



AX-1250

Multi-Zone Digital Amplifier

Instruction and User Guide

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PREFACE - Important Information

Graphical Symbols in this Guide

Warning and Important paragraphs draw your attention to important safe practices and additional information which may help you avoid injury, death, or loss of material or time.



WARNING! This indicates a potentially hazardous situation that, if not avoided, may result in death or serious injury. **DO NOT IGNORE A WARNING!**



IMPORTANT! This indicates information that will help you avoid damage to your equipment, loss of materials, or loss of time.
PAY ATTENTION TO THESE IMPORTANT STATEMENTS!

Graphical Symbols on the Device

The following have been placed on the device:



WARNING
RISK OF ELECTRIC SHOCK
DO NOT OPEN

AVIS
RISQUE DE CHOC ELECTRIQUE
NE PAS OUVRIR



This symbol alerts you to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock. Do not open the product's case.



This symbol informs you that important operating and maintenance instructions are included in the literature accompanying this product.

PREFACE - Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including other amplifiers) that produce heat.
9. Use the apparatus only in Moderate climates.(not in tropical climates)
10. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other, a grounding type plug has two blades and a third grounding prong, the wide blade or the third grounding prong are provided for your safety. If the provided plug does not fit onto your outlet, consult an electrician for replacement of the obsolete outlet.
11. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
12. Only use attachments / accessories specified by the manufacturer.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. If you install the apparatus in a built-in installation, such as a bookcase or rack, ensure that there is adequate ventilation. Leave 20cm (8") of free space at the top and sides and 10cm (4") at the rear. The rear edge of the shelf or board above the apparatus shall be set 10cm (4") away from the rear panel or wall, creating a flue like gap for warm air to escape. Good airflow is necessary to help ensure proper operation. Not only should you provide enough free space around the unit, but also ensure that air can flow freely and escape from the amplifier surroundings. Failure to do so may cause thermal shutdown of the unit, and reduced life expectancy.
15. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as:
 - When the power supply cord or plug is damaged.
 - If liquid has been spilled, or objects have fallen into the apparatus.
 - If the apparatus has been exposed to rain or water.
 - If the apparatus has been dropped or damaged in any way.
 - If the apparatus does not operate normally by following the instructions. Adjust only those controls that are covered by the operating instructions.
 - When the apparatus exhibits distinct change in performance this indicates a need for a service.



WARNING! Do not expose the apparatus to dripping or splashing.
Do not place objects filled with liquids near the apparatus.



WARNING! To reduce the risk of fire or electric shock,
Do not expose this apparatus to rain or moisture.



WARNING! Equipment must be connected to a Mains socket outlet with a protective earthing connection.



WARNING! Never push objects of any kind into the apparatus through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock.



IMPORTANT! Ensure adequate ventilation. Do not install in a cabinet that is smaller than 60cm (24") wide x 45cm (18") deep x 20cm (8") high. If you do the device may overheat.

PREFACE - Precautions

- 1. AC Fuse** - The AC fuse inside the unit is not user-serviceable. If you cannot turn on the unit, contact the dealer from whom you purchased this unit.
- 2. Care** - Occasionally you should dust the unit all over with a soft cloth. For stubborn stains, use a soft cloth dampened with a weak solution of mild detergent and water. Dry the unit immediately afterwards with a clean cloth. Don't use abrasive cloths, thinners, alcohol, or other chemical solvents, because they may damage the finish or remove the panel lettering.
- 3. Power**
WARNING
BEFORE PLUGGING IN THE UNIT FOR THE FIRST TIME, READ THE FOLLOWING SECTION CAREFULLY.
AC outlet voltages vary from country to country. Make sure that the voltage in your area meets the voltage requirements printed on the unit's rear panel. e.g. ~ 110V / 240V, 50/60HZ
The power cord is used to disconnect this unit from the AC power source. Make sure that the plug is readily operable (easily accessible) at all times.
If you do not intend to use the unit for an extended period, remove the power cord from the AC outlet.
- 4. Earth** – The unit is defined as Class1 in EN60065 (low voltage directive) and **MUST BE EARTHED**. Connect only to a mains socket outlet with protective earth, and only use the power cord supplied.
Finland:
"Laite on liitettävä suojamaadoituskoskettimillä varustettun pistorasiaan"
Norway:
"Apparatet må tilkoples jordet stikkontakt"
Sweden:
„Apparaten skall anslutas till jordat uttag"
- 5. Never Touch This Unit With Wet Hands** – Never handle this unit or its power cord while your hands are wet or damp. If water or any other liquid gets inside this unit, have it checked by your Axiom dealer.
- 6. Handling Notes**
 - If you need to transport this unit, use the original packaging.
 - Do not leave rubber or plastic items on this unit for a long time; they may leave marks on the case.
 - This unit's top and rear panels may get warm after prolonged use. This is normal.
- 7. Speaker Shorts**
Under no circumstances should the speaker output terminals of the unit be short circuited, grounded or connected to another output.
- 8. Direct Sun light** - Avoid installing the amplifier in positions where the front panel is exposed to direct sunlight – may cause control to become sluggish.
- 9. Controller Connection** - Never connect more than eight Axiom controllers. The supply is internally fused (self resetting) and may open circuit. Never connect the unit's 12VDC terminal ('Bus Run' port) to an external power supply.

PREFACE – Declaration of Conformity

We declare under our sole responsibility that this product, to which this declaration relates, is in conformity with the following standards:

EN60065, EN55013, EN55020, EN61000-3-2 and EN61000-3-3.

Following the provisions of Low Voltage Directive 2006/95/EC and EMC Directive 2004/108/EC, the EC regulation 1275/2008 and its frame work Directive 2009/125/EC for Energy-related Products (ErP).



TUV Certification

This product has been certified and conforms to UL60065 and certified to CAN/SSA, IEC 60065.

For North American Models

FCC interference statement

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



IMPORTANT!

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

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

For Canadian Models

NOTE: THIS CLASS B DIGITAL APPARATUS COMPLIES WITH CANADIAN ICES-003

For models having a power cord with a polarized plug:

CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT FULLY INSERT.

Modèle pour les Candadien

REMARQUE: CET APPAPEIL NUMÉRIQUE DE LA CLASSE B EST CONFORME À LA NORME NMB-003 DU CANADA.

Sur les modèles don't la fiche est polarisée:

ATTENTION: POUR ÉVITER LES CHOCS ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU' AU FOND.

RECYCLING:

This product's packaging materials are recyclable and can be reused. Please dispose of any materials in accordance with the local recycling regulations.

When discarding the unit, comply with local rules or regulations.

Batteries should never be thrown away or incinerated but disposed of in accordance with the local regulations concerning battery disposal.

This product and the supplied accessories constitute the applicable product according to the WEEE directive.



PREFACE - Supplied Accessories

Locate the following accessories:

AS3112 Australasian Plug to IEC60320 C13 Socket



VDE CEE 7/7 European Plug Schuko to IEC60320 C13 socket.....



Standard US Plug to IEC60320 C13 socket.....



Rack Ears.....



PREFACE - Warranty

Audio Engineering Ltd warrants its products to be free of material and construction defects. The warranty is for One Year from the date of purchase by the original consumer. Any products returned to either Audio Engineering Ltd or the Axiom Distributor and found to be defective within the warranty period will be repaired or replaced at no charge. The warranty does not cover costs relating to installation or removal of the product or consequential damages.

SECTION 1 - Quick Install Guide

Thank you for purchasing an Axiom AX-1250 Multi-Zone Amplifier.
Please read this manual thoroughly before making connections and plugging in the unit.
Following the instructions in this manual will enable you to obtain optimum performance and listening enjoyment from your new Multi-Zone Amplifier. Please retain this manual for future reference.

Unpacking / Setup

- Check for damage:
Immediately upon receiving the new AX-1250 Multi-Zone amplifier, inspect the carton for evidence of mishandling during shipment. Then carefully unpack the unit and inspect for damage. Please save the shipping carton and all inner package materials in the event that the AX-1250 needs to be shipped for service or moved to a new location.

IMPORTANT: If the AX-1250 Multi-Zone amplifier has been damaged during shipping, please contact the Axiom supplier immediately.

- Verify that all the accessories have been included, see PREFACE: Supplied accessories.
- Read the entire Instruction Manual.

Installation

- Connect Zone outputs 1 – 6 to speakers, using high quality speaker audio cables, e.g. minimum specification is 16 AWG (1.3mm²) Twin or Quad Audio cable.
 - All Speaker cabling should be home runs, avoid joining or crimping wires.
 - Speaker cabling should be kept at least 300mm (12") away from high voltage house wiring.
 - Speaker wiring can NOT be combined. The Zone outputs are 'Bridge' configuration where there are no common ground connections; i.e. The Left Zone output positive and negative terminals are connected to the Left speaker's Positive and negative terminals respectively. The Right Zone output positive and negative terminals are connected to the Right speaker's positive and negative terminals respectively.
 - Not suitable for use with a stereo speaker – single speaker with two voice coils – where the voice coils are internally connected.
 - Not suitable for use with transformer volume controls.
- Connect Sources 1 – 12 to Source equipment, using good quality RCA cables for the Analog L/R connections, and shielded 75Ω RCA cables for the Coax Digital Audio inputs.
 - Both Analog & Digital Audio connections may be made to input Sources 1 – 8. The Digital Audio source is the default selection if a signal is present.
 - Either a Digital Audio Coax or Optical connection can be made to input Sources 9 – 12.
 - Digital Audio Coax and Optical signals must be PCM.
- Connect AX-1250 to local network via the Ethernet port "MAIN IN"
- Connect Power cord to unit and then plug into an AC outlet to apply power.
- Use the AX-1250 intuitive front panel LCD GUI and Touch Panel to select Zone, and control the amplifier Standby, Source and Volume.

