apart

Sounds like the right choice

MA120 - MA240

Instruction manual

MA120 / MA240 manual

Safety instructions

- Caution! This professional device needs to be installed by qualified personnel only.
- Please check the carton box for any kind of damage on reception of the goods. In case of a damaged carton, please contact your dealer before opening the carton.
- !!!! Danger !!!! Exposure to high sound levels may cause a permanent hearing loss. Individuals vary considerably to sound pressure level induced hearing loss but nearly everyone will lose some hearing if exposed to high sound pressure levels for a sufficient amount of time. Therefore it is recommended that all persons exposed to equipment capable of producing high sound pressure levels, such as this amplifier, be protected by hearing protection while installing or operating this unit.
- Read all documentation before operating your equipment.
- Keep all documentation for future reference.
- Save the carton and packing material even if the equipment has arrived in good condition.
- Should you ever need to ship the unit, use only the original factory packing.
- Do not spill water or other liquids into or on the unit.
- Make sure power outlets conform to the power requirements listed on the back of the unit.
- Do not use the unit if the electrical power cord is frayed or broken.
- Always operate the unit with the AC ground wire connected to the electrical system ground.

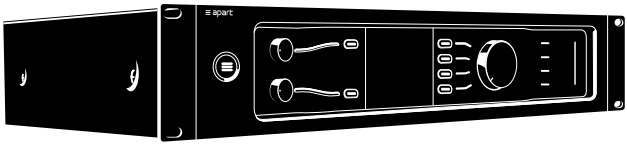
- Do not connect the inputs / outputs of amplifiers or consoles to any other voltage source, such as a battery, mains source, or power supply, regardless of whether the amplifier or console is turned on or off.
- Power down & disconnect units from mains voltage before making connections.
- Do not use the unit near stoves, heat registers, radiators, or other heat producing devices.
- Do not operate equipment on a surface or in an environment which may distort the normal flow of air around the unit. If the unit is used in an extremely dusty or smoky environment, the unit should be periodically "blown free" of dust.
- Do not remove the cover. Removing the cover will expose you to potentially dangerous voltages.
- Do not drive the inputs with a signal level higher than that required to drive equipment to full output.
- Do not run the output of any amplifier back into another input.
- In case of mal-function this device should be serviced by qualified service personnel only.
- This unit has NOT been designed for use in mobile applications, such as: mobile discobars, mobile PA systems, Live bands, audio rental systems, …

Introduction

“Setting a new industry standard”

When we, at Apart, look at mixing amplifiers today it seems like the complete pro audio industry slumbered. Stuck into old habits, the overall look and feel remains a hassle for both users and installers worldwide.

Thanks to excessive research and input from our partners, our R&D department together with a world leading design company succeeded in redefining the look of the “mixing amplifier” as we know it today.



The new and revolutionary Apart MA120/240 mixing amplifier offers the end-user an unseen cutting edge design and ease of use. The groundbreaking front panel is clear and easy to use without any unnecessary bells and whistles.

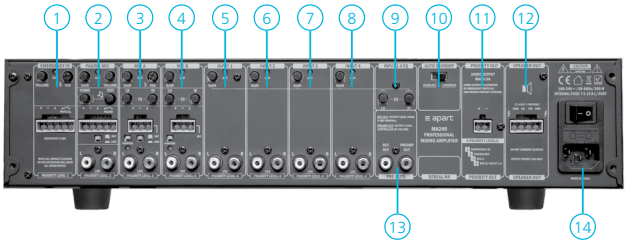
The refreshing rear panel will give every installer an instant gratification due to the sheer and logic design.

Together with an unprecedented connectivity and immaculate sound performance this reliable mixing amplifier is the new standard in the fixed install audio market.

Features

- 19" rack unit, 2U high with removable rack ears.
- High power class-D power amplifier module with 100 volt / 70 volt / 4 ohm output connectivity.
- Output power
  - MA120: 1 x 120 W @ 70 V / 100 V / 4 ohm.
  - MA240: 1 x 240 W @ 70 V / 100 V / 4 ohm.
- High thermal efficiency.
- PREAMP output and REC output.
- Patented front panel designed to give an intuitive user interface.
- Front control for end-user and back panel for configuration installer (out of reach of end-user).
- Universal switching mode power supply.
- Auto standby mode (can be switched off) with < 0.5W standby.
- 24 volt DC / 500 mA priority output.
- Dedicated emergency input with vox and mute all switch.
- Paging mic input with contact closure.
- 2 front panel operated mics: mic A with switchable vox.
- 4 line inputs on RCA.
- Signal clip indicators and gain control on all inputs for fast and easy configuration of the input gain.
- Status leds on the front panel with led VU meter.
- No cooling fan – maintenance free.
- Extended speaker and amplifier protection circuits : over current protect, over temperature protect, APC clip limiter.
- 4 priority levels for audio routing.
- Isolated emergency input.

