MUSE

Immersive Pre-Amp Processor
Operating Manual and Installer Guide

All models

Version 2.2
(Initial Revision 20190227)

INDY
AUDIO))LABS

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For DTS patents, see http://patents.dts.com

IMPORTANT SAFETY INSTRUCTIONS

CAUTION:
RISK OF ELECTRIC SHOCK!
DO NOT OPEN!

CAUTION! To reduce the risk of electric shock and fire, do not remove the cover or back plate of the device enclosure. There are no user serviceable parts inside. Refer servicing to an Acurus authorized service center.

CAUTION! The international symbol of a lightning bolt inside a triangle is intended to alert the user to uninsulated "dangerous voltage" within the device enclosure. The international symbol of an exclamation point inside a triangle is intended to alert the user to the presence of important operating, maintenance and servicing information in the manual accompanying the device.

WARNING! To reduce the risk of fire or electrical shock, do not expose this equipment to rain or moisture.

1. Read Instructions – All safety and operating instructions should be read before operating the device.

2. Retain Instructions –The safety and operating instructions should be retained for future reference.

3. Heed Warnings – All warnings on the device and in the operating instructions should be adhered to.

4. Follow instructions – All operating and safety instructions should be followed.

5. Attachments – Do not use attachments not recommended by the product manufacturer as they may cause hazards.

6. Water and Moisture – Do not use this product near water (for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like).

7. Ventilation – Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

8. Heat – This product should be situated away from heat sources such as radiators, heat registers, stoves, or other products that produce heat.

9. Power Sources – This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply in your home, consult with your product dealer or the local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

10. Grounding – This product is equipped with a three-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

11. Power Cord Protection – Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

12. Overloading – Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electrical shock.

13. Lightning and Periods of Non-Use – For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and powerline surges.

14. Cleaning – Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

15. Object and Liquid Entry – Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

16. Damage Requiring Service – Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a) When the power supply cord or plug is damaged,

b) If liquid has been spilled, or objects have fallen into the product,

c) If the product has been exposed to rain or water,

d) If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and often will require extensive work by a qualified technician to restore the product to its normal operation,

e) If the product has been dropped or damaged in any way, or

f) When the product exhibits a distinct change in performance – this indicates a need for service.

17. Replacement Parts – When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original parts. Unauthorized substitutions may result in fire, electric shock, or other hazards.

18. Safety Check – Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

19. Servicing – Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel. If this unit is purchased outside of the U.S., please contact your local dealer or distributor for service center information. If purchased inside the U.S. and dealer service is not available, contact Acurus Customer Service for a return authorization (RA) number before shipping. For further service information, contact:

ACURUS CUSTOMER SERVICE

phone: 1-866-781-7284

Email: support@acurusav.com

5225 EXPLORATION DRIVE

INDIANAPOLIS, IN 46241

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congratulations

Congratulations on your purchase of an Acurus MUSE pre-amp processor. The Acurus MUSE is a state-of-the-art component featuring high-end audio performance combined with unprecedented control, connectivity and upgradeability. Years of dedicated research, extensive testing, and engineering refinement went into the creation of this product.

Since 1993, Acurus has been delivering high-value, high-performance electronics. Just like the first Acurus products to roll off the assembly line more than 20 years ago, the MUSE was designed, hand-assembled and tested with pride by engineers, technicians and skilled assemblers in the United States of America. You should expect years of trouble-free operation from your product investment.

Acurus components offer unparalleled performance and control flexibility for the most discriminating listener. Your MUSE pre-amp processor incorporates advanced design and construction in a superbly crafted pre-amplifier.

unpacking

Outer and Inner Carton

Using a sharp object such as a knife or scissors, carefully open the outer single-walled (brown) shipping carton and inner double-walled (white) packaging cartons along their top seams.

The MUSE unit is wrapped in a protective poly bag and sandwiched between 100% recycled foam bumpers. Carefully lift the unit out of the box with the foam bumpers attached.

Package Contents

Inside the box you should find the following:
1. **Acurus MUSE**
2. **Foam Bumpers (2)**
3. **IR Remote Control**
4. **Hard Rubber Feet (4)**
5. **AC Power Cord**
6. **User Guide**
7. **Warranty Card**

In the unlikely event of any of the above items missing, immediately contact your dealer or Acurus Customer Service:

ACURUS CUSTOMER SERVICE
phone: 1-866-781-7284
email: support@acurusav.com
5225 EXPLORATION DRIVE
INDIANAPOLIS, IN 46241

Retain your Packaging

We highly recommend retaining your box and packaging materials as these are the best way to protect your pre-amp processor in transit. Should warranty service be required, you MUST either use your original packaging materials or request new packaging from Acurus Customer Service (for a nominal fee).

Register your Product

In order to validate your purchase and qualify for the full five (5) year parts and labor manufacturer's warranty on your new Acurus product, you must have purchased it from an authorized Acurus retailer AND you must return the included warranty card completely filled out within 30 days of purchase.

Record your Unit Information

For future reference, we recommend recording your product information here:

Model No. _____

Serial No. _____

Date of Purchase _____

Date Registered _____

IR Sensor Window

Power on/Standby Button

Touch-sensitive LCD Screen

feature overview

Your MUSE pre-amp processor has been engineered to provide years of trouble-free enjoyment when installed and used according to this guide. This section will help you become familiar with the most important features of the MUSE component.

Front Panel

The front-panel of The MUSE was designed with beauty, simplicity and control confidence as the primary goals.

Touch-sensitive LCD Screen: The MUSE features a touch-sensitive screen for direct control and status monitoring on the unit. The full-color, high-contrast TFT screen features familiar mobile-device-like icons.

Power on/Standby button: The left side of the front panel features a momentary-contact, machined-Aluminum power button for switching the unit from standby to power on mode. The light ring surrounding the power button illuminates red in standby mode and blue in normal operation.

IR Sensor window: A multi-function infra-red (IR) and ambient light sensor window is located on the right side of the front panel, to the right of the touch screen. This sophisticated sensor receives IR commands and senses changes in ambient lighting for automatically controlling LCD backlight brightness.

Side Panels

The left and right side panels of the Acurus MUSE include ventilation slots to help regulate the internal temperature of the unit even when rack-mounted.
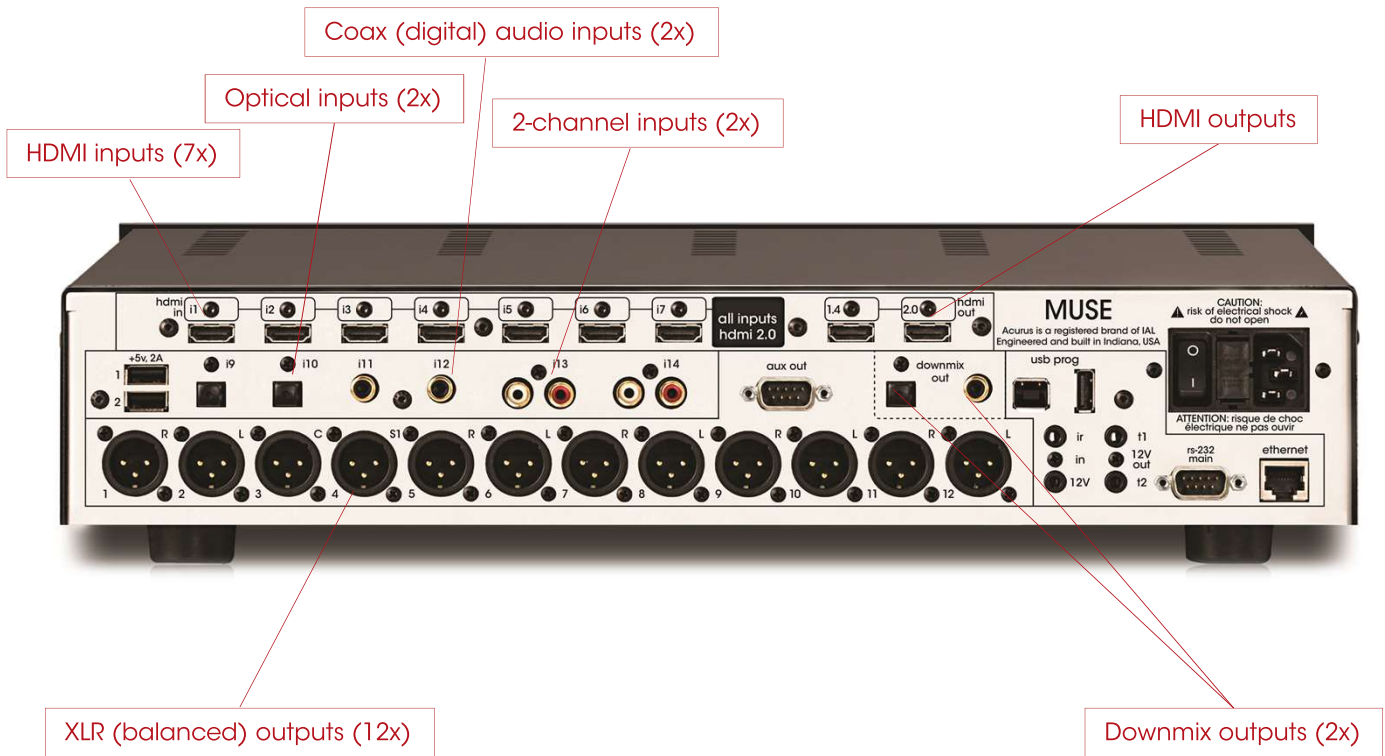
Coax (digital) audio inputs (2x)

Optical inputs (2x)

2-channel inputs (2x)

HDMI outputs

HDMI inputs (7x)

XLR (balanced) outputs (12x)

Downmix outputs (2x)

Rear Panel

The rear panel of the Acurus MUSE is designed for ease of connection and expandability. A white powder coat finish makes connector labels easy to see in dimly lit rack mounting situations.

HDMI Inputs (i1 – i7): At the top back left of the unit are seven sets of HDMI 2.0 inputs for connecting modern source devices such as Blue-Ray players, Set Top Boxes, Streaming media adaptors and any other HDMI-compliant devices. All inputs are compliant with HDCP 2.2 requirements for copy-protected 4K media.

HDMI Outputs (1 – 2): At the top back right of the unit are two sets of HDMI 2.0 outputs for connecting up to two HDMI sink devices such as Flat Panel TVs, Projectors or HDMI switchers. Both HDMI outputs carry the same source signal. Output 2 is compliant with the newly released HDCP 2.2 requirements for copy-protected 4K media. Output 1 is HDMI version 1.4 and should only be used as an independent monitor output for troubleshooting.

Optical Audio Inputs (i9 – i10): The MUSE includes two optical digital audio inputs for connecting TOSLink audio sources such as TVs, Gaming systems, CD players or streaming media sources from companies such as Amazon, Google or Roku. These inputs are designed to handle hi-res audio sources (up to 192kHz/24bit).

Coax Digital Audio Inputs (i11– i12): The MUSE includes two coax digital audio inputs for connecting SPDIF audio sources such as TVs, Gaming systems, CD players or other streaming media sources. These inputs handle multichannel and hi-res audio sources (up to 192kHz/24bit).

Unbalanced (RCA) analog inputs (i13 – i14): To the right of the coax digital inputs are two pairs of unbalanced (RCA) inputs (i13– i14). These inputs accept any line-level stereo analog source audio inputs such as optical disc players, streaming players or computer sound cards.

USB Power (2x)

Balanced AUX Audio out

IR Sensor Input

USB programming port

12V trigger input

12V trigger outputs (2x)

RS-232 Control Port (Main)

Ethernet control port

Rear Panel

The rear panel of the Acurus MUSE is designed for ease of connection and expandability. A white powder coat finish makes connector labels easy to see in dimly lit rack mounting situations.
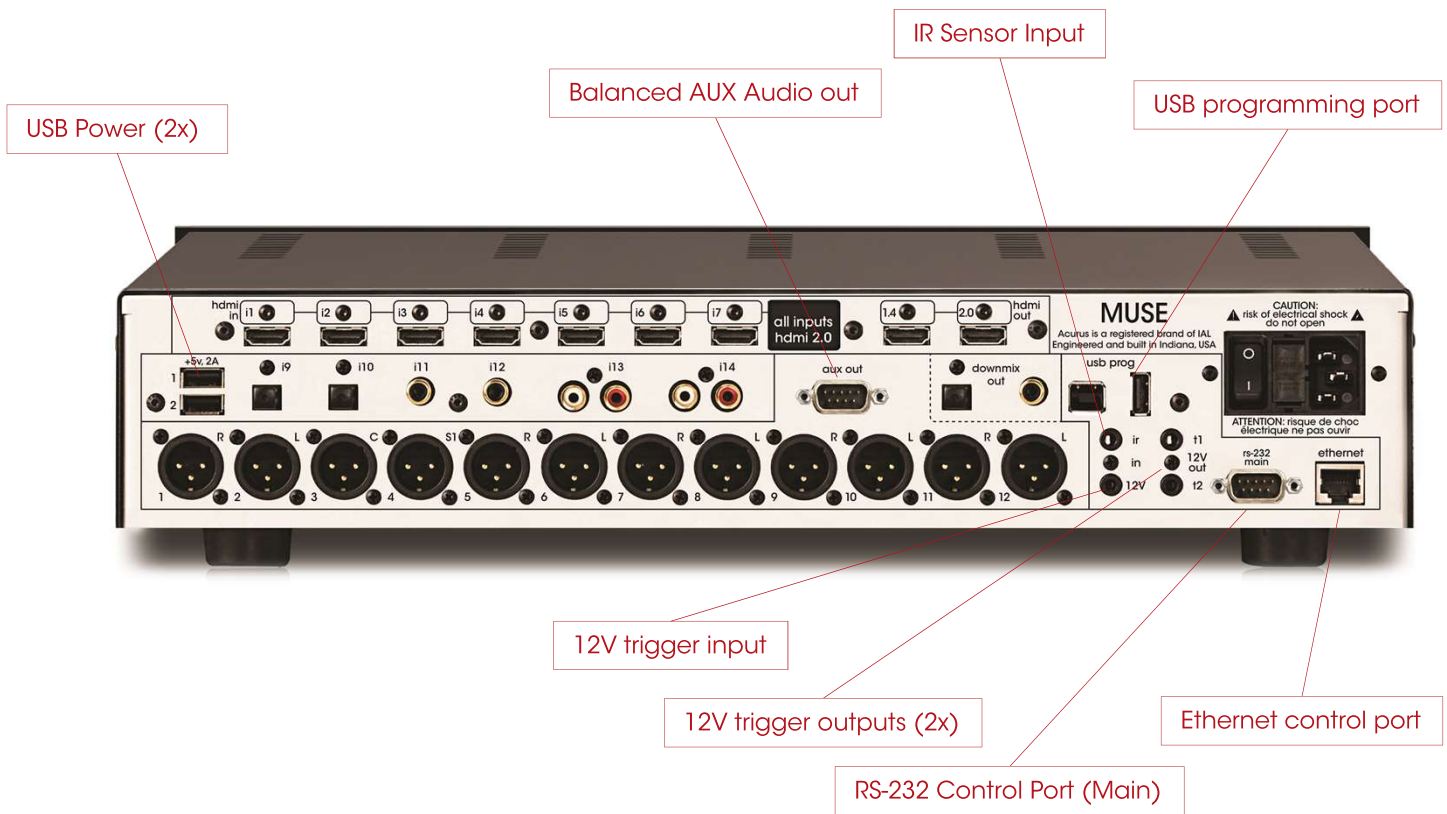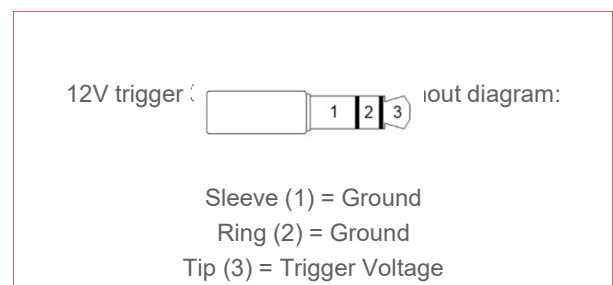
USB Power Outlets A, B: Two 5Vdc, .5A USB power outlets are placed in the left rear panel to provide a convenient method to power streaming media sources connected to the ACT from companies such as Amazon, Google or Roku.
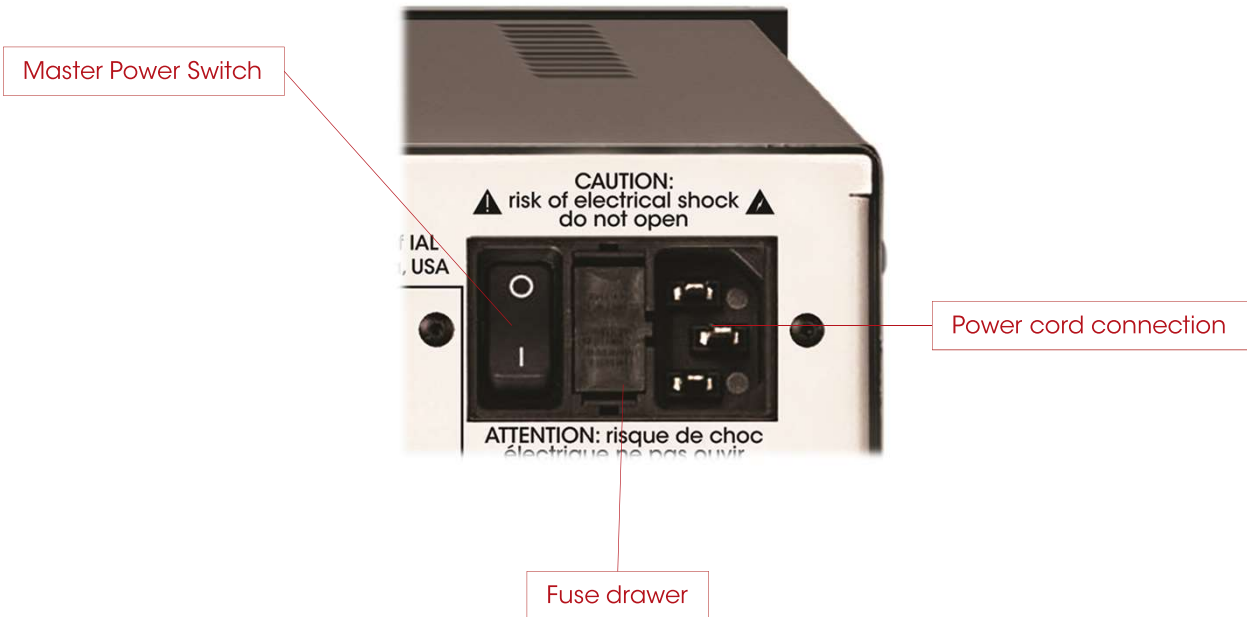
IR (Infra-red) and 12V Trigger Inputs: To the right of the digital audio inputs are dual 1/8" jacks for accepting an external Ir receiver (top) and a trigger input cable from an external trigger out source (bottom). Pinout for the 12V trigger input is shown below the photo:

