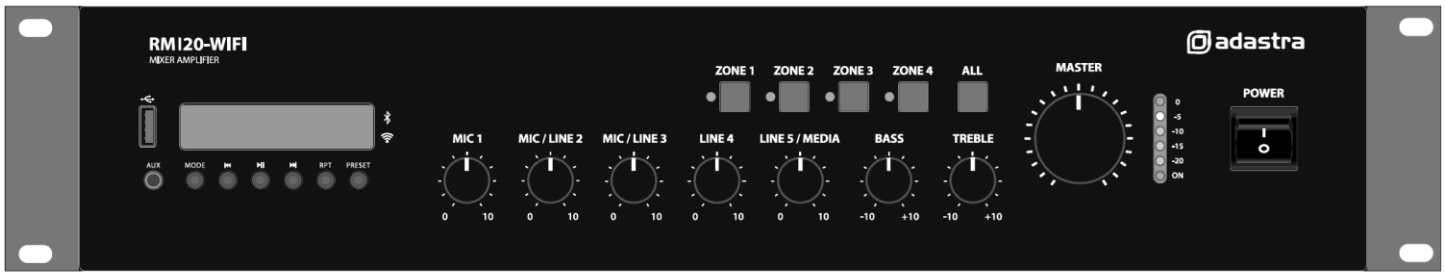
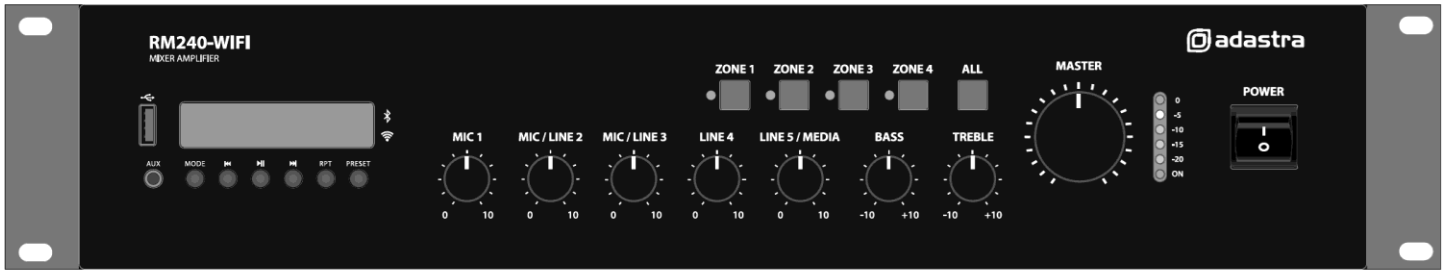
# RM-WIFI SERIES

5-INPUT MIXER-AMPLIFIER with WIFI/LAN, BLUETOOTH & USB PLAYER

RM120-WIFI: 953.234UK
RM240-WIFI: 953.235UK

User Manual




Version 1.0

Caution: Please read this manual carefully before operating
Damage caused by misuse is not covered by the warranty

## Introduction

Thank you for choosing the Adastra RM-WIFI seriesrackmount 100V amplifier as part of your public address system. This amplifier is designed to offer high quality, dependable service for mobile and installed systems. Please read this manual fully and follow the instructions to achieve the best results with your new purchase and to avoid damage through misuse.

**SAFETY SYMBOL AND MESSAGE CONVENTIONS**

| CAUTION<br>RISK OF ELECTRIC SHOCK<br>DO NOT OPEN | AVIS<br>RISQUE DE CHOC ELECTRIQUE NE PAS<br>OUVRIR |
|---|---|

**This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit**

**This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.**

### SAFETY NOTICE

1. Prior to use, read through this manual
2. Keep the manual in good condition
3. Pay attention to safety warnings
4. Observe all operating requirements
5. Do not use the device near water or wet areas
6. For cleaning, only use a lint-free, dry cloth
7. Install according to the specifications
8. Place away from heat sources or heating appliances
9. Use mains lead provided and avoid damage to cable or connectors
10. Unplug power from mains during stormy weather or if unused for long periods
11. In case of malfunction, water ingress or other damage, consult qualified service personnel
12. Do not place in damp areas or near liquids or moisture. Do not spill liquids on the housing
13. Please pay attention to warning symbols during transit and placement
14. Terminals marked with the ϟ symbol are HAZARDOUS LIVE and should only be connected by qualified personnel
15. Ensure that the apparatus is connected to a mains socket with a protective EARTH connection
16. Ensure correct operation of the mains switch

**Warning**

To prevent the risk of fire or electric shock, do not expose any components to rain or moisture.
If liquids are spilled on the casing, stop using immediately, allow unit to dry out and have checked by qualified personnel before further use. Avoid impact, extreme pressure or heavy vibration to the case
No user serviceable parts inside – Do not open the case – refer all servicing to qualified service personnel.