Connections



1. Emergency input: connect your balanced 0 dBV line level emergency input to the euroblock connector. If available, connect the emergency contact to the "mute all" connection. The contact must be "potential free", i.e. a relay or switch contact that does not carry any voltage. Alternatively, activate the "vox" circuitry by turning the vox control until you hear an audible "click". Now turn the vox control up while playing music until the vox circuit is activated. The vox and the mute all switch have the same function: they will mute all other sources, and will wake up the unit from standby (auto standby and front button standby). The emergency level can be set with the volume control. If the clip led lights up when the emergency signal is present, lower the level of the emergency signal at the source to avoid distortion. Activating the emergency input will also activate the priority output (11).

2. Paging mic input: connect your paging mic here: the input accepts microphone level signals on balanced euroblock, line level signals on balanced euroblock or RCA. Set the mic/line switch accordingly. Adjust the gain control so that the clip led does not light up when the signal is at its highest level. Then set the volume control as desired. When the paging contact is closed, all other sources (except emergency input) will be muted, and the chime will sound. Set the chime level as desired. The paging contact will also activate the priority output (11). To test the chime level, a chime test button is present.

3. MIC A input: connect a microphone here: the euroblock accepts balanced microphone or line level signals and RCA. Set the mic/line switch accordingly. Phantom power (48 V) can be applied to the balanced euroblock by pushing the phantom power switch. The led beneath the switch will be lit when phantom power is present. Adjust the gain control so that the clip led does not light up when the signal is at its highest level. If necessary, activate the vox circuitry by turning the vox level control until you hear an audible "click". Now turn the vox potmeter up until the vox circuit is activated. The MIC A volume can be set using the front panel potmeter (2). MIC A can be activated by pressing the MIC A select switch on the front panel (3). The vox circuit, when activated, will attenuate (30 dB attenuation) all lower priority sources (Mic B, input 1-4). MIC A has its own lo and hi eq controls. MIC A input is compatible with the local input panel that requires phantom voltage.

4. MIC B input: connect a microphone here: the euroblock accepts a balanced microphone signal and RCA. The led beneath the switch will be lit when phantom power is present. Adjust the gain potmeter so that the clip led does not light up when the signal is at its highest level. The MIC B volume can be set using the front panel potmeter (9). MIC B can be activated by pressing the MIC B select switch on the front panel (10). When selected, the MIC B signal will be mixed together with a signal present on line input 1-4. MIC B has its own lo and hi eq controls.

5. Input 1: line level input on RCA connectors. Adjust the gain control so that the clip led does not light up when the signal is at its highest level.

6. Input 2: line level input on RCA connectors. Adjust the gain control so that the clip led does not light up when the signal is at its highest level.

7. Input 3: line level input on RCA connectors. Adjust the gain control so that the clip led does not light up when the signal is at its highest level.

8. Input 4: line level input on RCA connectors. Adjust the gain control so that the clip led does not light up when the signal is at its highest level.

9. Input 1-4 eq: lo and hi controls for line inputs 1-4.

10. Auto standby: set the switch to "enabled" to enable auto standby. The amplifier will go to auto standby after 10 minutes if no signal is present current selected inputs.

11. Priority out: this connector will supply 24 VDC, max 500 mA when priority is activated. Priority will be activated by the emergency switch or emergency vox, or by the paging contact on the paging mic input. Typically, 24 volt priority is used to override volume controllers present on speaker lines.

12. Speaker out: speaker output connector on euroblock. Use the 4 ohm, or the 70 volt or the 100 volt output. Never use more than one output at the same time.

13. Pre-outs: the preamp output carries the same line level signal that is being fed to the power amplifier and is taken after the front panel volume control (6) and the front panel mic level controls (2). The rec out carries the same signal as the line out, but it is not influenced by the position of the front volume button and the front mic level buttons.