SECTION 2 – Introduction; Features

Multiple Analog & Digital Audio Sources

Sources 1 – 8 are either Analog Stereo, or Coax Digital Audio (PCM). Digital Coax has priority if both are connected.

The Analog Sources have gain adjustment: up to +10dB in 2dB steps.

Sources 9 - 12 are either Coax or Optical Digital Audio (PCM). Only one connection is allowable to each source.

Sources 1 -12 have programmable delay: up to 600ms - 5ms steps.

UPnP enabled Media Source.

Source 13 (Media 1) has UPnP support also known as DLNA, providing ‘Play from my Device’ functionality. The amplifier becomes a slave device – or Media Renderer – and is controlled by a UPnP controller, which is typically the Axiom App running on an iPad or Android Tablet, but can be any generic UPnP player.

Regarding generic UPnP player:

- *An AX-1250 has sub-devices implemented for each zone. The zone where music is to be played is selected from the Media Renderer list in the UPnP player.*
- *Starting playback in any given zone implicitly selects the media source in that zone. If the media source is already in use playing to another zone then the UPnP player will take over control.*

Source 13 (Media 1) may also stream from Internet Radio services like Tune-In or Pandora, and from a locally connected network share including a NAS. Decoding of mp3, wav, m4a, ogg, mp4, aac or flac music streams are supported.

Remote Sources.

Remote Sources (Lossless Audio via Ethernet): Multiple remote sources may be assigned, originating from a connected AX-1250, Mini4 or Axiom Media player.

Source Buffering and PCM streaming

Source 1 -12 have Digital Coax outputs for connection to a local amplifier.

The amplifiers Zones may be streamed over Ethernet using Axiom’s proprietary Low Latency Lossless Audio Stratagem (LLAS). The Audio streams can then be accessed by connected AX-1250 or Mini-4 multi-zone amplifiers.

Amplifier Zones

Six separate amplifiers independent yet integrated control.

Each zone has controls for bass, treble, balance, loudness, gain, mono and maximum volume limiting – useful for protecting connected speakers.

Amplifiers are rated 55 Watts into 8 ohm loads, and 75 Watts into 4 ohm loads with < 1% THD.

Power On Volume

Each Zone may be set to a specific volume level at Power ON.

Preamplifier Zones

Two separate preamplifiers with up to 3.5V_{RMS} output level (+14dB gain).

Each zone has controls for bass, treble, balance, loudness, gain, mono and maximum volume limiting. In addition each zone has a low pass filter that when selected only passes low frequency audio for driving Active Subwoofers.

When the low pass filter is selected the Tone and loudness controls are defeated.

Thermal Control

There are two progressive levels of thermal control:

- The amplifier volume is reduced 20dB.
- The amplifiers are shutdown until the temperature reduces below the first level.

Care should be taken to ensure adequate ventilation – see “Safety instructions” on page 4

Amplifier ON Status – “Amp-On”

Each zone has AMP-ON status: 12VDC OUT on the rear panel connector: (1, 2, 3, 4, 5, 6, 7, 8). The ‘AMP ON’ output’s are protected against shorts.

96 Zones

There are 96 zones of possible control.

On an AX-1250 amplifier each zone must be different, however in a multiple amplifier stack same zone amplifiers are possible – they simply mimic every parameter.

SECTION 2 - Introduction; Features

Zone Linking

A zone may be programmed to link multiple zones. Zone linking ties the source selection together. It may also tie the volume, and standby. This is useful for closely coupled audio areas where it is advantageous to have different volume control but the same source, or the same volume with separate standby control. Zone linking is setup either via the front panel user interface, Web application or ADP program.

Web App / Ethernet, USB and IR control

The AX-1250 amplifier is controlled, monitored and programmed via Ethernet or the rear panel USB.

An AX-1250 amplifier may receive IR directly from the front panel receiver or via the eight 'Controller' connections.

There are zone specific IR commands and also a set of global IR commands.

The commands are: ON, OFF, Standby (toggling), Mute, Volume Up, Volume Down, Source Selects, On with Source Specific commands.

The Global commands also include PRESET1 – PRESET 14, Alarm Enable, Alarm OFF, & 5 minute Sleep.

IR Emitter Ports

There are 10 Buffered IR emitter Ports. Ports 1 – 8 have IR routing, and are intended to control specific input source components. Two IR ports 9 & 10 are the sum of all IR sources; these control the 'All' zone source components.

Presets and Paging

There are 14 amplifier presets and two page presets.

Presets 1 - 14 are momentary and cause the amplifier to go to a predetermined setup, i.e. standby, volume & source selection.

The presets may also be programmed with event scheduling, and are used by the alarm clock.

The 'Page Preset' mode is for paging applications and is invoked by a contact closure between the 0V and PG1 or PG2 terminals.

The contact closure must have an external power source i.e. a 12 – 24V AC/DC powered door bell.

When the contact closure is released (power sensed across PG – 0V terminals) the amplifier zones return to their previous states.

PG1 is always assigned to the Page Preset.

PG2 may be assigned to any one of the 15 available Presets.

Door Bell

Up to 10 seconds of 44.1 KHz 16 Bit stereo sounds may be generated as part of a page preset.

Suitable 'wav' files are uploaded to the unit using the ADP program.

Real Time Clock

The AX-1250 amplifier is equipped with a real time clock, and must have internet access to set synchronize the time with an internet time server.

The amplifier may be set up to function as an Alarm clock, so that at 6.30am in the morning 5 days a week, the master bedroom zone could be made to turn on, select tuner, and go to a specific volume. Multiple Alarms are feasible (max of 14) however the Alarm Enable & OFF commands act upon all programmed Alarms.

The Clock automatically compensates for daylight saving.

Power Failure Restoration

After an AC power outage the AX-1250 amplifier restores its settings to the pre-interrupted state. All internal settings are stored in non-volatile memory.

Restore Defaults

The AX-1250 amplifier may be readily set to the default settings.

Restoring Defaults clears all memory and resets the zone allocations to zones 1 – 8.

Setup Lockout

Locks access to the System Setup and More menus where installation critical adjustments can be made.

Password = 1396

Firmware Upgradable

The AX-1250 amplifier may be updated with the latest operational firmware by either Internet download or by using rear panel USB and ADP program.

SECTION 2 - Introduction; Front Panel Guide



1 Front Panel
Solid Aluminium front Panel

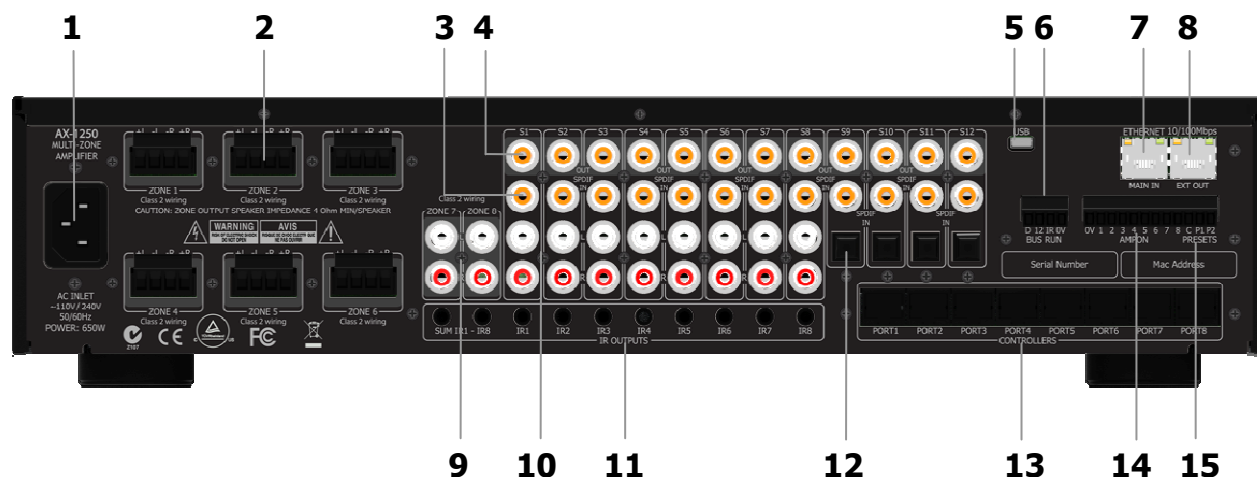
2 Infra-Red Receiver
Receiver for front panel IR control – Used only for amplifier control, not IR pass through.

3 Power Indicator
The power indicator glows blue whenever AC power is applied.

4 2.4" Colour LCD Touch Panel display
LCD Touch Panel display for menu guided control and programming. The display is dimmed to "Off" after 15 minutes of inactivity.