**Safety**

- Check for correct mains voltage and condition of IEC lead before connecting to power outlet
- Use double insulated speaker wire with adequate current rating for 100V speaker connections
- Only use one type of output – i.e. 4-16Ω or 100V – do not mix or combine these outputs on a single zone or output
- Do not connect 4-16Ω speakers to the 100V terminal or 100V speakers to the 4-16Ω terminal
- Do not allow any foreign objects to enter the case or through the ventilation grilles

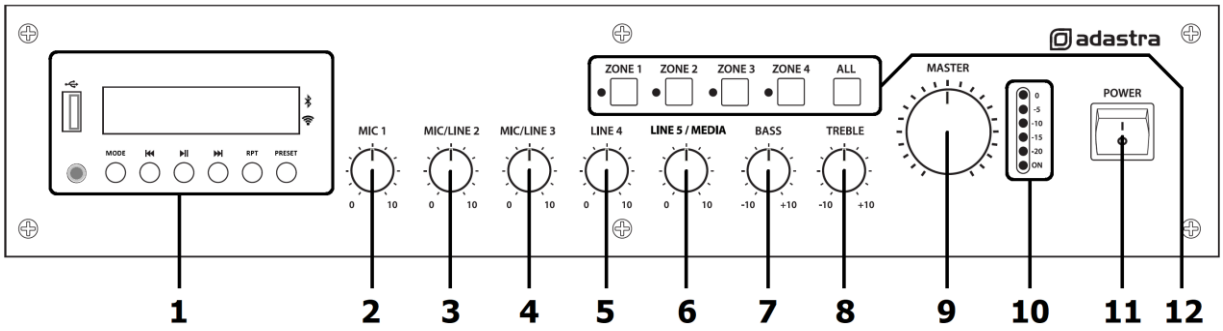
**Placement**

- Keep out of direct sunlight and away from heat sources
- Keep away from damp or dusty environments
- For rack-mounting, use the rack ears provided and ensure adequate support for the weight of the amplifier
- Ensure adequate air-flow and do not cover cooling vents at the front and rear of the amplifier
- Ensure adequate access to controls and connections

**Cleaning**

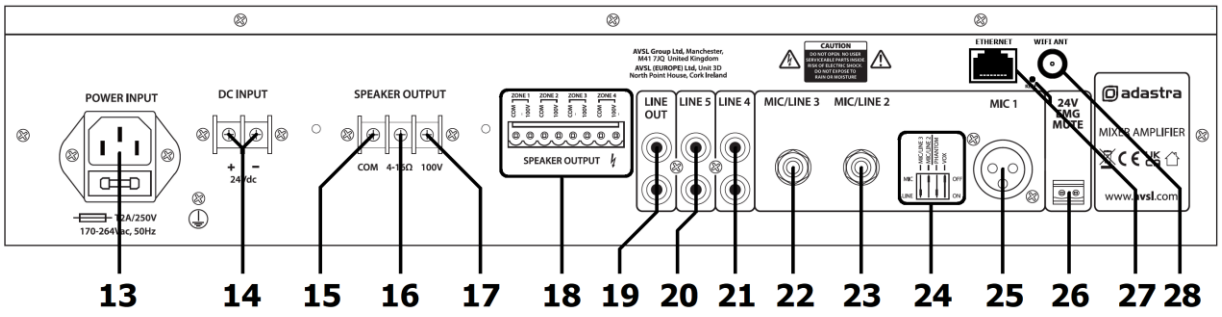
- Use a soft cloth with a neutral detergent to clean the casing as required
- Use a vacuum cleaner to clear ventilation grilles of any dust or debris build-ups
- Do not use strong solvents for cleaning the unit

**Front panel**



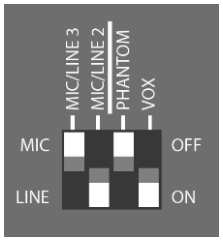

1. USB/LAN/WIFI/BT/AUX media player
2. MIC 1 volume control
3. MIC/LINE 2 volume control
4. MIC/LINE 3 volume control
5. LINE 4 volume control
6. LINE 5/MEDIA player volume control
7. BASS EQ control
8. TREBLE EQ control
9. MASTER volume control
10. VU level meter
11. POWER on/off switch
12. Speaker zone selector buttons

**Rear panel**




13. IEC mains inlet & fuse holder
14. DC power terminals
15. COM speaker terminal
16. 4-16Ω speaker terminal
17. 100V speaker terminal (unswitched)
18. 100V speaker terminals (zone switched)
19. LINE OUT connectors (RCA)
20. LINE 5 input (RCA)
21. LINE 4 input (RCA)
22. MIC/LINE 3 input (6.3mm jack)
23. MIC/LINE 2 input (6.3mm jack)
24. DIP switches (see DIP switches section below)
25. MIC 1 input (balanced XLR)
26. 24V Mute contacts
27. RJ45 LAN port and RESET switch
28. WIFI antenna connector (SMA)

## **DIP switches** (24)




MIC 1 input (25) has an option for +20V phantom power for condenser microphones and paging microphones with chimes.

