to the MIDI channel that is currently assigned to the A-16R.

To change the currently assigned MIDI channel:

- Hold down the desired Channel button on the A-16R while switching from Remote to Local/MIDI mode with the REMOTE/LOCAL switch.
- The selected Channel's LED will blink temporarily, indicating the MIDI channel is now assigned.

The A-16R MIDI channel is retained in non-volatile memory, and is remembered when the unit is powered down. This means that sixteen different A-16Rs can be assigned to unique MIDI channels allowing a separate automated mix for each A-16R to be driven from a multi-track DAW sequencer, for example.

The A-16R MIDI channel can only be assigned from the front panel of the A-16R, and not from the A-16CS Control Surface.

The default MIDI base channel programmed at the factory is channel 1.

MIDI Automation

An A-16R can be controlled remotely via MIDI, allowing automated mixing of multiple A-16Rs in a performance situation. This allows a user to have a custom monitor mix, but with a remote device such as a MIDI sequencer making the changes.

The A-16R will support MIDI control of Channel Volume, Pan, and Mute settings, as well as Channel Selection and Preset Recall. The A-16R listens to MIDI channel voice messages that are broadcast on the A-16R's assigned MIDI base channel. To use this feature the Local/Remote switch on the A-16R must be in the Local/MIDI (down) position, and the unit must be in normal Mix Mode.

MIDI Messages

The A-16R will respond to the following MIDI messages:

MIDI Message	Controller or Program Value	Result
Program Change:	0-15	Recalls Presets 1-16
Program Change:	16-31	Selects Channels 1-16
Controller 7:	0-127	Mapped to Current Channel Volume (min. to max.)
Controller 10:	0-127	Mapped to Current Channel Pan (left to right)
Controller 104:	any	Mutes the Current Channel
Controller 105:	any	Unmutes the Current Channel

Note that MIDI Controller 10 will be mapped to control Linked Channel Spread if STEREO LINK is active for the currently selected channel. (This is set from the front panel of Pro16 analog input modules, or from the DIP switches on compatible Pro16 A-Net console cards.) In that scenario, the stereo spread will increase as the controller value increases. If a Group is active, MIDI pan will be ignored, since Group panning must be set per channel when the Group is being configured.

Some points to remember about MIDI:
- The A-16R will only respond to MIDI control messages that are sent on the MIDI channel that the A-16R is assigned to.
- The A-16R can only listen to MIDI when in Local/MIDI mode. This means that it is not possible to use MIDI automation while using an A-16CS Control Surface.
- A-16R front panel controls are not sent out via MIDI; the MIDI Out jack on the A-16R is only used for SysEx data dumps of Preset files.

MIDI Data Storage

Two types of MIDI SysEx data can be generated by the A-16R, single preset files and files that contain all sixteen user Presets.

The A-16R can send the following data types from the MIDI Out jack:
- Single Preset files - the current system settings including volume, pan, mute, and group information are transmitted.
- All Preset files - the sixteen saved user Presets are

transmitted as a single data dump.

The A-16R can receive the following sysex data types:

- Single Preset files - saved mix information is loaded into the current mix state.
- All Preset files - the A-16R's current sixteen mix Presets are replaced with the data from a set of sixteen saved Presets.

The A-16R is capable of saving and restoring Presets via MIDI only when the front panel REMOTE/LOCAL switch is in the LOCAL position. In the REMOTE position, MIDI communication is disabled.

✓ **NOTE:** The MIDI Thru jack will always echo data appearing at the MIDI In jack regardless of the position of the REMOTE/LOCAL switch.

Saving Presets via MIDI

The A-16R can save Preset information to its internal memory or via MIDI SysEx any time it is in Save Mode. The A-16R Save Mode is entered by holding down the RECALL and GROUP buttons simultaneously. Holding the RECALL and GROUP button combination flashes the Recall and Group LEDs to indicate that you can save Presets.

To save a Preset to internal memory, you press a numbered Channel button to store the current mix at the selected location.

To save a Preset or group of presets via MIDI, the SOLO and MUTE buttons are used in combination with the RECALL and GROUP buttons.

Save One Mix Preset via MIDI

To save the current mix as a Preset via MIDI SysEx:

1. Recall a Preset (or edit a Preset to create a new mix) including volume, pan, mutes and groups for up to sixteen channels of audio as required. Editing can be done from the front panel of the A-16R or from the optional A-16CS.
2. Set the A-16R front panel Remote/Local switch to the LOCAL (MIDI On) position.
3. Set up your MIDI recording device so that it is ready to receive MIDI SysEx data.
4. Hold the RECALL and GROUP buttons down to enter Save Mode.
5. While still holding the RECALL and GROUP buttons, press the SOLO button. (After pressing the SOLO button, you can release the RECALL and GROUP buttons.)
6. The current mix is sent out from the A-16R to the MIDI

recording device as a SysEx data dump.

7. Save your MIDI SysEx data to disk or other storage media used by your MIDI recording device or software application.

When transmitting a single Preset, the sixteen yellow Mute LEDs in the channel buttons will light solid for the duration of the transmission to verify the send operation. For single preset file dumps this will be relatively brief. Note that there is no way that the A-16R can know that the MIDI Preset data file was received properly by the device that the SysEx transmission was intended for.

Saving All Mix Presets via MIDI

To save the currently saved set of sixteen mix Presets as a single MIDI SysEx data file:

1. Make sure that the A-16R front panel REMOTE/LOCAL switch is set to the LOCAL (MIDI On) position.
2. Set up your MIDI recording device so that it is ready to receive MIDI SysEx data.
3. Hold the A-16R front panel RECALL and GROUP buttons down to enter Save Mode.
4. While still holding the RECALL and GROUP buttons, press the MUTE button. (You can then release the RECALL and GROUP buttons.)
5. The contents of the internal memory of the A-16R is sent to the MIDI recording device as a single SysEx data dump.
6. Save your MIDI SysEx data to disk or other storage media as used by your MIDI recording device.

During the transmission of the Preset memory, the sixteen yellow Mute LEDs in the channel buttons will light solid for the duration of the SysEx transmission.

Note that only the sixteen *saved* Presets are transmitted as MIDI data. If you have edited a mix and have not stored it to a memory location in the A-16R, this mix will not be recalled when the SysEx data is loaded into the A-16R later.