12V Trigger Outputs (t1 – t2): To the right of the Ir and Trigger INPUTS are two independent 12V trigger OUTPUTS. These trigger outputs are enabled by default to go active (high) along with MUSE power on. The delay times on these trigger outputs can be individually adjusted to power on external devices such as power amplifiers in a sequence rather than all-at-once. Pinout is same as above for the trigger input.

RS-232, USB and Ethernet Ports: One RS-232 port (main) and an Ethernet Port are provided to enable control of the MUSE from a computer or 3rd party automation control system. The Ethernet port also provides the main networking connection and allows for Web control via the built-in web server in the MUSE. A small window to the lower left of the Ethernet port illuminates green when an active network connection is established. Both a mini USB jack and a large ("A"-type) USB jack are included for downloading firmware upgrades via a computer or a USB memory stick, respectively.

RS-232 AUX Port (analog audio only): This port is a balanced analog audio output with up to four audio outputs as determined by the selected loudspeaker layout. A DB-9 to XLR breakout cable is available from Acurus (order part number CAB-20).

12V trigger input pinout diagram:

Sleeve (1) = Ground
Ring (2) = Ground
Tip (3) = Trigger Voltage

Master Power Switch

Power cord connection

Fuse drawer

Master Power Switch: To the back right of the MUSE is a combined master power on/off switch, main AC in fuse drawer, and AC mains inlet. The master power switch in the off position puts the MUSE in a state of zero current draw, however, in most installations, this power switch will remain in the on position and the power on/standby control on the front panel or through network control should be used. The master power switch can be used to perform a system restart. Note that settings are maintained in non-volatile memory even with the master power switch off. Note also that a system restart can be performed through the settings menu without using the Master Power Switch.

Mains fuse drawer: Below the master power switch is the mains fuse drawer. Press the tabs on the sides of the drawer to open it and access the fuse(s) inside.

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IMPORTANT NOTE: Replace the mains fuse with the exact fuse rating called out on the product label located on the bottom of the MUSE housing.

**Main AC cord inlet:** Below the fuse drawer is the main AC cord inlet. Ensure the AC cord is inserted securely in this socket.

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IMPORTANT NOTE: Use only the AC cord included with the MUSE and do not tamper with or alter the ground plug.

IR Remote Control

The MUSE includes an IR remote control for everyday operation of the unit. In line-of-sight installations (where the MUSE front panel is visible from the user's seated position) the IR remote can simply be aimed towards the MUSE. In installations where the MUSE is located remotely from the user, an optional IR remote sensor (available from Acurus) can be connected to the rear of the MUSE and brought out near the end user. Alternately, the remote can serve as a master remote for programming another learning IR device.
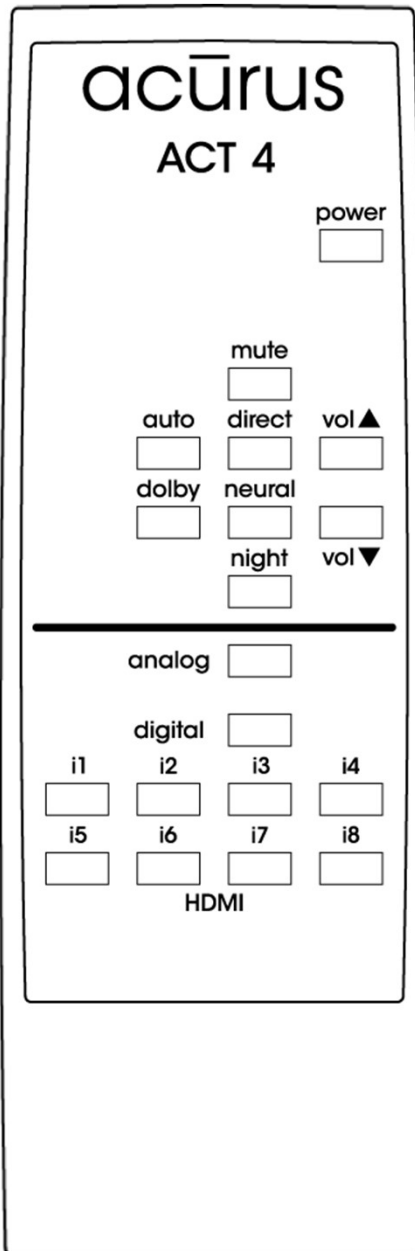
IR Buttons

The buttons on the MUSE remote are chosen to minimize remote complexity and to bring out the most commonly used functions. These buttons are arranged in order to simplify everyday use and to facilitate operation in a dimly lit environment.

power: toggles the MUSE between on and standby.

mute: silences sound output. The front panel indication of volume changes from white to red font when in mute.

vol: increases or decreases volume level

auto: turns on sound mode which fills all room loudspeakers for any input format

direct: turns on sound mode in which only the loudspeaker channels present in the input signal format are utilized

dolby: turns on sound mode in which dolby upmixing fills all loudspeaker channels preset regardless of input signal format

neural: turns on sound mode in which DTS Neural upmixing fills all loudspeaker channels preset regardless of input signal format

night: enables night mode which limits dynamics thus preventing disturbing others

analog: selects analog inputs i13 and i14. Press again to select next analog input

digital: selects digital inputs i9 through i12. Press again to select next digital input

HDMI buttons i1 through i8: selects HDMI input sources directly

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Installation advise

The MUSE was designed for both rack-mount and shelf-mount applications. The MUSE includes feet for shelf placement. These feet are removable in order to attach ears for rack mounting. This section provides instructions for proper installation and setup.

General Guidelines

When planning an MUSE installation, keep the following guidelines in mind:

It is ALWAYS advisable to:

1. Provide ample air space to the sides and rear of the unit (1-2 inches is the minimum preferred). It is not necessary to provide additional space above or below the unit.

2. Avoid obstructing air flow through the side-facing ventilation slits on the left and right sides of the MUSE unit.

3. Locate the unit near an AC power outlet or power conditioner and avoid using extension cords or power strips.

4. Locate the pre-amp processor as close as possible to audio source units such as optical disc players, set top boxes or music servers.

5. Whenever possible, plug audio source units into the same power outlet or power conditioner as the MUSE.

6. Use as short length wire leads as practical, especially on the pre-amp processor inputs.

It is NEVER advisable to:

1. Enclose the unit in a rack or cabinet without air flow or adequate ventilation, particularly across the air vents along each side of the unit.

2. Place the unit near a source of moisture such as a window or a live plant.

3. Place the pre-amp processor on a carpeted surface.

4. Remove the safety ground connector from the AC mains cord.

Shelf Mounting

The MUSE pre-amp processor can simply rest on a flat surface using the 4 rubber feet and mounting screws supplied with the unit.

Equipment Rack Mounting

The MUSE pre-amp processor can easily be configured for rack mounting by removing the 4 rubber feet and using an Acurus (part number ARM-3) rack mount kit available from your authorized Acurus dealer.

system connections

The MUSE pre-amp processor is designed for simple, reliable connections in a variety of system configurations. Following the guidelines below will ensure optimal performance from your MUSE pre-amp processor.

IMPORTANT NOTE: Make system connections with AC power off.

HDMI Audio/Video Source Inputs

You may connect up to seven HDMI source devices to the MUSE HDMI inputs i1 – i7. All HDMI inputs support 4K HDR and HDCP2.2 provided that high quality HDMI cables are used. Avoid using excessively long cables (longer than 3 meters), coiling or bunching up of cables.

HDMI Display Output

Connect the video display (TV or projector) to output 2 which is the full HDMI 2.0b output. Use of output 1 should generally be avoided as the video system is limited to HDMI 1.4 on this output. Be sure to use high-speed HDMI cabling to avoid dropouts and loss of audio or video. For runs longer than around 3 meters, use of DPL-certified active optical HDMI cable is highly recommended.

Coax Digital Audio Source Inputs

Use high quality RCA interconnects to connect up to two coax digital audio source devices to MUSE inputs i11– I12. Avoid coiling or bunching up of cables. Be sure RCA cables are fully inserted into MUSE input jacks in order to avoid dropouts or other digital signal integrity problems.

Optical Digital Audio Source Inputs

Use high quality Toslink optical interconnects to connect up to two optical digital audio source devices to MUSE inputs i9 – i10. To prevent signal integrity problems or permanent damage to optical cables, avoid tight turns or bundling.

Stereo (RCA) Audio Source Inputs

Use high quality RCA interconnects to connect up to two analog audio source devices to MUSE stereo audio inputs i13 – i14. Avoid coiling or bunching up of cables. Be sure RCA cables are fully inserted into MUSE input jacks in order to avoid hum and other analog signal integrity problems.

Balanced XLR Audio Pre-amp Outputs

Use high quality XLR interconnects to connect to external power amplifiers, subwoofers and/or powered loudspeakers. XLR to RCA adaptors may be used with pin2 hot and pin 1 signal ground. Pin 3 may be shorted to pin 1 or left open.

Balanced XLR AUX Outputs

Use the Acurus-sourced DB-9 to XLR (x4) cable to connect to power amplifiers, subwoofers and/or powered loudspeakers in layouts requiring more than the built-in 12 chassis mounted XLR outputs.

Coax Digital Audio Downmix Output

Use high quality RCA interconnects to connect the MUSE coax digital downmix output to an external zone amplifier or LFE seat vibration unit. Be sure RCA cables are fully inserted into MUSE input jacks in order to avoid dropouts or other digital signal integrity problems.

Optical Digital Audio Downmix Output

Use high quality Toslink optical interconnects to connect the MUSE coax digital downmix output to an external zone amplifier or LFE seat vibration unit. To prevent signal integrity problems or permanent damage to optical cables, avoid tight turns or bundling.

Trigger In and Out Control

To enable automatic power on/standby control of the MUSE from an external control system or power conditioner, connect a trigger cable from the trigger out of the controlling device to the 3.5mm 12V trigger input on the MUSE. The MUSE trigger input jack is wired with its tip active and will accept either a stereo or mono plug.

Similarly, to enable the MUSE to automatically control external power amplifiers and/or send a power signal to an external control system, connect one of the two trigger outputs t1 – t2 to the device to be controlled via a trigger cable for each slave device.

USB Power

Connect up to two USB-powered streaming media devices or active HDMI cables to this pair of 5V USB power outputs.

Control Networks

Ethernet: In order to take advantage of Acurus Enhanced Ethernet Control (E2C), connect the Ethernet port to a 10/100 or faster home network router or switch port via a standard CAT 5e or newer Ethernet cable. The network activity indicators near the Ethernet jack illuminates green when the MUSE is powered on and an active network connection is detected.

This port may also be directly connected to a system controller utilizing Ethernet command protocols (see section "Ethernet Command Protocol".

RS-232: Connect the RS-232 port labelled "main" to a system controller or computer using a 9-pin RS-232 serial cable for full bi-directional control and monitoring of the unit.

Mains (AC) Power

The MUSE is equipped with a high-quality 14 gauge, 3-conductor power cord. Plug this cord into the back of the pre-amp processor and then into a nearby AC outlet. Avoid using any extension cords or plugging into other components with rear-panel switched outlets.

basic operation

This section describes basic operation of the MUSE out-of-the-box using the front panel features.

AC Power on and bootup

Ensure the MUSE rear panel power switch is set to on. With AC power applied, the MUSE boots up and initializes. Allow 2 minutes for initial bootup from full power off. Once the MUSE boots up, standby mode can be used to turn the unit on and off instead of booting up from a full power down.

Standby Mode

At the end of the bootup process, the MUSE power light blinks and the LCD screen goes dark indicating that bootup is complete and the unit is ready to operate.