MIC 1 also has the option of VOX control, which attenuates the line input channels 4 and 5 by -40dB when MIC 1 signal is detected and returns them to normal when MIC 1 signal is silent.

MIC/LINE 2 (23) and MIC/LINE 3 (22) inputs can be set to MIC (up position) or LINE (down position) sensitivity to suit the type of input being used. Be sure to make these DIP switch settings when the amplifier is switched off. Making any changes when the amplifier is powered up may cause loud noises which can damage the speakers.

**Connection and setup**

Connect the rear IEC inlet (13) to the mains using the supplied mains lead (or an equivalent approved type). Alternatively, the amplifier can be powered by a 24V battery, such as a lorry or boat battery, by connecting the "+" and "-" of the battery to the DC INPUT (14) on the rear panel. Ensure that DC cables are capable of handling the required current (20A recommended)

The RM-WIFI seriesamplifiers have a total of 5 input channels. MIC 1 input (25) is fed to a dedicated microphone channel. Connect the main announcement microphone to this channel using a balanced XLR lead.

Connect microphones or mono line inputs to MIC/LINE 2 and MIC/LINE 3 inputs (23, 22) using good quality 6.3mm jack leads. Make sure the correct sensitivity is selected for the type of input source.

Connect any other line level audio inputs to the LINE 4 (21) and LINE 5 (20) connectors on the rear panel using good quality RCA leads. Since RM-WIFI seriesamplifiers have a mono output, all stereo signals are summed.

Further mixer-amplifiers or slave amplifiers can be connected from the rear LINE OUT sockets (19), again using a good quality RCA lead. This output carries the full mix of all channels 1-5 as fed to the speakers.

If wired LAN/WAN internet is available, connect via RJ45 to the ETHERNET port (27) and the supplied WiFi antenna should be screwed onto the WIFI ANT connection (28)

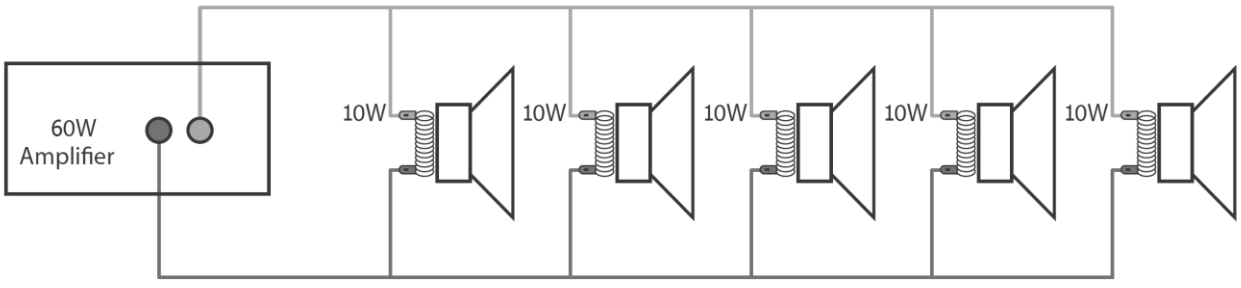
**Speaker outputs**

The RM-WIFI seriesamplifiers can be used either as 100V line amplifiers or standard low impedance power amplifiers. These 2 configurations cannot be used together, so it is important to decide which method will be used at the start.

**100V line systems**

For 100V line systems, connect the amplifier to the first speaker in the system using double-insulated speaker wire which has adequate current rating to handle the total output of the amplifier.

Connect the "100V" (17) output terminal to the positive (+) connection of the speaker and "COM" output (15) to the negative (-) connection of the speaker. Connect further speakers in parallel to the first speaker with all positive terminals and connected together and all negative terminals connected together as shown below.




A 100V line speaker system can comprise of many speakers connected together in parallel. The determining factor for how many speakers can be used on a single amplifier is the power rating. For most purposes, it is advised to connect as many speakers as needed with a combined wattage of no more than 90% of the amplifier's output power rating.

The terminals of a 100V speaker are connected to a transformer and in some cases, this transformer may be "tapped" for different power ratings. These tappings can be used to adjust the wattage (and output volume) of each speaker in the system to help achieve the ideal total power of the system for the amplifier.

**Speaker switching zones**

Any 100V speakers connected to the removable screw terminals labelled ZONE 1 / ZONE 2 / ZONE 3 / ZONE 4 will be governed by 4 front panel speaker switches (18).
(e.g. a speaker connected to ZONE 1 + COM will be enabled if Zone 1 button is depressed on the front panel)
There is also a switch labelled "ALL" on the front panel which enables output to all Zones 1 to 4.

If 100V speakers are needed for emergency evacuation or do not need to be switched on or off via the front panel, it is better to wire the "+" wire to the fixed unswitched 100V terminal (17) and the "-" wire to COM (15)

**Low impedance systems**

Alternatively, RM seriesamplifiers can be used to drive low impedance speakers by connecting the 4-16Ω terminal (16) to the "+" speaker connection and COM terminal (15) to the "-" speaker connection.