Loading Presets via MIDI

The A-16R can load Presets saved as either single Preset files or as All Preset files that include the complete set of sixteen memory locations. As when recalling a Preset from the internal memory, you must first enter Recall Mode to load a Preset. (Recall Mode on the A-16R is entered by pressing the Recall button.)

Remember that you need to have MIDI cables properly connected between the A-16R and your MIDI recording devices to load presets. Connect MIDI Out from your storage device to MIDI In on the A-16R.

Loading One Preset via MIDI

To load a single Preset that was saved to a MIDI recording device, the A-16R must first be placed into Recall Mode. Remember that MIDI reception is activated only when the front panel Remote/Local switch is in the Local position.

While waiting for valid MIDI SysEx information, the A-16R will remain in MIDI Recall until a valid A-16R MIDI message is received, or until you press another front panel button to exit MIDI mode. SysEx information for other manufacturer's devices will pass through the A-16R and be ignored.

To load one Preset:

1. Set the A-16R Remote/Local switch to the Local position.
2. Press the Recall button. The Recall button LED flashes.
3. Press the Solo button to arm the A-16R for MIDI reception. The LED in the Solo button will blink.
4. Send the single Preset SysEx data from your MIDI storage device.
5. The Preset is loaded into internal memory and is ready to be used as is and/or edited.
6. Save your Preset to an internal memory location.

When a SysEx transfer is complete, the system will display a status message to confirm that the data was received properly. Two messages are possible:

- Valid Data Received - all yellow Mute LEDs will flash
- Invalid Data or MIDI Error - all red Channel LEDs will flash

Press any A-16R button to acknowledge the transfer status message and return the A-16R to normal operation.

Loading an All Preset File via MIDI

As when loading a single Preset via SysEx, to load an All Preset data file the A-16R must first be placed into MIDI Recall Mode.

The A-16R will remain in MIDI Recall until a valid A-16R MIDI message is received, or until another front panel button is pressed to exit MIDI mode. MIDI SysEx information for other manufacturer's devices will pass through the A-16R and be ignored.

To load an All Preset data file via SysEx:

1. Set the A-16R front panel REMOTE/LOCAL switch to the LOCAL position.
2. Press the RECALL button. The RECALL button LED flashes.
3. Press the SOLO button to arm the A-16R for MIDI reception. The LED in the SOLO button will blink.
4. Send the All Preset SysEx data file from your MIDI storage device.
5. The sixteen Presets are loaded into the A-16R internal memory sequentially.
6. The Mute LEDs will serve as a progress bar. The LEDs will light in order from 1 to 16 as each Preset is received successfully.

When the All Preset SysEx file transfer is complete, the system will display a status message to confirm that the data was received properly. Two messages are possible:

- Valid Data Received - all yellow Mute LEDs will flash
- Invalid Data or MIDI Error - all red Channel LEDs will flash

Press any A-16R button to acknowledge the transfer status message and return the A-16R to normal operation.

Exit MIDI SysEx Mode

You can exit an All Preset SysEx load operation by pressing any A-16R front panel button, or by changing the position of the Remote/Local switch. Presets that have been successfully received prior to exiting the SysEx recall mode will be preserved in the internal memory of the A-16R. The remaining internal Preset memory of the A-16R will remain unchanged.

Applications

This section describes how to set up and use the Pro16 Monitor Mixing System in a variety of contexts. Pro16 mic- or line-level input modules such as the AN-16/i and AN-16/i-M can be used as well as console cards from Aviom and third-party manufacturers.

Most of the applications described below apply equally to analog and digital consoles. However, this document cannot cover third-party digital console cards and the configuration of the consoles that can accept them. Refer to the user documentation for the digital console for information about using and assigning direct outputs, aux sends, etc., to a Pro16 A-Net console card used as the input module for a monitor mixing system.

Console Direct Outputs

The direct output of a live or recording console allows you to take an exact copy of an input channel's audio and patch it into the Pro16 input module. A typical console's direct output point is right after the input (pre-fader, pre-EQ), meaning that changes made on the console as far as effects, EQ, etc., do not affect the sound of the direct output.

Aviom input modules can accept up to sixteen direct output signals as sources. You can use balanced or unbalanced cables to connect audio, depending on the configuration of your mixer.

Follow these steps to create a monitor system with direct outputs:

- Connect a balanced or unbalanced cable from the direct output jack on the mixing console to the first input on the Pro16 input module.
- Repeat this procedure for the other console channels you want to add to the monitor mix.
- Select an appropriate input level setting on the input module front panel (analog input modules only).
- Send audio into the Pro16 Monitor Mixing System.
- Select a channel on the Personal Mixer and set the volume and panning.
- Save the mix as a Preset.

At this point you can use the mix as is, or fine tune it by adding Groups, linking channels, etc.

Using Aux Sends

An Aux Send can be used alone or in combination with other audio sources such as direct outputs to create a monitor mix. Each Aux Send can be used to create a unique blend of channels, with the Aux Send output connected to the Pro16 input module.

For example, to send a mono blend of six vocals to one channel of the Pro16 input module, turn up the Aux Send the desired amount on each vocal source channel on the mixing console. Connect the Aux Send's output to the Pro16 input. Users can turn the vocal blend up or down on an Personal Mixer, but only the engineer can alter the blend.

Use two Aux Sends and panning along with two inputs on the Pro16 input module to send a stereo pair of vocals to the monitor mixing system.

Using Console Inserts

When you use your mixing console's insert points to send audio signals to the Pro16 input module, you have some options. The patching on the rear panel of Pro16 analog input modules is designed so that you can still use the insert point on your console for its traditional use—adding an effect to a channel.

There are some special ways that the input module can be used to allow this flexible processing. The exact layout of your existing main mixer will influence how many of these techniques you can use.

Y Cable Insert

The Pro16 analog input module can be used with a console's insert send/return loop just as if it were an effects processor. If you have a mixing console with a single TRS jack used for send and return of the effects loop, a TRS to dual mono "Y" cable is used to split the signal into two components. One of the mono ends is the Send cable, the other is the Return.

To use this type of insert with a Pro16 analog input module, connect the TRS jack to the console's insert point and patch the Y cable Send into the audio Iɴ jack on the input module. Then use the Y cable Return plugged into the input module Tʜʀᴜ jack to complete the loop back to the mixing console. The input module is now patched into the channel with no change to the audio signal. The console sees the input module as just another effects device.

Adding Effects

What if you need to add an effect such as a compressor to the same channel feeding the monitor system via the input module? There are a couple of options. For both examples, start with the cables set up as just described for

the simple insert example. You'll need one more cable.