14. Main input connector and power switch: connect the mains power cord here. Switch on the power switch to power up the unit. The mains fuse is also located here.

Note: emergency vox or emergency switch and the paging contact will mute all lower priority input signals. MIC A vox will attenuate all lower priority input signals by 30 dB. This is also known as "voice over circuit".

The chime can only be activated by closing the paging contact on the paging mic.

As long as the chime sounds, the paging message will be muted, even if the chime level is set to the minimum(off) level.

Do not use the priority output continiously at full power (24V, 0.5A).

IMPORTANT!

This amplifier relies on convectional cooling. In normal situations, overheating will not occur due to the class D amplifier topology. Since there are no cooling fans in the amplifier, make sure the convectional cooling system can work properly. The unit can be built in a 19 inch rack system using the included 19 inch brackets, but the ventilation holes should never be blocked. Therefore, it is absolutely necessary to allow at least one free rack space or 44 mm above the amplifier. Make sure the ambient temperature is between 0 and 40°C. Operating the unit beyond its normal limits may cause overheating. If necessary, use a forced ventilation system in your mounting rack when the rack holds multiple amplifiers.

The mains fuse is located in the mains inlet (14). When the fuse is broken, replace it with a fuse of the same current and voltage rating:

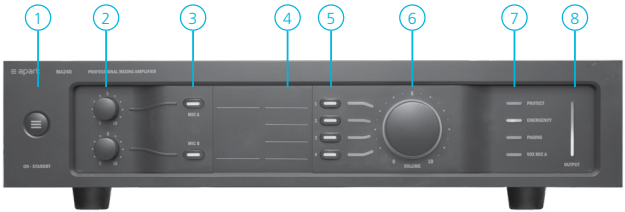
- MA120: T 2 A L / 250 V.
- MA240: T 3.15 A L / 250 V.

For qualified personnel only!

Before using the amplifier for the first time, check the total impedance of your speaker lines using an impedance meter: temporarily disconnect the speaker line from the amplifier and measure the speaker line. Minimum load impedance @ 100 volt must be 41.7 ohms or more. This value corresponds to 240 watts @ 100 volt.

Minimum load impedance @ 70 volt must be 20.4 ohms. Do not use more than 1 speaker output at the same time.

Operation



1. On / Standby button and led: switch the standby ON / OFF with this button. Please note that the main power switch at the rear of the unit (14) must be switched on. Read more about standby below. When the unit is on, the on/standby button led will light up steadily. When the unit is in standby, the led will fade in / fade out.

2. MIC A/B volume control: this control determines the output volume of MIC A/B.

3. MIC A/B on/off switch: use this button to turn MIC A / B on and off.

4. Name field: here you can attach the name stickers and the name fields supplied with the unit.

5. Input 1 – 4 selection buttons: by pressing these buttons, you can toggle between inputs 1 to 4, or switch off the selected input by pressing the button that is lit. You can only select one input at a time.

6. Volume control: turn the control button clockwise to increase the volume, counterclockwise to decrease. The volume control sets the output volume of the selected input 1 – 4 only.

7. Status leds: Protect led lights up when an overload of the amplifier occurs. The amplifier will be muted until the condition is normal again. Emergency led will light up to indicate that an emergency message is coming through. The paging led lights up when the paging contact is closed. Vox MIC A will light up to indicate that the vox circuit of MIC A is active. The vox circuit will only be active if MICA is selected (front button 3).

8. Output VU meter leds: this led bar indicates the output level. Avoid hitting the red zone!

Standby

The auto standby function can be enabled/disabled via a switch (10) at the rear of the unit. The power/standby control led will slowly fade in/out to indicate that standby is activated.

Basically, there are 2 standby modes:

- manual standby: activated by pushing the power button on the front.
- auto standby: activated by the auto standby circuitry.

The unit will go to auto standby after 10 minutes when the following requirements are fulfilled:

- Auto standby is enabled
- No audio signal is present on the SELECTED INPUT or MIC* (or when no input is selected)
- No emergency signal is present and the vox is active or the emergency contact is not closed
- The paging contact is not closed

The unit will wake up from manual standby by any of the following:

- Pressing the standby / power button.
- Activating the emergency input by the emergency vox or the emergency mute all.
- Cycling the power using the rear power switch (or a mains power interruption).
- Pushing any front panel button.

