

RM306

Rackmount 6-zone Mixer-Amplifier

Item ref: 953.161UK

User Manual



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 RM306 rackmount 6-zone mixer-amplifier as part of your public address system. This unit is designed to offer high quality, dependable service for mobile and installed systems. Please read this manual to gain the best results from your product and avoid damage through misuse.

SAFETY SYMBOL AND MESSAGE CONVENTIONS



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

AVIS
RISQUE DE CHOC ELECTRIQUE NE PAS
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 $\frac{1}{2}$ 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 1 type of output per zone – i.e. 4Ω, 8Ω or 100V – do not mix or combine these outputs on a single zone
- Do not connect 4Ω or 8Ω speakers to the 100V terminal or 100V speakers to the 4Ω or 8Ω terminals
- Do not allow any foreign objects to enter the case or through the ventilation grilles

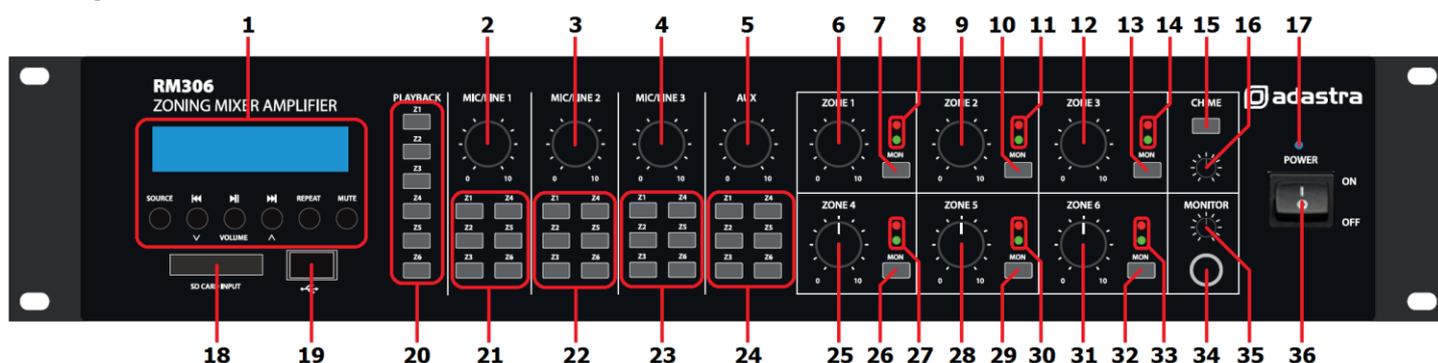
Placement

- For rack-mounting, ensure adequate support for the weight of the amplifier
- Ensure adequate air-flow and do not cover cooling vents at the sides of the amplifier
- Ensure adequate access to controls and connections

Cleaning

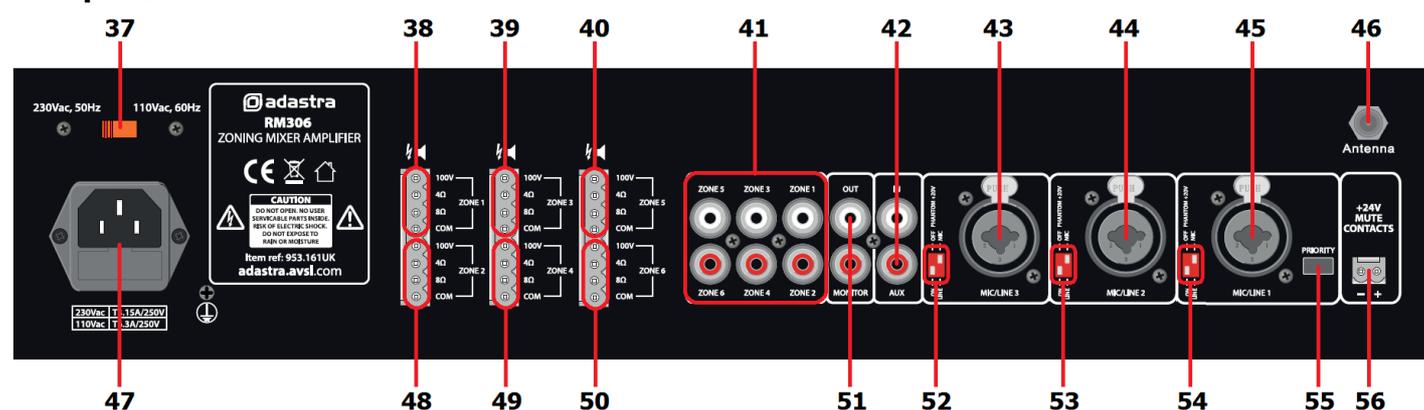
- Use a soft cloth with a neutral detergent to clean the casing as required
- Use a vacuum cleaner to clear ventilation grilles of any dust or debris build-ups
- Do not use strong solvents for cleaning the unit

