

AmpliPro Home Audio Controller - User Manual

Version: 0.3.5



Device Model: AP-S4Z6

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Quick Start Video:



App Downloads:



2 Safety and Legal

2.1 Safety

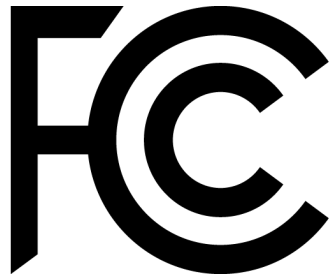


- **WARNING!** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO MOISTURE.
- **CAUTION!** TO REDUCE THE RISK OF ELECTRIC SHOCK, KEEP COVER ON AT ALL TIMES.

IMPORTANT SAFETY INSTRUCTIONS

- Read and retain these instructions for future reference.
- Take heed of all warnings and adhere to all guidelines outlined in this manual.
- Avoid using this unit in close proximity to water.
- Only a dry cloth may be used to clean the exterior surface.
- Utilize canned/compressed air to clean the interior, ensuring the unit is unplugged beforehand. Never remove the top cover of the unit.
- Ensure ventilation openings remain unobstructed and follow manufacturer's installation guidelines.
- Avoid placement near heat sources such as radiators, stoves, or other heat-producing appliances.
- Preserve the grounded safety pin of the plug; if incompatible with your outlet, consult an electrician for replacement.
- Protect the power cord from elastic stress damage, especially at plugs and exits from the unit.
- Avoid modifying or damaging the power cord; keep it away from heat sources and heavy objects.
- Use only attachments and accessories specified by the manufacturer.
- Unplug during lightning storms or extended periods of inactivity.
- Direct all servicing needs to qualified personnel in case of damage or malfunction.
- Operate within specified voltage limits to prevent fire or electric shock.
- Avoid contact with speaker terminals to prevent electric shock.
- Ensure proper grounding; consult an electrician to verify this.
- Ensure stable installation on level surfaces to prevent injury or damage.
- Note that the unit remains partially connected to AC power even when turned off; do not remove the cover.

2.2 FCC Statement



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

- Reorient or relocate the device.
- 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.

3 Overview

AmpliPro™ is a multi-room/-zone home audio controller and amplifier made for whole-home audio systems with many zones. It can play up to 4 simultaneous audio streams (Airplay™, Pandora®, Spotify Connect™, etc.) or sources (RCA inputs), each routed to one or many zones, all of which are configurable in real-time using the mobile apps (see QR codes on the first page of this manual), self-hosted AmpliPi Web App, or the underlying REST API. It is expandable up to 36 zones using AmpliPro Expanders.

