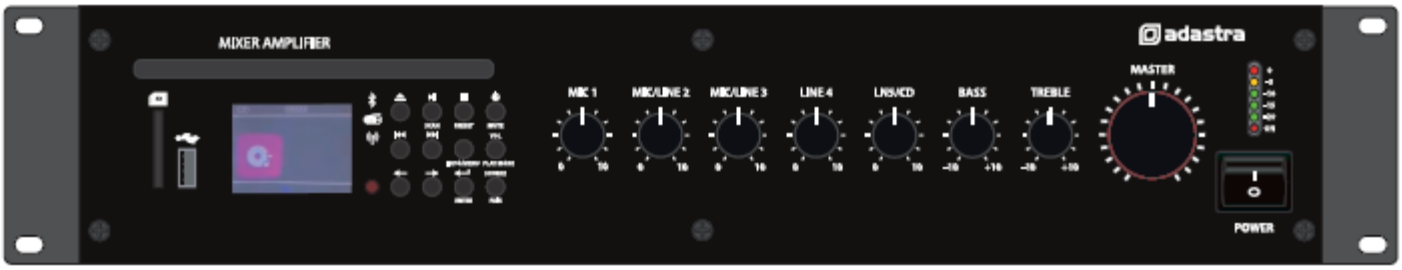
RMC-SERIES

Rackmount 100V mixer-amplifier with CD player

RMC120D: 953.142UK

RMC240D: 953.143UK

User Manual



Version 2.0

⚠	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 RMC-series rackmount 100V mixer-amplifier with CD/BT/DAB+/FM/USB/SD 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 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
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

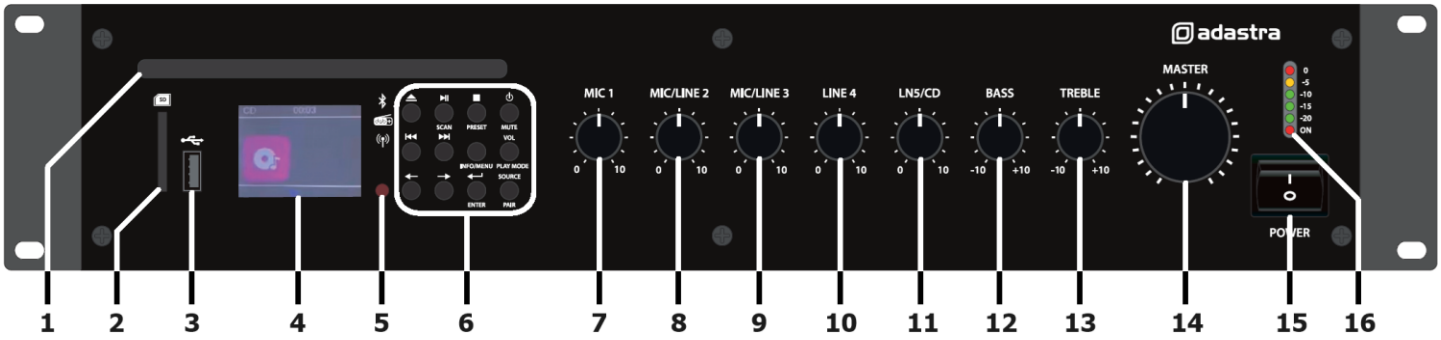
Placement

- 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

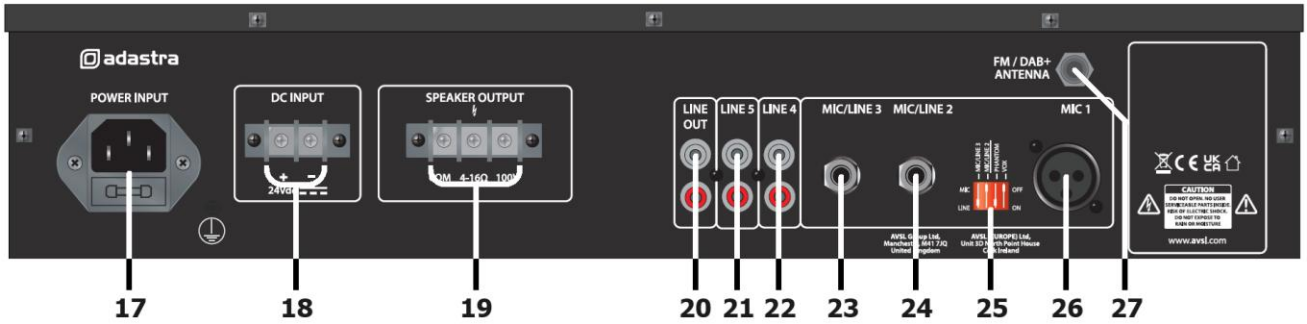
- Use a soft cloth with a neutral detergent to clean the casing as required
- Use a vacuum cleaner to clear ventilation grilles of any dust or debris build-ups
- Do not use strong solvents for cleaning the unit