5 Chassis Feet
Set high enough to provide unrestricted air-flow through the chassis for convection cooling.

SECTION 2 - Introduction; Rear Panel Guide



- 1 AC Inlet**
IEC socket.
- 2 Speaker Terminals**
Plug in terminal clamp connectors accept 1.5mm² speaker wires.
- 3 Coax Digital Input Terminals**
Coax digital inputs.
- 4 Coax Digital Source Output Terminals**
Coax digital outputs for expansion to further amplifier zones.
- 5 USB for programming**
USB mini B socket for programming and firmware updates.
- 6 Bus Run Controller Interface**
Legacy 'BUS RUN' port (4 way terminal block).
- 7 Ethernet Port – MAIN IN**
MAIN IN is 10/100 Base T primary Ethernet port for connection to the Home network Router or switch.
- 8 Ethernet Port – EXT OUT**
EXT OUT is 10/100 Base T secondary port for connection to another AX-1250's 'MAIN IN' Ethernet Port.
- 9 Zone Preamplifier Outputs**
Zone 7 & Zone 8 analog audio L/R outputs.
- 10 Analog Input Terminals**
Source S1 – S8 analog audio L/R inputs.
- 11 IR Emitter Ports**
3.5mm mono jacks.
IR1 and IR8 are used to control specific source equipment, where each IR port may be assigned to a specific Controller(s).
IR9 & IR10 are used to control source equipment common to all zones. These ports output the combined IR1 – IR8 infra-red.
- 12 Optical Digital Inputs**
Optical digital inputs.
- 13 Controller Interface**
For connection to keypads and IR receivers.
8 controller interface ports - RJ45 sockets.
- 14 AMP ON Control**
AMP-ON 1 - 8 output 12VDC when Zone is ON.
- 15 PRESETS – Door Bell**
12 – 24V AC/DC powered doorbell trigger terminals.

SECTION 3 – Installation; Typical Configuration

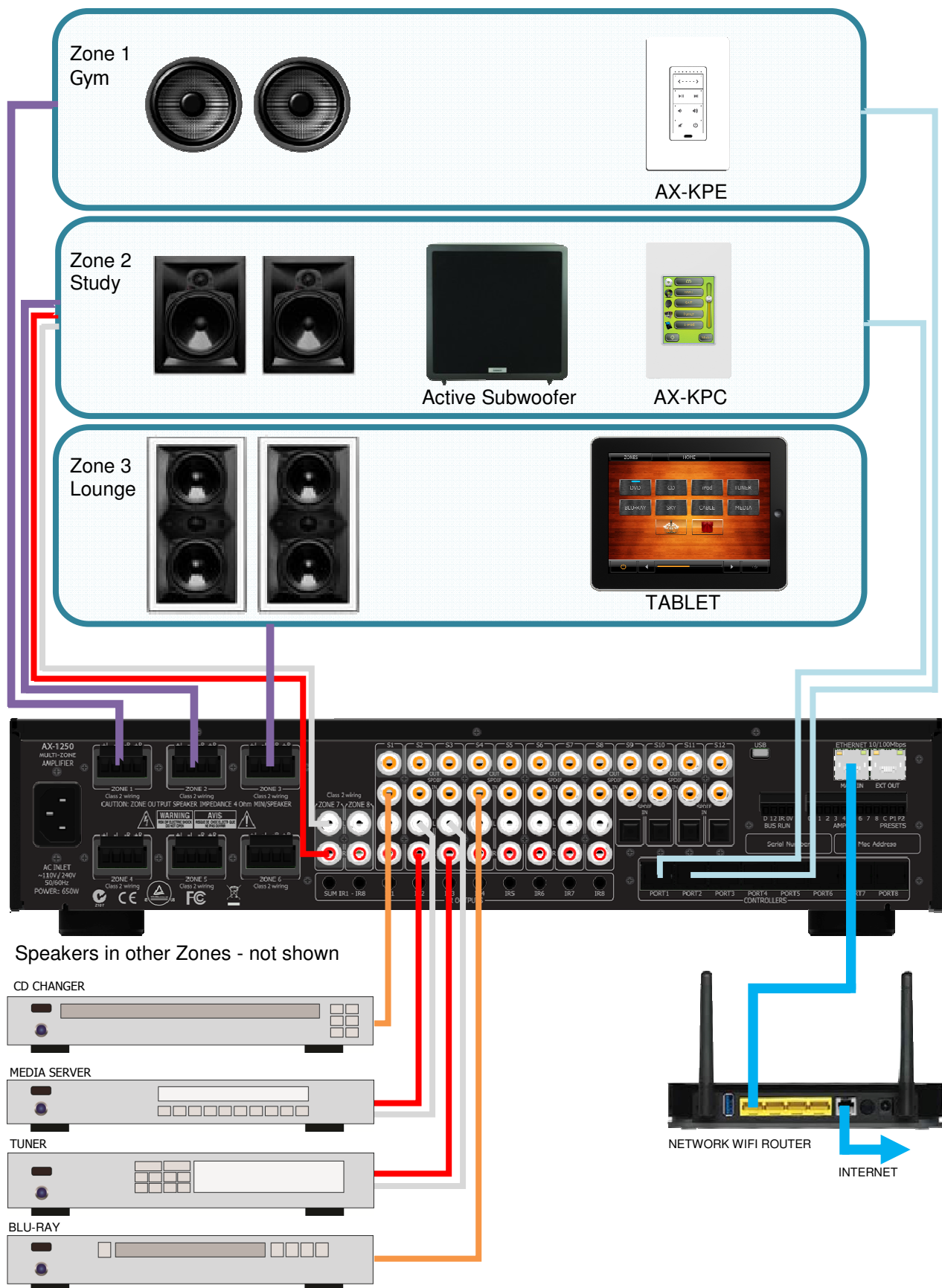


FIG 1

SECTION 3 - Typical System Configuration

FIG 1 depicts a typical configuration where the AX-1250 amplifier is providing audio into six of the possible eight listening zones. Only three of the Zones are depicted.

Each zone consists of a room with a pair of speakers and a suitable controller.

Each zone may be listening to any of the connected sources: Blu-ray, Tuner, Media server, CD changer etc.

Controllers

Each zone has a specific control requirement.
Choose controllers that best suit the application.

- Zone 1 – The Gym: Keypad with IR receiver
- Zone 2 – The Study: Keypad
- Zone 3 – The Lounge: Tablet

The Axiom Keypad's may be plugged into any of the eight Controller ports.

Source control IR emitters are plugged into the IR Ports. There are ten IR ports: IR1 - IR8, and IR9 & IR10.

IR 1 – IR8 route source specific IR signals from connected controllers, while IR9 & IR10 output the common IR or the sum of all received IR signals. These Ports may be used for source equipment that is common to all zones.

When controlling the AX-1250 using an iPad or Android tablet, the AX-1250 must be connected to a WIFI enabled Ethernet router and the Web Tablet browser must be directed to the AX-1250's IP Address. The AX-1250's WEB application also provides source control functionality.

The AX-1250 can store and regenerate source equipment IR commands, and be directed to output the IR commands to a specific IR output port as required. This advanced feature is programmed using the Axiom Design Portal program (ADP)

Speakers

Speakers in each zone are connected to the amplifier by "Home Run" speaker cables.

Source Equipment

The AX-1250 amplifier has eight stereo RCA audio inputs for connecting to source equipment. These input channels also feature Coax Digital inputs. If a signal is present on the Digital input it takes precedence over the Analog input. There are four additional Digital only input channels featuring both coax and Optical inputs.

A zone may select from any of the connected sources.

Someone in the Lounge may be listening to the Tuner while another in the Study may be listening to music from the media server.

All eight zones may select the same source, in such circumstances there is a possibility that all eight zones may be trying to control that source – not always desirable – so a system should be well planned and where appropriate additional source equipment installed.

Preamplifier Zone Outputs

The preamplifier output zones are completely independent of the Digital amplifier zones. These can optionally be used for locations where a high or lower power amplifier / speaker would be required. A preamplifier Zone may be Zone linked to one of the Digital amplifier zones and provide line level outputs to a subwoofer. This is what is shown in the Study, where the preamplifier zone 7 provides the active subwoofers line level. In this case Zone 7 must be Zone Linked to Zone 2 and Zone linking options for Link Volume and Link Standby have been selected. The zone 7 EQ must have a low pass filter frequency selected.