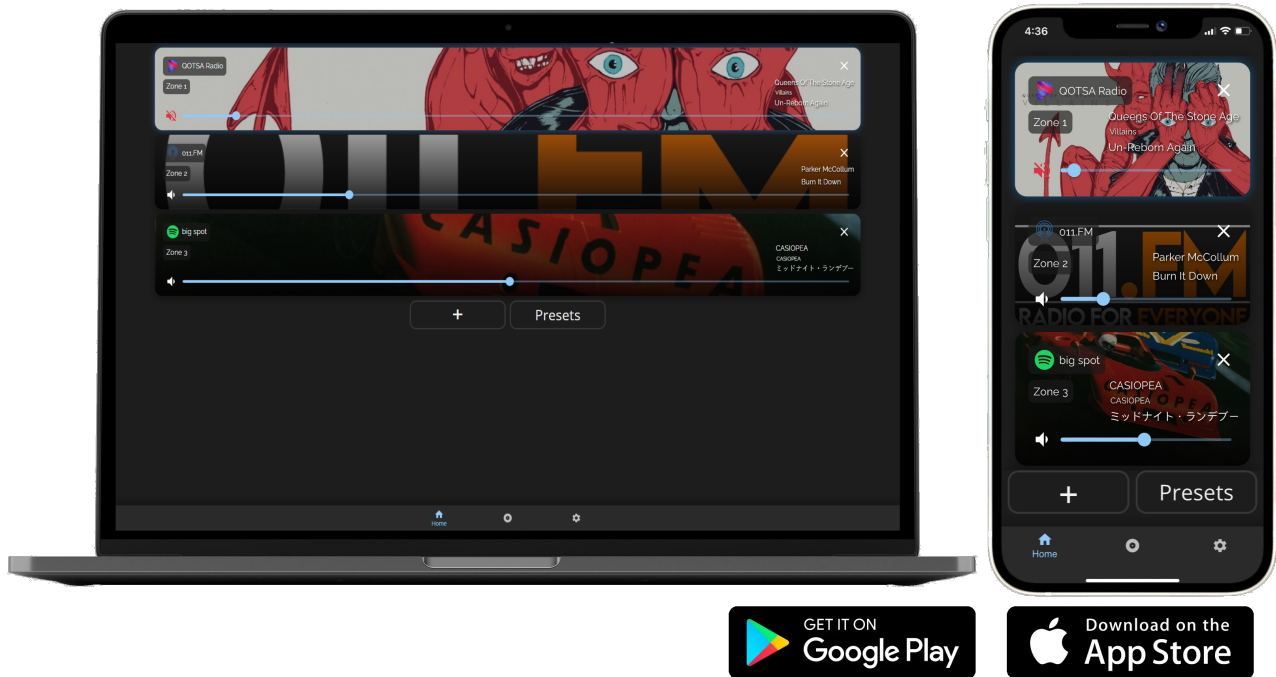
Your AmpliPro controller includes the following components:

- 1 x User Manual
- 1 x AmpliPro Controller
- 1 x Power Cable
- 1 x Ethernet Cable
- 6 x 4-pin Euroblock connectors (for speaker connections)

The following optional accessories are available and can be purchased separately:

- **AmpliPro Wall Panel:** Wall mountable touch panel that can control volume and playback for a zone or group of zones. Also includes two physical switches for light control, intended to replace the light switch in the room it's installed in.
- **AmpliPro Zone Expander:** Expansion unit to add more controllable zones. Up to 5 can be added to an AmpliPro controller for a total of 36 zones.

3.1 App

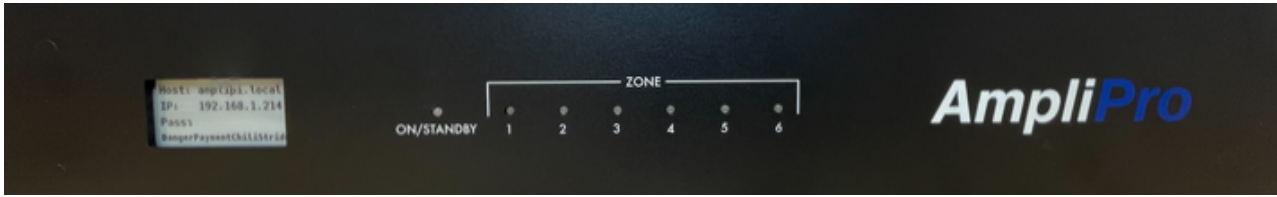


AmpliPro hosts a web app (referred to as "AmpliPi") that can control the system from any PC or mobile phone on the local network. It is designed with the idea that each of the four audio sources could be controlled separately by different people in the house.

There is also a downloadable app for iOS and Android devices, simply search for "AmpliPi" on your respective app distributor, or scan the proper QR code for your device on the Links page at the start of this manual

3.2 Main Controller

3.2.1 Front Panel



1. **DISPLAY:** Displays IP Address, Hostname, and SSH Password.
2. **ON/STANDBY:** Displays the state of the audio controller:
 - Green: The unit is on
 - Red: The unit is on Standby
 - Blinking Red: The unit is updating / booting
3. **ZONE:** Displays the power state of each zone
 - Blue: Zone is on (not muted)
 - None: Zone is off (muted)