Do not use 4-16Ω and 100V at the same time.

**Emergency mute function**

RM seriesmixer-amplifiers are equipped with a Euroblock connector for a 24V mute function (26).
These contacts can be wired to an emergency panel (such as a fire alarm) which has a 24V trigger output.
(The 24V contacts can be connected with either polarity +/- or -/+ to operate)
When the alarm is activated, the RM mixer-amplifier will mute all channels except for MIC1, which remains active for emergency announcements.

**Operation**

When all connections to the amplifier are made, turn all rotary controls down and switch on the power (11) and a power "ON" LED will illuminate. Press in the "ALL" zones button for testing so that none are muted (12)

Turn BASS and TREBLE controls (7, 8) to the 12 o'clock position (pointing straight up) and turn the MASTER rotary control (9) up part way for testing.

Ensure a signal is being fed to one of the line inputs and gradually increase the volume control for that channel (2, 3, 4, 5 or 6) until the output is heard through the speakers.

Turn up the MASTER to the maximum required volume level and reduce the channel volume control if necessary.

Repeat this process for any line inputs connected to channels 2, 3, 4, 5 or 6.

Note: If a line input is not connected to an RM-WIFI seriesmixer-amplifier, the initial test can be made using the built-in media player. See the "Media player" section for instructions.

Note: Both the media player output and LINE 5 input are governed by the LINE 5 / MEDIA volume control (6)

The output of the amplifier is represented on the VU meter LEDs (10) and care should be taken that the red "0" LED is only lit momentarily during use. Anything longer than a short flash of this LED may be indicating distortion or clipping of the output signal and the MASTER volume control or channel volume control should be turned down.

If a microphone is connected to MIC 1 input, make sure it is switched on and if it requires phantom power, make sure this feature is enabled on the DIP switch.

Gradually increase the MIC 1 control (2) whilst speaking into the microphone until the required volume level is reached.

The microphone should not be able to "hear" the speakers, which can cause feedback (squealing or howling) Repeat this process for microphones or line inputs connected via the MIC/LINE 2 and 3 inputs.

If the VOX feature is enabled on the DIP switches, audio playback through channels 4 and 5 will be reduced in volume automatically when speaking into MIC 1.

In addition to channel and MASTER volume controls, there are BASS and TREBLE EQ controls (7, 8) to adjust the tone of the overall output. At the 12 o'clock position, these controls apply no effect to the signal (no boost or cut).

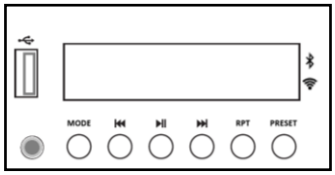
Moving the BASS control clockwise boosts the low frequencies in the audio, whilst moving it anticlockwise will cut these low frequencies.

Likewise, moving the TREBLE control clockwise boosts the high frequencies in the audio, whilst moving it anticlockwise will cut these high frequencies.

Adjust these EQ controls to suit the type of audio signal or compensate for the room acoustics.

**Media player**

The RM-WIFI mixer-amp is fitted with a built-in media player (1)




The media player has a Bluetooth receiver, USB audio player and a wired or WiFi network player.

Pressing the MODE button will step through Network Player, Bluetooth, Aux Line In.

Inserting a USB pen drive into the USB port will automatically start playback of any mp3 or wma files stored on it.
Pressing ⏵⏸ will pause or play the current track.
Pressing ⏮ or ⏭ will select the previous or next track.
Pressing RPT cycles through the repeat play modes:
Repeat Playlist / Repeat Single Track / Repeat Playlist on Shuffle / Shuffle Play / Repeat and Shuffle Disabled.

**Note: USB playback will override the Network Player mode if a pen drive is present.**

**Bluetooth**

Search available Bluetooth devices on your smart phone for a device with Bluetooth ID "adastra-****-BLE" (where **** is a unique ID number for each unit). Select to pair and connect with this ID.
When paired and connected, set the volume low on the smart phone or other sending device and play a track to check the sound through the speakers, increasing the volume on the smart phone to the required level.

Playback controls on the media player can remotely operate the smart phone from the amplifier front panel.
Pressing ⏵⏸ will pause or play the current track, whilst holding ⏵⏸ will disconnect the current paired device.
Pressing ⏮ or ⏭ will select the previous or next track.
Pressing RPT will release the Bluetooth player from its pairing and display the Bluetooth ID

**Line In**

In this mode, the media player listens to the AUX 3.5mm stereo line input that is situated below the USB port.
Any audio played through this connection will appear on the LINE 5 / MEDIA channel.

**Network Player**

The RM-WIFI seriesamplifier has an inbuilt network player, which can be set to play music files stored on a connected smart phone, local NAS drive, or stream audio from the internet. The network player is a mode within the media player section which is then controlled via a smart phone application. When first selected, the display will show "Network Player Connecting…."