Power On

Press the power button on the left side of the front panel. The button illuminates blue and the LCD screen illuminates. With no input signal present, the Loudspeaker Format Indicator on the right side of the LCD display appears as a blank white circle.
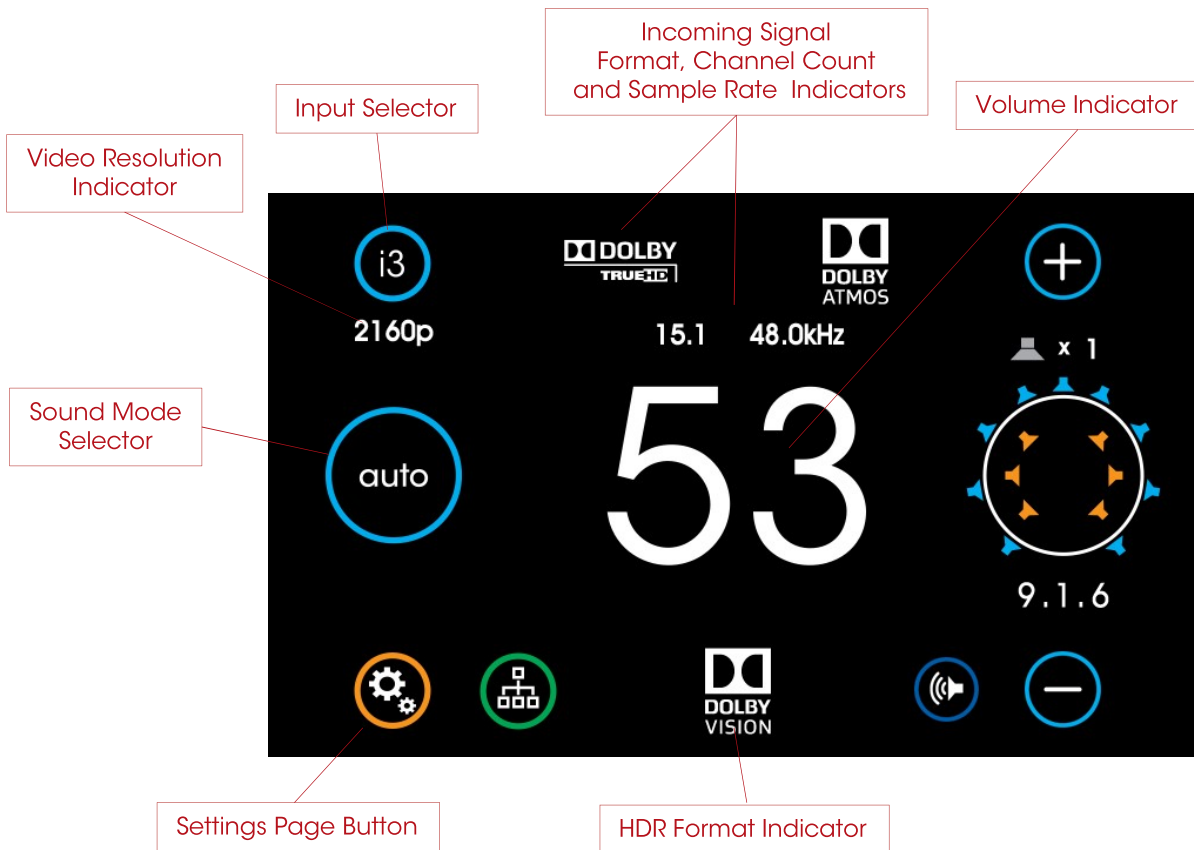
Select Input

Select the input to be played on the upper left of the touch screen.

Adjust Volume

Adjust volume using the up/down buttons on the right side of the LCD touch panel. With an active input stream, the LCD display will show the incoming signal format and the active speakers playing.

Video Resolution Indicator

Input Selector

Incoming Signal Format, Channel Count and Sample Rate Indicators

Volume Indicator

Sound Mode Selector

Settings Page Button

HDR Format Indicator

main user interface

Main

The main screen of the MUSE provides complete system status and incoming stream information in one clear, concise view..

Input Selector: Touch this button to select an input to the MUSE. (see page 17)

Video Resolution Indicator: This shows the video resolution incoming on the selected HDMI input if inputs i1-i7 are selected and a video signal is present. Resolutions from 480i through 2160p are supported.

Sound Mode Selector: This shows the currently selected sound processing mode. Touch to change the mode. (see page 18)

Settings Page Button: Touch the settings button at the lower left of the front panel display to access and adjust MUSE settings and preferences. Speaker layout and settings, Dolby, DTS and other global system preferences are setup here. (see page 21)

Incoming Signal Format Indicator: The MUSE main screen shows input signal information above the volume number. The color graphics make encoding and decoding technologies very clear and easy-to-read.

Incoming Channel Count and Sample Rate: The MUSE shows the incoming signal channel count (from 1.0 to 15.1) and decoded sample rate (from 32kHz to 192kHz) on the main page in the top middle (above the volume number).

Volume Indicator: A scale 1-99 volume indicator displays present system volume. When muted, the volume indicator switches from white to red in color.

HDR Format Indicator: : This shows the HDR video type incoming on the selected HDMI input if inputs i1-i7 are selected and an HDR video signal is present. Types including HDR10, HLG and Dolby Vision are supported.
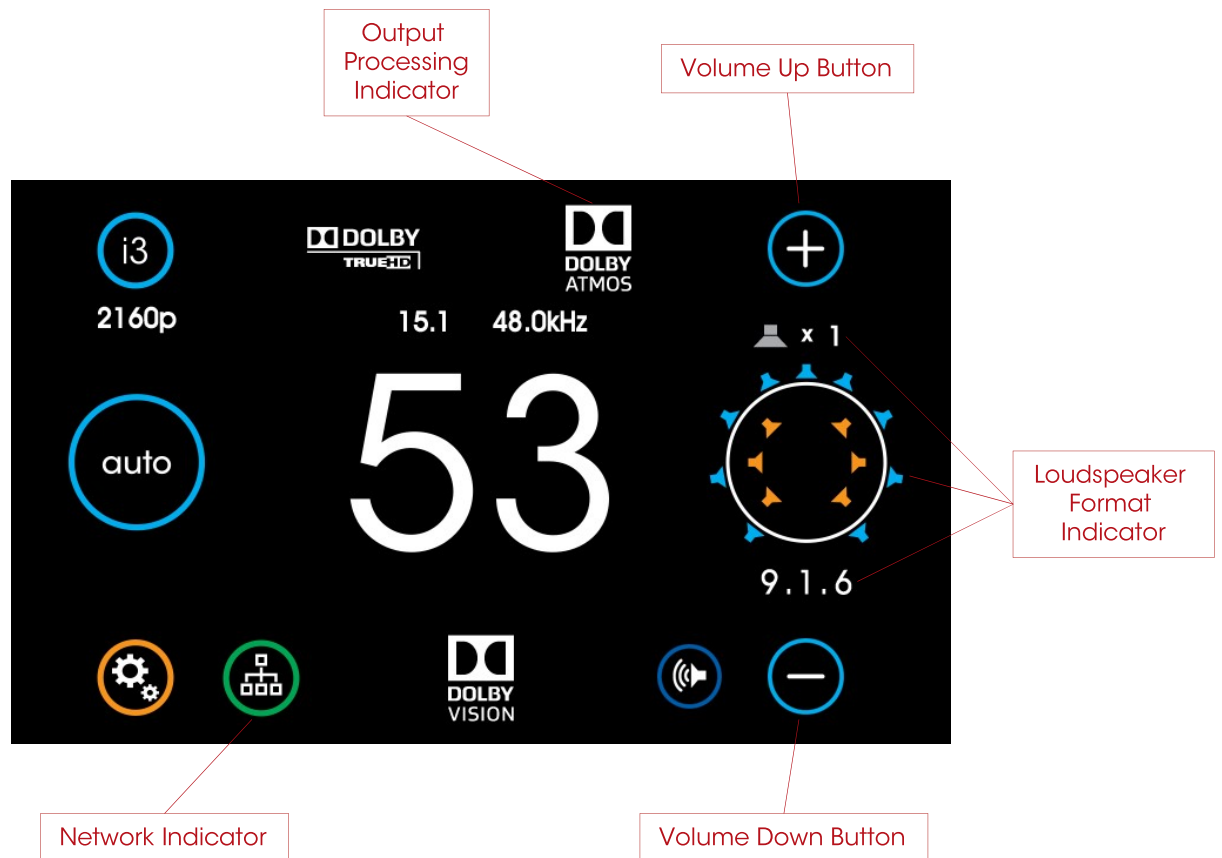
Main (Cont'd)

Output Processing Indicator: This indicator shows the processing applied (if any) to the input signal. Processing technologies (also referred to as "post-processing") can include "direct" as well as various other up-mixing technologies from Dolby and DTS. Both Sound Mode and Loudspeaker layout impact the output processing applied.

Loudspeaker Format Indicator: To the far right in the main screen is the signal format indicator. A quick glance shows the active (sound-producing) loudspeakers in the room resulting from a combination of the input signal format, the sound mode, the loudspeaker layout and any additional output processing being applied. The number below the diagram indicates the numeric description of the resulting processed signal format. Note that this format is often not the same as the input signal format, particularly if up-mixing or down-mixing is being performed.

Network Indicator/Settings Button (lower right): This button serves to bring up the Network Quick-connect screen for quickly retrieving the IP address of the MUSE. It also indicates network status by illuminating bright green with an active Ethernet connection and dimmed out with no connection detected. (see page 17)

Volume Up Button (upper right): Touch this button to increase the audio volume.

Volume Down Button (lower right): Touch this button to decrease the audio volume.

HDMI Inputs i1 – i7

Optical inputs
i9 - i10

Coax digital
inputs i11 - i12

Analog Inputs i13 – i14
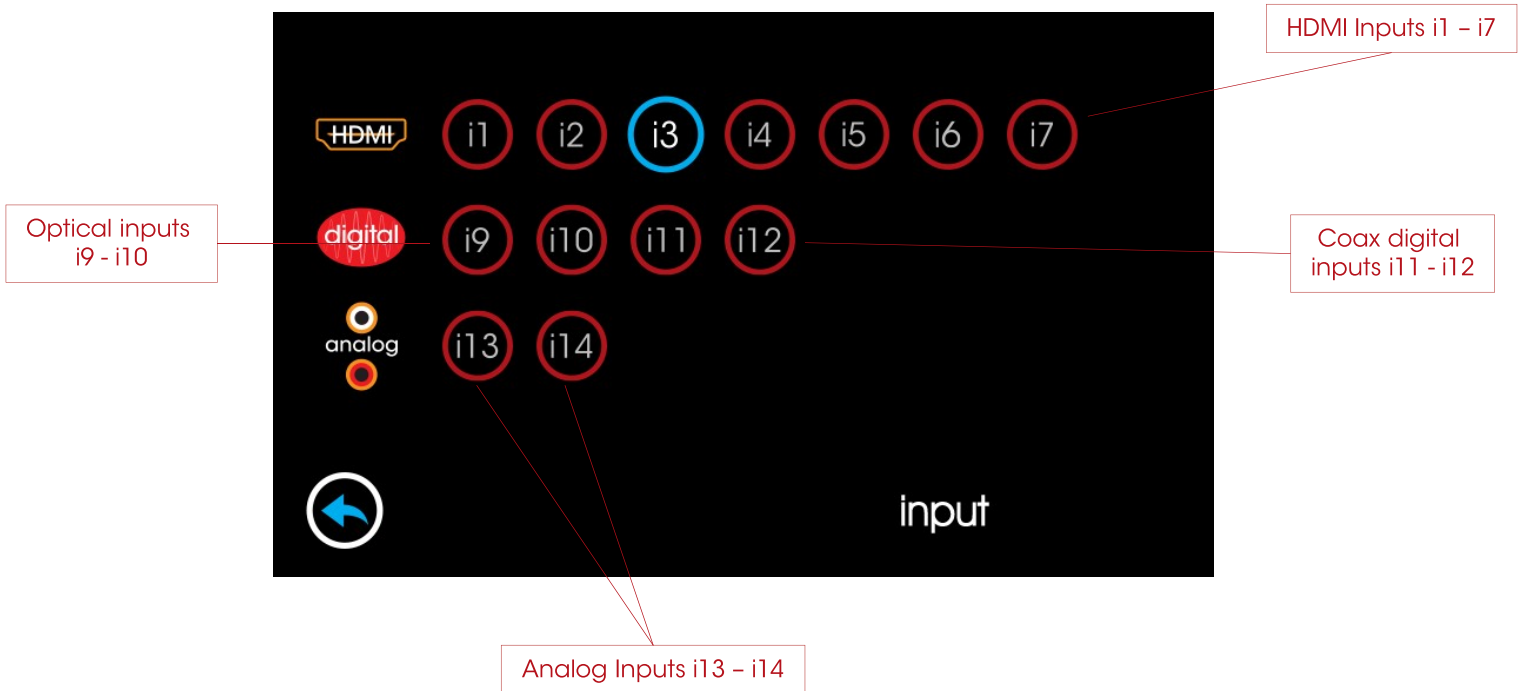
input

Input Selection

Touching the input button brings up the input selection page.
Here you can select from HDMI sources, digital audio sources
and analog input sources.

MUSE IP address

http://192.168. 1 .107

Using your mobile device, go to the above address
via your browser to establish mobile control of your ACT4

Network Quick-Connect

Touching the green network button on input lower right of the
main page brings up the current IP address of the MUSE. This
address can be used for remote control and setup. (see page
38)
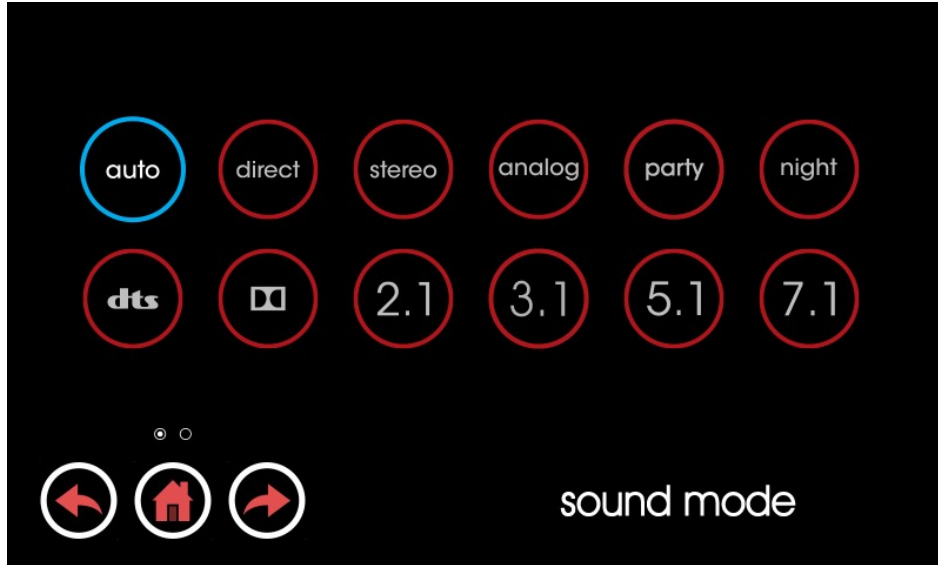
Sound Mode

Touching the Sound Mode Selector brings up the input selection page. Here you can control how the MUSE processes the source signal.

Auto: This is the default processing mode. In auto mode, the MUSE automatically decodes, up-mixes or down-mixes the source signal* according to the source signal type and the current loudspeaker layout. The result is that native dolby and dts signals are decoded natively and all loudspeakers in the room are utilized regardless of input signal format changes. Two-channel analog sources are up-mixed according to the room layout. Multi-channel and/or object-based digital signals from HDMI or other digital inputs are up-mixed or down-mixed according to the loudspeaker layout.