Front panel



- | | | | |
|-----|------------------------------------|-----|--|
| 1. | Media player | 19. | USB port |
| 2. | Mic/Line 1 level control | 20. | Media playback zone assign buttons |
| 3. | Mic/Line 2 level control | 21. | Mic/Line 1 zone assign buttons |
| 4. | Mic/Line 3 level control | 22. | Mic/Line 2 zone assign buttons |
| 5. | Auxiliary line input level control | 23. | Mic/Line 3 zone assign buttons |
| 6. | Zone 1 output level control | 24. | Auxiliary line input zone assign buttons |
| 7. | Zone 1 monitor send button | 25. | Zone 4 output level control |
| 8. | Zone 1 output LED indicators | 26. | Zone 4 monitor send button |
| 9. | Zone 2 output level control | 27. | Zone 4 output LED indicators |
| 10. | Zone 2 monitor send button | 28. | Zone 5 output level control |
| 11. | Zone 2 output LED indicators | 29. | Zone 5 monitor send button |
| 12. | Zone 3 output level control | 30. | Zone 5 output LED indicators |
| 13. | Zone 3 monitor send button | 31. | Zone 6 output level control |
| 14. | Zone 3 output LED indicators | 32. | Zone 6 monitor send button |
| 15. | Chime button | 33. | Zone 6 output LED indicators |
| 16. | Chime output level control | 34. | Monitor headphones output |
| 17. | Power indicator | 35. | Monitor output level control |
| 18. | SD card slot | 36. | Power on/off switch |

Rear panel



- | | | | |
|-----|-------------------------------------|-----|---|
| 37. | Voltage selector | 47. | Mains power inlet (IEC) and fuse holder |
| 38. | Zone 1 speaker output terminals | 48. | Zone 2 speaker output terminals |
| 39. | Zone 3 speaker output terminals | 49. | Zone 4 speaker output terminals |
| 40. | Zone 5 speaker output terminals | 50. | Zone 6 speaker output terminals |
| 41. | Zones 1-6 line level outputs (RCA) | 51. | Monitor line level output (2 x RCA) |
| 42. | Channel 4 Auxiliary input (2 x RCA) | 52. | Channel 3 DIP switches (mic/line + phantom) |
| 43. | Channel 3 Mic/Line input (XLR/jack) | 53. | Channel 2 DIP switches (mic/line + phantom) |
| 44. | Channel 2 Mic/Line input (XLR/jack) | 54. | Channel 1 DIP switches (mic/line + phantom) |
| 45. | Channel 1 Mic/Line input (XLR/jack) | 55. | Channel 1 priority switch |
| 46. | Antenna connection | 56. | 24V emergency mute contacts |

Introduction

The RM306 is a versatile and powerful mixer amplifier with 4 input channels which can be assigned in a matrix to any of 6 zone outputs. In addition to external signal sources, the RM306 has an integrated Bluetooth™ receiver, FM tuner and USB/SD audio player for comprehensive audio playback options. Please read the following instructions to get the best results from the equipment and avoid damage through misuse.

Connection and setup

With the RM306 power switched off (36), connect the rear IEC inlet (47) to the mains using the supplied mains lead (or an equivalent approved type). Ensure that the voltage is correct as indicated on the voltage selector (37) and that the mains outlet is switched on.

The RM306 has 4 input channels and an integral multi-source audio player. Channels 1, 2 and 3 are designed for either microphones or line level sources (such as a CD/mp3 player or output from a mixer) via combo connectors on the rear panel. These can accept either XLR or 6.3mm plugs for balanced or unbalanced signals.

DIP switches



Mic/Line inputs 1, 2 and 3 each have 2 DIP switches on the rear panel (52, 53, 54) to set the input level and/or activate +20V phantom power for use with condenser microphones.

Set the level correctly for the type of input source connected (Mic or Line)

If the source connected is a condenser microphone which requires phantom power, make sure that the phantom is switched on for that channel.

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 bangs through the system which can damage the speakers.

Priority and Emergency Activation

The Mic/Line 1 input also has a Priority switch (55), which attenuates all other channels when Mic/Line 1 signal is detected and returns them to normal when Mic/Line 1 signal is silent.