Monitor without the effect:

- Remove the cable from the Thru jack of the Pro16 input module.
- Plug it into the *output* of the effect.
- Connect a cable from the input module Thru jack to the *input* of the effect.
- The send/return loop is complete and now includes the effect.
- You do not hear the effect in the monitors.

Monitor with the effect:

- Remove the cable from the audio In jack of the Pro16 input module.
- Plug it into the *input* of the effect.
- Connect a cable from the *output* of the effect to the input module In jack.
- Leave the cable already connected to the input module Thru jack as it is. It completes the loop and sends the processed signal back to the mixing console.

You can wire much of the same functionality described above into a patch bay for more permanent installations. Remember to use the same type of cables and patch bays—balanced cables with balanced patch bays, unbalanced cables with unbalanced patch bays.

Studio Cue System

In the studio, the flexibility of the Personal Mixer will give performers more control of their headphone cue mix. At the same time it allows the recording engineer to spend less time fussing with the cue mix and more time making the recorded tracks sound great.

Making a cue mix from a recording console is essentially the same as when using a live mixing board. If your recording console or DAW has direct outputs or unused auxiliary sends, you can use the same techniques as described for live audio monitor mixes.

Playback Monitoring

In the studio, performers also need to listen back to tracks they have just recorded. If each performer is using a different mix while recording, playback of the track will be different in each set of headphones.

If you can dedicate two inputs on the Pro16 input module for playback, you can easily provide the performers with a high-quality playback of the track they have just recorded.

Here's how to set it up:

- Set aside the first fourteen channels of the Pro16 input module for audio tracks to be sent to the performers as a cue mix.
- The remaining two channels (15-16) are reserved for the stereo mix that the engineer creates in the studio.
- Connect cables from the mixing console for monitoring the fourteen performer channels as described previously from direct outputs, aux sends, etc.
- Patch the output of the stereo mix that you want the performers to hear into the remaining two input module inputs.

The idea is that you will create two Presets on the Personal Mixers for the performers. The first is their standard cue mix. It uses fourteen channels; the last two channels, 15 and 16, are muted. They can change it as needed while they work. Save this as Preset #1 in the Personal Mixer.

The other Preset is the exact opposite. The performer's fourteen cue channels are muted and the two channels containing the engineer's playback mix are on. Save this as Preset #16 in the Personal Mixer.

For the example, let's assume that channels 1 through 14 are used for performer cue playback. Channels 15 and 16 will be used to play back the recorded track.

When the musicians are cutting tracks, have them select Preset #1. Record tracks as usual, with each musician listening to their personal customized cue mix. When you want to listen back to a recorded take, have the performers switch to Preset #16. They now hear the engineer's mix. All players hear the same mix, that the engineer can control as needed.

Of course the players can create additional cue mixes and save them to the remaining empty Preset locations 2 through 15 as needed.

Adding Effects to a Monitor Mix

Sometimes you may want to have reverb, delays, etc. sent into the monitor system. This works for live applications as well as for studio cue systems. There are two ways of accomplishing this:

- Patch the effects returns from the mixing console into the Pro16 input module via insert points if available.
- Connect the effects device's audio outputs to the Pro16

> input module *first* and then use the Thru jack on the input module to complete the signal chain.

In either case the performers can now decide how much of the effects return is required in their personal mix. And, they can save up to sixteen mixes with various amounts of effects in each.

Adding Live Ambience to a Monitor Mix

For performers using in-ear monitors in a live performance situation, it may be desirable to add some room ambience into the monitor system to help add a sense of space. This technique can be used with most live mixing consoles. All you need is a way to send the signal from one or more room mics into the Pro16 input module. A pair of mics on either side of a stage provides a stereo ambience signal that can be added as needed to a performer's mix.

If you are using direct outputs from channels to send instrument and mic signals into the input module, you need to dedicate two channels to the mics that are picking up the ambient sound. It is not necessary that these live mics be sent into the front of house mix.

Silent Session

There is no requirement that a mixing console be used with the Pro16 Monitor Mixing System, especially when you have an analog input module. It makes a great self-contained rehearsal environment for keyboard players, guitarists, and electronic drummers, etc.

To set up a silent monitoring system:

- Connect the outputs from stereo keyboards to inputs on the Pro16 input module.
- If the keyboard player uses a sub-mixer, you can optionally connect the stereo output of the keyboard mixer to two inputs.
- Patch the output of a guitar amp simulator into a pair of inputs.
- Connect an electronic drum kit's outputs into the input module.
- Set the stereo link switches on the input module for any stereo channel pairs.

Other Uses for the Personal Mixer Outputs

The stereo audio outputs on the Personal Mixer can be used with stereo headphones, in-ear monitors, or powered speakers. But, since the outputs

are at line level, they are capable of sending the current monitor mix to any audio device capable of using a line level audio signal.

Record a Mix

The output of your Personal Mixer can be used for recording. Use it to record a rehearsal or performance, or to create rehearsal mix-minus recordings for substitute performers.

Connect either the XLR or TRS line outputs to the recording device. Two separate cables are required—one for the left side, the other for the right. To record the output of a Personal Mixer:

- Create a mix on the A-16R. Use panning, mutes, Groups etc. as required.
- Save the Preset to a memory location.
- Connect the line outputs of the A-16R to the inputs of the recorder.
- Choose an appropriate audio level for recording on the device by setting the Master volume control on the A-16R to a level that does not distort the inputs of the recorder.

Troubleshooting

Before contacting Customer Service, check the following list of common problems and solutions for help.

Problem: *Nothing happens when editing from the front panel of the A-16R. Or, nothing happens when trying to edit the A-16R remotely using an A-16CS Control Surface.*

Possible Solutions:

- The REMOTE/LOCAL switch on the right side of the A-16R determines which device is active for editing.
- When using an A-16CS, make sure that the A-Control cable is connected to the A-Control jack found on the rear panel of the A-16R.

Note that only one device can edit an A-16R at a time.

Problem: *No audio from Personal Mixer outputs*

Possible Solutions:

- No input audio from the main mixing console. Check the levels of the main mixing board that the system is connected to.
- Check the cables and connections between the main mixer and the personal monitor system. The Signal LEDs on the front of Pro16 analog input modules can be used to confirm that audio is being received.
- Check channel routing if using a console interface card as the system's input module.
- Bad cables; try a replacement.
- All channels on the Personal Mixer are at zero.
- Master volume level on the Personal Mixer is at zero.
- A-Net cables are not connected properly.