On your smart phone, download the **WiiM Home** application by Linkplay Tech. Inc.
For iOS devices, download the WiiM Home app from the App Store.
For android devices, download the WiiM Home apk from the Google Play Store.

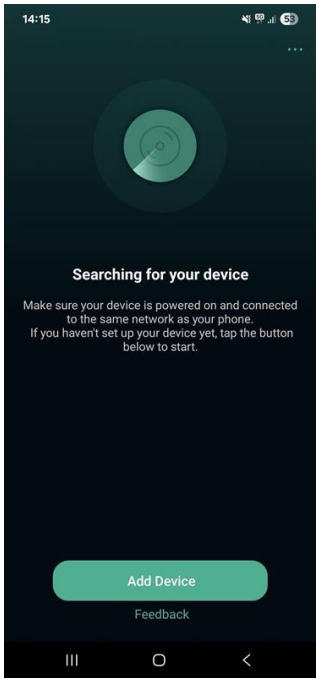
If available, the RM-WIFI series amplifier can connect to the wired network using the rear RJ45 port, and the RM-WIFI series amplifier will be visible to the app without connecting to WiFi. Otherwise, connect to WiFi as follows.

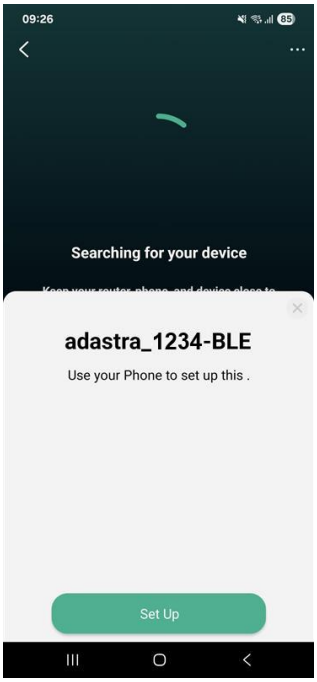
If your WiFi router has a **WPS** feature, pressing this and then a long press of the Play/Pause button can allow an automatic connection to the WiFi. Otherwise, follow all steps below to connect your smart phone and RM-WIFI series amplifier to the wireless network.

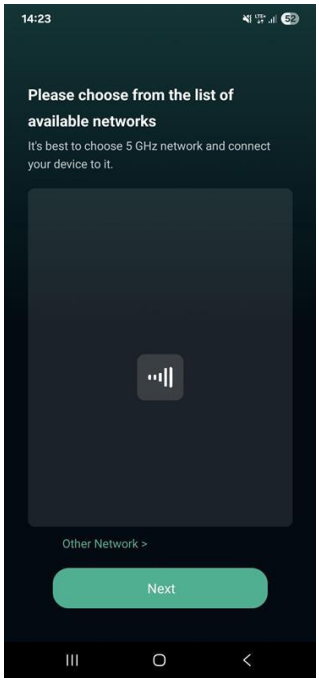
Open the WiiM Home application and the welcome screen will be followed by a **Searching** screen.

If the RM-WIFI series amplifier has already been connected to the local WiFi, or is connected to the wired network, the **Searching** screen will confirm that it has found 1 or more devices.

The amplifier will be labelled "adastra_1234-BLE" (where 1234 can be any 4-digit number). The app will then jump to the **Device List** page (shown in following pages)


If the RM-WIFI series amplifier is not detected, select **Add Device**.

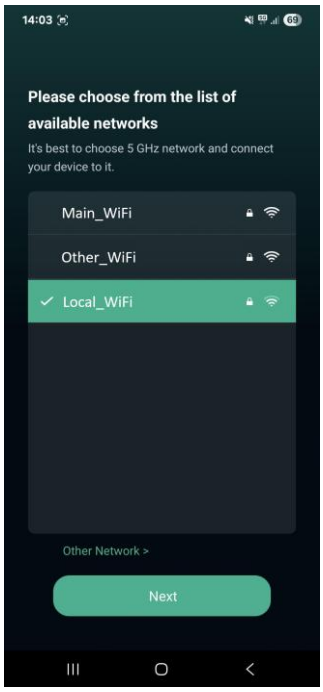
Ensure that Bluetooth is enabled on the smart phone and held within Bluetooth range of the RM-WIFI amplifier.

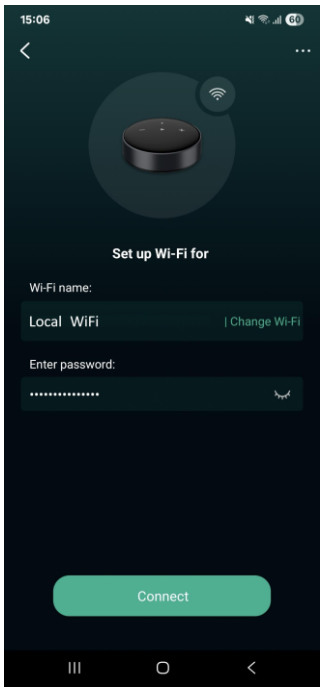
A pop-up will show **adastra_1234-BLE** (where 1234 can be any 4 characters) and instruct you to "Use your Phone to set up this". Select "Set Up".