SECTION 3 - Multiple Amplifier Stacks

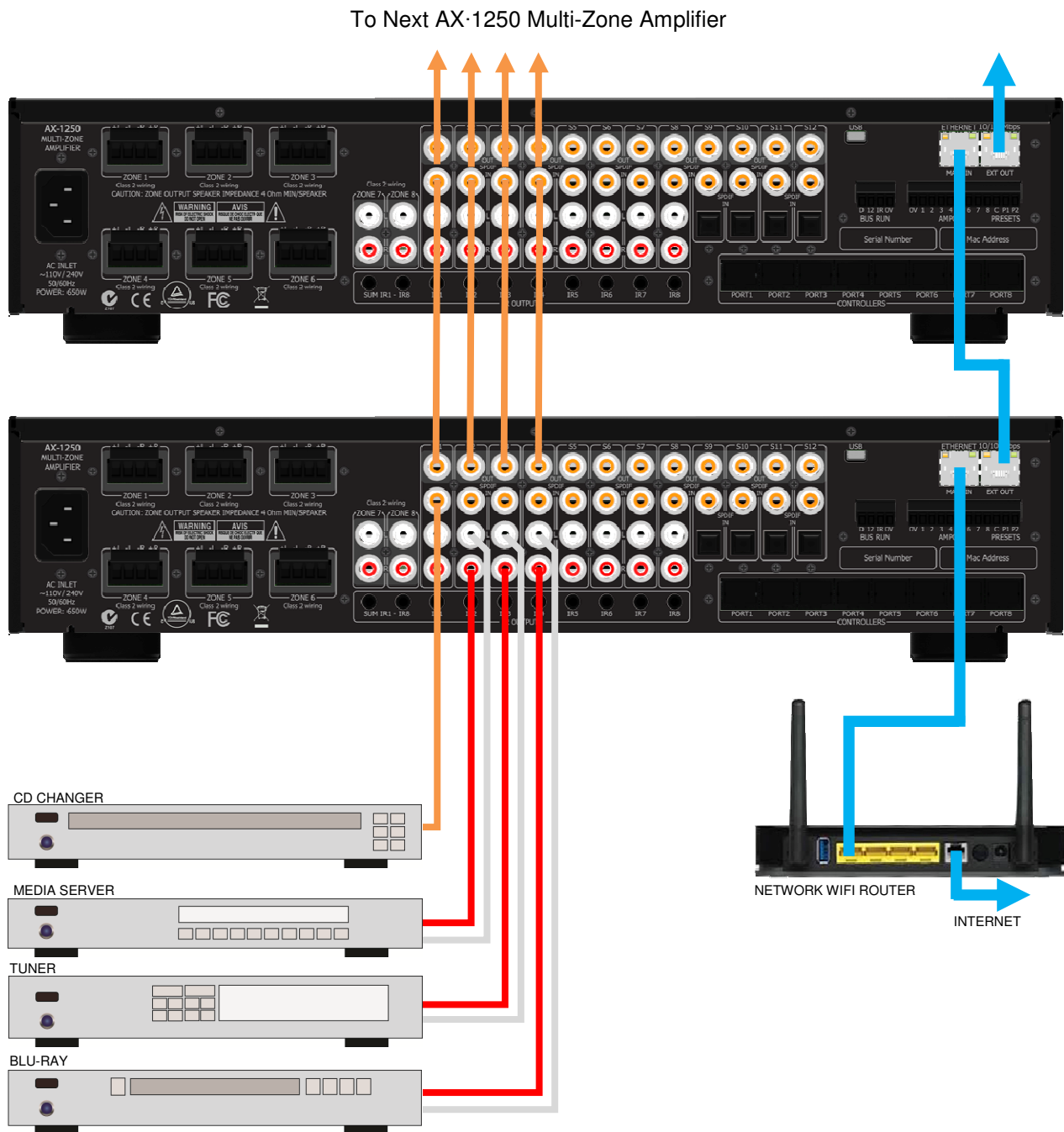


FIG 2

In large installations where multiple AX-1250 amplifiers are required Ethernet conveys amplifier control, and link to other Media sources if connected to the Home network Router or Switch.

FIG 2 shows a stack of AX-1250's with Source connections to first amplifier where they are converted to Digital audio, buffered and sent to the next amplifier in the stack. Use good quality Coax Digital Shielded RCA cables for the interconnection, cables should be <3m (4ft).

The maximum recommended expansion is eight units.

The Ethernet can be connected as shown. However if an Ethernet router or switch is local and has enough ports then connect each AX-1250 to the router / switch directly.

SECTION 3 - Controller Wiring

The AX-1250 is packed with control options:

- **USB:**
Intended for initial installation Programming or firmware update.
Not intended for permanent connection to a PC or other control system.
- **ETHERNET:** 100BaseT.
When connecting to a network router or switch – use the MAIN IN Port.
The EXT OUT Port may be used for conveying Ethernet to other local amplifiers or controllers.
- **CONTROLLERS:**
Conveys +12VDC, IR and Data between the AX-1250 and Axiom keypad controllers, connected using CAT5 cables.
The Ports may be setup to be Zone assigned i.e. A Controller connected to Port 1 controls only Zone 1 etc.
- **BUS RUN:**
(Legacy) Port conveys +12VDC, IR & Data to remotely connected IR controllers.
- **AMPON:**
Zone ON is +12VDC 100mA trigger output.
- **PRESETS:**
P1 and P2 Inputs are active low (default).
However this can be swapped in the settings.
Default settings: Use a 'Push to Break' switch.
Swapped settings: Use a 'Push to make' switch.
The BUS RUN 0V and 12V can be connected as shown in FIG 3.

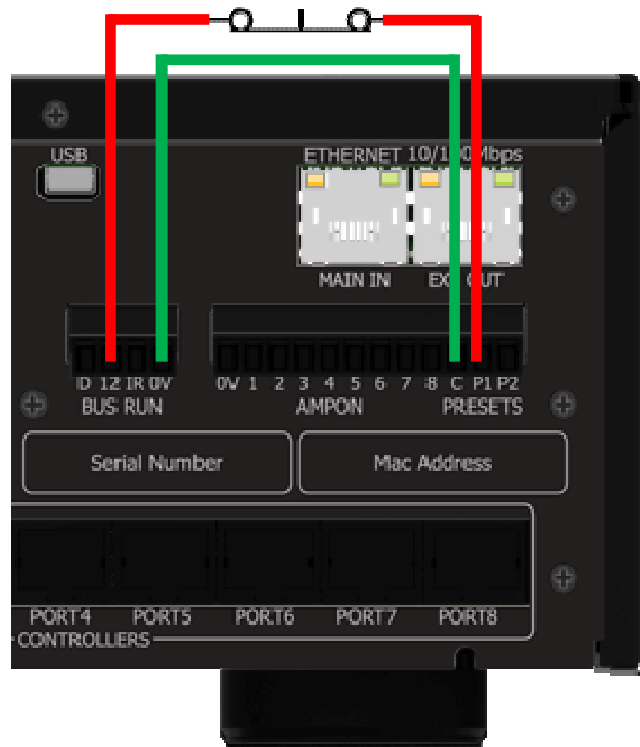


FIG 3

SECTION 4 - Menu Navigation: User

Front Panel User Interface:

The AX-1250 amplifier has a 2.4" Touch Panel LCD colour display which is used for control and accessing status of all amplifier functions.

After 2 minutes of inactivity the LCD dims to 50% brightness, after a further 15 minutes it dims OFF.

A Touch on the screen will restore the LCD to full brightness, enabling touch control.

Home Page

The home page provides access to the Amplifier zones: Zone1 - Zone 8. Selecting a Zone opens its control page. The Blue indicators in the buttons provide zone standby status.

The first six zones are the amplifier outputs, the last two zones are the preamplifier outputs.



Zone Control Page

At the top of the control page the Zone name is displayed.

The 'Zones' button is the Home Page return.

The Control page provides status & control for the selected Zones:

- Standby
- Volume Slider
- Volume Up / Down with Digit readout
- Source Selects S1 – S4
- Mute

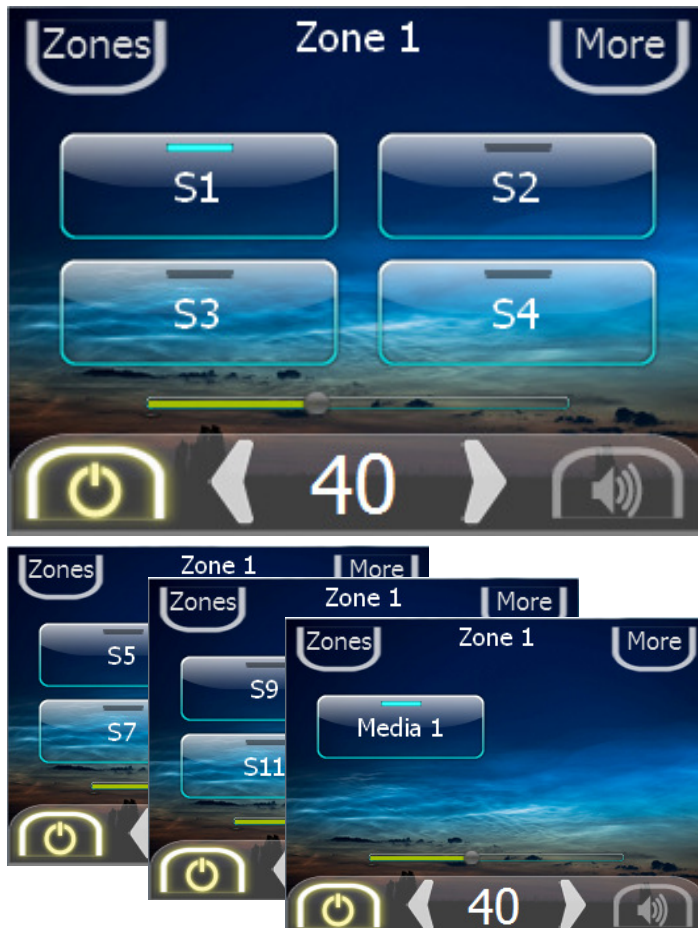
The selected source has an illuminated blue indicator.

The Volume slider changes colour as the volume increases, i.e. Green – Yellow – Red.

Selecting the 'More' button will display the next source pages: S5 – S8, S9 – S12 & then the conditional source pages will be displayed – if connected – otherwise the source selection loops back to the Start, i.e. S1 – S4.

