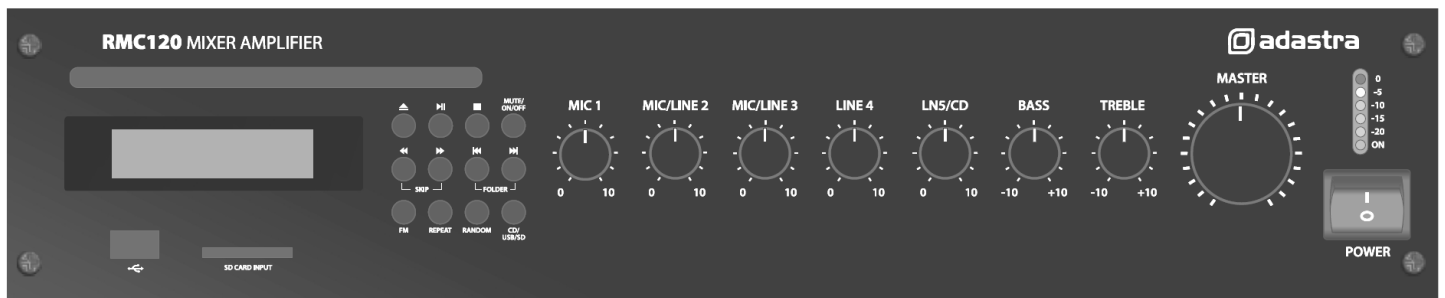# RMC120 SERIES

Rackmount 100V mixer-amplifier with CD player

Item ref: 953.141UK

User Manual

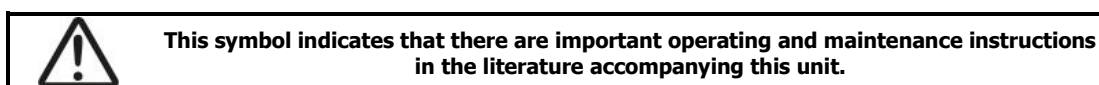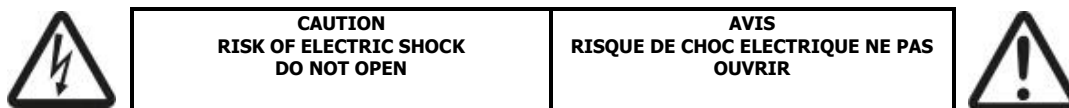Version 1.1

⚠️ 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 RMC120 rackmount 100V mixer-amplifier with CD player 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 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 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 ⚡ 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
17. The DC input terminals must only be connected to a DC power supply which complies with SELV

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
- Do not use 8Ω and 100V terminals at the same time
- Do not connect 8Ω speakers to the 100V terminal or 100V speakers to the 8Ω terminal
- Do not allow any foreign objects to enter the case or through the ventilation grilles or CD slot

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 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
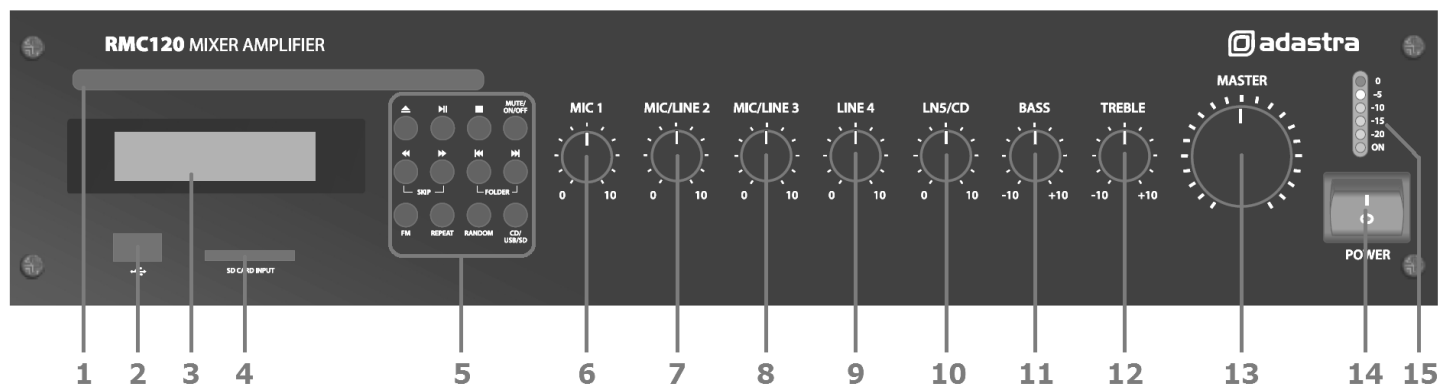
1. CD feed slot
2. USB port
3. LCD display
4. SD card slot
5. Audio player controls
6. MIC 1 volume control
7. MIC/LINE 2 volume control
8. MIC/LINE 3 volume control
9. LINE 4 volume control
10. LINE 5/CD volume control
11. BASS EQ control
12. TREBLE EQ control
13. MASTER volume control
14. POWER on/off switch
15. Output level meter