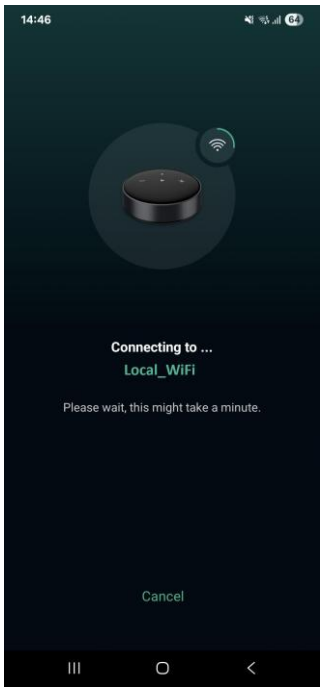
The next screen will search for available WiFi networks and then list them.

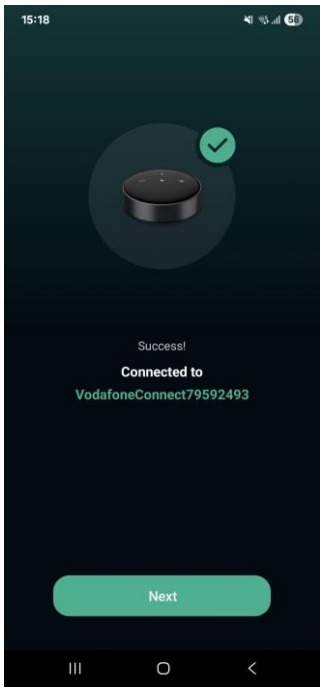
Select the preferred network, which must be the network that the smart phone is connected to, and select "Next".
You will be prompted to enter the password for the wireless network and then click "Connect"

The connection process will begin, which may take a few minutes, and then the screen will show "Success" and prompt to click the "Next" button.



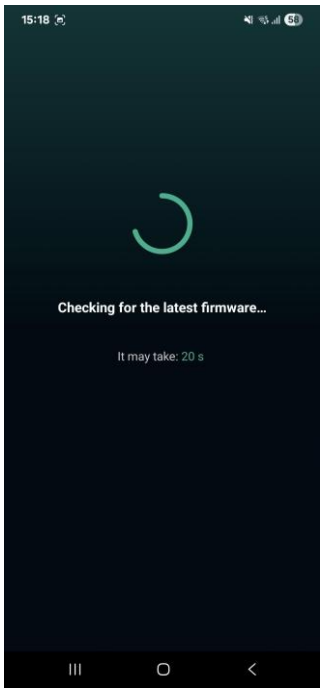



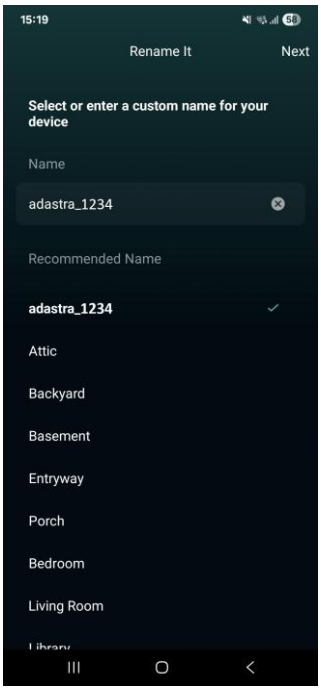



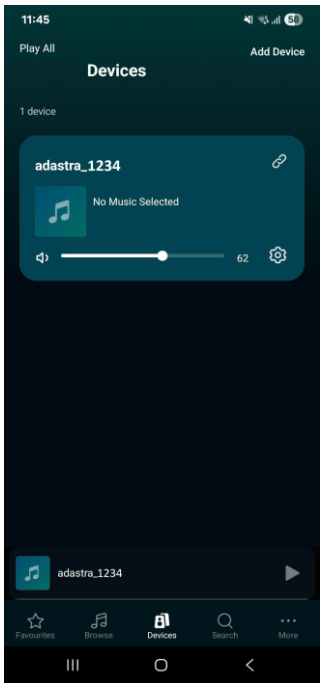



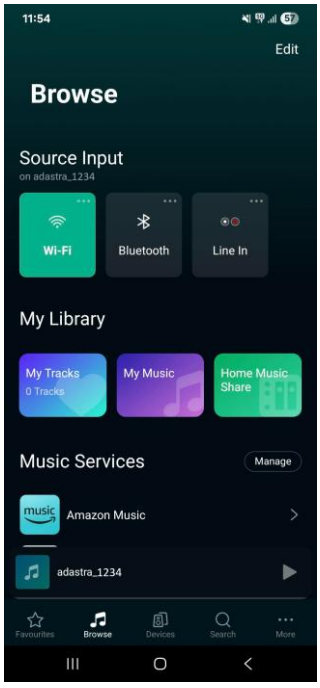

The network setup will then check for firmware updates and ask to select a name for the amplifier.
Once named, the amplifier will appear in the Devices page.