For buildings with a main emergency alarm panel (for fire alerts etc.), the RM306 has Mute contacts on the rear panel (46), which will mute all audio except for channel 1 when activated by a 24V trigger voltage. This leaves channel 1 active for evacuation announcements in the case of an emergency.

The screw terminal plug can be pulled out to make connection easier. 2-core bell wire is appropriate for this. Connect a 24Vdc output from the alarm control panel observing the correct polarity shown on the contacts.

Signal Inputs and Outputs

Connect microphones or line signals to Mic/Line 1, 2 and 3 inputs (43, 44, 45) using good quality signal leads. A stereo or mono line level source can be connected to the Auxiliary channel 4 input on 2 RCA connectors (42)

For checking the output of any zone, an assignable Monitor output can be connected to headphones from the front panel 6.3mm jack (34) or as a line output (e.g. to active speakers) from RCA connectors at the rear (51)

Each zone output has a dedicated RCA signal output on the rear panel (41), which can be connected to the line inputs of active speakers or amplifiers. These are in addition to the speaker outputs detailed below.

An antenna input (46) is provided on the rear panel for connection to an external aerial for FM tuning.

Speaker outputs

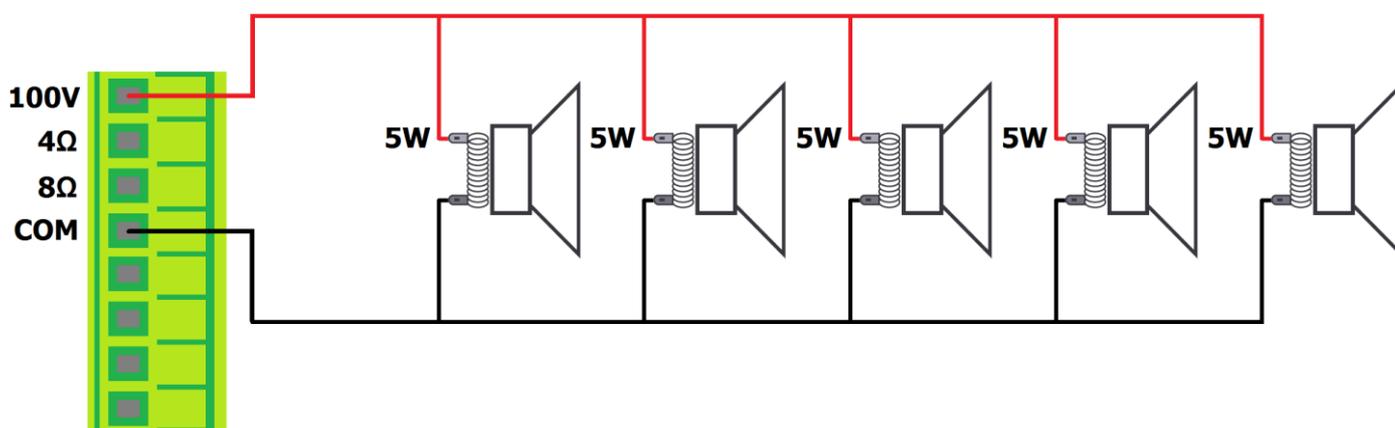
The RM306 has a separate speaker output for each zone, connected via 3 large modular terminal plugs. Each plug can be removed from the rear panel for convenient connection of speaker outputs to 2 zones.

Each zone output can be used to power either 100V line speakers or standard low impedance speakers. These 2 configurations cannot be used together, so it is important to decide which will be used at the start.

100V line systems

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

Connect the "100V" output terminal for the selected zone to the positive (+) connection of the speaker and "COM" output 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. 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 (in the case of the RM306, this is 30W per zone output)

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

Low impedance systems

Alternatively, each zone output of the RM306 is capable of powering one or more low impedance speakers. There is an option on each zone for either a 4Ω or 8Ω speaker output to determine the minimum impedance. It is essential to select the correct output terminal when opting for low impedance speakers.

For a single 8Ω speaker, connect the positive (+) wire to the "8Ω" terminal and the negative (-) wire to "COM". For a single 4Ω speaker or for 2 x 8Ω speakers connected in parallel, connect the positive (+) wire to the "4Ω" terminal and the negative (-) wire to "COM".

In either case, the connected load should have a combined impedance no lower than stated on the terminal. Lower impedance may cause irreparable damage to the amplifier. The connected speaker(s) must also have a power handling to accept up to 30Wrms from the zone output. Lower power handling may risk damage to the speakers.