Problem: *Can't change Presets*

Possible Solutions:

- Make sure that the RECALL button has been pressed. Its LED will flash, indicating that you should press a numbered button to recall a Preset.

Problem: *I don't think my Preset was saved.*

Possible Solutions:

- When saving a Preset, make sure that the RECALL and GROUP buttons are both held down before pressing one of the numbered memory location button. The Preset is saved when you release your finger from the memory location button. When a Preset has been saved correctly, you will see all sixteen channel LEDs flash momentarily to confirm the save operation.

Problem: *Can't hear a channel that is part of a Group*

Possible Solutions:

- The Group might be muted. Check the lower (yellow) LED in the channel buttons. A lit yellow LED indicates the channel is muted. To unmute it, press the MUTE button while the Group is selected. The yellow LED must be unlit in order to hear the audio on that channel.
- The channel volume is all the way down. In Group edit mode, select the channel and check the level for that channel by looking at the LEDs in the Volume indicator. If no LEDs are lit, then the channel is turned all the way down. Raise the volume by turning the channel VOLUME knob; re-save the Group and Preset if necessary.

Problem: *The A-Net LED is on, but there is no sound*

Possible Solutions:

- The A-Net Active LED indicates that the input to the receiving device is properly connected to another A-Net device. It does not indicate that all devices in a system are properly connected, however. If you have two Personal Mixers connected together, the second Personal Mixer's A-Net LED will light because the first Personal Mixer is correctly connected to it. Check that each device in the chain has a Cat-5 cable plugged into it.
- Check that the A-Net cables are connected in the correct order. The Cat-5 cable connected to the first Personal Mixer should be connected to the A-Net In jack. The next device is connected from the A-Net Out on the first device to the A-Net In on the next.

Problem: *A Preset was saved with a stereo link active but when the Preset is recalled the channels are mono. (Or, a Preset was saved with mono channels, but on recall the channels are linked.)*

Possible Solutions:

- The status of the stereo link is set by the Link switches on the input module. If a Preset is recalled and the position of the Link switch is different from when the Preset was saved, the Preset will be adjusted to agree with the current settings on the input module's front panel. If this happens, simply change the position of the Link switch on the input module. Your current mix will be updated immediately.

Problem: *A channel was assigned to one Group and now it is suddenly part of a different Group.*

Possible Solutions:

- When you link a pair of channels with the Link switch on the input module after a Group has been created, it is possible that channel characteristics could change. This includes the volume, pan, mute status, and Group assignment. The rule to remember is that the even-numbered channel (the right side of the pair) will inherit the characteristics of the odd-numbered channel (left side of the pair).

Problem*:* *In Group mode, can't select a new channel.*

Possible Solutions:

- If you already have three Groups defined and attempt to create a new Group, the button press is ignored. Creating a new Group would exceed the limit of three Groups per Preset. Edit or delete an existing Group to continue.

Specifications - A-16R

Audio Outputs	Impedance matched output
Headphone Output	Front panel; TRS; Tip: Audio Left; Ring: Audio Right; Sleeve: Ground
Mix input, stereo	Balanced 1/4" TRS; front-panel volume control
Insert send/return	Balanced 1/4" TRS
A-Net I/O	1 A-Net In, 1 A-Net Out; RJ45 connectors
D/A Conversion	44.1/48kHz, 24-bit
Indicators	Pan: 5 LEDs, 4 red, 1 green; Channel Volume: 12 red LEDs
Stereo Operation	Stereo Link, per channel pair; set at the input module Variable pan/spread per channel or channel pair
Tone Controls	Treble: +/-12dB at 9kHz shelving Bass: +/-12dB at 160Hz shelving
Output Impedance	140 ohms
Freq. Response	4Hz-22kHz +0.2dB/-3dB
THD +N	<0.003%
Signal to Noise (unweighted)	-90dB typical, A/D to D/A Measured from AN-16/i to A-16II
Crosstalk	-90dB
Latency	0.880 msec (measured from analog input to analog output)
Pro16 A-Net	uses unshielded Cat-5e UTP (or better) cable; maximum 500ft (150m) between devices
Remote Control	A-16CS: A-Control, RJ45 jack, max. 200 ft (60m) Compatible with select third-party controllers via RS-232
Power Supply Input Voltage Output Voltage Plug Size	External, DC, universal switching type 100-240 volts, 50/60Hz, 30VA 18-24 VDC, 0.5 amp 2 mm
Dimensions, A-16R	19" (482.6 mm) x 6.7" (170.2 mm) , 1U high
Dimensions, A-16CS	10.75" (273 mm) x 5.6" (142.2 mm); 2.25" (57.5 mm) high
Weight	A-16R 6.8 lbs. (3.08 kg) A-16CS 3.4 lbs (1.54 kg)
Options	A-16CS Control Surface MT-1 Mic Stand Bracket (for A-16CS) EB-1 Extension Bracket
All Aviom products are designed and manufactured in the USA.	

Specifications - A-16CS

Footswitch jack	1/4" TRS, selects Preset up/down
A-Control	Supplies data and power from host A-16R; RJ45 connector
Indicators	Pan: 5 LEDs, 4 red, 1 green; Channel Volume: 12 red LEDs
Power Supply	Powered by host A-16R
Dimensions	10.75" (273 mm) wide x 5.6" (142.2 mm) deep; 2.25" (57.5 mm) high
Weight	3.4 lb. (1.54 kg)
Options	MT-1 Mic Stand Bracket (uses 6-32, 1/4-inch machine screws) EB-1 Extension Bracket
All Aviom products are designed and manufactured in the USA.	

A-16CS Mounting Options

The A-16CS can be mounted to standard mic stands with the MT-1, which attaches to the bottom of the Control Surface.
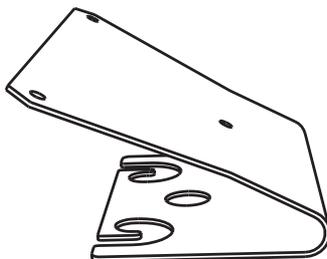
MT-1 Mic Stand Mount

The MT-1 attaches to the bottom of the A-16CS using three machine screws, size 6-32, 1/4-inch long.