Rear panel
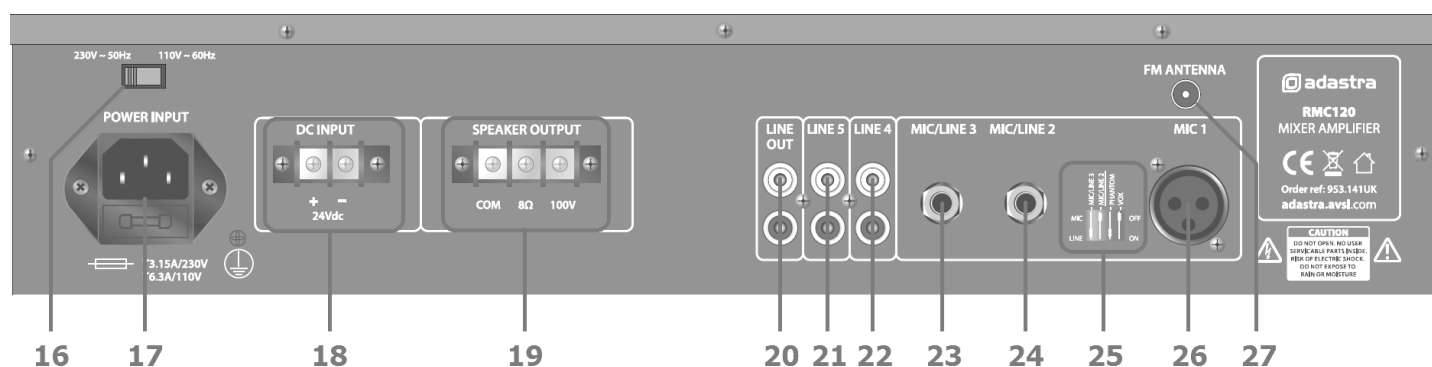
16. Mains voltage switch
17. IEC mains inlet & fuse holder
18. DC power terminals
19. Speaker connection terminals
20. LINE OUT connectors (RCA)
21. LINE 5 input (RCA)
22. LINE 4 input (RCA)
23. MIC/LINE 3 input (6.3mm jack)
24. MIC/LINE 2 input (6.3mm jack)
25. DIP switches (see DIP switches section below)
26. MIC 1 input (XLR)
27. FM antenna connection

Connection and setup

Connect the rear IEC inlet (17) 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 (16) and that the mains outlet is switched on.

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 24Vdc INPUT (18) on the rear panel. Ensure that DC cables are capable of handling the current (10A min. recommended)

Ensure the POWER (14) is switched off until all input and speaker connections are in place.

The RMC120 has a total of 5 input channels. MIC 1 input (26) is fed to a dedicated microphone channel. Connect the main announcement microphone to this channel using a balanced XLR lead.