3.2.2 Rear Panel



- **POWER:** 115V, or optionally 230V connection. See the installation page for more details.
- **CONTROLLER:**
 - **SERVICE:** USB mini connection for re-imaging the AmpliPro device.
 - **USB:** USB A ports for connecting peripherals such as additional storage devices. Do not power a device plugged into the RCA inputs using the USBs, see the installation page for more details.
 - **AUX IN:** Additional stereo input.
 - **ETHERNET:** Network connection.
- **INPUTS:** 4 Stereo auxilliary RCA inputs.
- **PREOUT:** Unamplified zone audio outputs, intended for use with powered speakers/subwoofers.
- **ZONE X:** Amplified stereo outputs for Zone X, using 4-pin euroblock connectors.
- **EXPANSION:** Connection to the next expansion unit (if one or more expanders are needed).

3.2.3 Specifications

| Feature | |
|--------------------------|---|
| Streaming Sources | Airplay™, Pandora®, Spotify Connect™, DLNA®, Internet Radio, Bluetooth™* |
| Control Interfaces | Web App, Mobile App, REST API, Third-Party Software |
| Dimensions | 2U 19" rackmount unit, 12.5" L x 19" W x 3.5" H |
| Weight | 15 lbs / 6.8 kg |
| Connectivity | 100Mbps Ethernet 2x USB 2.0 |
| Power Input | 100-120 VAC or 180-264 VAC, 50-60Hz, Maximum input 782W |
| Power Consumption | 6.7W Idle 391W Continuous 782W Peak |
| Peak Current Consumption | 6.8A @ 115VAC or 3.4A @230VAC |
| Speaker Power | 55 WPC @ 4 Ω 32 WPC @ 8 Ω |
| Speaker Impedance | 4 - 8 Ω |
| Stereo Zones | 6 |
| Audio Input | 4 RCA Line In Max input level: 2.0 VRMS (6dBV) Input Sensitivity: 0.35 VRMS |
| Digital Audio Sources | 32-bit 384KHz (Source 1), 16-bit 48KHz (Sources 2, 3, 4) |

* with third party USB Adapter

4 Installation

4.1 Overview

It's time to power on your AmpliPro and try it out. To avoid damaging the unit, please read through this guide before installing and powering your AmpliPro unit!

WARNING!! VERIFY THAT THE VOLTAGE OF YOUR WALL OUTLET MATCHES THE VOLTAGE LISTED NEAR THE POWER INLET BEFORE PLUGGING IN. IF THE VOLTAGE IS NOT MATCHED, PLEASE CONTACT US AT support@micro-nova.com