A-16R Block Diagram

Dimensions

17.378
[441.40]

.239
[6.07]

5.6
[142.2]

.119
[3.02]

1.720
[43.69]
[-1.75]

18.312
[465.12]

19.000
[482.60]

1.674
[42.52]

Dimensions shown:
5.548 [140.9]
10.746 [273]
2.344 [59.5]
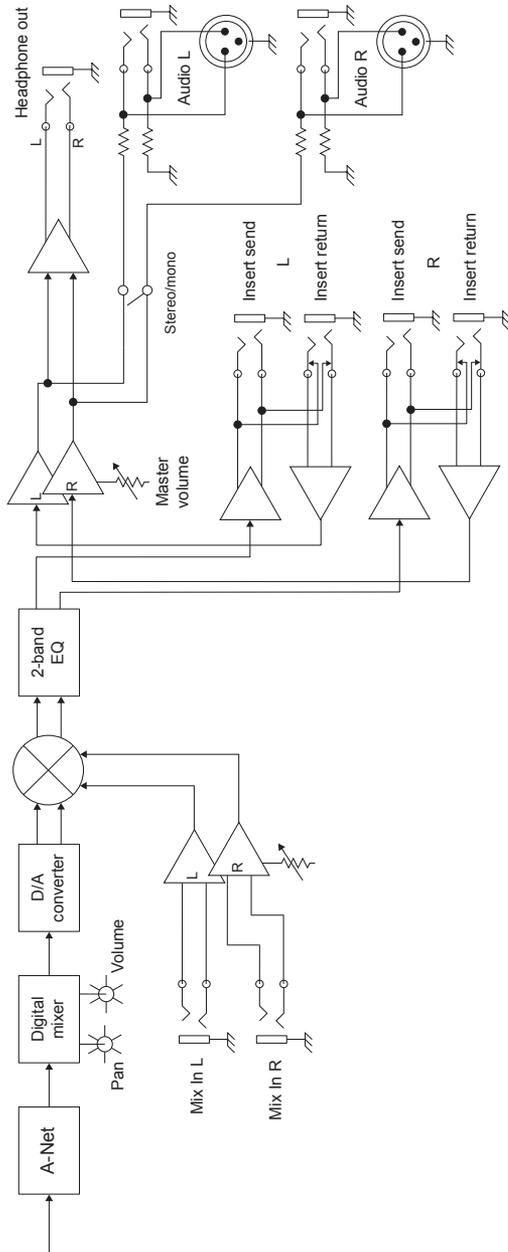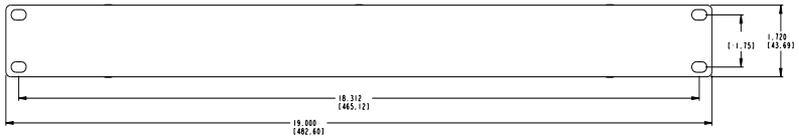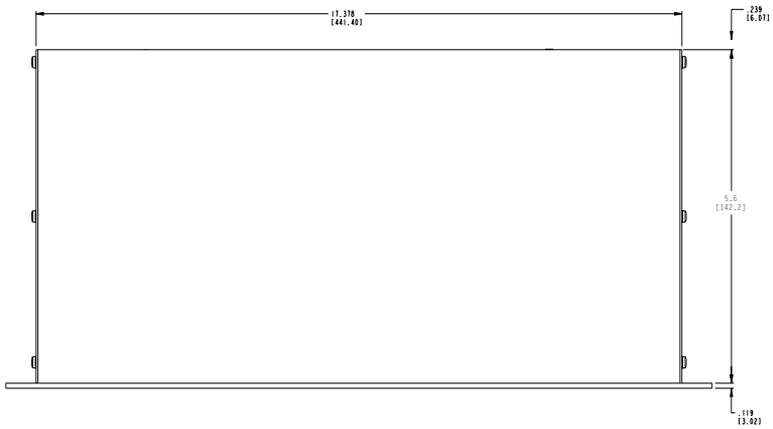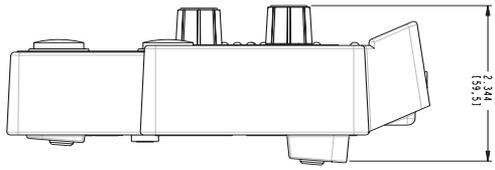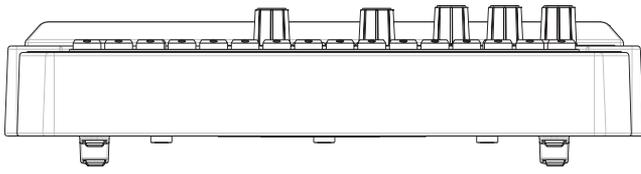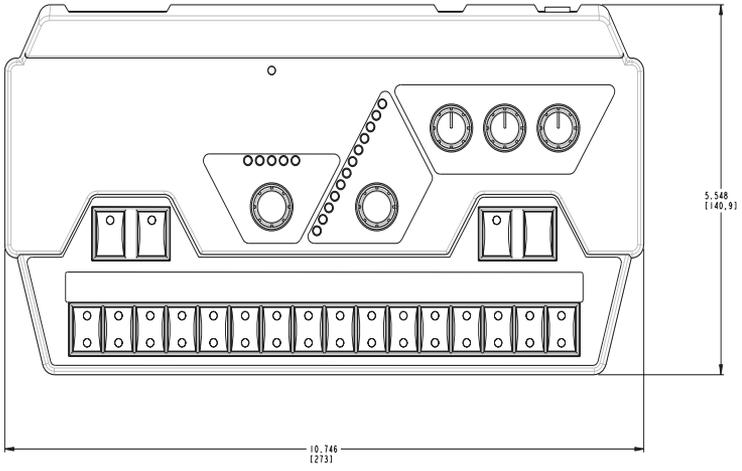
A-Control Specifications

The specifications below can be used to set up control systems to remotely send commands to the A-16R Personal Mixer via its A-Control jack.

Physical Connections

The A-Control interface on the A-16R and A-16CS is an RJ45 connector. Cabling between the devices is standard Cat-5e cable with a maximum distance of 60m/200ft.