Front panel



1. CD feed slot
2. SD card slot
3. USB port
4. TFT display
5. IR remote receiver (optional)
6. Audio player controls
7. MIC 1 volume control
8. MIC/LINE 2 volume control
9. MIC/LINE 3 volume control
10. LINE 4 volume control
11. LINE 5 / CD volume control
12. BASS EQ
13. TREBLE EQ
14. MASTER volume control
15. Power on/off switch
16. Power status and output level LEDs

Rear panel



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

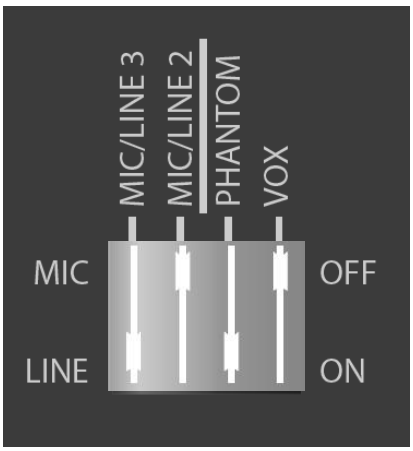
Connect the rear IEC inlet (17) to the mains using the supplied mains lead (or an equivalent approved type). Ensure that the supply voltage is correct for the RMC-series mixer-amp and the mains outlet is switched on.

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 (15) is switched off until all input and speaker connections are in place.

RMC-series mixer-amps have 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 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/BT/USB/SD/DAB+/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 a mix of all channels 1-5 as produced through the speakers.

To use the DAB+/FM radio tuner, connect the F connector (27) to a DAB/FM aerial with clear radio reception.

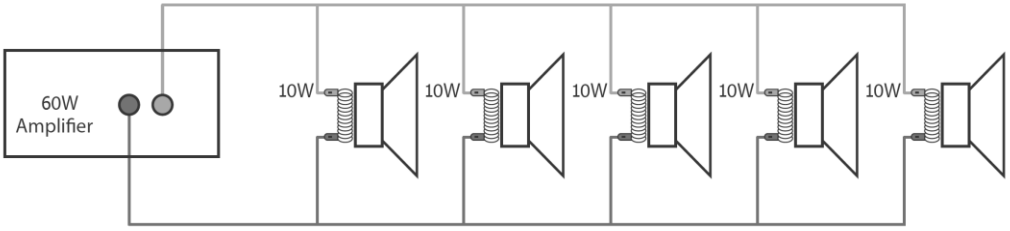
Speaker outputs

An RMC mixer-amp can be used either as a 100V line amplifier or standard low impedance 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 the amplifier's output power rating (keeping within 90% of the max. output or lower is recommended for the most stable operation)

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

Each RMC mixer-amp alternatively provides an output for a 4-16Ω load by connecting the "4-16Ω" output to the positive (+) speaker connection and "COM" output to the negative (-) speaker connection. It is important to ensure that the total speaker load is no less than 4Ω and that the combined power handling of the speakers is equal to or greater than the output power of the amplifier.

For instance, when using 8Ω speakers, connecting 2 of these speakers in parallel (+ and + connected together, – and – connected together) they will combine to make a 4Ω load, whereas two 16Ω speakers connected in parallel will make an 8Ω load, or four 16Ω speakers connected in parallel will make a 4Ω load.

Before connecting low impedance speakers like this, check the load and power handling capacity of speakers.

Operation

When all connections to the amplifier are made, turn all rotary controls down and switch on the power (15) and a power "ON" LED will illuminate. Turn BASS and TREBLE controls (12, 13) to the 12 o'clock position (pointing straight up) and turn MASTER rotary control (14) 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.