Conditional Sources are:

Media Player: Ethernet connection to server
Internet Radio: Tune in – Internet connection
Streamed sources linked to other networked Axium amplifiers.



SECTION 4 - Menu Navigation: User

More Functions Page

When the “More” button is pressed and held for >1second a More functions Page opens.

There are four Zone specific functions that when selected navigate to setup pages:

- EQ
- Levels
- Zones
- Delay

There is also a System function which is not zone specific. The System page is covered later. Note System functions may be accessed via any of the Zones ‘More functions’ pages.

The Back arrow button returns to the Zone Control Page.

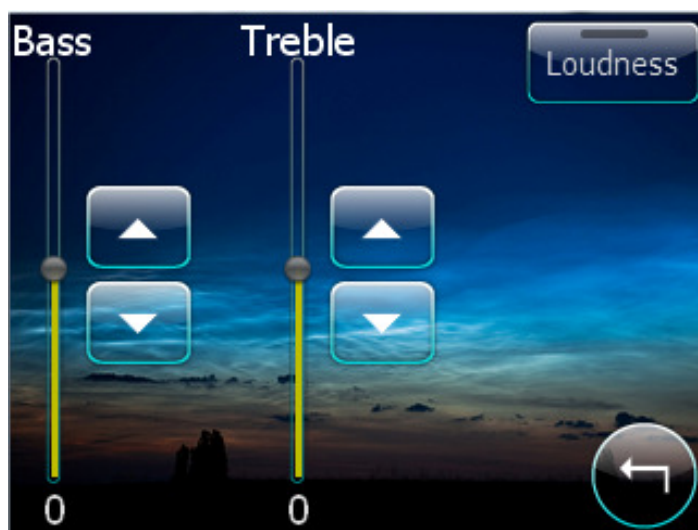


EQ Setup Page

The EQ setup page provides status & control for the selected Zones:

- Bass \pm 12dB using Slider or Up/Down button
- Treble \pm 12dB using slider or Up/Down Button
- Loudness Control – toggle.

The Back arrow button returns to the More Functions Page.



The Preamplifier zones have an additional ‘Low pass filter’ button on the EQ setup page. When selected a ‘Low Pass Filter’ page opens.

There are four low pass filter options:

- 80Hz
- 120Hz
- 180Hz
- 240Hz.

Select the setting most appropriate for the connected Sub woofer.

When a low pass filter is selected the Tone and loudness controls are defeated.

The Back arrow button returns to the More Functions Page.



SECTION 4 - Menu Navigation: User

Levels Setup Page

The Levels setup page provides status & control for the selected zones:

- Maximum Volume Limiting – can be reduced over the range from 100 to the minimum of 2 using the slider or Up/Down buttons.
- Gain – can be adjusted $\pm 12\text{dB}$ in 2dB steps using the slider or Up/Down buttons
- Mono – if selected will combine Left and Right signals.

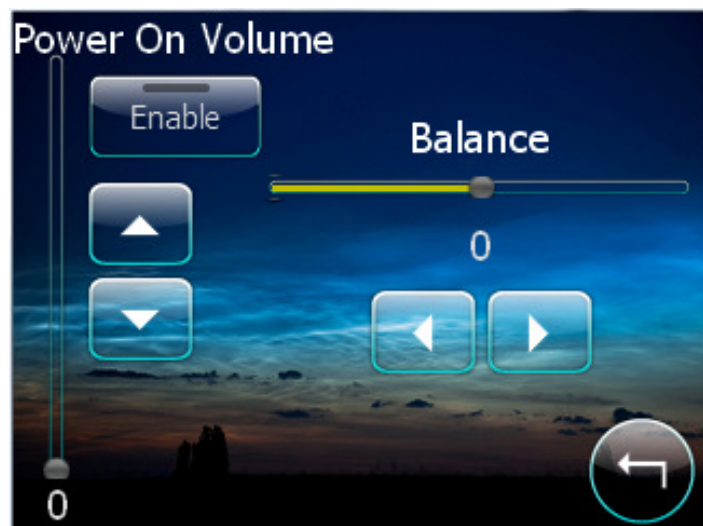
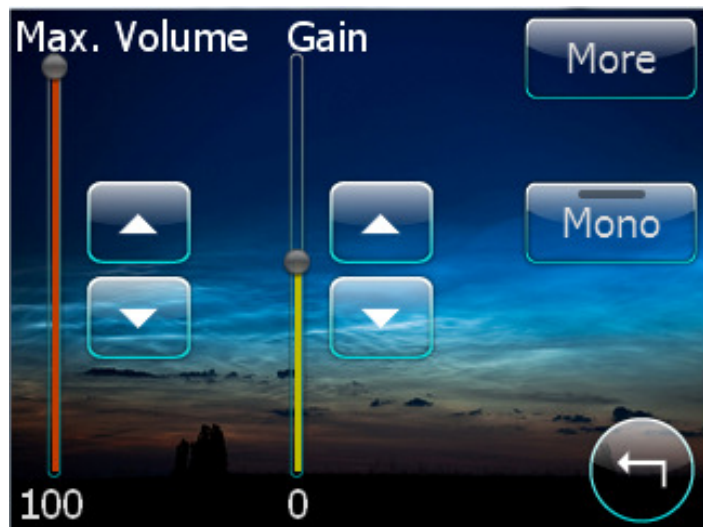
The 'More' button navigates to a further Levels setup page

The Back arrow button returns to the More Functions Page.

The Levels setup page 2 provides status & control for the selected zones:

- Balance - $\pm 20\text{dB}$ of adjustment in 2 dB steps can be made using the slider or Left/Right buttons.
- Power On Volume – Volume level can be adjusted over the full Volume range using the Slider or Up/Down buttons. The function is enabled when the 'Enable' button is selected.

The Back arrow button returns to the Levels Setup Page.



Delay Setup Page

The Delay setup page provides a single slider and Up/Down control for adjusting the Zones Audio Delay time. It may be adjusted over the range from 0 – 600ms in 5ms steps

The S1 – S12 buttons may be selected to be included or de-selected to be excluded from the delay group.

The Back arrow button returns to the More Functions Page.



SECTION 4 - Menu Navigation: User

Zones Setup Page

Zones setup page provides the means to set the Zone coding.

There are also Buttons for Zone Linking setup and Zone Name editing.

To change the Zone allocation simply make the adjustment using the Up/Down button.

The Back arrow button returns to the More Functions Page.

To Name the Zone select 'Edit'
The Zone Name Page opens:

To setup the Zone Linking select the 'Zone Linking' button:



Zone Name Page

Use the keypad to enter the Name text,
The limit is 15 regular ASCII characters.

Once entered, select the back arrow to return to the Zones Setup Page.



Zone Linking Page

The zone may be linked with any other zone or zones. Make the selection by scrolling through the zone list and choosing OK.

The Type of Zone Linking:
Link Volume or Link Standby may be selected.
When Link volume is selected the linked zone(s) will track the source and volume settings.
When Link Standby is selected the Linked Zone(s) will behave as if they are the same zone.

Once entered, select the back arrow to return to the Zones Setup Page.

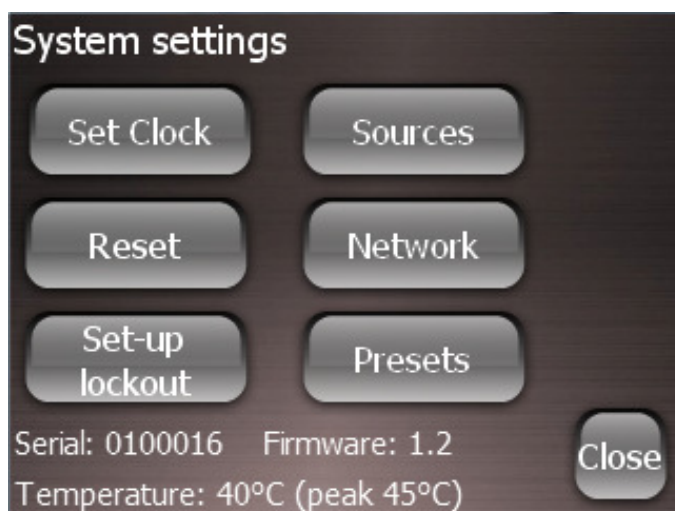


SECTION 4 - Menu Navigation: System

System Page

The System settings page opens when the System button is selected in any of the 'More function pages' for longer than 5 seconds. The System settings are Zone independent functions. The page displays the internal amplifier heatsink temperature.

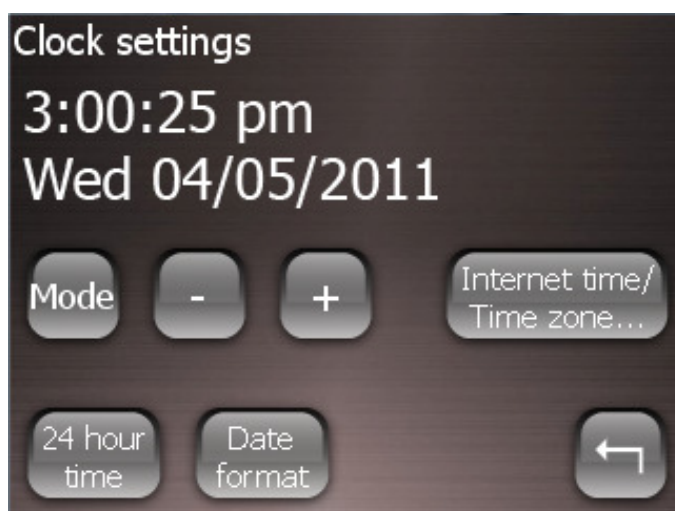
Select the Close button to return to the Zone Page.