Electrical Connections

The A-Control interface uses the RS-422 asynchronous serial protocol for information exchange. The A 16R also provides remote power to the remote control unit. Electrical wiring of the Cat-5e cable between the Host (A-16R) and the Controller (A-16CS) is specified in the following table:

Wire Number	Function
1	RS-422 Data: Host Out to Controller In (Host Tx +)
2	RS-422 Data: Host Out to Controller In (Host Tx -)
3	RS-422 Data: Controller Out to Host In (Host Rx +)
6	RS-422 Data: Controller Out to Host In (Host Rx -)
4 / 5	Ground
7 / 8	Remote Power: +18 to +30 VDC Unregulated / 40mA max (+24 volts nominal for A-16CS)

Note that the act of switching the A-16R Local/Remote switch to the REMOTE position will supply power and ground down the A-Control cable to the Controller.

Physical Layer Data Format

The Physical Layer data format of the RS-422 A-Control conforms to the following specifications:

Physical Layer Data Format	
Electrical:	RS-422
Start Bits:	1
Data Bits:	8
Hardware CTS, RTS:	Not Supported
Stop Bits:	1
Parity:	None
Baud:	31.25k
Idle State:	High (Active-low start bit referenced to "+" signal on RS-422)

Note that hardware handshaking (dedicated lines for CTS, RTS, DTR, etc.) is not supported.

MIDI Implementation Chart

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default Changed	n/a	n/a	sysex data is channel independent
Mode	Default Messages Altered	************		
Note Number	True Voice	************		
Velocity	Note On Note Off	x x	x x	
After-touch	Key's Channel	x x	x x	
Pitch Bend		x	x	
Control Change				
Program Change	True Number	x	x	
System Exclusive		o	o	Preset Data Dumps
System Common	Song Position Song Select Tune Request	x x x	x x x	
System Real Time	Clock Commands	x x	x x	
Aux Messages	Local On/Off All Notes Off Active Sensing System Reset	x x x x	x x x x	
Notes				
Mode 1: Omni On, Poly		Mode 2: Omni On, Mono		o: Yes
Mode 3: Omni Off, Poly		Mode 4: Omni Off, Mono		x: No

MIDI System Exclusive Implementation

Version 1.00 for Aviom A-16R

1.   Introduction and Overview

This document is designed to aid in the understanding of the A-16R's MIDI System Exclusive (SysEx) implementation. MIDI SysEx support for the A-16R product includes messages that allow for uploading and downloading of all sixteen system presets or the current active configuration also referred to in this document as the current preset. Described in this document is the implementation of these features. In order to utilize these features the A-16R may be interfaced to any MIDI management device such as a personal computer with MIDI software or stand alone devices such as MIDI SysEx recorders/sequencers.

1.1. Transmit Flow

Shown below is the basic transmit flow for the currently supported/ implemented MIDI system exclusive messages on the A-16R.

MIDI OUT ← ⎰ MIDI All Presets
            ⎱ MIDI Current Preset

Figure 1 - MIDI Transmit Flow

1.2.   Receive Flow

Shown below is the basic receive flow for the currently supported/ implemented MIDI system exclusive messages on the A-16R.

MIDI IN → ⎰ MIDI All Presets
           ⎱ MIDI Current Preset
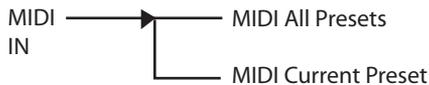
Figure 2 - MIDI Receive Flow

2.   MIDI System Exclusive Packet Pieces

A MIDI SysEx packet can be thought of as a group or collection of bytes that contain a start indicator referred to as the "SysEx Head", "Message Data" which may contain control or status information and a "SysEx Tail" which

terminates/ends the packet. Described below is an overview of a generic MIDI SysEx packet structure.

SysEx Head	Message Data	SysEx Tail

Figure 3 - MIDI General Packet Structure

The specifics and mechanics of the various packet pieces are described in the subsequent sections.

2.1.   MIDI System Exclusive Packet Head

Several data bytes define the "SysEx Packet Head." Among these are the standard "Start of Exclusive" also known as SOX, a standard MIDI Manufacturer's ID assigned by the MIDI Manufacturers Association (MMA) and Aviom proprietary product and message type identification. SysEx messages that contain incorrect or unknown ID information or unsupported message types are ignored by the A-16R without generating error indications. The MIDI SysEx packet head of an A-16R SysEx packet is described below.

SOX	1111 0000	(F0H)	Start of Exclusive
Manufacturer's ID	0000 0000	(00H)	Aviom Manufacturer's ID Byte 1
	0000 0001	(01H)	Aviom Manufacturer's ID Byte 2
	0100 0101	(45H)	Aviom Manufacturer's ID Byte 3
Family ID	0000 0000	(00H)	(A16 Family)
Product ID	0000 0000	(00H)	(A-16R Product)
Device ID	0000 0000	(00H)	(expansion)
Msg. Type	0mmm mmmm	-	See table 1 for valid message types
Msg. Descriptor	0000 0000	(00H)	Message Descriptor Byte 1 (expansion)
	0000 0000	(00H)	Message Descriptor Byte 2 (expansion)
	0000 0000	(00H)	Message Descriptor Byte 3 (expansion)
	0000 0000	(00H)	Message Descriptor Byte 4 (expansion)
	0000 0000	(00H)	Message Descriptor Byte 5 (expansion)
	0000 0000	(00H)	Message Descriptor Byte 6 (expansion)

2.2.   MIDI System Exclusive Packet Tail

Every complete MIDI System Exclusive message should contain a Trailer/ Tail byte referred to as an "End of Exclusive" or EOX for short. Reception of implemented System Exclusive messages in the A-16R that do not contain an EOX will be treated as incomplete and flagged as an error.

EOX	1111 0111	(F7H)	End of Exclusive

2.3.   Message Data Format

There are essentially two basic data byte formats used in the "Message Data" section of an A-16R's SysEx message. The first format is a nibblized format and the second is a padding format. In general the "Message Data" of the A-16R's SysEx message is nibbilized or broken up into MIDI seven bit status bytes. In this nibblization process one data byte becomes two bytes. The upper 4 Bits or upper nibble of the first byte is fixed while the lower 4 Bits or lower nibble contains the Most Significant Bits (MSB) of the data byte being "nibblized." Similarly, the upper nibble of the second byte is fixed while the lower nibble contains the Least Significant Bits (LSB) of the data byte.

MSB	0001 hhhh	h = high 4 bits of data byte - sent first
LSB	0001 llll	l = low 4 bits of data byte

The second basic data byte format used in the "Message Data" section is the padding format. Padding is inserted between presets in order to provide necessary delays to allow for preset processing.