DIP switches
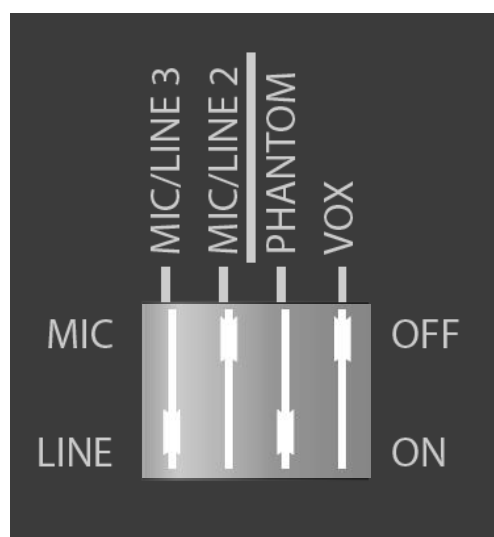
MIC 1 channel has an option for +20V phantom power for condenser microphones and paging microphones with chimes.

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.

These features are set by DIP switches (25) as shown here. Moving the DIP switch down will switch the feature ON.

MIC/LINE 2 (24) and MIC/LINE 3 (23) jack inputs can be set to MIC or LINE sensitivity to suit the type of input being used. Moving the relevant DIP switch down selects LINE sensitivity. Moving the DIP switch up selects MIC sensitivity.

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.

Connect microphones or mono line inputs to MIC/LINE 2 and MIC/LINE 3 inputs 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 (22) and LINE 5 (21) connectors on the rear panel using good quality RCA leads. Since RM series amplifiers are mono output, stereo signals will be summed together.

LINE 5 input can be used in place of the integral CD/USB/SD/FM player.

Further mixer-amplifiers or slave amplifiers can be connected from the rear LINE OUT sockets (20), again using a good quality RCA lead. This output carries the full mix of all channels 1 – 5 as produced through the speakers.

Speaker outputs

The RMC120 can be used either as a 100V line amplifier or standard low impedance power amplifier. 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" output terminal 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.
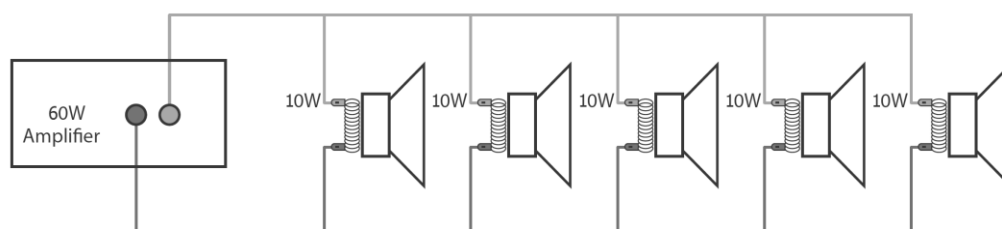
A 100V line speaker system can comprise of many speakers connected together. The determining factor for how many speakers can be used on a single amplifier is the power rating. For most purposes, it is advised to connect as many speakers as needed with a combined wattage of no more than 90% of the amplifier's output power rating.

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.

Low impedance systems

The RMC120 can provide an output for a single 8Ω speaker by connecting the "8Ω" output to the positive (+) speaker connection and "COM" output to the negative (-) speaker connection. It is important to ensure that the speaker load is no less than 8Ω and that the power handling of the speaker is equal to or greater than the output power of the amplifier.

Operation

When all connections to the amplifier are made, turn all rotary controls down and switch on the power (14) and a power "ON" LED will illuminate. Turn BASS and TREBLE controls (11, 12) to the 12 o'clock position (pointing straight up) and turn MASTER rotary control (13) up part way for testing.

Ensure a signal is being fed to one of the line inputs 2, 3, 4 or 5 and gradually increase the volume control for that channel 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 other line inputs connected to channels 2, 3, 4 or 5.
Note: The initial test can be made using the built-in CD/USB/SD/FM audio player. See section below for instructions. Both the audio player output and LINE 5 input are governed by the LN5/CD volume control (10)

The output of the amplifier is represented on the level meter LEDs (15) 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 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. Gradually increase the MIC 1 control (6) 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 noise). Repeat this process for microphones connected via the MIC/LINE 2 and MIC/LINE 3 inputs.