Direct: This processing mode is available for any input signal source. For most loudspeaker layouts equal to or larger than 5.1, direct mode reproduces audio or video content utilizing the same speaker layout as the source signal was originally recorded in. Analog signals are passed through from any 2-channel input without any subsequent processing. Digital multi-channel signals (such as 5.1 or 7.1) are passed through to the appropriate loudspeakers according to the source format. Note that loudspeakers not used in the source signal format (for example, overhead loudspeakers in a 7.1 movie) will not playback. Note also that missing loudspeaker signals due to room layout limitations (for example, rear surround speakers in a 7.1 movie being played in a 5.1 speaker layout) will not playback.

Stereo: This mode is available for any input signal source. Stereo allows the MUSE to play audio or video media in a basic left-right (2-channel stereo) format. Multi-channel audio is automatically down-mixed to 2-channels. Any other loudspeakers present in the room other than the main left and right speakers are not driven.

analog: This mode is available for any analog stereo (2-channel) input. Analog mode bypasses any digital processing for utilizing the MUSE as a pure 2-channel pre-amplifier. This mode is ideal for 2-channel or multi-channel critical listening with large, high-performance loudspeakers.

party: This mode is available for all inputs. Party is a variation of auto mode in which any signal is up-mixed or down-mixed to 2.1 channels. The resulting left and right loudspeaker signals are then routed to all available left and right loudspeakers including surrounds and overhead speakers. This mode is ideal for providing party music to fill a room with sound.

night: This mode available for all inputs. Night is a variation of auto mode in which dynamic compression is applied to the signal to reduce its loudness. In addition, the subwoofer signal is automatically attenuated. The result is an overall quieter signal for listening at night without disturbing other members of the household.
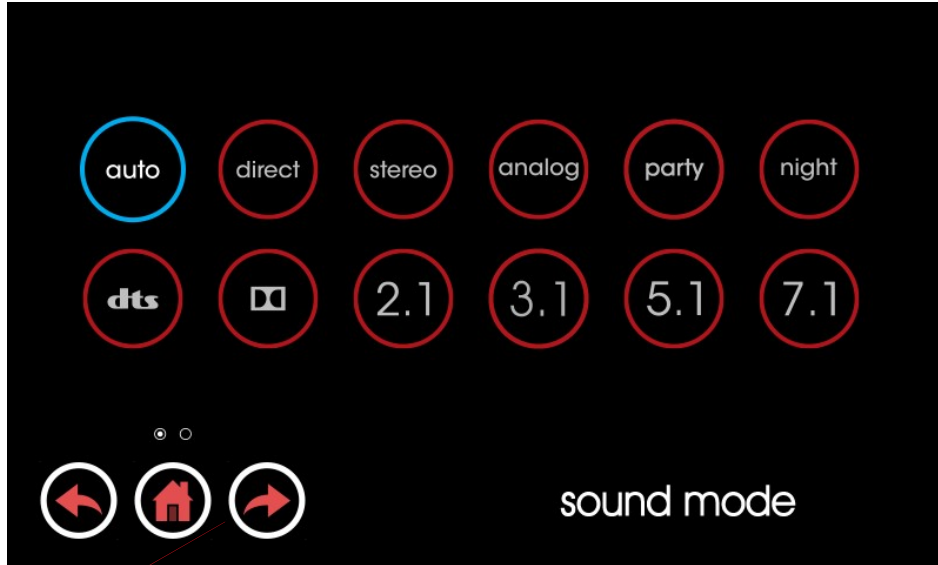
To "On the Fly" Screen

Sound Mode (cont'd)

dts: This sound mode is available for any inputs. dts mode automatically utilizes the best native dts decoding method for any incoming dts signal and utilizes dts Neural:X surround up-mixing to fill all available loudspeakers in the room, including overhead speakers, if present. PCM signals are also up-mixed with Neural:X if selected in Sound Mode Preferences (see settings page).

dolby: This mode is available for any inputs. Dolby mode automatically utilizes the best native Dolby decoding method for any incoming Dolby signal and utilizes Dolby Surround up-mixing to fill all available loudspeakers in the room, including overhead speakers, if present. PCM signals are upmixed using Dolby Surround Up-mixer by default unless changed in Sound Mode Preferences (see settings page).

stereo: This mode is available for all inputs. Stereo mode automatically limits playback to the main left and right loudspeakers in the room. This mode automatically down-mixes multi-channel signals to 2 loudspeakers whenever necessary. LFE signals (where present) are mixed to the left and right loudspeakers in the case where left and right loudspeakers are set to "large" (see loudspeaker settings).

2.1: This mode is available for all inputs. 2.1 mode is the same as stereo mode but with the addition of the subwoofer channel for rendering LFE. If the main left and right loudspeakers are set to small, the subwoofer channel also contains down-mixed low-frequency audio from the other source channels. 2.1 mode can be useful for stereo source media playback or for playing back TV audio without surround channels.

5.1: This mode is available for 5.1 or greater channel count input signals. 5.1 mode automatically limits playback to five main audio bed loudspeakers in the room plus the subwoofer. This mode automatically down-mixes multi-channel signals greater than 5.1 to 5.1 loudspeaker format whenever necessary. 5.1 mode can be useful for providing a baseline when evaluating legacy 5.1 source media with auto (up-mixed) mode.

7.1: This mode is available for 7.1 or greater channel count input signals. 7.1 mode automatically limits playback to seven main audio bed loudspeakers in the room plus the subwoofer. This mode automatically down-mixes multi-channel signals greater than 7.1 to 7.1 loudspeaker format whenever necessary. 7.1 mode can be useful for providing a baseline when evaluating legacy 7.1 source media with auto (up-mixed) mode. 7.1 mode can also prove useful as a baseline for evaluating the effects of overhead sound objects in immersive surround material encoded in formats such as Dolby Atmos and DTS:X.

Forward Arrow to "On the Fly" Screen: Touch the forward arrow to change parameters on the fly for DTS dialog control and Bass and Treble (see page 20)

"On-the-Fly"

Pressing the left or right arrow in the sound mode control screen brings up the on-the-fly adjustments page. Here, some of the most impactful parameters affecting audio can be adjusted.

DTS Dialog Control: The latest generation of object-based DTS decoding allows you to directly boost dialog audio in new DTS-exclusive media content that includes this feature in the mix. Dialog adjustments can be useful in noisy or reverberant environments in order to help make dialog more intelligible. People with impaired hearing may also benefit. Note that the content creator may disable the use of this feature in the mix and so Dialog Control may not always be available on every title. Note that this is not the same as the center loudspeaker level as this is an audio object level control rather than a channel level control.

Bass and Treble Levels: The bass and treble levels on the overall audio signal can be adjusted +/- 12dB in steps of 1dB using these adjustments. This feature is designed to compensate for variances in program material and listening preference rather than for room or loudspeaker fine-tuning. For the latter, adjustment of the loudspeaker PEQ settings is recommended.

Internal Temperature Monitor

Sound Mode Preferences

HDMI settings

Dolby settings

dts settings

Loudspeaker Settings

Level settings

Trigger Setup

Screen Preferences

Firmware Update

Network Settings

Factory Reset and System Restart

28 °C
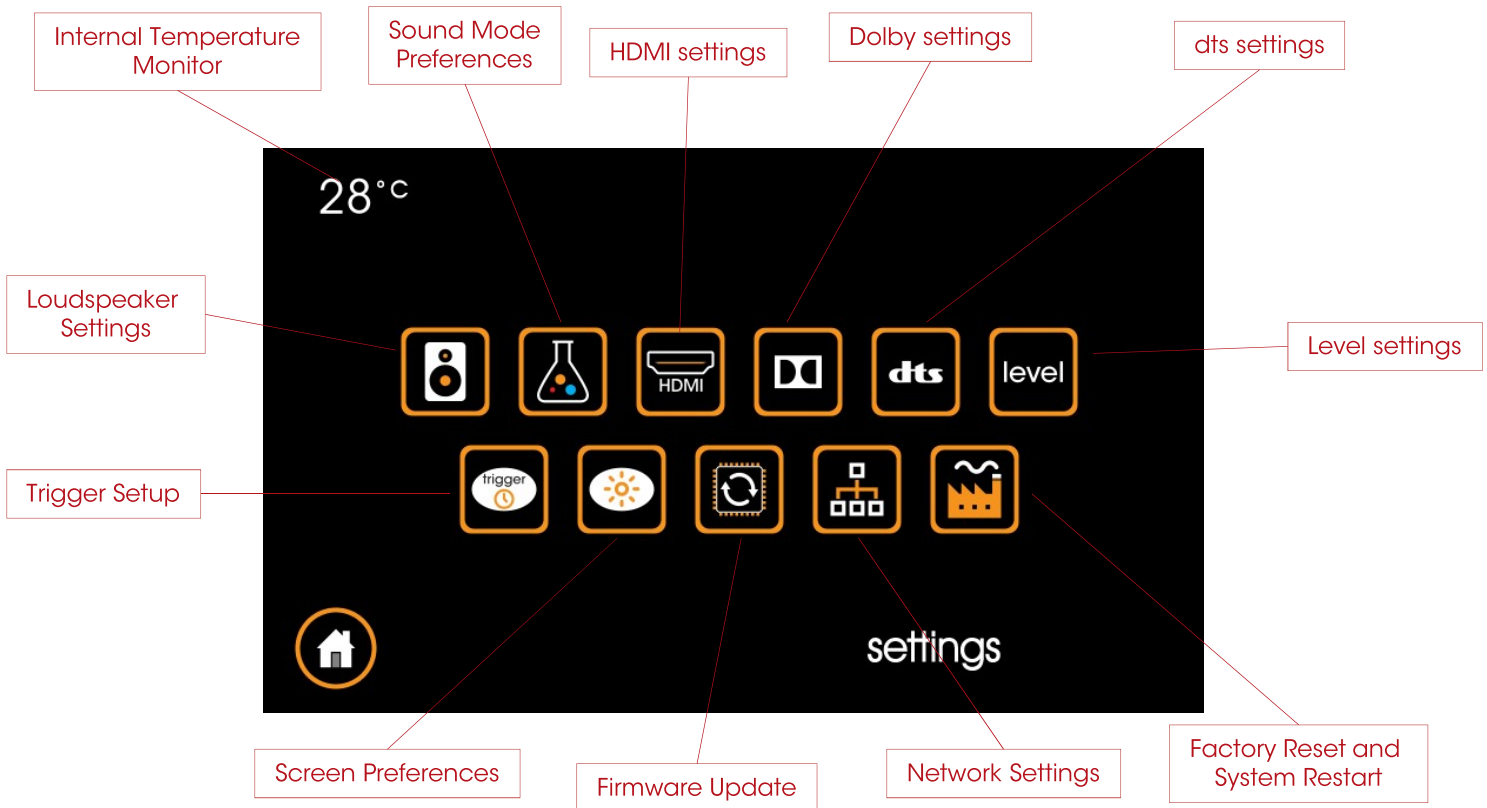
settings

settings overview

Settings Page

Touching the settings button brings up the settings page.

Internal Temperature Monitor: Displays the internal temperature of the MUSE to ensure optimal operating conditions. Recommended range is 25 to 45 degrees C.

Loudspeaker Settings: Opens the setup pages for loudspeaker layout selection, EQ, delay and crossover.

Sound Mode Preferences: Preferences for Night mode and PCM signal input handling.

HDMI Settings: Adjustments for lip sync delay and input/output HDMI compatibility.

Dolby Settings: Settings include Dolby compression and center spread.

DTS Settings: Settings include dts compression.

Level Settings: Settings for max volume, A/D sample rate and input 16 mode.

Trigger Setup: Settings for delay on trigger outputs and IR internal/external toggle

Screen Preferences: Settings related to screen brightness and sleep timeout.

Firmware Update: Displays firmware version and restarts the MUSE in order to enter reprogramming mode.

Network Settings: Settings to enable DHCP or Static IP setup for network connectivity and control.

Factory Reset and System Restart: Restarts the MUSE with setup parameters preserved (restart) or all settings including setup parameters reset (factory reset).

Audio Bed Loudspeaker Layout Selector

Subwoofer Selector

Overhead Loudspeaker Layout Selector

To Loudspeaker Parameters Page

Layout Indicator
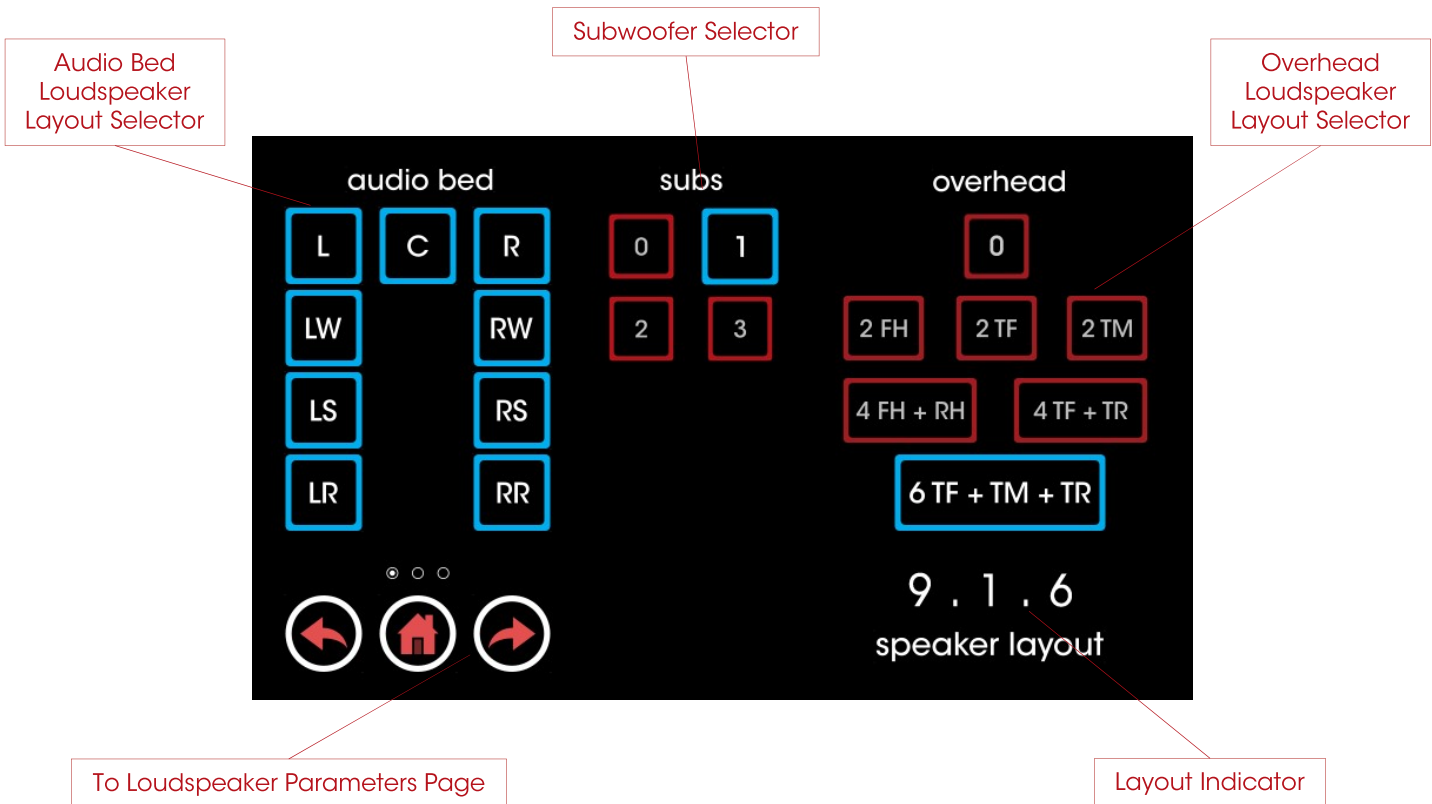
Speaker Layout

On this page, you can directly set the speaker layout in the room. Audio bed loudspeakers, subwoofers and overhead loudspeakers are grouped together and selectable as buttons.