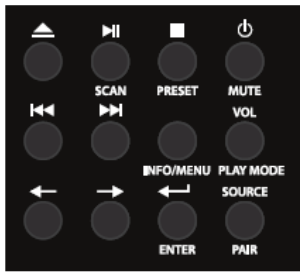
Note: The initial test can be made using the built-in audio player. See section below for instructions. Both the audio player output and LINE 5 input are governed by the LN5/CD volume control (11)

The output of the amplifier is represented on the level meter LEDs (16) 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 (do not switch the DIP switches with volume up). Gradually increase the MIC 1 control (7) 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.

Audio Player



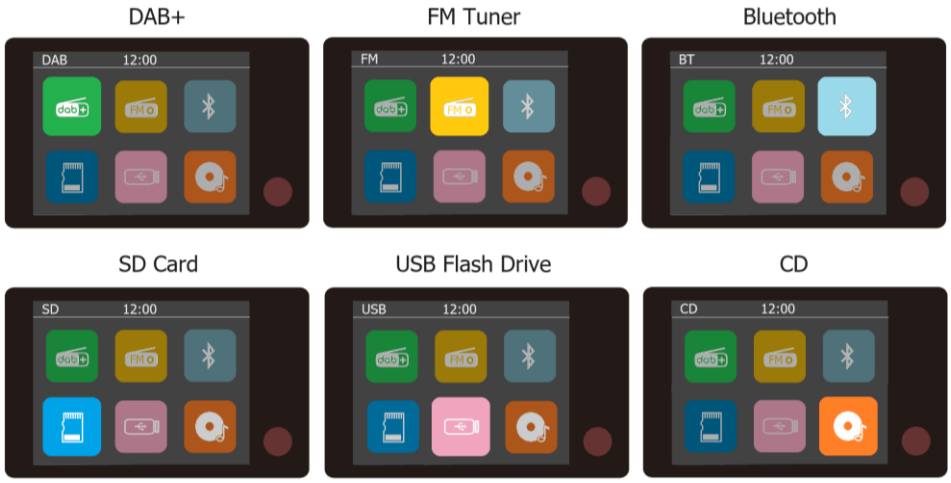
RMC mixer-amps have a built-in digital audio player for playback of recorded tracks, wireless streaming from a smartphone and tuning into digital or FM radio stations.

When in standby mode (clock face), pressing the INFO/MENU button will enter the main settings Menu. Press ENTER to enter a setting or menu option and ← or → to adjust the value. Press ENTER to confirm or INFO/MENU to go back.

Backlight	Timeout adjusts time to dim backlight. Brightness adjusts overall backlight brightness.
Time/Date	Date/Time manually adjusts date & time. Hour System is 12 or 24-hour. 3 x Date Format.
	Clock Style can be Analog or Digital face. Auto update is No Update or Update from Radio.
Language	Language can be set to English, Deutsch, Français or Italiano.
Factory Reset	Select YES to return to factory settings or NO to go back.
System Version	Displays the current firmware version.

Activation and Source Selection

From the standby clock, briefly press the Power/MUTE button to switch the player on. The player will revert to the last source setting (DAB+, FM, BT, SD, USB, or CD). To change this, press the Source select / Bluetooth Pair button (12) and use ← or → to select the required option. The display will step through 6 options as shown below. When the required source is highlighted. press ENTER to confirm.



DAB / DAB+ Tuner

When the DAB+ source is selected, the RMC mixer-amp is in DAB / DAB+ tuner mode and may already have some stations stored as presets. The last selected station will be playing with the station title above and text information next to the DAB+ symbol in the display.

The information displayed can be selected by repeatedly pressing the INFO/MENU button. One of the Info options is a red bar graph, showing the strength of the DAB+ signal. This can be useful for adjusting the position of the antenna or checking reception from an external aerial.

The playback volume can be adjusted by pressing the VOL/PLAY MODE button and using ← or → to set the output level. Output can be muted or unmuted by briefly pressing the POWER/MUTE button.

The list of preset stations can be stepped through by either pressing the ⏮ or ⏭ buttons or ← or → buttons and then pressing ENTER to select the highlighted station. To re-tune all pre-set stations, activate the auto-tuning feature of the AS-6 by holding the ⏵⏸ button until a scanning bar graph is displayed. When the bar graph reaches 100%, all available stations will be stored in memory for selection when required.