From here, there are some tabs along the bottom of the screen for Favourites / Browse / Devices / Search / More.
Choosing Browse opens the Source Input / My Library / Music Services page.



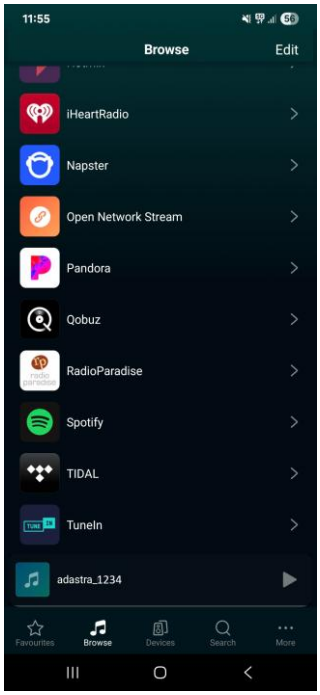



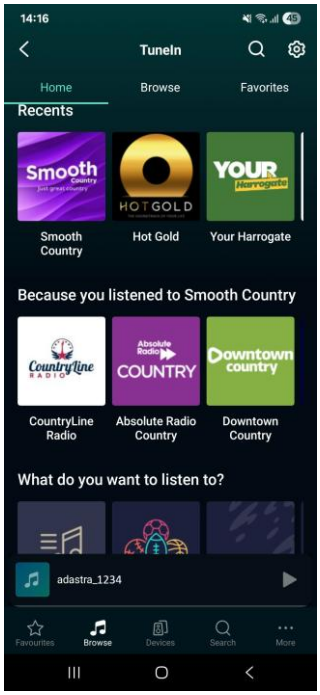



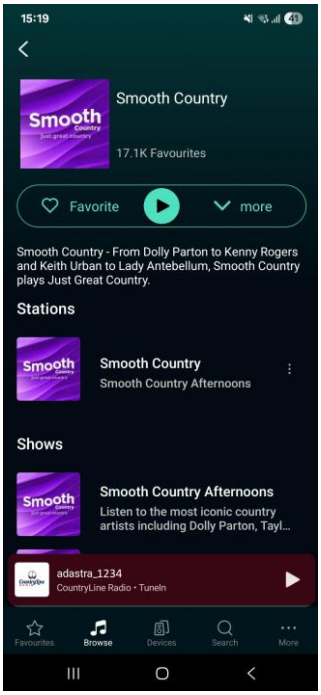

At the top of the page are three Source Input options to switch the RM-WIFI series audio player between WiFi (internet), Bluetooth and Line In (front panel 3.5mm AUX)

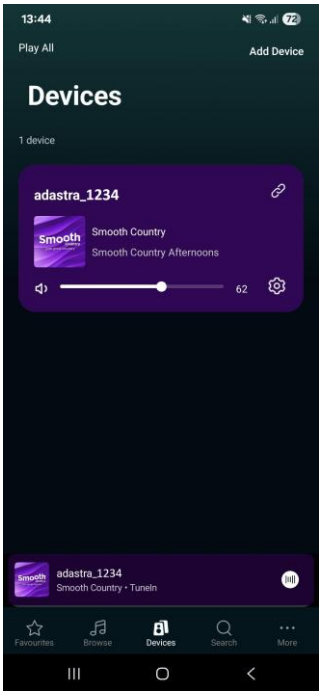
Below these are 3 options: My Tracks (Favourites), My Music (on smart phone), and Home Music Share (e.g. NAS drive)

Scrolling further down the Browse screen shows the embedded services. Some of these services are for subscription. For free-to-air internet radio, the following example describes the embedded TuneIn service. (additional free-to-use services include Radio Paradise, vTuner and Hotmix)




(open Network Stream is a direct internet streaming service based on an http:// or https:// address)
Select TuneIn from the Music Services list. The TuneIn screen will show, including tabs for Home, Browse and Favorites. Select a radio station stream for playback by browsing through categories and types or searching by name.

Once a radio station has been chosen, pressing play will begin the audio stream from the internet (even if the phone is disconnected, the stream will continue)
On this same page, it is possible to select this station to be listed in the Favourites section by clicking "♡ Favorite".