Audio Bed Layout Selector: These buttons enable or disable the audio bed (ear-level) loudspeakers. Left-right speaker pairs are enabled and disabled in pairs.

Subwoofer Selector: These buttons enable or disable the subwoofers.

Overhead Loudspeaker Layout Selector: These buttons enable or disable the overhead loudspeaker configuration.

Layout Indicator: This indicator shows the resulting loudspeaker layout from the audio bed, subwoofer and overhead loudspeaker selections.

Forward Arrow to Loudspeaker Parameters Page: Touch this arrow to adjust specific parameters for each loudspeaker.

Initial setup

This section describes the initial setup of The MUSE pre-amp processor via the front panel screen.

Loudspeaker Settings

The MUSE supports a wide variety of loudspeaker layouts and configuration options. Loudspeaker layout and individual loudspeaker settings are simple to change by selecting the speaker icon within the settings page.

Speaker Layout Screen: To setup the MUSE output configuration according to the particular speaker layout in the room, simply touch the buttons corresponding to the room loudspeaker positions. The layout screen indicates the layout description in industry-standard numeric terms on the lower right as changes are made. The audio bed section determines which ear-height loudspeakers are enabled. The height section selects between top front, top middle and top rear loudspeakers or none. Upward firing or "dolby enabled" speakers are selected here as well. Finally, select the number of actively driven subwoofers in the system (up to three). Changes are made to the MUSE and its audio output immediately in response to layout changes on this screen as they happen.
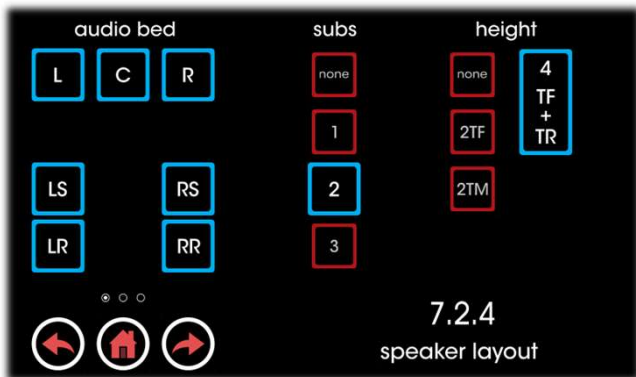
Speaker Parameters Screen: To set parameters for individual loudspeakers in the MUSE, use the forward arrow from the speaker layout screen to bring up the speaker parameter screen.
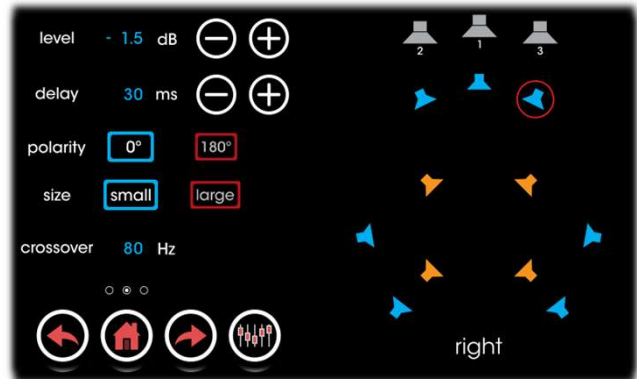
Speaker Selector: To check or adjust the parameters for an individual loudspeaker, simply touch the loudspeaker the graphic layout map on the right side of the speaker parameters screen. The speaker being adjusted will be highlighted with a red circle. Audio bed speakers are shown in blue. Overhead and height speakers are shown in goldenrod and subwoofers are shown in grey.

Level: To adjust the relative level of a loudspeaker up to +/- 12dB, use the "+" and "-" buttons. The level can be adjusted up or down in 0.5 dB increments.

Delay: This parameter is the delay in milliseconds (mS) between the loudspeaker being adjusted and the main listening position (reference position) in the center of the loudspeaker setup. As a close approximation, 1mS of delay corresponds to 1 foot (0.3 meters) of distance. As a recommended guideline, adjust this setting for each speaker to reflect the actual distance each speaker is located from the reference position. For dolby-enabled height loudspeakers, subtracting approximately 40% from this delay setting will serve as a reasonable starting point to account for the extra distance high-frequency height information travels due to ceiling reflections.

Polarity: To invert polarity of the signal sent to a loudspeaker (due to mixing loudspeaker types or to test for a reversed loudspeaker cable run), select the 180º button.

Size: Full-range loudspeakers capable of low-frequency reproduction should be set to "large" in order to take advantage of their full capabilities. Smaller (typically "bookshelf" sized loudspeakers) should be set to "small" in order to prevent distortion resulting from being driven with excessive low frequency signals. When set to small, the low frequency information for this loudspeaker is diverted instead to the subwoofer channel(s).

Crossover: To set the high-pass crossover frequency for a loudspeaker set as "small", use the "+" and "-" buttons. The default high-pass frequency is 80Hz. This can be fine-tuned from 40Hz to 200Hz in 10Hz increments. For subwoofers, this control sets the low-pass crossover frequency within the same range. This control is not available for loudspeakers set as "large".
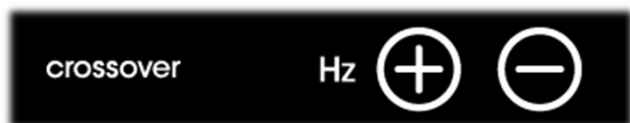
Loudspeaker EQ Screen (Firmware Version 0.9 and Newer): Touch the loudspeaker EQ button to the right of the right arrow on the speaker parameter screen to enter the loudspeaker EQ screen. There are 5 parametric EQ filters for each loudspeaker output (including subwoofers) that can be independently set. These EQ filters can be used to help compensate for room acoustics and/or loudspeaker response deviation.

PEQ Control - Gain: The loudspeaker PEQ features adjustable gain from +6dB (boost) to -12dB (cut) in 0.5dB increments. Simply touch the gain "+" and "-" buttons to make adjustments.

PEQ Control - Frequency: The loudspeaker PEQ features adjustable frequency from 20Hz to 20kHz in increments which vary for convenience and control according to the frequency range being adjusted. Resolution at low (subwoofer) frequencies is 2Hz, increasing in width with increasing frequency. The result is more consistent number of frequencies adjustable per octave (doubling of frequency). Simply touch the frequency "+" and "-" buttons to make adjustments to center frequency.

PEQ Control - Q: The Q or bandwidth of each of the PEQ frequency bands can be adjusted from a wide (0.1) range spanning multiple octaves to a narrow range (10), spanning only a narrow range of frequencies (forming a notch filter). This allows for both broadband adjustments and narrow frequency compensation. Touch the Q "+" and "-" buttons to make adjustments to PEQ filter bandwidth.
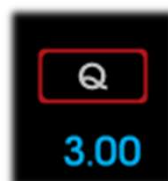
Noise Generator: The MUSE features tone (sinusoidal), white and pink noise generators for aiding in system tuning and calibration. Enable the noise generators here.
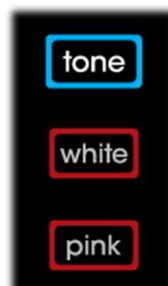
External Generator (ext): In addition to built-in tone and noise generators, the MUSE includes the option of using an external source. This is a highly desirable feature when tuning room acoustics with an external program.

PEQ Reset: If desired, the EQ of loudspeaker being adjusted can be reset entirely by the push of a single button. Resetting the current speaker EQ will not affect any other loudspeaker EQ settings.

Sound Mode Settings

The MUSE has the flexibility to handle many incoming sound formats in multiple ways. Certain sound modes can be custom tailored for a listener's preferences. These settings can be altered in the sound mode settings screen which is opened via the "flask" button in the settings menu.

Auto Mode Preferences: Analog and PCM signals coming in may be passed through directly or upmixed using either Dolby Surround or DTS Neural:X technology. This screen selects the preferred processing method for PCM input signals.
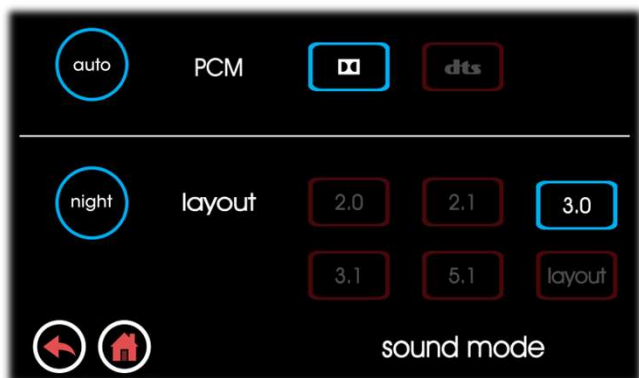
Night Mode Preferences: For listening late at night, the MUSE can be configured to maximize the audio experience while minimizing disturbances to other members of the household who may be sleeping. Night mode automatically engages dolby or dts dynamic range compression, depending on the source signal. In addition to compression, the layout can be simplified in order to remove speakers in ceiling or in walls which may be adjacent to rooms to be kept quiet. Select either the current layout or one of the other downmix layout options for night mode in the screen above.

HDMI Settings

In the HDMI settings page, HDMI audio into the MUSE and the HDMI display itself can be fine-tuned.
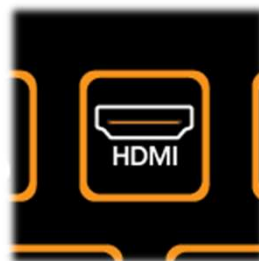
HDMI audio delay: HDMI audio can be adjusted for time delay in order to prevent lip-sync issues related to video processor delays. Delay is adjustable from 0 to 500mS in 10mS steps. This setting applies to all HDMI inputs and should be set according to the delays inherent in the video system.
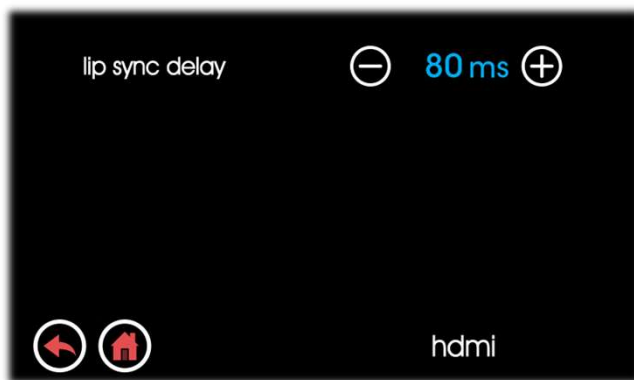
Dolby Settings

In the Dolby settings page, additional Dolby processing in the MUSE can be enabled and fine-tuned.

Dolby Dynamic Range Control: Different home listening environments present a wide range of requirements for dynamic range. Dynamic range control is the means to apply dynamic range compression to audio content. When dynamic range compression is applied, the content's high audio levels are cut (attenuated) and the low levels are boosted (amplified). Rather than simply compressing the audio program at the transmission source to work well in the poorest listening environments, Dolby Digital encoders calculate and send Dynamic Range Control (DRC) metadata with the signal. This metadata can then be applied to the signal by the decoder (MUSE) to reduce the signal's dynamic range more intelligently. Dolby Dynamic Range Control can by applied by setting this switch to "ON".

Dolby Surround Upmixer Center Spread Control: The Dolby Surround Upmixer (DSU) found in the latest generation of Dolby Atmos decoders has the ability to process audio in a manner that is called "center spread". Center spread expands the center channel signal to the left and right front speakers to create a wider frontal audio image for the listener. The process is optimized and designed primarily for playback of stereo music content. Center spread may be enabled or disabled on the MUSE using this control.

DTS Settings

In the DTS settings page, additional DTS processing in the MUSE can be enabled and fine-tuned.

DTS Dynamic Range Compression: DTS Dynamic Range Compression provides gain adjustment of the source to maintain a suitable audible range at both low and high playback levels. By allowing content to be passed with full dynamics preserved in the transmission, dynamics can be reduced in the playback system (if desired). The DRC control allows customization to individual playback preferences.

Level Settings

The level settings in the MUSE allow fine-tuning of system behavior such as maximum volume, analog input volume trim and more.

Max Volume Level: Use this setting to limit the max volume range of the MUSE. This limit can prevent sound from becoming too loud in small rooms or rooms with very efficient loudspeakers.
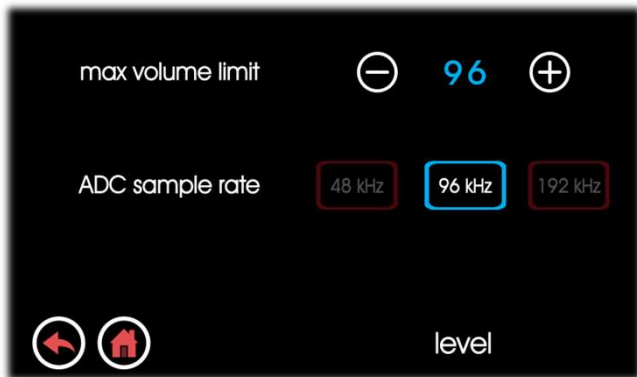
Analog – ADC Sample Rate: For analog inputs i15 – i20, the sample rate for the A/D converter or ADC can be adjusted for maximum conversion quality. Sample rates can chosen from 48kHz, 96kHz, and 192kHz. Default sample rate is 96kHz.

Trigger Settings

The Trigger Settings menu contains the parameters needed to customize the behavior of the trigger out ports t1 – t4.

IR Receive Selector: The MUSE has a built-in IR receiver in the front panel. In certain installations, the front panel of the MUSE can not be located in line-of-sight with the IR remote control. The external IR sensor port labelled "iR Rx" may be used. Enable the external IR sensor in this screen. Note that the internal front panel IR sensor is disabled whenever the external sensor is selected.
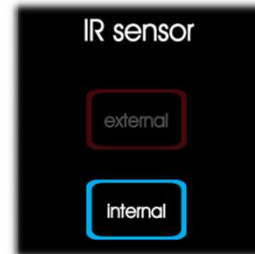
Trigger Out Enable and Delay Settings: Trigger outputs t1 – t4 are controlled here with the option of setting each output on or off and setting delay times of 0 to 5 seconds in 1 second increments. This allows delayed turn-on of external power amplifiers which minimizes instantaneous current loads on the mains AC circuits powering these amplifiers.
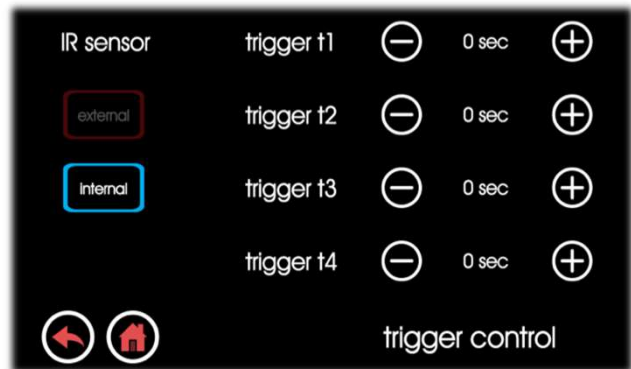
Front Panel Settings

The MUSE front touch screen brightness and sleep parameters are adjusted using this settings screen.