Operation

When all connections to the amplifier are made, turn all rotary controls down and switch on the power (36) and the power LED (17) will illuminate.

To check for correct operation of the system, select an input source and output zone for testing. In the following example, Mic/Line 1 input and Zone 1 output have been selected.

- Turn up Zone 1 level control (6) part way for testing
- Make sure that the "Z1" assign button for Mic/Line channel 1 (21) is pressed in
- If a line input is connected to channel 1, make sure that the signal is playing from the audio source
- If a microphone is connected to channel 1, speak into the microphone
- Gradually turn up the Mic/Line 1 level control (2) whilst checking for output to Zone 1
- Increase the Zone 1 output level to the maximum required volume for that zone
- Reduce the Mic/Line level to compensate

If Zone 1 cannot be heard from the location of the RM306, use the monitoring feature as follows

- Turn down the Monitor level control (35) and connect headphones to the Monitor output (34)
- Make sure that the Monitor button for Mic/Line 1 is pressed in and listen through the headphones
- Gradually turn up the Monitor level control and check for the output to Zone 1

Each zone output has 2 LED indicators to show the signal status (8, 11, 14, 27, 30, 33)

The green LED follows the audio to show that the signal is present.

If the red LED lights for more than very short flashes, this indicates overload to that zone.

In this instance, the zone level control should be reduced until the red LED does not light.

The above process can be extended to check all zones and other input channels can be checked in the same way as for Mic/Line 1 (note: in the case of Aux channel 4, this can only accept line level input)

If preferred, the system can be checked using the onboard multi-source audio player.

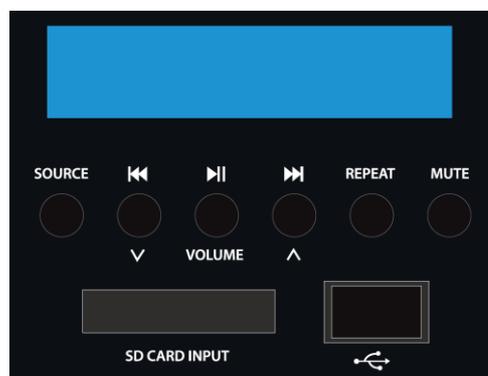
Full information on the operation of this feature is detailed below.

Onboard Multi-Source Audio Player

The RM306 is fitted with a built-in audio player, operated via a backlit LCD display and transport buttons.

This section provides access to a Bluetooth™ receiver, FM radio tuner and USB/SD audio player

In order to play audio to one of the zones, it is necessary to press in one of the "Playback" buttons (20).



SOURCE Select between Bluetooth, FM tuning, USB or SD playback

 Previous track or FM channel select

 Play/Pause track or FM auto tuning

 Next track or FM channel select

REPEAT Select RT1 repeat single, RTA repeat all or RND random

MUTE Mute playback (press and hold to switch the player on/off)

When the RM306 is powered up, the media player display will illuminate with an initial greeting "Welcome".

This message will then change to show the mode, output volume and media status.

If no USB or SD media are connected, the initial mode of the audio player will be Bluetooth.

Bluetooth Operation

Bluetooth Mode
VOL: 30 Unpaired

In order to play back audio from a smartphone, tablet or other Bluetooth device, the built-in Bluetooth receiver will need to be paired with a device which is within range. The initial status is "Unpaired", showing that there is no Bluetooth connection.

Bluetooth Mode
VOL: 30 Paired

To pair a device with the RM306 Bluetooth receiver, it is necessary to scan for devices in the Bluetooth menu of the sending device and select to pair with "BT001". Once paired, the RM306 display will change to indicate this.

Select to connect as an audio device and play audio tracks on the smartphone or tablet (or other) and the audio should be heard on the selected zone.

The buttons labelled "∧" and "∨" can adjust the audio player output volume.

Press and hold "∧" to increase volume or press and hold "∨" to decrease volume.

Pressing "Mute" will mute any output from the audio player (pressing and holding switches the player on/off)

If the sending device goes out of range or the Mode of the audio player is changed, the connection will stop. Returning to within range or to Bluetooth mode will restore the pairing.

It may be necessary to re-select connection as an audio device on the sending device.

FM Tuner

FM: 94.6MHZ
VOL: 30 CH:01

Press the Source button to switch to the FM tuner function. For good FM reception, it will be necessary to connect an external aerial to the Antenna connector on the rear panel using good quality coaxial RF cable terminated with an F-type connector.