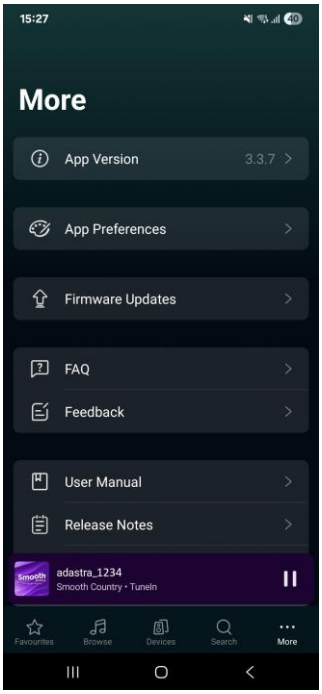
Selecting the Devices tab at the bottom will show the RM-WIFI amplifier listed with any others set up in the app. Selecting the RM-WIFI amplifier will open the channel in full-screen mode, with some additional functions available. The 3 dots on the right side of the screen opens options to store the channel being played as a Preset, Favourite, or add to playlist, depending on the service.

The rightmost tab on the bottom of the screen is for "…More" which has some device and app information as well as an embedded user manual for TuneIn.

The leftmost tab is for Favourites. At the top of this screen is a row of 10 Presets that have been saved. For fast access, the first 6 of these are accessible by pressing the PRESET button on the RM-WIFI amp, and then pressing the button under that number.

Below the presets are rows for Recently Played and TuneIn favourites (described above)

For other embedded services/apps, these may be subscription-based or region specific.
At the top of the Music Services list is a "Manage" option to allow services to be switched on or off in the list.




## Specifications

| Model | RM120-WIFI | RM240-WIFI |
|---|---|---|
| Power supply | 170-264Vac, 50Hz (IEC) or 24Vdc (screw terminals) | |
| Signal inputs / output | Mic XLR, 2 x mic/line jack, 2 x RCA line, RCA line output | |
| Input sensitivity: mic 1 | -53dBV | |
| Input impedance: mic 1 | 5k Ohms | |
| Input sensitivity: line | -15dBV (-18.5dBV line 5) | |
| Input impedance: ch.2-5 | 1k Ohms | |
| Speaker outputs | 4 switched + 1 non-switched 100V / 4-16 Ohms / COM | |
| Controls | Mic1, mic/line2+3, line4+5, bass, treble, master volume | |
| Equalizer: bass | 100Hz ±10dB | |
| Equalizer: treble | 10kHz ±10dB | |
| Rear panel switches | Phantom, Vox, Mic/Line (2 + 3) | |
| Phantom power | +20V (mic 1 XLR, switchable) | |
| Audio source | DAB+/FM tuner, USB/SD player, Bluetooth receiver | |
| Emergency control | 24V contacts - mute all except Mic.1 when triggered | |
| THD | <1.0% | |
| Output power: rms | 120W | 240W |
| Fuse | T3.15A | T5A |
| Dimensions | 433 x 320 x 88mm | |
| Weight | 6.36kg | 7.37kg |

## Troubleshooting

| | |
|---|---|
| No Network connection | Check local WiFi and try wps pairing |
| | Use wired LAN if available |
| | Check firewall settings in case the stream is being blocked |
| Bluetooth cannot connect | Ensure that Bluetooth is enabled on sending device |
| | Ensure that the sending device is within Bluetooth range (5-10m) |
| | Check that "adastra ****" is the connected device |
| | If there are more than one "adastra ****" devices, check each in turn |
| No audio from Bluetooth device | Ensure that volume controls are not turned down on sending device |
| | Check volume and Play/Pause buttons in case Bluetooth is muted |
| No playback from USB or SD device | Ensure media is formatted to FAT32 and files are standard mp3/wma type |
| Output too loud or distorted | Reduce MIC, LINE IN, USB/SD and/or MASTER level |
| | Ensure Hi-Z line level input(s) not connected via MIC input |
| Output too quiet or inaudible | Increase MIC, LINE IN, USB/SD and/or MASTER level |
| | Check for quiet recording of media files on USB |
| | Check VOX override is not unintentionally suppressing audio playback |
| No microphone output | Check phantom power is enabled if using a condenser microphone |
| Feedback from microphone | Face microphone away from speakers and monitors and reduce level |
| Amplifier overheating | Ensure cooling vents are clear from debris and dust |
| | Check that 4, 8 or 16Ω speakers are not connected to 100V terminals |
| | Ensure total 100V speaker wattage is lower than amplifier rating |
| | Ensure that 100V and 4, 8 or 16Ω speakers are not both connected |
| | Ensure that total load connected to 4 - 16Ω output is not less than 4Ω |

**Disposal:** The "Crossed Wheelie Bin" symbol on the product means that the product is classed as Electrical or Electronic equipment and should not be disposed with other household or commercial waste at the end of its useful life. The goods must be disposed of according to your local council guidelines.

Hereby, AVSL Group Ltd. declares that the radio equipment type 953.234UK and 953.235UK are in compliance with Directive 2014/53/EU

The full text of the EU declaration of conformity for 953.234UK is available at the following internet address:
http://www.avsl.com/assets/exportdoc/9/5/953234UK%20CE.pdf
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