Padding	0000 0000	(00H)	Padding byte format, ignored by A-16R

2.4.   Checksum Calculation

The preset checksum is calculated by a straight 8-Bit addition of all preset data bytes, excluding the preset ID, prior to nibblization. In the event of an overflow the overflow will be discarded in this scheme. Once the checksum has been calculated, the 8- Bit result is then nibblized for transmission and inserted into the MIDI SysEx message. In the case of the All Presets Message several checksums are included in the MIDI SysEx message, one for each preset contained within the message.

2.5.   Receiver Errors

Many events may result in errors being generated. For example, if the received checksum doesn't match the calculated checksum or if reception of a channel voice message occurs in the middle of a SysEx message, a SysEx

failure/error will be generated. When an error is detected on the A-16R, the SysEx progress LEDs (also known as the mute LEDs) will stop updating and the failure will be indicated by flashing the channel select LEDs. The SysEx error can only be acknowledged and cleared by the users pressing a button on the A-16R's front panel or by toggling the remote/local switch.

3.   Message Type List

Currently there are only two SysEx message types implemented in the A-16R. A single byte location exists in each SysEx message, supported by the A-16R, to identify the message type.

Message Type	Encoded Value	Reference
MIDI All Presets	00H	Figure 4 and Section 4
MIDI Current Preset	01H	Figure 5 and Section 5

Table 1 - A-16R SysEx Message Types

3.1. MIDI All Presets (Message Type = 00H)

Listed below is an overview of the complete "MIDI All Presets" message. This message contains data for all 16 presets transferred to or from the A-16R. All portions of this message are included in the figure including, "SysEx Head", "Message Data" , and "SysEx Tail."
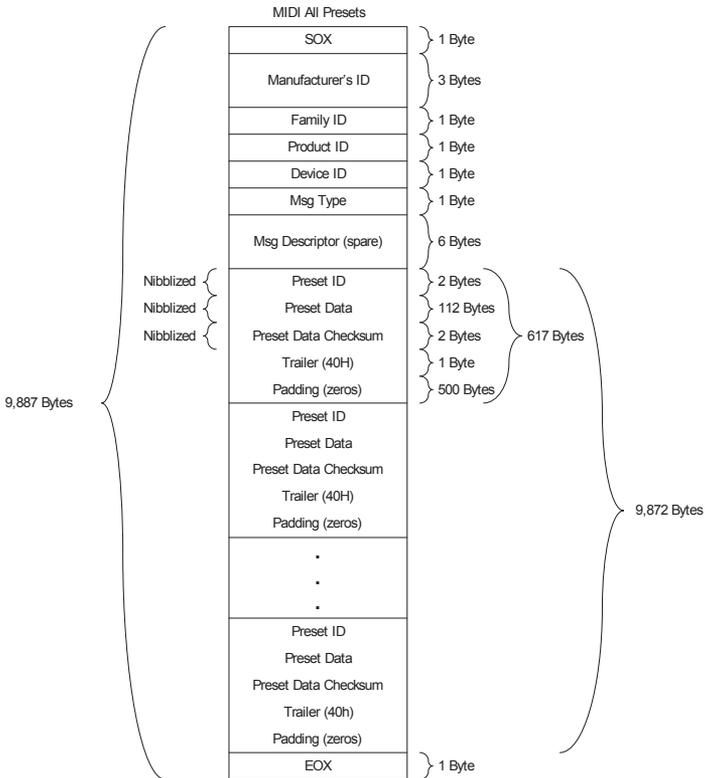
## 3.2.	MIDI Current Preset (Message Type = 01H)

Listed below is an overview of the complete "MIDI Current Preset" message. This message contains data for the current active configuration transferred to or from the A-16R. All portions of this message are included in the figure including, "SysEx Head", "Message Data" , and "SysEx Tail."

MIDI Current Preset		
SOX	1 Byte	
Manufacturer's ID	3 Bytes	
Family ID	1 Byte	
Product ID	1 Byte	
Device ID	1 Byte	
Msg Type	1 Byte	
Msg Descriptor (spare)	6 Bytes	632 Bytes
Nibblized — Preset ID - 0 (00H)	2 Bytes	
Nibblized — Preset Data	112 Bytes	
Nibblized — Preset Data Checksum	2 Bytes	617 Bytes
Trailer (40H)	1 Byte	
Padding (zeros)	500 Bytes	
EOX	1 Byte	
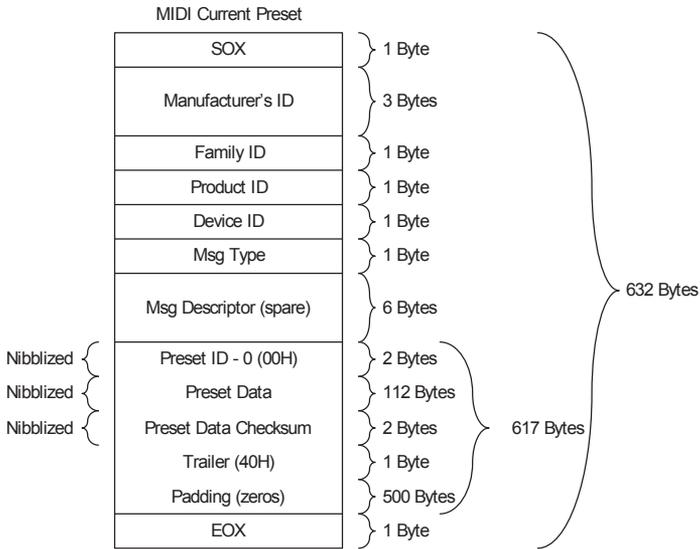
Figure 5 - MIDI Current Preset Message

4.   MIDI All Presets Detail

Listed below is a more detailed picture of the "MIDI All Presets" message as implemented on the A-16R.