If the VOX feature is enabled, 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 to adjust the tone of the overall output. At the 12 o'clock position, these controls are applying 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.

CD playback

The RMC120 is fitted with a built-in audio player. This unit allows playback of music or audio messages from CD or stored as standard compressed audio files on either USB pen drive or SD card. There is also an FM tuner function, for which there is a rear antenna connection (27).
For CD playback, ensure that LN5/CD level control (10) is turned up for the audio player output to be heard.
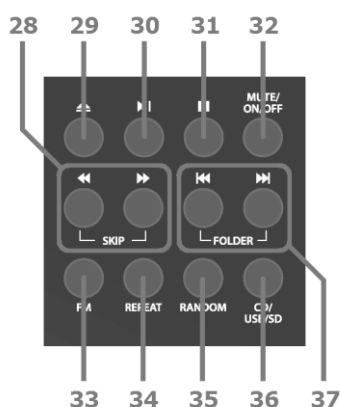
28. Forward/Reverse seek buttons (in FM mode, press and hold for auto tune)
29. CD eject
30. Play/Pause track or FM channel select mode
31. STOP
32. MUTE ON/OFF
33. FM select
34. REPEAT
35. RANDOM
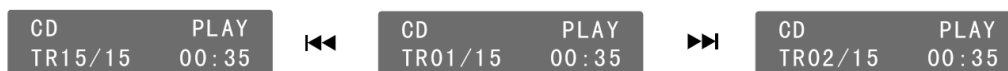36. CD/USB/SD source select button
37. Previous/Next buttons

Insert a CD into the feed slot (1) and the mechanism will draw the disc inward and read the contents

| CD | | | CD | | | CD | STOP |
| CLOSE | | → | LOADING | | → | TR00/15 | 45:35 |

Press the Play/Pause button (30) to play from track 1 on the disc. Press again to pause playback.

Play:

| CD | PLAY |
| TR01/15 | 00:35 |

Pause.

| CD | PAUSE |
| TR01/15 | 00:35 |

Use the Previous or Next buttons (37) to select the desired track.

| CD | PLAY | | CD | PLAY | | CD | PLAY |
| TR15/15 | 00:35 | ⏮ | TR01/15 | 00:35 | ⏭ | TR02/15 | 00:35 |

Pressing the RANDOM button (35) initiates random track playback sequence.
Press REPEAT (34) to repeat the current track, press REPEAT again to repeat all tracks.

| CD RAN | PLAY | | CD REP 1 | PLAY | | CD REP A | PLAY |
| TR15/15 | 00:35 | | TR01/15 | 00:35 | | TR01/15 | 00:35 |

To fast forward or reverse through a track, use the Forward/Reverse seek buttons (28)

| CD | ◀◀ SEEK- | | CD | PLAY | | CD | SEEK+ ▶▶ |
| TR01/15 | 00:28 | ◀◀ | TR01/15 | 00:35 | ▶▶ | TR01/15 | 00:45 |
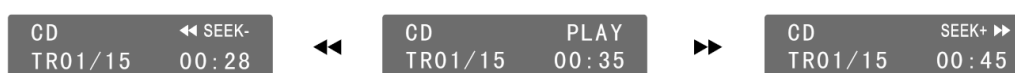
Press the STOP button (31) to halt playback and return the track to its start position.
Press the CD EJECT button (29) to auto-feed the disc out of the player.