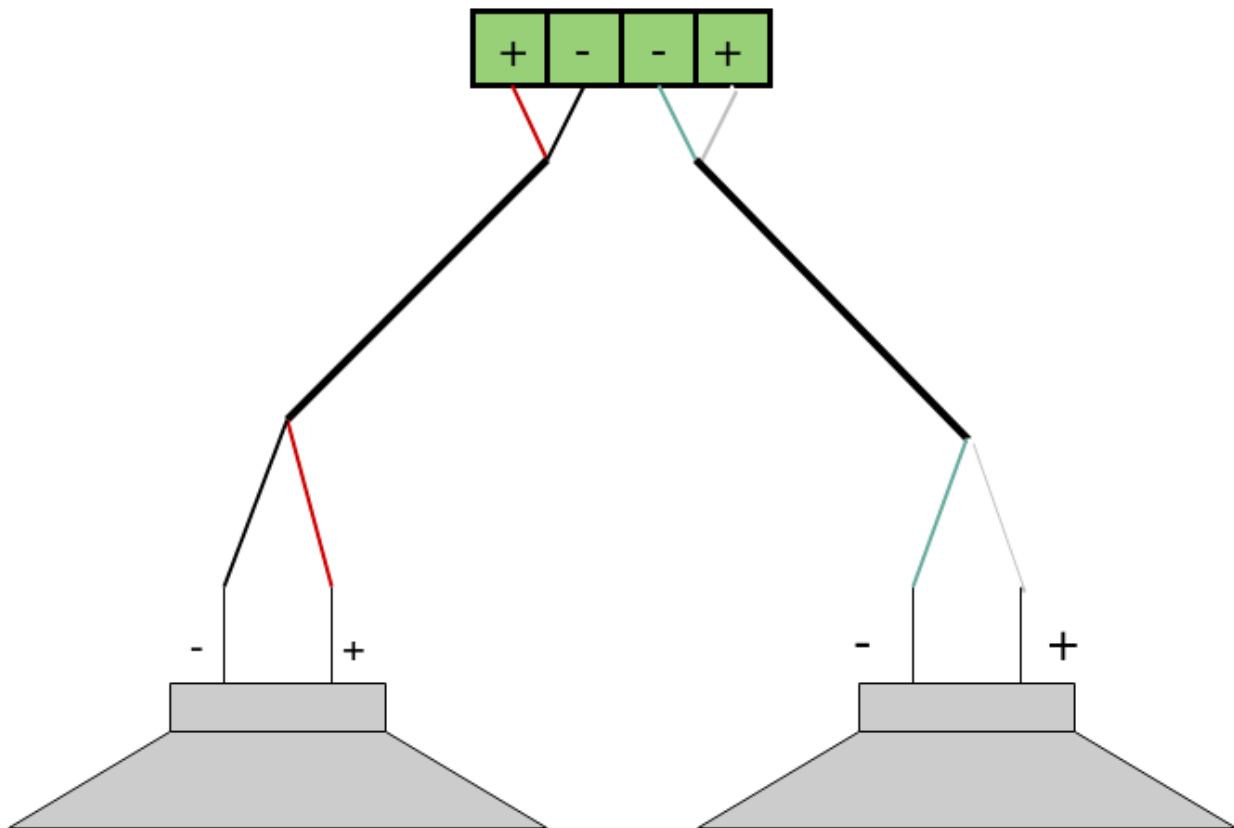
4.2 Mounting and Placement

Main Controllers and Zone Expanders both ship with built-in 19" rackmount ears, so that they can be easily installed into a server rack. Both the main and expansion units are approximately 15 pounds (6.8 kilograms). Some things to keep in mind to avoid overheating the unit:

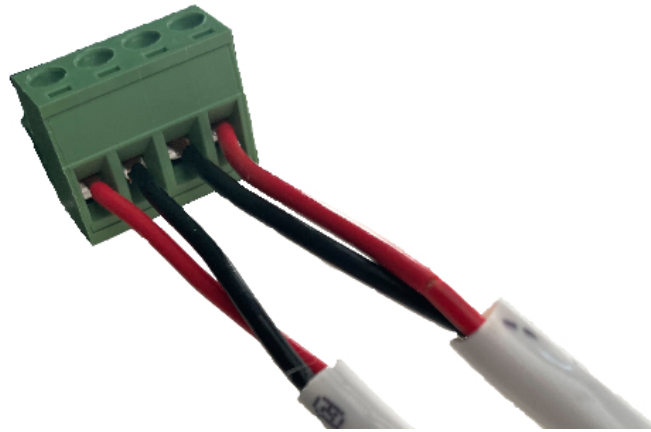
- Don't block the vent holes on the side
- Don't allow dust to build up inside the unit. See cleaning instructions on the safety page for more details.

4.3 Speakers

Each of AmpliPro's zones has two speaker outputs that drive a 4-8 Ohm speaker, using the provided Euroblock connectors. Here is what the basic wiring diagram for a zone looks like:



AmpliPro's amplifiers are capable of driving 4-8 Ohm speaker loads. Here is what a typical stereo speaker connection, using CL2-rated 14-AWG speaker wire and the Euroblock connectors, looks like:



To connect a stereo speaker pair using speaker wire:

1. Strip 3-4 inches of the cable jacket, then strip 1/4 inch of insulation from the end of each wire.
2. Twist the frayed end of each wire.
3. Please note that the wiring diagram (the image with four green squares wired to two speakers) shows polarity, not necessarily the colors of the wires. Make sure you connect positive to positive and negative to negative while also keeping the left and right channels separated into their own speakers.
4. Unscrew each set screw to open the contacts, then insert and tighten down each wire one by one. Note that set screws loosen, but should not come out.
5. To avoid any shorts, make sure that there aren't any stray wire strands.
6. The speaker set can now be connected to one of the 6 zones.