If no channels are tuned in, press the Play/Pause button to begin auto tuning, which scans available stations and stores them as channels within the RM306 FM tuner. Pressing Play/Pause again will abort the auto-tuning.

To step through pre-set stations, press the Previous or Next buttons.

Volume and Mute buttons operate as they do for Bluetooth mode as described above.

USB/SD Player

Music Mode

The RM306 audio player has inputs for a USB pen drive or SD card with standard compressed digital audio files on them. Inserting either or both of these will switch the player to read from these sources and the display will show "Music Mode".

USB001 00:01 RTA
VOL: 30 Track Name

Whichever device is connected last will take priority and playback will start from that source. The display will show the source selected, track number, repeat mode, volume level and track name (scrolling for longer text).

Pressing the Source button will now step through Bluetooth, FM and either or both USB and SD media.

If the selected media had been playing previously, selecting it again will return to the last point played.

Pressing play/pause will play or pause the selected track. The Mute button will mute or un-mute the output.

Pressing Previous or Next buttons will select through audio files on the selected media.

Pressing the Repeat button will select through 3 repeat modes.

- RT1 will play the selected track repeatedly
- RTA will play all tracks on the selected storage device and then repeat from the start
- RND will play all tracks on the selected storage device in a random order

Powering down

When powering the RM306 down, it is advised to turn down all zone output level controls to avoid loud clicks or pops through the connected speakers. If not used for long periods, disconnect from the mains.

Specifications

Power supply	110-230Vac, 50/60Hz (IEC)
Output power	6 x 30Wrms
Audio source	USB/SD/FM/BT audio player
Bluetooth version	2.0
Inputs	3 x mic/line (XLR/jack), auxiliary 2 x RCA
Input impedance	1k Ω (mic/line)
Input sensitivity	-11dB (line), -46dB (mic)
Zone outputs: line	6 x RCA
Zone outputs: speaker	6 x terminal outputs 100V/8 ohms/4 ohms/com
Phantom power	+20V switchable to each XLR
Monitor outputs	6.3mm stereo phones out, 2 x RCA line out
Mute	+24V relay contacts
Frequency response	100Hz - 24kHz
THD	<0.76% @ 1kHz
SNR	84dB (line), 82dB (mic)
Dimensions	433 x 89 x 403mm
Weight	13.5kg

Troubleshooting

No power LED on control panel	Ensure IEC lead is in good condition and connected properly
	Ensure that the voltage selector is switched to the correct value for the supply
	Ensure POWER switch is on and check mains inlet fuse
Power LED is on but no other LEDs and no output	Check input signals and condition of input connection leads
	Check that the selected zone output is assigned on the active input channel
	Check Zone, Mic/Line, Aux or BT/FM/USB/SD volume controls are turned up
Power light and zone output LEDs lighting but no output	Use monitor function to check zone signal using headphones
	Check speaker output terminals are connected correctly
	Check speakers are working (test on another amp if available)
LCD display on audio player is not lit	If main power is on, press and hold the Mute button until the display is lit
No output from audio player	Ensure that Mute function is off and volume is not set too low
	Check that Mic/Line 1 priority or 24V mutes are not overriding playback
No playback via Bluetooth	Ensure that the sending device is paired and connected as audio to "BT001"
	Check playback status and volume setting of sending device
USB/SD player will not play audio from media	Press Play/Pause button to check if track is paused
	Press the Source button to ensure that the required device is selected
	Check memory device is connected properly (remove and re-insert)
	Check file types – standard compressed digital audio files are required
Output is very loud or distorted	Check level of input signal is not too high
	Reduce relevant Mic/Line, Aux, USB/SD and/or Zone level controls
Output is working but at very low level	Check input audio source level is not too low
	Increase relevant Mic/Line, Aux, USB/SD and/or Zone level controls
	Check for quiet recording of media files on USB/SD/BT devices
	Check Mic/Line 1 priority is not unintentionally suppressing other channels
No microphone output	Check phantom power is enabled if using condenser microphones
Feedback from microphone	Face microphone away from speakers and monitors
	Turn down relevant Mic/Line and/or Zone level controls
Amplifier overheating	Ensure cooling vents are clear from debris and dust
	Check that 4 Ω or 8 Ω speakers are not connected to 100V terminals
	Ensure total 100V speaker wattage is lower than the max rating for any zone
	Ensure that 100V and 8 Ω speakers are not connected simultaneously
	Ensure that total load connected to 4 Ω or 8 Ω output is not less than stated



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.

*Errors and omissions excepted.
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