Set Clock Page

The clocks time and time zone are automatically synchronised when connected to the internet or to a PC using the USB connection. However the clock settings and how the clock is displayed may be adjusted.

Select the Back arrow to return to the System settings Page.

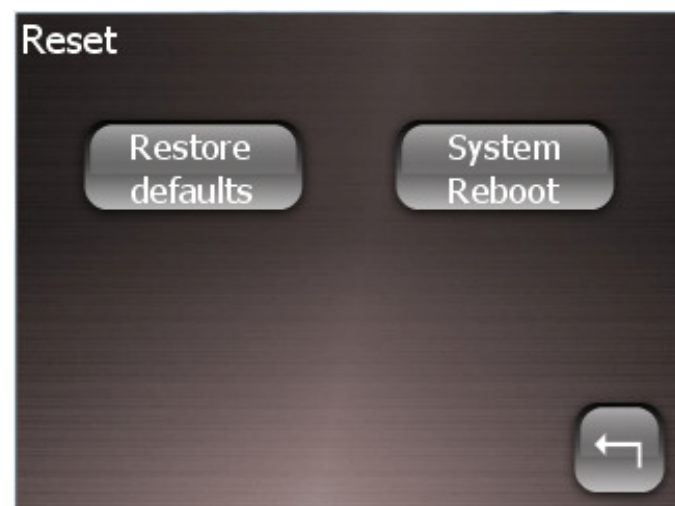


Restore Defaults Page

To fully restore the AX-1250 to factory defaults, select 'Restore Defaults' then select 'Yes', or to return to previous menu select 'No'. Factory defaults resets the zone allocations back to 1 - 8 Clears all settings like Zone and Source Names, Presets, Zone linking, gain adjustments, Maximum volume limits, Bass, Treble and Loudness etc.

Alternatively to reboot the system select the 'System Reboot' button, then select 'Yes', or to return to previous menu select 'No'.

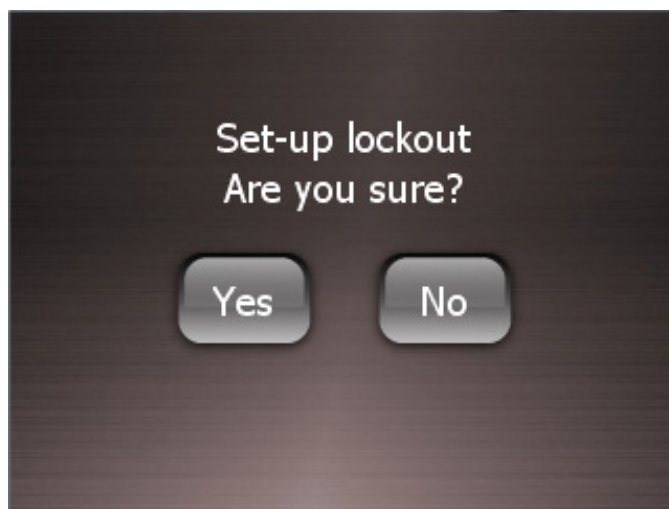
Select the Back arrow to return to the System settings Page.



SECTION 4 - Menu Navigation: System

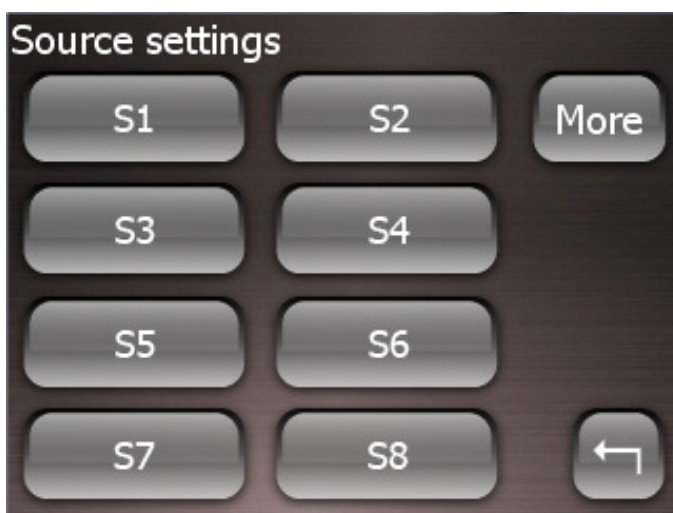
Setup lockout Page

You may lock the user out from making critical installation setting changes by enabling the Setup lockout. Once set the user can not access the System Settings menus. Select 'Yes' to enable this option, or 'No' to return to the previous menu.



Sources settings Page

Select the Source to be adjusted
From S1 – S8 or select sources S9 –S12 using the 'More' button.



Or select the Back arrow to return to the System settings Page.

A Source may be named, by using the phone Keypad.
The analog input gain can be adjusted using the Gain slider or Up / Down buttons.
Gain is used to match the analog input levels to the Digital sources.
Some Analog sources have large variation in output levels. The 0dB default setting is suitable for connection to high output devices like DVD players, while the standard level (1Vrms) is achieved by setting the gain to +6dB.
The Gain slider - and source button - will flash red if the gain is set to high and distortion is detected.
Select the Back arrow to return to the System settings Page.

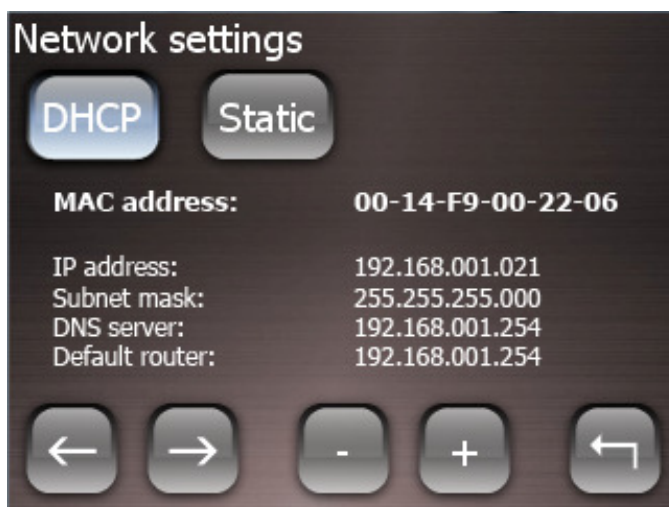


SECTION 4 - Menu Navigation: System

Network settings Page

Network setting always defaults to DHCP. The connected Ethernet router's allocated IP address can be viewed. If for some reason a Static IP is required the selection can be made, and settings adjusted using the back and forward arrow and plus minus keys.

Select the Back arrow to return to the System settings Page.



Presets Page

There are 14 possible presets. It is easier to set up the presets using a connected PC running the Axiom Design Portal program. However Presets can be setup using the Menu navigation. The first 8 presets are accessible on the opening page. To access the remaining presets select the 'More' button

Select the Back arrow to return to the System settings Page.



Presets 9 – 14 and the Page Preset may be accessed.

Selecting 'More' returns to the previous page displaying Presets 1 – 8.

'Clear Alarms' turns off all alarm settings. These can only be re-enabled by resetting the alarms in the preset.

Select the Back arrow to return to the System settings Page.



SECTION 4 - Menu Navigation: System

This page is displayed after selecting a Preset. The Preset may be assigned the Page Preset 2 function. This is where the Preset is invoked when a PG2 contact closure is made on the rear panel. Once enabled it cannot be disabled unless re-assigned to a different Preset, or by Restore default.

Select 'Set up' to enable the Preset Setup Mode. An Axiom splash page is displayed followed by the Home Page. When in the Preset Setup mode Navigate through all the zones and make appropriate changes to the standby, volume and source selections etc. Once all settings have been adjusted, navigate back to the Preset: More/System setup/Preset, Select Yes to complete and exit the Setup Preset Mode, or No if you want to continue further settings changes.

The 'Set alarm' button above navigates to the Alarm Preset page.

The Alarm time and days that it is to be activated may be selected.