USB/SD playback

Push a USB pen drive into the USB port (2) and/or an SD card into the SD card input (4)

```
USB                  USB          STOP
    LOADING    →     TR0196

SD                   SD           STOP
    LOADING    →     TR0196
```

Press the CD/USB/SD button (36) to ensure that the player is set to play from the required memory device.
Press the PLAY/PAUSE button to play the current track and press again to pause as needed.

```
USB          PLAY        USB          PAUSE
TR0001       00:35       TR0001       00:35
```

Searching and playback of tracks is the same as described above for the CD player

FM tuner

Press the FM select button (33) to switch to the FM tuner function.

```
TUNER          CH01
   FM  87.5MHZ
```

Use the Previous or Next buttons (37) to select a stored channel.

```
TUNER          CH30             TUNER          CH01             TUNER          CH02
   FM  107.10MHZ     |◄◄           FM  87.50MHZ     ►►|           FM  89.30MHZ
```

Tuning and storing stations

Use the Forward/Reverse seek buttons (28) to manually tune the frequency in steps of 0.05MHz
Alternatively, press and hold the Forward/Reverse seek buttons to auto search for available stations.

Upon finding a station, the auto search will stop, giving the option to store this station.
At this point, pressing the PLAY/PAUSE button (30) will flash a "00" channel number in the display.

```
TUNER          Ch00            TUNER          CH01             TUNER          CH01
   FM  89.30MHZ                   FM  89.30MHZ                    FM  89.30MHZ
```

Use the Previous/Next buttons (37) to select an appropriate channel memory.
Press PLAY/PAUSE again to confirm and store the station into the selected channel memory.

Auto search can be stopped at any time by pressing the Forward/Reverse seek buttons (28)

MUTE ON/OFF

Pressing the MUTE ON/OFF button (32) will mute the output of the audio player.

```
TUNER  MUTE  CH01
   FM  89.30MHZ
```

Pressing and holding the MUTE ON/OFF button will put the audio player in standby mode.
Press this button again to restore functions from standby mode.

Specifications

Power supply	110/230Vac, 50/60Hz (IEC) or 24Vdc option (screw terminals)
Output power: RMS	120Wrms
Outputs : Speaker	100V / 8 Ohm / COM
Audio source	Integral CD/USB/SD/FM audio player
Output: Line	RCA signal output
Inputs	Mic XLR, 2 x mic/line jack, 2 x RCA line
Volume controls	Mic1, mic/line2+3, line4+5 (CD), master
Equalizer : Bass / Treble	100Hz ±10dB / 10kHz ±10dB
Rear panel DIP switches	Phantom, Vox, Mic/Line (2 + 3)
Phantom power	+20V (MIC 1 input)
THD	<1.0% nominal (0.03% CD player, 0.05% USB/SD player)
Dimensions	433 x 320 x 89mm
Weight	9.0kg

Troubleshooting

No power LED on control panel	Ensure IEC lead is in good condition and connected properly
	If 24Vdc power input is being used, check battery is charged
	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 MASTER, MIC, LINE or USB/SD volume controls are turned up
Power light and output LEDs lighting but no output	Check speaker output terminals are connected correctly
	Check speakers are working (test on another amp if available)
No playback from CD	Press PLAY on transport controls
	Check that disc is standard CD audio format
	Check that the display is showing tracks, if not, the disc may be damaged.
	Press CD/USB/SD button to ensure correct source is selected
	Press the EJECT button and try re-inserting the disc
USB/SD player will not play audio from media	Press PLAY on transport controls
	Press CD/USB/SD button to ensure correct source is selected
	Check memory device is connected properly (remove and re-insert)
	Check file types – standard compressed digital audio files required
	Check memory device works on a PC or Mac for standard playback
Output is very loud or distorted	Check level of input signal is not too high
	Reduce MIC, LINE IN, USB/SD and/or MASTER level
Output is working but at very low level	Check input audio source level is not too low
	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
Amplifier overheating	Ensure cooling vents are clear from debris and dust
	Check that 8Ω speakers are not connected to 100V terminals
	Ensure total 100V speaker wattage is lower than amplifier rating
	Ensure that 100V and 8Ω speakers are not connected simultaneously
	Ensure that total load connected to 8Ω output is not less than 8Ω

Hereby, AVSL Group Ltd. declares that the radio equipment type 953.141UK is in compliance with Directive 2014/53/EU

The full text of the EU declaration of conformity is available at the following internet address: http://www.avsl.com/assets/exportdoc/9/5/953141UK%20CE.pdf