Front Panel Brightness: The brightness on the MUSE front panel screen may adjusted according to the particular lighting in the environment the MUSE is installed in. The standard levels are "Low", "Med", and "High". In addition, "Auto" mode is provided which utilizes ambient light sensing to automatically adjust the brightness according to changing light levels in the environment the MUSE is installed in.

Screen Sleep Timer: The MUSE screen can go to full black after a timeout period preselected in this screen. Timeout periods include 1, 3, and 5 minutes as well as infinite or never. Touching the front screen wakes it up and/or resets the screen sleep timer.

Firmware Update Settings

The MUSE firmware version can be viewed and updated in this screen.

Current Firmware Versions: This view shows an overview of the currently active firmware versions in the MUSE. Touching the firmware update button reboots the unit to prepare for firmware updates.

Network Settings

MUSE ethernet connections enable a home theater system to be controlled by mobile devices on the network and/or by third-party control and automation systems. Customization of network settings is accomplished here.

Static IP Address Entry Screen: Pressing the static IP address control brings up the IP address entry screen. Enter the desired static IP address using the "+" and "-" keys to increment or decrement the address.
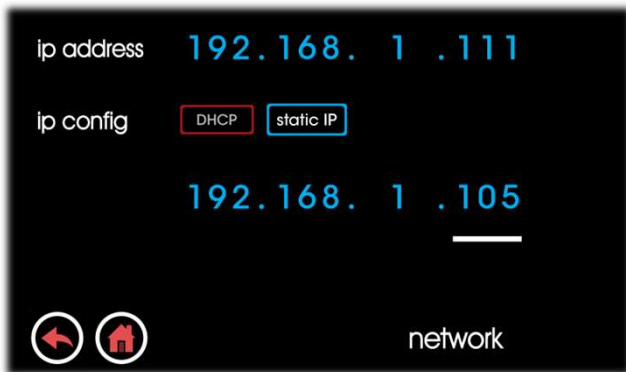
P Address: This indicator shows the current IP address for the MUSE. The factory default IP address is preset to 192.168.1.245. However, if DHCP is enabled, the MUSE will automatically request an IP address from the DHCP server upon initially joining the network. This process can take up to a minute and usually results in a new IP address assignment from the factory default.

IP Type Selection: This control determines whether the MUSE IP address is either Static or DHCP.

DHCP Type Selection (default): DHCP automatically re-establishes a network IP address assigned by the network DHCP server (usually located in the local router) after each MUSE or DHCP server power cycling. The DHCP method of establishing an IP address for the MUSE helps ensure no IP address conflicts occur on the network. However, external controllers issuing commands to the MUSE via IP must be made aware of any changes to the MUSE IP address in order to continue working over the long term.

To reset a DHCP address for the MUSE because of network changes, either the router can be reset or the DHCP button on the MUSE can be touched. Touching the DHCP button with cause the MUSE to request a new IP address from the DHCP server. Once received, the new address is displayed. This process can take a few minutes to complete.

If a DHCP server does not exist on the local network, is not activated for some reason or has a limited range of IP addresses to work with, the MUSE may not be able to obtain an automatic IP address assignment. In this case, the MUSE will generally remain on its default IP address of 192.168.1.245.

Startic IP Type Selection (optional): A Static IP can be manually set by pressing the Static IP button. Use the cursor to select the triplet along with the "+" and "-" keys to increment or decrement the number.

With a static IP address set, as long as there are no other devices already on the local network with the same (conflicting) IP address, the MUSE can be controlled and monitored at this address even through router and/or MUSE power cycling.

A static IP allows mobile devices and 3rd party control systems to retain links to control the MUSE even through power cycling.

Network Connection Status: This indicator (on the lower-right corner of the MUSE home screen) shows whether or not the MUSE Ethernet link is active. The button is dimmed (inactive) when the network is not detected and glows (active) when the network is detected.

Note that "connected" status only means that the MUSE is connected successfully to a network router or switch and does not necessarily mean that the MUSE has a live data connection to the Internet or any other particular control device. IP and other protocols must be setup properly for control connections to work but a "connected" status indication is a critical first step.

Network Quick Connection Assistant: Touch the above indicator on the home screen whenever a network connection is active to bring up the network quick connection assistant screen as shown below.

Factory Reset

If needed, the MUSE can be completely reset to factory default settings using the factory reset function here.

Factory Reset Button: Press the factory reset button to restore the MUSE to its factory default settings. To prevent unwanted noises or pops, be sure any downstream connected power amplifiers or other outputs are turned off before a factory reset operation is performed.

During the reset process, a "rebooting" message appears as shown below. The reset can take up to 2 minutes to complete.

loudspeaker layouts

Your MUSE processor is flexible enough to drive literally hundreds of unique combinations of loudspeaker layouts. While many layouts follow the rear panel connector labelling directly, some of the higher channel count layouts (such as 9.x.x) map front wide speakers, for example, to the height 3 output.

The tables that follow illustrate which signals appear on each of the MUSE output connectors for any possible loudspeaker layout. The tables are separated based on the number of audio bed (or ear-level) speakers in the layout.

2, 3 audio bed channels

LAYOUT	LEFT	RIGHT	CENTER	SUBWOOFER #1	SURR (LEFT)	SURR (RIGHT)	REAR (LEFT)	REAR (RIGHT)	HEIGHT #1 (LEFT)	HEIGHT #1 (RIGHT)	HEIGHT #2 (LEFT)	HEIGHT #2 (RIGHT)	SUB #2 (AUX1)	SUB #3 (AUX2)	HEIGHT #3 LEFT (AUX 3)	HEIGHT #3 RIGHT (AUX 4)
FORMAT 2.X.X													**AUX OUT**			
2.0.0	L	R														
2.1.0	L	R		SB1												
2.2.0	L	R		SB1									SB2			
2.3.0	L	R		SB1									SB2	SB3		
2.0.2 TM	L	R							LTM	RTM						
2.1.2 TM	L	R		SB1					LTM	RTM						
2.2.2 TM	L	R		SB1					LTM	RTM			SB2			
2.3.2 TM	L	R		SB1					LTM	RTM			SB2	SB3		
FORMAT 3.X.X													**AUX OUT**			
3.0.0	L	R	C													
3.1.0	L	R	C	SB1												
3.2.0	L	R	C	SB1									SB2			
3.3.0	L	R	C	SB1									SB2	SB3		
3.0.2 TM	L	R	C						LTM	RTM						
3.1.2 TM	L	R	C	SB1					LTM	RTM						
3.2.2 TM	L	R	C	SB1					LTM	RTM			SB2			
3.3.2 TM	L	R	C	SB1					LTM	RTM			SB2	SB3		

loudspeaker layouts (cont'd)

4 audio bed channels

LAYOUT	LEFT	RIGHT	CENTER	SUBWOOFER #1	SURR (LEFT)	SURR (RIGHT)	REAR (LEFT)	REAR (RIGHT)	HEIGHT #1 (LEFT)	HEIGHT #1 (RIGHT)	HEIGHT #2 (LEFT)	HEIGHT #2 (RIGHT)	SUB #2 (AUX1)	SUB #3 (AUX2)	HEIGHT #3 LEFT (AUX 3)	HEIGHT #3 RIGHT (AUX 4)
FORMAT 4.X.X													**AUX OUT**			
4.0.0	L	R			LS	RS										
4.1.0	L	R		SB1	LS	RS										
4.2.0	L	R		SB1	LS	RS							SB2			
4.3.0	L	R		SB1	LS	RS							SB2	SB3		
4.0.2 FH	L	R			LS	RS			LFH	RFH						
4.1.2 FH	L	R		SB1	LS	RS			LFH	RFH						
4.2.2 FH	L	R		SB1	LS	RS			LFH	RFH			SB2			
4.3.2 FH	L	R		SB1	LS	RS			LFH	RFH			SB2	SB3		
4.0.2 TF	L	R			LS	RS			LTF	RTF						
4.1.2 TF	L	R		SB1	LS	RS			LTF	RTF						
4.2.2 TF	L	R		SB1	LS	RS			LTF	RTF			SB2			
4.3.2 TF	L	R		SB1	LS	RS			LTF	RTF			SB2	SB3		
4.0.2 TM	L	R			LS	RS			LTM	RTM						
4.1.2 TM	L	R		SB1	LS	RS			LTM	RTM						
4.2.2 TM	L	R		SB1	LS	RS			LTM	RTM			SB2			
4.3.2 TM	L	R		SB1	LS	RS			LTM	RTM			SB2	SB3		
4.0.4 FH/RH	L	R			LS	RS			LFH	RFH	LRH	RRH				
4.1.4 FH/RH	L	R		SB1	LS	RS			LFH	RFH	LRH	RRH				
4.2.4 FH/RH	L	R		SB1	LS	RS			LFH	RFH	LRH	RRH	SB2			
4.3.4 FH/RH	L	R		SB1	LS	RS			LFH	RFH	LRH	RRH	SB2	SB3		
4.0.4 TF/TR	L	R			LS	RS			LTF	RTF	LTR	RTR				
4.1.4 TF/TR	L	R		SB1	LS	RS			LTF	RTF	LTR	RTR				
4.2.4 TF/TR	L	R		SB1	LS	RS			LTF	RTF	LTR	RTR	SB2			
4.3.4 TF/TR	L	R		SB1	LS	RS			LTF	RTF	LTR	RTR	SB2	SB3		

5 audio bed channels

LAYOUT	LEFT	RIGHT	CENTER	SUBWOOFER #1	SURR (LEFT)	SURR (RIGHT)	REAR (LEFT)	REAR (RIGHT)	HEIGHT #1 (LEFT)	HEIGHT #1 (RIGHT)	HEIGHT #2 (LEFT)	HEIGHT #2 (RIGHT)	SUB #2 (AUX1)	SUB #3 (AUX2)	HEIGHT #3 LEFT (AUX 3)	HEIGHT #3 RIGHT (AUX 4)
				FORMAT 5.X.X										AUX OUT		
5.0.0	L	R	C		LS	RS										
5.1.0	L	R	C	SB1	LS	RS										
5.2.0	L	R	C	SB1	LS	RS							SB2			
5.3.0	L	R	C	SB1	LS	RS							SB2	SB3		
5.0.2 FH	L	R	C		LS	RS			LFH	RFH						
5.1.2 FH	L	R	C	SB1	LS	RS			LFH	RFH						
5.2.2 FH	L	R	C	SB1	LS	RS			LFH	RFH			SB2			
5.3.2 FH	L	R	C	SB1	LS	RS			LFH	RFH			SB2	SB3		
5.0.2 TF	L	R	C		LS	RS			LTF	RTF						
5.1.2 TF	L	R	C	SB1	LS	RS			LTF	RTF						
5.2.2 TF	L	R	C	SB1	LS	RS			LTF	RTF			SB2			
5.3.2 TF	L	R	C	SB1	LS	RS			LTF	RTF			SB2	SB3		
5.0.2 TM	L	R	C		LS	RS			LTM	RTM						
5.1.2 TM	L	R	C	SB1	LS	RS			LTM	RTM						
5.2.2 TM	L	R	C	SB1	LS	RS			LTM	RTM			SB2			
5.3.2 TM	L	R	C	SB1	LS	RS			LTM	RTM			SB2	SB3		
5.0.4 FH/RH	L	R	C		LS	RS			LFH	RFH	LRH	RRH				
5.1.4 FH/RH	L	R	C	SB1	LS	RS			LFH	RFH	LRH	RRH				
5.2.4 FH/RH	L	R	C	SB1	LS	RS			LFH	RFH	LRH	RRH	SB2			
5.3.4 FH/RH	L	R	C	SB1	LS	RS			LFH	RFH	LRH	RRH	SB2	SB3		
5.0.4 TF/TR	L	R	C		LS	RS			LTF	RTF	LTR	RTR				
5.1.4 TF/TR	L	R	C	SB1	LS	RS			LTF	RTF	LTR	RTR				
5.2.4 TF/TR	L	R	C	SB1	LS	RS			LTF	RTF	LTR	RTR	SB2			
5.3.4 TF/TR	L	R	C	SB1	LS	RS			LTF	RTF	LTR	RTR	SB2	SB3		
5.0.6 TF/TM/TR	L	R	C		LS	RS			LTF	RTF	LTM	RTM			LTR	RTR
5.1.6 TF/TM/TR	L	R	C	SB1	LS	RS			LTF	RTF	LTM	RTM			LTR	RTR
5.2.6 TF/TM/TR	L	R	C	SB1	LS	RS			LTF	RTF	LTM	RTM	SB2		LTR	RTR
5.3.6 TF/TM/TR	L	R	C	SB1	LS	RS			LTF	RTF	LTM	RTM	SB2	SB3	LTR	RTR

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7 audio bed channels

LAYOUT	LEFT	RIGHT	CENTER	SUBWOOFER #1	SURR (LEFT)	SURR (RIGHT)	REAR (LEFT)	REAR (RIGHT)	HEIGHT #1 (LEFT)	HEIGHT #1 (RIGHT)	HEIGHT #2 (LEFT)	HEIGHT #2 (RIGHT)	SUB #2 (AUX1)	SUB #3 (AUX2)	HEIGHT #3 LEFT (AUX 3)	HEIGHT #3 RIGHT (AUX 4)
FORMAT 7.X.X													AUX OUT			
7.0.0	L	R	C		LS	RS	LR	RR								
7.1.0	L	R	C	SB1	LS	RS	LR	RR								
7.2.0	L	R	C	SB1	LS	RS	LR	RR					SB2			
7.3.0	L	R	C	SB1	LS	RS	LR	RR					SB2	SB3		
7.0.2 FH	L	R	C		LS	RS	LR	RR	LFH	RFH						
7.1.2 FH	L	R	C	SB1	LS	RS	LR	RR	LFH	RFH						
7.2.2 FH	L	R	C	SB1	LS	RS	LR	RR	LFH	RFH			SB2			
7.3.2 FH	L	R	C	SB1	LS	RS	LR	RR	LFH	RFH			SB2	SB3		
7.0.2 TF	L	R	C		LS	RS	LR	RR	LTF	RTF						
7.1.2 TF	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF						
7.2.2 TF	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF			SB2			
7.3.2 TF	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF			SB2	SB3		
7.0.2 TM	L	R	C		LS	RS	LR	RR	LTM	RTM						
7.1.2 TM	L	R	C	SB1	LS	RS	LR	RR	LTM	RTM						
7.2.2 TM	L	R	C	SB1	LS	RS	LR	RR	LTM	RTM			SB2			
7.3.2 TM	L	R	C	SB1	LS	RS	LR	RR	LTM	RTM			SB2	SB3		
7.0.4 FH/RH	L	R	C		LS	RS	LR	RR	LFH	RFH	LRH	RRH				
7.1.4 FH/RH	L	R	C	SB1	LS	RS	LR	RR	LFH	RFH	LRH	RRH				
7.2.4 FH/RH	L	R	C	SB1	LS	RS	LR	RR	LFH	RFH	LRH	RRH	SB2			
7.3.4 FH/RH	L	R	C	SB1	LS	RS	LR	RR	LFH	RFH	LRH	RRH	SB2	SB3		
7.0.4 TF/TR	L	R	C		LS	RS	LR	RR	LTF	RTF	LTR	RTR				
7.1.4 TF/TR	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF	LTR	RTR				
7.2.4 TF/TR	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF	LTR	RTR	SB2			
7.3.4 TF/TR	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF	LTR	RTR	SB2	SB3		
7.0.6 TF/TM/TR	L	R	C		LS	RS	LR	RR	LTF	RTF	LTM	RTM			LTR	RTR
7.1.6 TF/TM/TR	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF	LTM	RTM			LTR	RTR
7.2.6 TF/TM/TR	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF	LTM	RTM	SB2		LTR	RTR
7.3.6 TF/TM/TR	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF	LTM	RTM	SB2	SB3	LTR	RTR

loudspeaker layouts (cont'd)