4.3.1 Connections

- Improper connection of speakers can damage the unit
- Never connect multiple speakers in parallel such that it brings the total impedance below 4 ohms (max 2x 8ohm speakers in parallel).
- Amplified speaker outputs **CAN NOT** be bridged, attempting to do so will damage the amplifier and void the warranty

4.3.2 Running wire in walls and ceilings

- Most electric codes require the use of CL2-rated speaker wires for in-wall installations. Please refer to local building codes for more details.
- Avoid running speaker wires next to AC power wires as much as possible to reduce noise.
- When necessary, cross AC wires at 90-degree angles to avoid introducing any noise into the speakers.

4.3.3 More Info

More information on speaker selection and installation can be found in AmpliPro's community forums that can be reached from the system settings, simply click on "About", then the "Community" link and see the "Installation and Getting Started" topic on our discourse group, also accessible at ampli.discourse.group.

4.4 Preamp Outputs

Each of AmpliPro's zone outputs has a corresponding line-level RCA output pair. These outputs can be used to connect powered subwoofers and other active/powered speakers.

The volume output of a preout is controlled by the corresponding speaker output. This allows a connected subwoofer to be controlled proportionally to the speaker's output in the same zone.

4.5 Audio Inputs

Each of the stereo RCA inputs can be connected to a different audio source, such as the output of a TV or other compatible device. See device specifications page for further information.

4.6 Expansion Units

To increase the number of zones you can add expansion units to your system. You can add up to 5 additional zone expander units to a single AmpliPro main unit. Each expansion unit adds 6 zones or pairs of speakers. Zones attach to main units using the CHAIN IN/OUT connectors on the rear panel.

4.7 Network connection

Connect an RJ45 cable to the Ethernet port on the main unit. Connect the other end to a port on your main network (likely on your router). The unit's IP address is configured by DHCP.

4.8 Power

WARNING!! VERIFY THAT THE VOLTAGE OF YOUR WALL OUTLET MATCHES THE VOLTAGE LISTED NEAR THE POWER INLET.

AmpliPro ships preconfigured for the typical mains voltage in your region, either 120V mains power or 230V mains; to see what mode it was set to before shipment, check which hole near the power inlet has a plastic peg/screw. If your unit is preconfigured incorrectly for your region, please contact us at support@micro-nova.com

Once you've ensured that the unit has the correct input voltage configured, plug the AmpliPro into a wall outlet. The ON/STANDBY will start off blinking red and then transition to solid red once the unit is fully powered on. Continue below to enjoy your unit!

4.9 Startup and Configuration

Now that the AmpliPro unit is powered on, it's time to use the software. To access the app, there are two options:

4.9.1 Mobile App

1. We offer mobile apps available on Android and iOS, simply search for "Amplipi" on the Google Play Store or Apple's App Store or go to the Links page at the start of this manual for QR codes for each version
2. Once you have the app downloaded, permit the app to access devices on your local network. The app will automatically search your network for active AmpliPro units.
3. If you have multiple controllers, it will ask which unit you wish to connect to. We suggest giving different hostnames to each unit if you have multiple controllers on the same network for this reason.

4.9.2 Webapp

1. Simply enter "amplipi.local" into a web browser, on any device that both has a web browser and is connected to the same network. Android and Windows 7 users will need to type the IP address found on the unit's display into their web browser instead.

4.9.3 From the app:

1. Click the plus (+) icon and select a stream
 - The Groove Salad - InternetRadio stream comes preconfigured (needs an internet connection).
2. Change the volume on the zone you would like to output music on. Zones may be hidden inside a group. Click on the different groups to see which zones belong to them.
3. If you wish to change the default group and zone names or add different streaming sources, click on the gear icon on the bottom right to reach the settings page where you can configure inputs, zones, and groups.

5 Troubleshooting

If you are having problems with your AmpliPro device, start here.