The unit will wake up from auto standby by any of the following:

- Activating the previously selected sound source (i.e. signal present on the previously selected input**).
- Pushing any front panel button.
- Activating the paging contact.
- Activating the emergency input by the emergency vox or the emergency switch.
- Cycling the power using the rear power switch (or a mains power interruption).

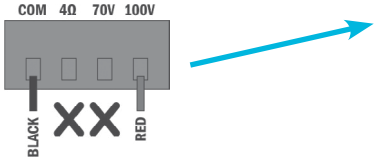
**Note: when the audio cable at the selected input is long and noisy, the unit will not go to auto standby mode.*

***The minimum required signal level required to wake up the unit from auto standby is 2-10 mVrms for line inputs and 0.1 - 0.5 mVrms for microphone signals.*

Practical example

Connecting the speakers

Example: 100 volt speaker line.
Connect the speaker line wires as shown.



The 4 ohm and 70 volt connectors are not used. Connect the common or speaker line ground wire to the COM connector. Connect the 100 volt line to the 100 volt connector.
The minimum speaker line impedance is 83.3 / 41.7 ohms (120 / 240W). Check the impedance with an impedance meter before connecting the speaker line to the amplifier.

Note: never use more than one output at a time! Do not overload the speaker output. In 70 and 100 volt speaker lines, the power of all speakers in the chain must be added. The total power MUST be lower than or equal to the amplifier's output power. For example: on a 240 watt 100 volt amplifier, you can connect 4 x 60 watt 100 volt speakers in parallel: 4 x 60 = 240 watts.

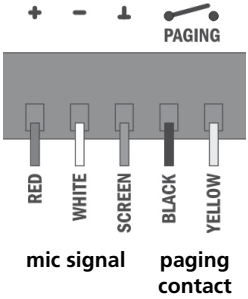
Always measure the speaker line with an impedance meter or loudspeaker line watt meter

The loudspeaker out terminal is for class 3 wiring and presents a risk of electric shock or a fire risk. The wiring must only be connected and installed by a qualified person, the National wiring rules for installation of class 3 wiring must be followed.

Practical example

Connecting and setting up a paging microphone

1. Connect the microphone wire as shown in the picture.
   The + - GND is used for the balanced signal of the microphone.
   The paging contact closure is indicated in the picture.



2. Set the mic / line button to “MIC”.
3. Close the paging contact.

4. While speaking in the microphone as loud as possible, turn the gain control slowly clockwise until the clip led lights up at the highest peaks. Now turn the control back a little. Open the volume control until the paging message sounds as loud as desired. Watch the output VU meter on the front of the unit and make sure meter never hits the red zone.

5. Open the paging contact.

6. Turn the chime potmeter about halfway, push the "test" button to hear the chime and adjust the chime volume as desired using the chime potmeter.

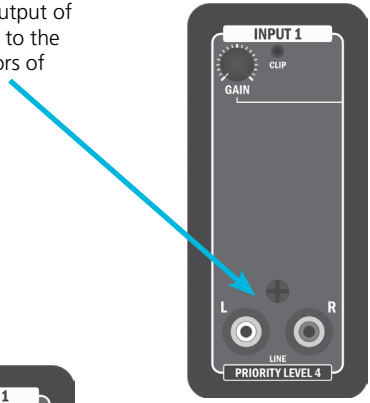
Note: the paging mic and chime levels are independent from the position of the big volume control on the front of the unit.

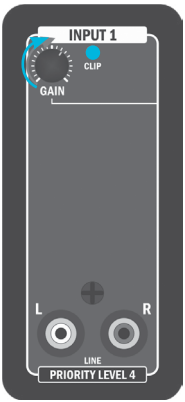
The paging contacts must be potential free, i.e. no voltages should be present on these connectors.

Practical example

Connecting a line source (tuner, CD player, ...) to input 1

1. Connect the output of the line source to the cinch connectors of input.





2. While the line source is playing, turn the gain control on input 1 slowly clockwise until the clip led lights up at the highest signal peaks. Now turn the control back a little.

3. Select "INPUT 1" on the front panel. Turn up the big volume control on the front panel to hear the selected source through the speaker(s).

Note: use the gain control also to equalize the level differences between sources. For example, if the CD player plays "louder" than the radio, turn the gain control of the CD player a little lower to compensate for the difference in output level.