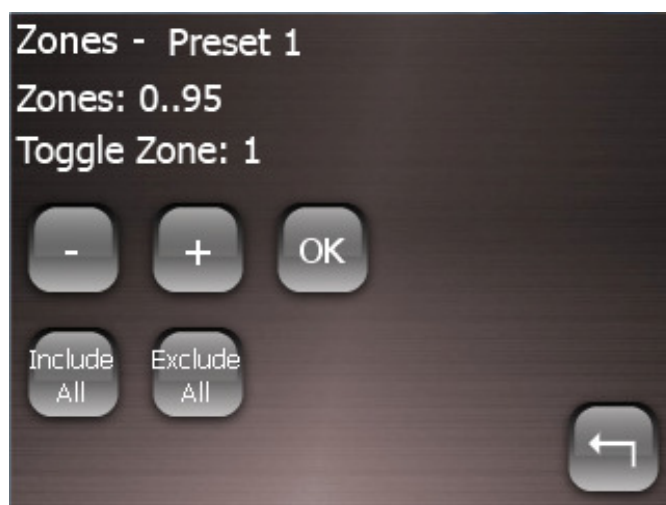
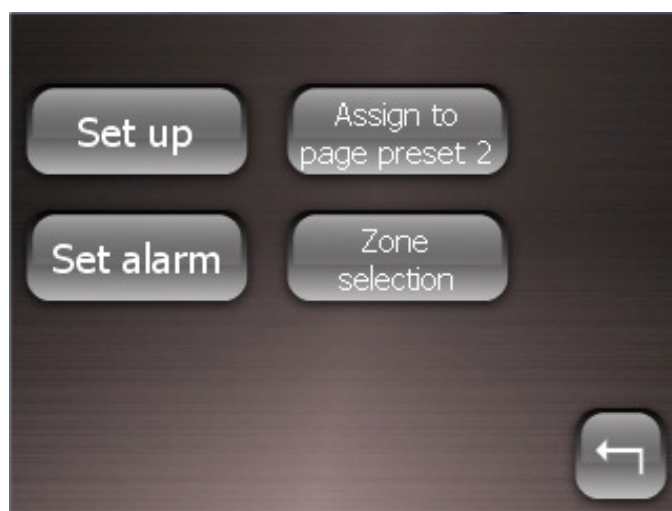
The Alarm is set only if the Enable is set.

Select the Back arrow to return to the System settings Page.

The 'Zone selection' button above navigates to the Zones allocation page.

Presets are system wide functions, and other connected Axiom amplifier zones can be included using the 'Include All' or excluded using the 'Exclude All' buttons. Alternatively each zone can be navigated through using the plus and minus buttons, and if to be included the OK button is selected.

Select the Back arrow to return to the System settings Page.



SECTION 5 - WEB Application: Monitor and Control

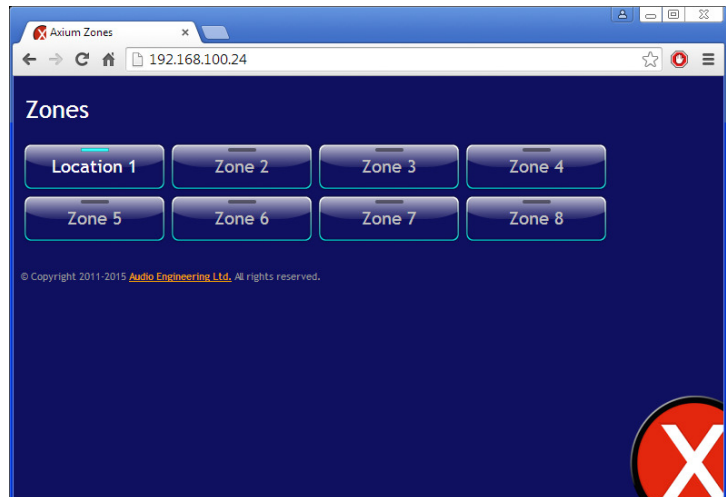
The Axiom AX-1250 amplifier has a WEB application which may be used for configuration, control and monitoring of amplifier functions.

In a Browser enter either the connected amplifiers default NetBIOS name or the IP address which is assigned by the connected Router. i.e. <http://AX1250-00016> or <http://192.168.100.24>

Home Page

The home page provides access to the Amplifier Zones.
Selecting a Zone opens its control page.

The first Zone defaults to the name Location 1, all other zones if un-named are listed as Zone 2, Zone 3 etc.



Zone Control Page

The Zone Control Page provides status & control of:

- Standby
- Mute
- Volume: Slider or Up/Down button with readout.
- Source Selection: S1 – S12, Media 1 and any Conditional sources
- If Media 1 is the selected Source; then Media Navigation and Player functions are displayed.

A blue button indicates selection or ON status.

Because of Web browser limitations, Slider setting changes are made using a positional touch on the slider

The 'Zones' button is the Home Page return.
The 'Settings' button opens the Settings page.

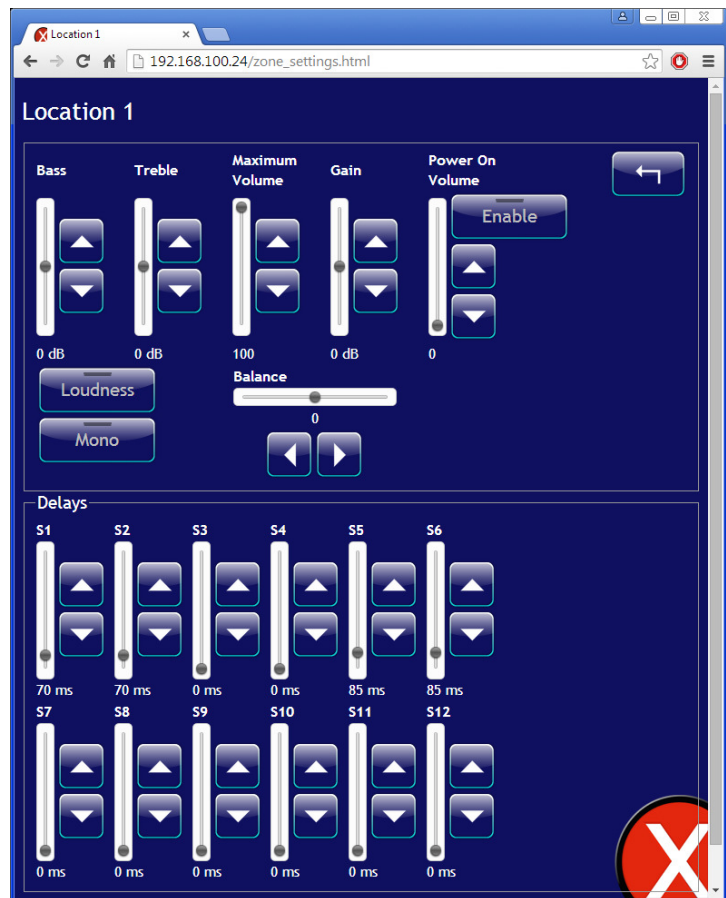


SECTION 5 - WEB Application: Monitor and Control

Zone Settings Page

The Zone Settings Page provides status & control of:

- Bass: Slider or Up/Down button
- Treble: Slider or Up/Down button
- Loudness
- Mono
- Balance: Slider or Left/Right button
- Gain: Slider or Up/Down button
- Maximum Volume Limit: Slider or Up/Down button
- Power On Volume: Enable with Slider or Up/Down button
- Delays for each Source: S1 – S12: Slider or Up/Down button



The Back arrow button returns to the Zone Control Page.

SECTION 5 - WEB Application: Configuration

To access configuration pages, in the browser enter either the NetBIOS name or IP address with a config extension. i.e. <http://192.168.100.24/config>

There are 5 configurations pages and a Log page that may be selected.

Device Configuration Page

The Device Configuration page provides

Device information:

- Model
- Unit ID
- Manufacture Date
- Installed Firmware Version
- Temperature of amplifier heatsink
- IP address
- MAC address.
- Amplifiers assigned Network name

Wired Ethernet:

The Network configuration is DHCP by default. A Static IP address may be selected; IP settings will appear in a drop-down.

Date & Time:

Configure the NTP server and if/when Daylight Saving time is observed.

If settings have been changed they do not take effect until 'Save Changes' button has been selected.

Device Settings

Device Information

Model	AX-802
Unit ID	100016
Manufacture Date	26/5/2015
Firmware Version	1.2 beta 1
Temperature	33°C (peak 35°C)
IP Address	192.168.100.24
MAC Address	00:50:C2:A8:A2:73

Wired Ethernet - 192.168.100.24

Amp Network Name: AX8021

Connection: Automatic Configuration (DHCP)

KNX Interface: (Disabled)

Date and Time

Date: 7/21/2015, 9:33:16 AM

NTP Server: oceania.pool.ntp.org

Observe DST: ☒

DST begins: Last Sunday of September

DST ends: First Sunday of April

Save Changes Undo Changes

Sources Configuration Page

This allows you to rename the audio Sources on the amplifier – the names will appear on connected keypads and Tablets or Mobiles running the Axium Application.

Source names have a maximum of 15 characters (less when using exotic characters).

The gain of each analog source may also be adjusted using the Left/right buttons. These changes happen live.

If settings have been changed, they must be Saved using the "Save Changes" button for the changes to be permanent.

Source Settings

Physical Source	Source Name [click name to edit]	Source Gain
Source 1	S1	0dB
Source 2	S2	0dB
Source 3	S3	0dB
Source 4	S4	0dB
Source 5	S5	0dB
Source 6	S6	0dB
Source 7	S7	0dB
Source 8	S8	0dB
Source 9	S9	0dB
Source 10	S10	0dB
Source 11	S11	0dB
Source 12	S12	0dB

Save Changes Undo Changes

SECTION 5 - WEB Application: Configuration

Zones Configuration Page

All Axiom amplifiers on the network are listed. The MAC address is displayed to show which unit is being configured. Axiom amplifiers have a MAC address label fixed either to rear panel or cover.

Zone Settings:

The Zone Name may be changed – click the name to edit. Zone names have a maximum of 15 Characters (less when using exotic characters). These names will appear on connected Keypads and Tablets running the Axiom App.