FM Tuner

The FM tuner option can be useful where there is no DAB or DAB+ signal available and operates in a similar way to the DAB+ tuner. The text information displayed next to the FM symbol can be selected by repeatedly pressing the INFO/MENU button.

The playback volume can be adjusted by pressing the VOL/PLAY MODE button and using ← or → to set the output level. Output can be muted or unmuted by briefly pressing the POWER/MUTE button.

Unlike the DAB+ tuner, pressing ← or → manually tunes the reception frequency in steps of 0.05MHz. Pre-set stations are selected by pressing the ⏮ or ⏭ buttons or pressing the ■ / PRESET button and then using the ← or → buttons to select from a drop-down list. Pressing ENTER to select the highlighted station.

To re-tune all pre-set stations, activate the auto-tuning feature of the FM tuner by holding the ⏵⏸ button until a scanning bar graph is displayed. When the bar graph reaches 100%, all available stations will be stored in memory for selection when required.

Bluetooth Receiver

Selecting the BT source option ("B" rune symbol) opens the RMC mixer-amp's inbuilt Bluetooth receiver. A device that is previously paired with the RMC-series mixer-amp via Bluetooth will automatically connect if it is within BT wireless range.

To pair a new device, press the SOURCE/PAIR button to initiate pairing on the RMC mixer-amp. Open the Bluetooth menu on a smart phone and search for the device called "Adastra RMC***D" (where *** is the power version) and select to pair. Once paired, the display will state "Connected" or "Playing" and show the name of the connected device. This device will stream any audio playback wirelessly to the RMC mixer-amp.

The playback volume can be adjusted by pressing the VOL/PLAY MODE button and using ← or → to set the output level. Output can be muted or unmuted by briefly pressing the POWER/MUTE button.
During Bluetooth playback, the ⏵⏸ button will pause or play the current track remotely on the sending device. The ⏮ or ⏭ buttons or ← or → buttons will select the track being played.

Playback controls for CD/USB/SD

CD, USB and SD card modes have some common controls for playback, navigation and display.

The playback volume can be adjusted by pressing the VOL/PLAY MODE button and using ← or → to set the output level. Output can be muted or unmuted by briefly pressing the POWER/MUTE button.

A short press of the ⏮ or ⏭ buttons or ← or → buttons will select the track being played.
Holding the ⏮ or ⏭ buttons will fast reverse or fast-forward the track being played.

Pressing and holding the VOL/PLAY MODE button enters the Play Mode menu, offering Repeat One, Repeat All, Random and Normal playback modes, selectable using the rotary encoder.

CD Playback

To play a CD, use the source select procedure to enter CD mode. If you are unsure if a disc is already loaded, press the eject button ⏏, which will push any CD that is already loaded back out of the CD slot (1). To load a CD, carefully feed a disc into the slot 'label up' and the mechanism will draw the CD into the machine. Playback should begin automatically and can be paused or resumed using the ⏵⏸ button.

The feed mechanism will only operate in CD mode. Press eject to remove or change the CD as required.
The display will show the CD symbol, playback mode (playing/paused/stop), track number and elapsed time.

Note: Do not insert mini-CDs as these are not suitable for slot feed machines and could lead to damage.