5.1 Audio

5.1.1 Noise

Audio noise can have a lot of causes, below are some common reasons:

- **Mixing grounds:** AmpliPro has two different grounded lines, analog and digital. The most common way to mix them is by plugging in an audio device and attempting to power it with the USB on the rear of the unit, all USB-powered devices must be powered from a wall outlet
- **Speaker setup:** Some speaker configurations can lead to excess noise being inducted into the output. This is unrelated to the system and has everything to do with how the speakers are wired and installed.
- **Hardware issues:** See the support page for more info.

5.1.2 No Audio

Lack of audio typically has one of a few causes:

- **No Source / Bad Source:** The source itself isn't outputting audio properly, try changing to a different source to confirm
- **Bad Output / Bad Zone:** Either the speaker, the speaker wires, or one of the ports on the back of the AmpliPro might be broken or hooked up incorrectly. Try a different speaker, length of wire, or port on the back of the AmpliPro to test each case

5.2 Updating

From the app:

1. Click the gear icon in the bottom right corner to go to the configuration page
2. Select **Updates** and click the **Check for Updates** button

5.2.1 New Release

To update your AmpliPi software to the latest version:

3. Click the **Update** button

5.2.2 Prereleases and using previous versions

Had an issue with an update? Want to try a beta release? Follow these steps:

3. Click the **Older Releases** tab
4. Select the release you would like to use from the dropdown menu
5. Click the **Start Update** button

6 Warranty and Return information

6.1 1-Year Limited Warranty

We take great pride in our products, and your satisfaction is truly our top priority. We guarantee AmpliPro hardware to be free of defects in material or workmanship under normal use during the warranty period. This warranty covers AmpliPro units sold directly by MicroNova LLC through this website, as well as authorized distributors.

The warranty period shall last 1 year, beginning from the date that you receive your AmpliPro unit (based upon the tracking information from your shipment.) During this warranty period, MicroNova LLC will repair or replace, at no charge, the AmpliPro unit (or components within that AmpliPro unit) that prove defective under normal use. The replacement unit or component assumes the remaining warranty of the original unit. This warranty does not cover products damaged by accident, misuse, or by third-party equipment. Note that for international orders, we are unable to cover shipping costs or any duties incurred as part of the warranty work.

We test each and every AmpliPro unit thoroughly before shipping to you, but we are only human. If you believe your item has an issue, please contact our support team at support@micro-nova.com to help diagnose and resolve the issue. Most issues can be resolved by working with our team. AmpliPro is a new and evolving open-source product, and we ask for your patience and understanding as we address any issues you may encounter. Everyone's home audio setup is unique, and we cannot anticipate and test for all possible permutations, but we will do our best to make AmpliPro work for you! Remember that we are in this together, and by working with the MicroNova team and the AmpliPro open source community to resolve issues, you are helping fix the issue not just for yourself, but for the whole community!

AmpliPro is a radically open product, with open-source software, firmware, and schematics. While we encourage users to modify AmpliPro to meet their needs, our warranty understandably cannot cover hardware that has been modified by end users. Should you encounter issues while making modifications, we will do our best to support you in any way that we can, including making replacement components available to you at a reasonable cost.

We at MicroNova reserve the right to extend this warranty **at our discretion**. There is no right to a further extended warranty, though some customers may receive such treatment **at our discretion**.

6.2 30-Day Return Policy

If for any reason you are not completely satisfied with AmpliPro, you may return it in its original condition within 30 days from the date that you receive your AmpliPro unit (based upon the tracking information from your shipment) for a refund. This warranty covers AmpliPro units sold directly by MicroNova LLC through this website. Buyer is responsible for return shipment costs and must use a shipping carrier that provides tracking information. We will promptly issue your refund upon receipt of your return. Note that for international orders, we are unable to refund original shipping costs or any duties incurred.

We encourage anyone considering returning their unit to contact our support team at support@micro-nova.com to try and resolve any issues you are encountering!

6.3 Contact Information

Contact us at support@micro-nova.com for any support needs