9 audio bed channels

LAYOUT	LEFT	RIGHT	CENTER	SUBWOOFER #1	SURR (LEFT)	SURR (RIGHT)	REAR (LEFT)	REAR (RIGHT)	HEIGHT #1 (LEFT)	HEIGHT #1 (RIGHT)	HEIGHT #2 (LEFT)	HEIGHT #2 (RIGHT)	SUB #2 (AUX1)	SUB #3 (AUX2)	HEIGHT #3 LEFT (AUX 3)	HEIGHT #3 RIGHT (AUX 4)
FORMAT 9.X.X													**AUX OUT**			
9.0.0	L	R	C		LS	RS	LR	RR							LW	RW
9.1.0	L	R	C	SB1	LS	RS	LR	RR							LW	RW
9.2.0	L	R	C	SB1	LS	RS	LR	RR					SB2		LW	RW
9.3.0	L	R	C	SB1	LS	RS	LR	RR					SB2	SB3	LW	RW
9.0.2 FH	L	R	C		LS	RS	LR	RR	LFH	RFH					LW	RW
9.1.2 FH	L	R	C	SB1	LS	RS	LR	RR	LFH	RFH					LW	RW
9.2.2 FH	L	R	C	SB1	LS	RS	LR	RR	LFH	RFH			SB2		LW	RW
9.3.2 FH	L	R	C	SB1	LS	RS	LR	RR	LFH	RFH			SB2	SB3	LW	RW
9.0.2 TF	L	R	C		LS	RS	LR	RR	LTF	RTF					LW	RW
9.1.2 TF	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF					LW	RW
9.2.2 TF	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF			SB2		LW	RW
9.3.2 TF	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF			SB2	SB3	LW	RW
9.0.2 TM	L	R	C		LS	RS	LR	RR	LTM	RTM					LW	RW
9.1.2 TM	L	R	C	SB1	LS	RS	LR	RR	LTM	RTM					LW	RW
9.2.2 TM	L	R	C	SB1	LS	RS	LR	RR	LTM	RTM			SB2		LW	RW
9.3.2 TM	L	R	C	SB1	LS	RS	LR	RR	LTM	RTM			SB2	SB3	LW	RW
9.0.4 FH/RH	L	R	C		LS	RS	LR	RR	LFH	RFH	LRH	RRH			LW	RW
9.1.4 FH/RH	L	R	C	SB1	LS	RS	LR	RR	LFH	RFH	LRH	RRH			LW	RW
9.2.4 FH/RH	L	R	C	SB1	LS	RS	LR	RR	LFH	RFH	LRH	RRH	SB2		LW	RW
9.3.4 FH/RH	L	R	C	SB1	LS	RS	LR	RR	LFH	RFH	LRH	RRH	SB2	SB3	LW	RW
9.0.4 TF/TR	L	R	C		LS	RS	LR	RR	LTF	RTF	LTR	RTR			LW	RW
9.1.4 TF/TR	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF	LTR	RTR			LW	RW
9.2.4 TF/TR	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF	LTR	RTR	SB2		LW	RW
9.3.4 TF/TR	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF	LTR	RTR	SB2	SB3	LW	RW
9.0.6 TF/TM/TR	L	R	C		LS	RS	LR	RR	LTF	RTF	LTM	RTM	LW	RW	LTR	RTR
9.1.6 TF/TM/TR	L	R	C	SB1	LS	RS	LR	RR	LTF	RTF	LTM	RTM	LW	RW	LTR	RTR

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RS-232 and Ethernet Control

The MUSE pre-amp processor is designed for simple, reliable control in a variety of system configurations. This section details the control protocols and specs for interfacing MUSE with a computer and/or 3rd party automation system.

RS-232

The MUSE pre-amp processor uses a standard RS-232 (DB-9) connection. _A Null Modem Cable must be used to connect to the RS-232 connector located on the back of the pre-amp processor._ The RS-232 Control system is functional right out of the box.

The RS-232 (DB-9) pin out is defined in the tabled below:

PIN	TYPE
2	TX DATA (Transmit)
3	RX DATA (Receive)
5	GND (Ground)

Serial communications format is as follows:

FORMAT	SETTING
Baud Rate	9600
Data Bits	8
Stop Bit	1
Parity	No
Flow Control	No

The MUSE pre-amp processor is design to receive serial commands and execute upon receiving the command. This simple format allows for very efficient communication between the pre-amp processor and the control system.

SEND COMMAND FORMAT:

QQQXXX

Where:
QQQ = category code (typically 3 ASCII characters)
XXX = command code (typically 3 ASCII characters)

EXAMPLE - SEND COMMAND:

PWRTGL

This command string will toggle the current power state of the MUSE.

VERBOSE RESPONSE

Verbose response mode returns human-readable confirmation messages in response to system changes or adjustments (originating from any source). For the above example command, here is the verbose response:

OK, Power On

To enable verbose response, the following serial command must be issued prior:

VERBON (verbose serial mode on command)

Command Sequencing

Preload and Go! - RS-232 / UDP Command Application
A unique feature of MUSE control via RS-232 and UDP/IP commands is the ability to send and read operating parameters while the ACT4 is still in the standby state. This allows a 3rd party control system to the power on the MUSE in a predetermined state resulting in smoother behavior for the end user.

EXAMPLE: The control system could set the MUSE to HDMI input 3, then set the volume level to 35, then turn the power ON. The MUSE would power ON very quickly and then all of these settings would already be loaded.

Mute and Update - RS-232 / UDP Command Application
Another unique control option is that a control system could MUTE the MUSE and then change inputs, volume level, and other parameters during MUTE.

EXAMPLE: The MUSE would receive the MUTE ON command and then the control system would switch to another input, set the volume level to, say, 60, then deliver the MUTE OFF command.

RS-232 Control Command Table

Category	Function	ASCII Command	Verbose Response	Notes
POWER	Power Toggle On / Off	PWRTGL	OK	
	Power On	PWRONN	OK	
	Power Off	PWROFF	OK	
MUTE	Mute Toggle On / Off	MUTTGL	OK	
	Mute On	MUTONN	OK	
	Mute Off	MUTOFF	OK	
VOLUME	Volume Level Up	VOLUPP	OK	
	Volume Level Down	VOLDWN	OK	
	Volume Direct	VOL0XX	OK	XX = 01 to 99
INPUT	Input i1 - HDMI	INPP01	OK	
	Input i2 - HDMI	INPP02	OK	
	Input i3 - HDMI	INPP03	OK	
	Input i4 - HDMI	INPP04	OK	
	Input i5 - HDMI	INPP05	OK	
	Input i6 - HDMI	INPP06	OK	
	Input i7 - HDMI	INPP07	OK	
	Input i9 - Optical	INPP09	OK	
	Input i10 - Optical	INPP10	OK	
	Input i11 – Coaxial	INPP11	OK	
	Input i12 – Coaxial	INPP12	OK	
	Input i13 – Analog L/R	INPP13	OK	
	Input i13 – Analog L/R	INPP14	OK	
SOUND MODE	Sound Mode - Auto	SDMAUT	OK	
	Sound Mode - Direct	SDMDIR	OK	
	Sound Mode - Stereo	SDMSTR	OK	
	Sound Mode - Analog	SDMANA	OK	
	Sound Mode - Party	SDMPAR	OK	
	Sound Mode - Night	SDMNGT	OK	

RS-232 Control Command Table

Category	Function	ASCII Command	Verbose Response	Notes
SOUND MODE	Sound Mode – DTS Neural X	SDMDTS	OK	
	Sound Mode – Dolby	SDMDLB	OK	
	Sound Mode – 2.1	SDM2D1	OK	
	Sound Mode – 3.1	SDM3D1	OK	
	Sound Mode – 5.1	SDM5D1	OK	
	Sound Mode – 7.1	SDM7D1	OK	
VERBOSE	Verbose Response Enabled	VERBON	OK	Simple "OK" response
	Verbose Response Level 2	VERBN2		Response sent after any change including front panel, IR, etc…
	Verbose Response Disabled	VERBOF		No response returned
SYSTEM	Restart MUSE	SYSRST	OK	
FRONT PANEL BRIGHTNESS	Front Panel Brightness - Auto	FPBAUT	OK	
	Front Panel Brightness - Low	FPBLOW	OK	
	Front Panel Brightness - Med	FPBMED	OK	
	Front Panel Brightness - High	FPBHGH	OK	
LIPSYNC	Lipsync Delay Direct	LPSDXX	OK	XX = 0 to 50: Each number corresponds to 10 ms EX: LPSD31 = 310ms Lipsync Delay
BASS	Bass Level = -10dB	BASM10	OK	
	Bass Level = - 9dB	BASM09	OK	
	Bass Level = -8dB	BASM08	OK	
	Bass Level = -7dB	BASM07	OK	
	Bass Level = -6dB	BASM06	OK	
	Bass Level = -5dB	BASM05	OK	
	Bass Level = -4dB	BASM04	OK	
	Bass Level = -3dB	BASM03	OK	
	Bass Level = -2dB	BASM02	OK	
	Bass Level = -1dB	BASM01	OK	
	Bass Level = +0dB	BASP00	OK	
	Bass Level = +1dB	BASP01	OK	
	Bass Level = +2dB	BASP02	OK	
	Bass Level = +3dB	BASP03	OK	
	Bass Level = +4dB	BASP04	OK	
	Bass Level = +5dB	BASP05	OK	
	Bass Level = +6dB	BASP06	OK	
	Bass Level = +7dB	BASP07	OK	
	Bass Level = +8dB	BASP08	OK	
	Bass Level = +9dB	BASP09	OK	
	Bass Level = +10dB	BASP10	OK	

RS-232 Control Command Table

Category	Function	ASCII Command	Verbose Response	Notes
TREBLE	Treble Level = -10dB	TRBM10	OK	
	Treble Level = - 9dB	TRBM09	OK	
	Treble Level = -8dB	TRBM08	OK	
	Treble Level = -7dB	TRBM07	OK	
	Treble Level = -6dB	TRBM06	OK	
	Treble Level = -5dB	TRBM05	OK	
	Treble Level = -4dB	TRBM04	OK	
	Treble Level = -3dB	TRBM03	OK	
	Treble Level = -2dB	TRBM02	OK	
	Treble Level = -1dB	TRBM01	OK	
	Treble Level = +0dB	TRBP00	OK	
	Treble Level = +1dB	TRBP01	OK	
	Treble Level = +2dB	TRBP02	OK	
	Treble Level = +3dB	TRBP03	OK	
	Treble Level = +4dB	TRBP04	OK	
	Treble Level = +5dB	TRBP05	OK	
	Treble Level = +6dB	TRBP06	OK	
	Treble Level = +7dB	TRBP07	OK	
	Treble Level = +8dB	TRBP08	OK	
	Treble Level = +9dB	TRBP09	OK	
	Treble Level = +10dB	TRBP10	OK	
DOLBY	Dolby Dynamic Range Control OFF (DRC OFF)	DLBDRF	OK	
	Dolby Dynamic Range Control ON (DRC ON)	DLBDRN	OK	
	Dolby Surround Center Spread OFF	DLBCSF	OK	
	Dolby Surround Center Spread ON	DLBCSN	OK	
DTS	DTS Dynamic Range Control OFF (DRC OFF)	DTSDRF	OK	
	DTS Dynamic Range Control ON (DRC ON)	DTSDRN	OK	
	DTS Dialog ControlX = 0 to 6 dB	DTSDGX	OK	Not available on all DTS:X recordings

RS-232 Status Command Table

Category	Function	ASCII Command	Verbose Responses	Notes
POWER	Power - On / Off	STSPOW	OK POWER OFF OK POWER ON	
MUTE	Mute - On / Off	STSMUT	OK MUTE OFF OK MUTE ON	
INPUT	Input Selected – i1 to i14	STSINP	OK INPUT i1 OK INPUT i2 OK INPUT i3 OK INPUT i4 OK INPUT i5 OK INPUT i6 OK INPUT i7 OK INPUT i9 OK INPUT i10 OK INPUT i11 OK INPUT i12 OK INPUT i13 OK INPUT i14	
VOLUME	Volume Level Value	STSVOL	OK VOL0XX	XX = 01 to 99
SOUND MODE	Sound Mode Selected	STSMOD	OK SM AUTO OK SM DIRECT OK SM STEREO OK SM ANALOG OK SM PARTY OK SM NIGHT OK SM DTS OK SM DOLBY OK SM 2.1 OK SM 3.1 OK SM 5.1 OK SM 7.1	
BRIGHTNESS	Front Panel Brightness	STSFPB	OK FPB LOW OK FPB MED OK FPB HIGH	Low / Med / High
LIPSYNC	Lipsync Delay	STSLPS	OK LIPSYNC DELAYXXX	XXX = 000 to 500 ms
DOLBY	Dolby DRC – On / Off	STSDLD	OK DOLBY DRC OFF OK DOLBY DRC ON	
DOLBY	Dolby Center Spread – On / Off	STSDLC	OK DOLBY CENTER SPD OFF OK DOLBY CENTER SPD ON	

RS-232 Status Command Table

Category	Function	ASCII Command	Verbose Responses	Notes
DTS	DTS DRC – On / Off	STSDTD	OK DTS DRC OFF OK DTS DRC ON	
DTS	DTSX Dialog Control – 0 to 6dB	STSDTL	OK DTS Dialog 0 OK DTS Dialog 1 OK DTS Dialog 2 OK DTS Dialog 3 OK DTS Dialog 4 OK DTS Dialog 5 OK DTS Dialog 6	
BASS	Bass Level Value – 10db to +10dB	STSBAS	OK BASS -10 OK BASS -09 OK BASS -08 OK BASS -07 OK BASS -06 OK BASS -05 OK BASS -04 OK BASS -03 OK BASS -02 OK BASS -01 OK BASS +00 OK BASS +01 OK BASS +02 OK BASS +03 OK BASS +04 OK BASS +05 OK BASS +06 OK BASS +07 OK BASS +08 OK BASS +09 OK BASS +10	
TREBLE	Treble Level Value – 10db to +10dB	STSTRB	OK TREBLE -10 OK TREBLE -09 OK TREBLE -08 OK TREBLE -07 OK TREBLE -06 OK TREBLE -05 OK TREBLE -04 OK TREBLE -03 OK TREBLE -02 OK TREBLE -01 OK TREBLE +00 OK TREBLE +01 OK TREBLE +02 OK TREBLE +03 OK TREBLE +04 OK TREBLE +05 OK TREBLE +06 OK TREBLE +07 OK TREBLE +08 OK TREBLE +09 OK TREBLE +10	

Web-based Control

The MUSE pre-amp processor contain a built in web server. Direct control and status monitoring tools are located on the web page for the product. This feature is a great tool for diagnosis / setup of the product. This interface will also auto optimize the user interface for mobile devices. All that is required is a device with a web browser, a standard router, and an MUSE pre-amp processor. All operating and many setup controls for the product are available on the pre-amp processor Web Page.

To use the web interface, visit the website for the pre-amp processor.