SD Card Playback

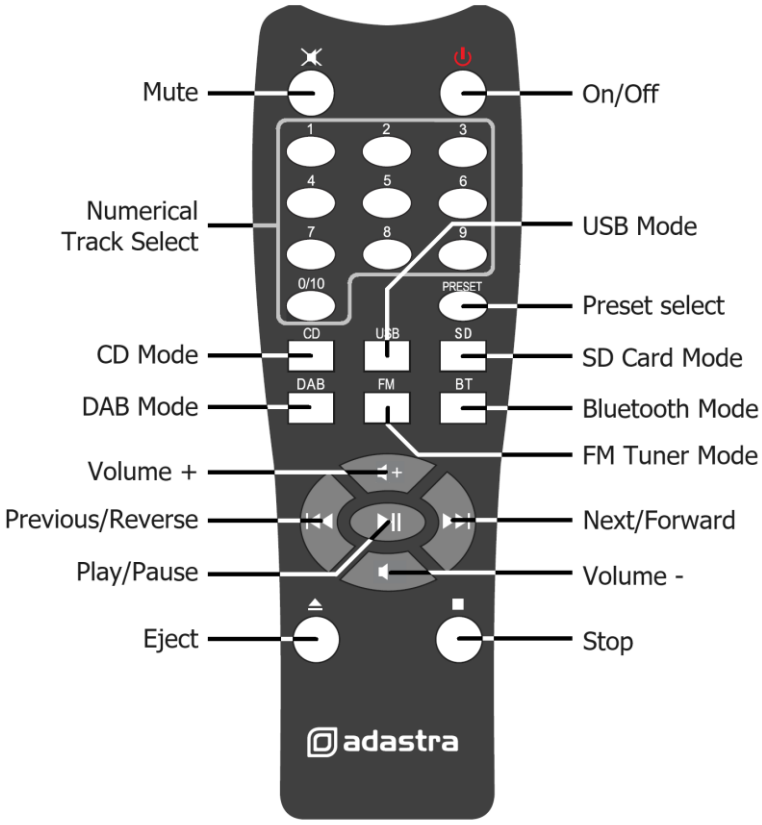
Insert an SD card (formatted to FAT32, 32GB max.) with standard mp3 audio files into the SD card slot (2). Selecting the SD card option in the source menu will begin playback of stored tracks (or press Play/Pause). The SD text information displayed in the display can be selected by pressing the INFO/MENU button.

USB Playback

Insert a USB flash drive (formatted to FAT32) with standard mp3 audio files stored on it into the USB port (3). Selecting the USB option in the source menu will begin playback of stored tracks (or press Play/Pause). The USB text information displayed in the display can be selected by pressing the INFO/MENU button.

Optional remote control

A remote control is available as an optional extra for RMC-series mixer-amps (code SPR000708) in the form of a handheld IR remote control which has the same control as found on the front panel and some additional functions.



Open the rear compartment on the handheld remote and install 2 x AAA batteries, observing the correct polarity as indicated inside the compartment. Replace the battery compartment cover.

Aim the remote control towards the I.R. detector next to the display (5)

Remove batteries from the handset if not being used for long periods.

The remote handset replicates all of the front panel controls with some additions.

There are separate DAB, FM, BT, SD, USB and CD select buttons and a full 0-9 numerical select button set for faster access to media and tracks. Pressing 0/10 adds a zero before or after the selected number.

To power the media player down, press and hold the On/Off/Mute button on the front panel or press On/Off on the remote. Press the same button again to power up.

Specifications

Power supply	170-264Vac, 50Hz (IEC)	
Fuse	T3.15A	
DC power	24Vdc (screw terminals)	
Inputs	Mic XLR, 2 x mic/line jack, 2 x RCA line	
Input sensitivity: mic 1 (balanced)	-53dBV	
Input impedance: mic 1	5k Ohms	
Input sensitivity: line (unbalanced)	-15dBV (-18.5dBV line 5)	
Input impedance: inputs 2-5	1k Ohms	
Line output	RCA	
Speaker outputs	100V / 4-16 Ohms / COM terminals	
Bluetooth version	v5.0	
Controls	Mic1, mic/line2+3, line4+5 (USB), bass, treble, master volume	
Equalizer: bass	100Hz ±10dB	
Equalizer: treble	10kHz ±10dB	
Rear panel switches	Mic/Line (2 + 3), Phantom, Vox	
Phantom power	+20V (MIC 1 input)	
THD	<1.0%	
Model	RMC120D	RMC240D
Fuse	T3.15A	T5A
Power: rms	120Wrms (100V or 4 Ohms)	240Wrms (100V or 4 Ohms)
Dimensions	432 x 320 x 88mm	432 x 320 x 88mm
Weight	7.0kg	10.4kg

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, no output	Check input signals and condition of input connection leads
	Check MASTER, MIC, LINE or LN5/CD 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	Ensure correct source is selected and 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 the EJECT button and try re-inserting the disc
USB/SD player will not play audio from media	Ensure correct source is selected and press PLAY on transport controls
	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
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 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 4-16Ω speakers are not connected to 100V terminals
	Ensure total 100V speaker wattage is lower than the amplifier rating
	Ensure that 100V and 4-16Ω speakers are not connected simultaneously
	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 953.142UK 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/9/5/953142UK%20CE.pdf