SOX	1111 0000	(F0H)	Start of Exclusive
Manufacturer's ID	0000 0000	(00H)	Aviom Manufacturer's ID Byte 1
	0000 0001	(01H)	Aviom Manufacturer's ID Byte 2
	0100 0101	(45H)	Aviom Manufacturer's ID Byte 3
Family ID	0000 0000	(00H)	(A16 Family)
Product ID	0000 0000	(00H)	(A-16R Product)
Device ID	0000 0000	(00H)	(expansion)
Msg. Type	0000 0000	(00H)	Message Type = MIDI_ALL_ PRESETS_MSG
Msg. Descriptor	0000 0000	(00H)	Message Descriptor Byte 1 (expansion)
	0000 0000	(00H)	Message Descriptor Byte 2 (expansion)
	0000 0000	(00H)	Message Descriptor Byte 3 (expansion)
	0000 0000	(00H)	Message Descriptor Byte 4 (expansion)
	0000 0000	(00H)	Message Descriptor Byte 5 (expansion)
	0000 0000	(00H)	Message Descriptor Byte 6 (expansion)
Preset ID	0001 0000	(10H)	Nibblized First Preset ID (MSB)*
	0001 0000	(10H)	Nibblized First Preset ID (LSB)*
Preset Data	...	...	112 consecutive bytes containing info for one preset
Preset Checksum	0001 nnnn	-	Nibblized Preset Data Checksum (MSB)

	0001 nnnn	-	Nibblized Preset Data Checksum (LSB)
Preset Trailer	0 1 0 0 0000	(40H)	Indicates end of a given preset
Padding	...	...	500 consecutive bytes of the pattern 00H
Preset ID	0001 0000	(10H)	Nibblized Second Preset ID (MSB)*
	0001 0001	(11H)	Nibblized Second Preset ID (LSB)*
Preset Data	...	...	112 consecutive bytes containing info for one preset
Preset Checksum	0001 nnnn	-	Nibblized Preset Data Checksum (MSB)
	0001 nnnn	-	Nibblized Preset Data Checksum (LSB)
Preset Trailer	0100 0000	(40H)	Indicates end of a given preset
Padding	...	...	500 consecutive bytes of the pattern 00H
	|	|	
Preset ID	0001 0000	(10H)	Nibblized Last Preset ID (MSB)*
	0001 1111	(1FH)	Nibblized Last Preset ID (LSB)*
Preset Data	...	...	112 consecutive bytes containing info for one preset
Preset Checksum	0001 nnnn	-	Nibblized Preset Data Checksum (MSB)
	0001 nnnn	-	Nibblized Preset Data Checksum (LSB)
Preset Trailer	0100 0000	(40H)	Indicates end of a given preset
Padding	...	...	500 consecutive bytes of the pattern 00H
EOX	1111 0111	(F7H)	End of Exclusive
* - Valid preset range 0-15			

5. MIDI Current Preset Detail

Listed below is a more detailed picture of the "MIDI Current Preset" message as implemented on the A-16R.

SOX	1111 0000	(F0H)	Start of Exclusive
Manufacturer's ID	0000 0000	(00H)	Aviom Manufacturer's ID Byte 1
	0000 0001	(01H)	Aviom Manufacturer's ID Byte 2
	0100 0101	(45H)	Aviom Manufacturer's ID Byte 3
Family ID	0000 0000	(00H)	(A16 Family)
Product ID	0000 0000	(00H)	(A-16R Product)
Device ID	0000 0000	(00H)	(expansion)
Msg. Type	0000 0001	(01H)	Message Type = MIDI_CURRENT_PRESET_MSG
Msg. Descriptor	0000 0000	(00H)	Message Descriptor Byte 1 (expansion)
	0000 0000	(00H)	Message Descriptor Byte 2 (expansion)
	0000 0000	(00H)	Message Descriptor Byte 3 (expansion)
	0000 0000	(00H)	Message Descriptor Byte 4 (expansion)
	0000 0000	(00H)	Message Descriptor Byte 5 (expansion)
	0000 0000	(00H)	Message Descriptor Byte 6 (expansion)
Preset ID	0001 0000	(10H)	Unused
	0001 0000	(10H)	Unused
Preset Data	...	...	112 consecutive bytes containing info for one preset
Preset Checksum	0001 nnnn	-	Nibblized Preset Data Checksum (MSB)
	0001 nnnn	-	Nibblized Preset Data Checksum (LSB)

Preset Trailer	0100 0000	(40H)	Indicates end of a given preset
Padding	...	...	500 consecutive bytes of the pattern 00H
EOX	1111 0111	(F7H)	End of Exclusive

Index

Symbols

1/4-inch TRS jacks 37

A

A-16CS 21, 41, 43, 45,
   cable length, A-Control 45
   Control Surface 14, 15, 16
   Saving a Mix 44
   select Preset with footswitch 46
A-16CS Control Surface 3, 18, 35
   A-Control, connecting 17
   and MIDI control 50
A-16CS Master Volume 22
A-16D 2
A-16D A-Net Distributor 36
A-16D Pro 2
A-16D Pro A-Net Distributor 36, 37
A-16II 2
A-16 Personal Mixer 2
A-16R
   Front Panel 11
   Rear Panel 13
A-16R Master Volume 3
A-16R mixers
   cascading 40
A-16R Personal Mixer 17
AC Line Conditioning 7, 8
A-Control 14, 17, 35, 41, 43, 45, 61, 70
A-Control, connecting 17
Adding Effects 56, 58
Adding Live Ambience 59
All Preset files
   MIDI SysEx 50
   SysEx 54
AN-16/i 55
AN-16/o 36
AN-16SBR System Bridge 7
A-Net 1, 4
A-Net Active LED 12, 16
A-Net Connectors 36
A-Net Distributor 2
A-Net Distributors 36
A-Net In jack 36
A-Net input module 42
A-Net I/O 14
A-Net LED 63

A-Net Out jack 36, 42
ASI A-Net Systems Interface 5
Assign Base Channel
   MIDI 48
Audio Connections , Outputs 18
Audio Outputs 37
audio processor 38
Automation
   MIDI 49
Auxiliary Mix In level 35
Aux Send 56

B

Balanced Inserts 38
balanced outputs 13
Base Channel
   MIDI 48
Basic Navigation 19
Bass 21, 24
Bass and Treble knobs 21
bass shaker 38
Bass tone control 12, 16
Button Behaviors 23, 44

C

cable length 6
   A-16CS, A-Control 45
Cascading A-Net mixers 40
Cat-5 5, 6, 7
Cat-5e 2
   UTP 5
Cat-6 2, 6
Category 5 5
Category 5e
   5
Certifications ii
Channel
   selected for editing 19, 34
   selecting 24
   stereo link 19
Channel Labels 10
Channel LEDs 34
Channel Mute LED 11
Channels
   labeling 18
   MIDI 48

stereo pan 26

X

XLR 13
XLR output
  balanced output
    TRS output 37

Y

Y Cable Insert 56
yellow LED 19

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®