FORMAT: http://IP ADDRESS
EXAMPLE: http://192.168.1.245

Note that the default IP address for the MUSE is 192.168.1.245 however, use of DHCP will likely override this address.

Ethernet Control

The MUSE pre-amp processor is designed to receive external control system commands via the Ethernet port. All commands use UDP Protocol (User Datagram Protocol) format for sending commands from a control device to the MUSE over a standard IP network. For real-time status, a status table is available to be read via XML format from the MUSE web server. This enables 2-way 3rd-party IP driver control.

Connections
The Ethernet port on the pre-amp processor should be connected to the router or network switch. The external control system should also be connected to the same router via wired or wireless connection.

UDP Format / Initial Settings:
All UDP control devices will require both the IP Address of the MUSE and the MUSE UDP Control Port. The MUSE IP Address can vary depending on the installation.

UDP Setting	Value
IP ADDRESS	STATIC of DHCP
UDP PORT	26482

UDP Control Setup:
In order to setup UDP control from an external system, you have to know the MUSE IP Address and the MUSE UDP Port number (see table above). By default, the MUSE UDP Receive Port State is ON or open to receive commands.

Once these steps are complete, you can issue the UDP commands via an external control system.

Static IP Address Setup
It is highly recommended to set a Static IP when setting up an external control system or disable DHCP on the network. Doing this will prevent the DHCP function inside the network router from changing the MUSE IP address to an address unknown by the control system.

UDP Command Structure:
The UDP data to be sent consists of HEX codes that will be transmitted to the designated IP address and Port. The format is shown below.

BASIC MUSE UDP SEND COMMAND FORMAT:

06 F9 19 FF **S1 S2 S3 S4 S5 S6** 00 00

Where:
06 F9 19 FF = UDP command prefix (for MUSE 6-character command code)

S1 S2 S3 S4 S5 S6 = the serial command code in HEX

00 00 = command end marker (for MUSE)

UDP Command Example
SEND COMMAND: PWRPTG (Power Toggle)

06 F9 19 FF **50 57 52 50 54 47** 00 00

This UDP command will toggle MUSE power on and off.

For testing purposes, you can use a UDP Test program to verify UDP operation of the pre-amp processor once set up. Some examples of free UDP test tools available online:

https://packetsender.com/

http://www.simplecomtools.com/ProductCart/pc/viewPrd.asp?idproduct=6&idcategory=5

Direct Volume Level Control: The MUSE also contains a set of UDP commands that you can directly set parameters such as the volume level via UDP directly without restrictions.

For example, to directly change volume, simply change the two hex bytes highlighted in RED (byte #9 and #10) to the HEX value of the number that you wish to set. Valid volume numbers range from 01 to 99 in increments of 1.

ASCII	UDP COMMAND	VOL LEVEL
V66	06 F9 19 FF 56 4F 4c 30 **36 36** 00 00	66

XML Status Monitoring: When control commands are issued to the MUSE, quite often, real-time status feedback is needed by the control system. Real-time status monitoring can be done by an external control system by reading the *status.xml* file available on the pre-amp processor web server. Many modern 3rd party control systems have means of reading and parsing xml files. The XML file can be found at this address on the pre-amp processor:

FORMAT: **http:// IP ADDRESS/status.xml**
EXAMPLE: **http://192.168.1.245/status.xml**

The XML format contains three levels of information: 1) Identifies the brand, 2) Identifies the model, and 3) Provides the Type of unit and the Data for the unit.

The example below illustrates the format of the possible data values for each object in the XML file:

```
<ACURUS>
        <PROD>
                <TYPE>TYPE NAME</TYPE>
                <DATA1>DATA VALUE 1</DATA1>
                <DATA2>DATA VALUE 2</DATA2>
                        …
                <DATA3>DATA VALUE 3</DATA3>
        </PROD>
</ACURUS>
```

Data types included in the MUSE XML table are listed below:

MUSE UDP STATUS DATA TYPES:

DATA TYPE	DEFINITION
PWR	power status
MUT	mute status
VOL	volume level setting
INP	input selection
SMD	sound mode

The following is a complete XML file example for the MUSE which enables all the above data to be read and parsed as often as needed by the control system.

```
<ACURUS>
        <MUSE>
                <TYPE>PROCESSOR</TYPE>
                <XPWR> 1</XPWR>
                <XMUT> 0</XMUT>
                <XVOL> 14</XVOL>
                <XINP> 1</XINP>
                <XSMD> 0</XSMD>
        </MUSE>
</ACURUS>
```

problem resolution

From time to time, problems may occur. The following table is intended to help categorize and solve issues that may arise. Of course, if problems persist, do not hesitate to call your local dealer or Acurus Customer Service.

Troubleshooting Table

problem or symptom	possible cause	recommendations
MUSE does not power on – no front panel display illumination	AC not connected	• Check that power cord is connected at the wall and at the back of the unit • Check that switched AC outlets are on • Check that power conditioner is on (if applicable)
	Blown main fuse	• Check fuse compartment in back of unit near AC inlet. Replace fuse and retest. If problem persists, refer unit to service personnel.
MUSE has power ("on" button illuminated) but does not respond via mobile device control	IP address not entered correctly on mobile device	• Verify correct IP address for MUSE by reviewing the MUSE network settings menu. NOTE: It can take up to a few minutes for some routers to assign an IP address automatically. The initial address MUSE displays may be re-assigned by the router after DHCP auto-assignment.
	Mobile device not connected to same network as MUSE	• Check to ensure control device is connected to the local network and not another neighboring network • Check to ensure that all network routers and switches are powered up and active • Look at the connection table in the router to confirm that both the MUSE and the mobile device are listed
	MUSE disconnected from network	• Check MUSE rear-panel network activity light – if not illuminated green, check network cable connections. If cable is plugged in and switch or router shows activity indication, replace network cable.
MUSE cuts out after playing for a while	Inadequate ventilation	• Check to ensure that sides, rear and top of unit have at least 2 inches of air space and that air can flow in and out of space around MUSE installation.
	HDMI cable inadequate	• Check to ensure HDMI cables are of high quality and rated for HDR (High Speed) if applicable. Use DPL-certified active HDMI cables for runs longer than 3 meters.
MUSE has power ("on" button shows on screen) but does not respond via 12V trigger	Trigger cable connection issue	• Check to ensure control device is connected via recommended trigger cable configuration
Picture but no sound	HDMI cable inadequate	• Check to ensure HDMI cables are of high quality and rated for HDR (High Speed) if applicable. Use DPL-certified active HDMI cables for runs longer than 3 meters.
	Connected to HDMI output 1	• HDMI output 2 is the main output with support for HDCP2.2, HDR 4K. HDMI output 1 is not generally used except for legacy displays.
MUSE does not recognize the network	Network IP range incompatible	• MUSE automatically connects to networks with an IP range that begins with 192.168… Networks out of this range may not work with MUSE unless Static IP is selected. Reset the IP of the router to 192.168.x.y if possible or select Static IP in range.

Problem or symptom	Possible cause	recommendations
MUSE switches on (display shows home screen) but does not produce audio	HDMI cable inadequate	• Check to ensure HDMI cables are of high quality and rated for HDR (High Speed) if applicable. Use DPL-certified active HDMI cables for runs longer than 3 meters.
	Amplifiers not active	• Check to ensure the external amplifier(s) are powered on and signal cables between MUSE and the external amplifier are connected.
	Defective source device or cables	• Check connections between source device and MUSE. • Try using an alternate source device to eliminate the possibility of an MUSE problem. • Check source device RCA or Optical cables for faults.
	MUSE input setting issue	• Make sure the MUSE input number matches the source device connection
Not all MUSE channels appear to be working	Loudspeaker connection issue	• Check loudspeaker connections at the amplifier and at the speaker terminals. Look for frayed, shorted, or disconnected leads.
	Speaker layout setting issue	• Check MUSE audio settings menu to ensure speaker layout is set to include all connected speakers in the room.
	Source device connection issue	• Check connections between source device and MUSE • Try using an alternate source device to eliminate the possibility of an MUSE problem. • Check source device RCA cables for faults
	Sound Mode incorrect for source	• Check to make sure the sound mode selected is capable of producing sound in all channels (see page 18).
MUSE sound is garbled or distorted	Shorted or poorly connected loudspeaker wires	• Check loudspeaker connections at the amplifier and at the speaker terminals. Look for frayed, shorted, or disconnected leads.
	Defective source device or cables	• Check connections between source device and MUSE • Try using an alternate source device to eliminate the possibility of an MUSE problem. • Check source device RCA cables for faults
MUSE sound contains hum	Poorly connected or faulty source cables	• Ensure that audio cables are inserted fully in RCA jacks • Replace cables that are suspect
	AC ground loop	• Be sure to use either the 3-prong AC cord that came with the MUSE or equivalent • Do not remove the ground lug from the AC cord • Plug all devices into the same AC outlet if possible
	Cable or Satellite TV grounding issue	• Verify source by disconnecting incoming cable line or satellite dish cable to see if hum disappears. If this is the source, then hum will disappear when the cable is disconnected from the system. If so, use an isolation transformer (such as a Mondial Magic Box) at each of the cable and/or satellite inputs

Obtaining Additional Help

For problems not addressed here, have the model, serial number and date of purchase of the MUSE component handy and contact your local dealer or contact Acurus

Customer Service at 1-866-781-7284 M-F, 9AM to 5PM E.S.T. or email support@acurusav.com.

product specifications

RCA (i13 – i14)

Frequency response	18 – 50kHz ± 0.03dB
THD	< 0.002% @ 1kHz, 2Vrms input
SNR	> 95dB

Optical and Coax Digital (i9 – i12)

Frequency response	20 – 20kHz ± 0.05dB
THD	< 0.01% @ 1kHz, -20dBFS input
SNR	> 95dB

HDMI (i1 – i7)

THD	< 0.015% @ 1kHz, -20dBFS input
SNR	> 95dB
Max output	3.5Vrms, 7Vrms (Sub out)
Power consumption	70W (max), <1W (standby)

Audio Decoding

Surround Formats	PCM, Dolby Atmos, DTS:X, up to 9.1.6 (Hardware supports up to 11.1.8)
Sample rates	32, 44.1, 48, 88.2, 96, 176.4, 192kHz
Bit depths	16, 20, 24bit

Calibration and Loudspeaker Tuning

Channel gain trims	Fully-independent, +/-12dB, 0.5dB steps
Subwoofer crossover	Fully-independent, 2-way, 24dB/octave high-pass
Subwoofer crossover frequency	Fully-independent adjustable high-pass from 40Hz to 200Hz

Audio Post Processing

Loudspeaker Adjustments	Parametric EQ, Delay, Polarity, Large/Small, Crossover Frequency

Video

HDMI	7 in x 2 out
4K video mode support	up to 4:4:4 (50/60Hz) (enhanced mode)
12 bit deep color	Yes
3D support	Yes
HDCP	V 2.2 (7 in, 1 out)
HDR formats	HDR10, HLG, Dolby Vision

product specifications (cont'd)

Control

Front panel display	5" touch-sensitive LCD
Serial	1 x RS-232 (DB-9), Full 2-way control, 1 x USB A programming port, 1x USB programming port
Ethernet	1 x Ethernet, Web interface & 2-way IP control via UDP
12V trigger	1 x 3.5mm IN, 2 x 3.5mm OUT
Charging port	2 x USB 5V, 2A
Infra-red	1 integrated (front panel), 1 external (rear panel 3.5mm TRS input)

Audio Connections

Stereo analog audio inputs	2 x Gold-plated (RCA) L/R unbalanced
Digital audio inputs	2 x coax (RCA) and 2 x Optical
Multi-channel analog audio outputs	1 set 12 XLR 11.1 configuration, AUX out DB9 with 4 XLR for 15.1
Stereo Downmix Output	1 x coax (RCA) and 1 x Optical

Physical

Product dimensions	3.5" (8.9cm) H x 17" (43.2cm) W x 14.3" (36.3cm) D
Product weight	18 lbs. (8.2kg)
Finish	Black satin anodized, laser-etched logo, white rear panel
Carton dimensions	10" (25.4cm) H x 22" (55.9cm) L x 24" (61.0cm) W

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about acurus and indy audio labs

Acurus and Aragon and wholly owned brands of Indy Audio Labs, LLC.

Indy Audio Labs was founded in late 2008 by three audio engineers and a physicist who saw a vision for an affordable set of home entertainment products that bring together professional-grade audio performance, state-of-the-art control and connectivity, and simplified access to today's content sources.

Acurus was originally founded by Mondial designs in 1993 as a more affordable alternative to its critically acclaimed flagship brand, Aragon. Like its predecessor, Mondial, Indy Audio Labs designs and manufactures all of its audio components in the USA using custom fabricated parts and assemblies. Indy Audio Labs prides itself on remaining true to the original mission of Acurus today – delivering both high-performance and high-value. Acurus is "accuracy from the US".

acurus

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WARRANTY

U.S. and Canada:

The Warranty below is valid only for sales to consumers in the United States or Canada.

The manufacturer warrants this product to be free from defects in materials and workmanship (subject to the terms set forth below) for a period of five (5) years from the date of purchase. During the Warranty period, the manufacturer will repair or replace (at the manufacturer's option) this product or any defective parts.

To obtain technical support and/or warranty service, you may either: (a) contact the authorized Acurus dealer from which you purchased this product or (b) call INDY AUDIO LABS at 1-866-559-5113 (toll free) or (c) email INDY AUDIO LABS support at support@ indyaudiolabs.com. If you choose to call INDY AUDIO LABS directly we strongly suggest that you choose the technical support option as the majority of customer problems can be solved over the phone. If technical support is unable to solve the problem, they will advise as to whether the preferred route to obtain warranty service is to return the product to the INDY AUDIO LABS authorized dealer from which you purchased the product or to return the product directly to the manufacturer, freight paid, for repair. If returning the product you will need to obtain a Return Authorization from Indy Audio Labs and ship this product in either its original packaging or packaging affording an equal degree of protection.

Proof of purchase in the form of a bill of sale or receipted invoice (which is evidence that this product is within the Warranty period) must be presented or included in order to obtain Warranty service.

This Warranty is invalid if (a) the factory-applied serial number has been altered or removed from this product or (b) this product was not purchased from an INDY AUDIO LABS authorized dealer. You may call 1-866-559-5113 (choose the INDY AUDIO LABS customer service option) to confirm that you have an unaltered serial number and/or that you purchased from a INDY AUDIO LABS authorized dealer.

This Warranty is only valid for the original purchaser and will automatically terminate prior to expiration if this product is sold or otherwise transferred to another party.

This Warranty does not cover cosmetic damage or damage due to misuse, abuse, negligence, acts of God, accident, commercial use or modification of, or to any part of, the product. This Warranty does not cover damage due to improper operation, maintenance or installation, or attempted repair by anyone other than the manufacturer or an INDY AUDIO LABS dealer which is authorized to do INDY AUDIO LABS warranty work. Any unauthorized repairs will void this Warranty. This Warranty does not cover product sold AS IS or WITH ALL FAULTS.

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Applicable Territories: Some states and foreign territories do not allow the exclusion or limitation of incidental or consequential damages or implied warranties so the above exclusions may not apply to you. This Warranty gives you specific legal rights, and you may have other rights, which vary from state to state and territory to territory. The warranty on this product if it is sold to a consumer outside of the United States or Canada shall comply with applicable law and shall be the sole responsibility of the distributor that supplied this product. To obtain any applicable warranty service, please contact the dealer from which you purchased this product, or the distributor that supplied this product.