When a stereo source is connected, the signals of the left and right inputs will be mixed to mono.

warranty info

Warranty claims and claims for hidden defects can be considered only if the defects appear within the warranty period of 24 months and are notified within 8 days following their appearance per registered letter. The warranty is not valid in case of an incident, wear, for moving parts, power surges, inadequate packing or shipping, improper use or storage and the disregard of recommendations of Apart Audio. The warranty only concerns the spare parts and not the involved labor, transportation or any other costs. The product must be returned in the original packaging with the proof of purchase by an Apart-Audio authorized reseller.

The general terms and conditions can be found here:

http://www.apart-audio.com/conditions/General_Terms_and_Conditions_Apart_Audio.pdf

Technical specifications

Product name	MA120	MA240
Emergency input		
Nominal input sensitivity	0 dBV (1 Vrms)	
THD+N @ -6dB (pre-out)	< 0.5%	
Frequency response (-3dB)	45 Hz – 20 kHz	
Input impedance	5 kohms	
Paging mic		
Nominal input sensitivity bal. mic (gain max)	-45 dBV (5.6 mVrms)	
Nominal input sensitivity bal. line (gain max)	-12 dBV (250 mVrms)	
Nominal input sensitivity unbal. line (gain max)	-12 dBV (250 mVrms)	
THD+N @ -6dB (pre-out)	< 0.4 %	
Frequency response (-3dB)	bal mic: 165 Hz – 20 kHz unbal, bal line: 20 Hz – 20 kHz	
Gain	-15 to +15 dB	
Length chime	2 s	
Input impedance	2 kohms	
Mic A / Mic B		
Nominal input sensitivity bal. mic (gain max)	-50 dBV (3 mVrms)	
Nominal input sensitivity bal. line (gain max)	-12 dBV (250 mVrms)	
Nominal input sensitivity unbal. line (gain max)	-12 dBV (250 mVrms)	
THD+N @ -6dB (pre-out)	< 0.2%	
Frequency response (-3dB)	bal mic: 165 Hz – 20 kHz unbal, bal line: 20 Hz – 20 kHz	
LO EQ	+-10 dB @ 100 Hz	
HI EQ	+-10 dB @ 10 kHz	
Phantom	Voltage: 48 V	
Vox attenuation MicB, Input 1-4	30 dB	
Input impedance	2 kohms	

Product name	MA120	MA240
Input 1-4		
Nominal input sensitivity unbal. line (gain max)	-12 dBV (250 mVrms)	
THD+N @ -6dB (pre-out)	< 0.1%	
Frequency response (-3 dB)	20 Hz – 20 kHz	
LO EQ	+-10 dB @ 100 Hz	
HI EQ	+-10 dB @ 10 kHz	
Input impedance	10 kohms	
Priority output		
Voltage	24 V	
Max current	0.5 A	
Amplifier output		
RMS output power (1% THD)	120 W	240 W
Dynamic power	150 W	280 W
SNR (1% THD)	> 90 dB	> 90 dB
THD+N @ -6 dB	< 0.5 %	< 0.5 %
Cooling	convection	
Amplifier protection	temperature, overcurrent, overvoltage, undervoltage	
PRE-out / REC-out		
Nominal output level	0 dBV (1 Vrms)	0 dBV (1 Vrms)
Power supply		
Max power consumption	160 W	320 W
Idle power consumption	12.5 W	15 W
Standby power consumption	0.5 W	0.5 W
Power supply	100 V - 240 VAC (+-10%) / 50-60 Hz	
Standby		
Input trigger sensitivity to wake up		
Line 1 - 4	- 43 dBV (7 mVrms ± 10%)	
Mic A, Mic B, RCA	- 50 dBV (3 mVrms ± 10%)	
Mic A, Mic B, Balanced (mic) (vox off)	- 74 dBV (0.2 mVrms ± 10%)	
Emergency in (vox max)	- 46 dBV (5 mVrms ± 10%)	
Time to auto standby	approx. 10 min	
General		
Dimensions amplifier (l x d x h)	43 x 29 x 8.9 cm	43 x 29 x 8.9 cm
Weight amplifier	5 kg	6 kg
Accessories	rack ears, power cable, manual, euroblock connectors, sticker paper, feet	

developed
by
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