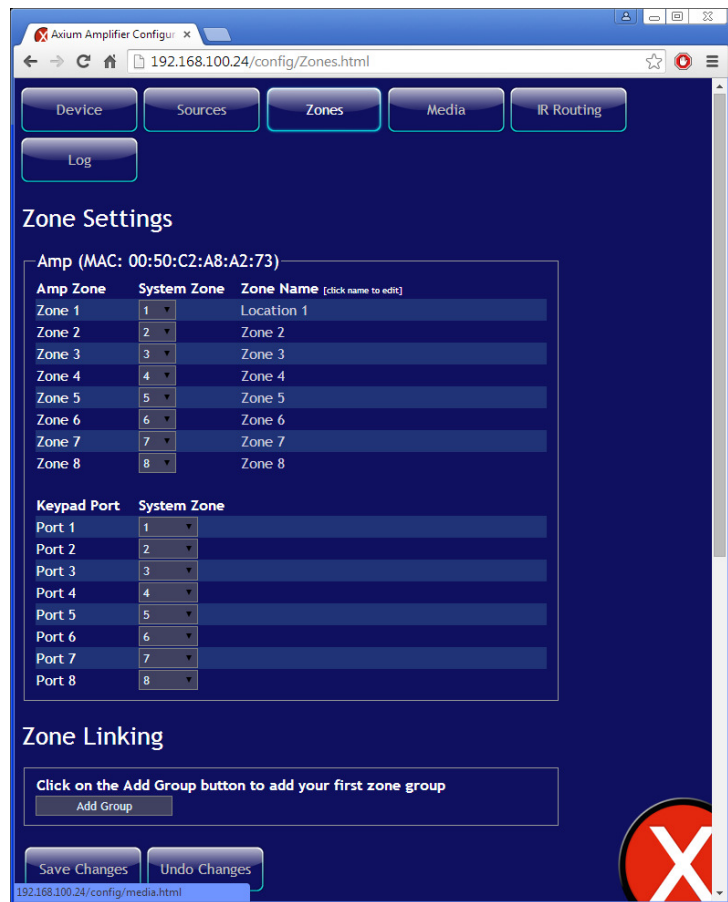
The Devices physical Zones 1- 8 may be configured with a different logical zone or system zones: ranging from 0 – 95.

Each Keypad port can have a zone assigned. This enables source specific IR routing and for keypads that support this feature, the keypad's zone will be automatically assigned depending on its keypad port connection.

Zone Linking:

Zones can be linked together so that the source selection and optionally power and/or volume apply to all zones in the group. There is no limit to the number of zones in a group, but a zone may only be a member of a single group.

'Save Changes' Button must be selected for changes to take effect.



Media Servers Configuration Page

Servers: is the list of network shares where music files are located.

UNC path is in the form `\\server\share` and may also include folder names.

Enter the path where of the connected Network share by clicking the Add button and editing the UNC path name.

Username is generally required and is usually set to 'guest' for shares that are configured without a user.

If a domain is required then the username is entered in the form 'Domain\User'

Password is used when the user has an account with a password.

'Save changes' button must be selected for changes to take effect.



SECTION 5 - WEB Application: Configuration

IR Routing Configuration Page

IR signals received on any one of the IR inputs do not need to be transmitted on every IR output.

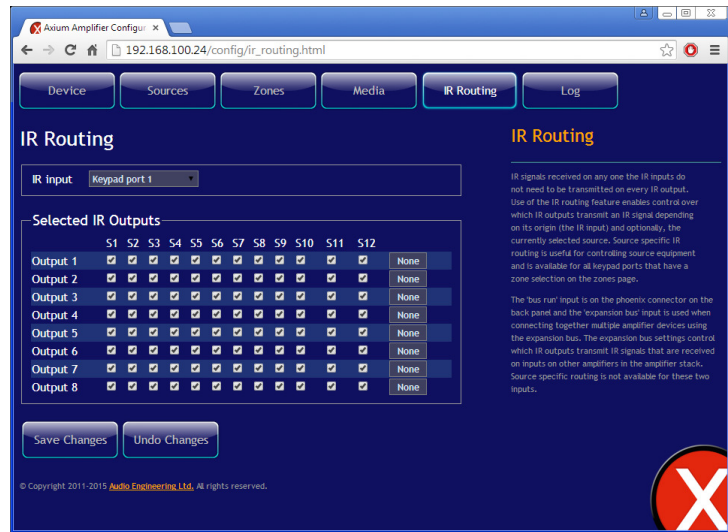
Use of the IR Routing feature enables control over which IR outputs transmit an IR signal depending on its origin and optionally the currently selected source.

Source specific IR routing is useful for controlling source equipment and is available for all keypad ports that have a zone selection on the zones page.

IR input: selects the keypad port to setup IR routing.

Selected IR outputs: Is a table of check boxes that when checked transmits source related IR to specific IR outputs.

Make the required selections, and select the 'Save Changes' button for changes to take effect.

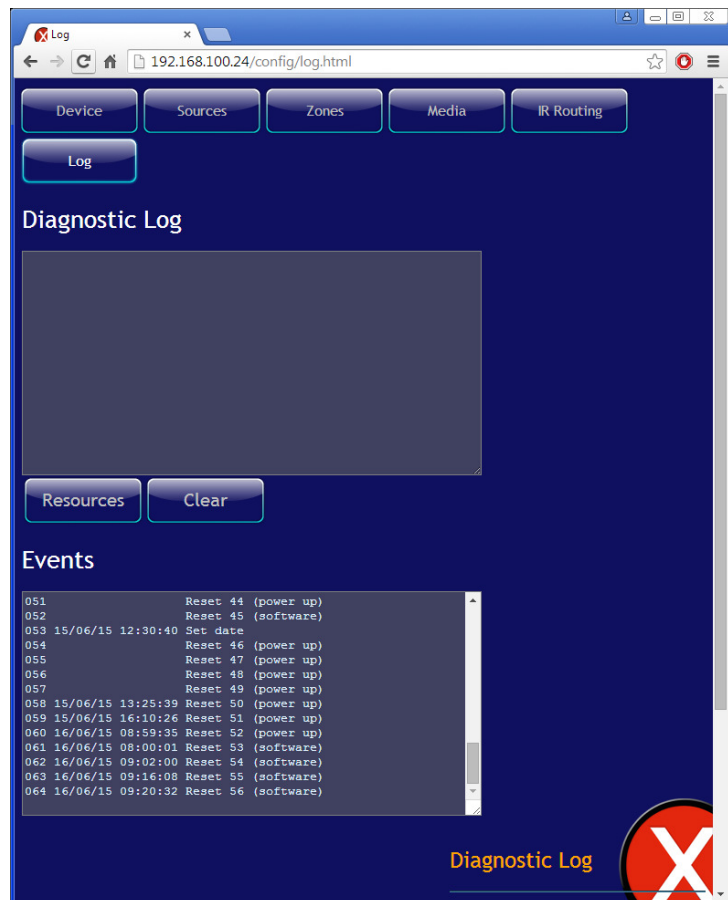


Log Page

Diagnostic Log: Is a useful tool for diagnosing connection issues and possible faults.

This log is not stored in memory – so information is only collected from the current active power cycle.

Events: Non-volatile log of certain parameters like power interruptions, high temperature events, etc



SECTION 6 - Specifications

Amplifier Section

Rated Output Power:	
8 Ω Loads, all channels driven, 1% THD:	55 Watts / channel
4 Ω Loads, all channels driven, 1% THD:	75 Watts / Channel
THD (Total Harmonic Distortion)	<0.1% (50 Watt, 8 Ω load)
Damping Factor (8Ω Load)	10
Speaker Impedance (Z1 – Z6 L/R)	4 Ω - 8 Ω
Analog Input Sensitivity (S1 – S8)	0.75V _{RMS} (Vol 100, Gain 0dB, 55W Output)
Analog Input Impedance (S1 – S8)	22K Ω
Digital input Sensitivity	0dBFS
Preamplifier Output Level (Z7 & Z8)	+14dB
Frequency Response - 48 KHz sample rate:	10 Hz – 22 KHz
- 96 KHz sample rate:	10 Hz – 42 KHz
Tone Control	\pm 12dB, 100 Hz (Bass) \pm 12dB, 10 KHz (Treble)
Signal to Noise Ratio	95dB (IHA-A, 0.75V input / unbalanced)

Interface

IR Output	Ten 3.5mm Jack: IR1 – IR10 current limited to 25mA.
Ethernet	100Base T, MAIN IN and Switch EXT OUT.
USB	One USB mini-B 5 pin
Controller	Eight RJ45 Socket
BUS RUN	One 4 way terminal block (0V, IR, 12V & Data).
Amp On & PG Control	One 10 way terminal plug with Amp ON 1 – 8 and Two Page preset contact closure inputs: PG1 & PG2.

General

Power Supply	110 / 240VAC 50/60 HZ
Power Consumption	650 W
Standby Power Consumption	6W
Dimensions	435 x 90 x 390 mm
Height including feet	105mm
Weight	7Kg

Specifications and features are subject to change without notice.

Acknowledgments – FreeRTOS – uIP

The AX-1250 firmware is based in part on FreeRTOS.org™ V5.0.2 and the uIP TCP/IP stack.

For more information on FreeRTOS.org™ please visit <http://www.freertos.org>.

Source code for FreeRTOS.org™ can be downloaded from their official website.

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