

# USER MANUAL

RevB 06-2017

# VMA-1120

100V LINE MIXER-AMPLIFIER

## Welcome

Thank you for choosing Hill Audio for your sound system. To make sure that this product meets your expectations and provides long-term, reliable performance, please read and follow this instruction manual carefully.

## Manual Language

UK	This user manual is written in English. For other languages, visit	<a href="http://www.hill-audio.com">www.hill-audio.com</a>
FR	Ce guide est écrit en anglais. Pour les autres langues, visitez:	<a href="http://www.hill-audio.com">www.hill-audio.com</a>
DE	Diese Anleitung ist in Englisch verfasst. Für andere Sprachen:	<a href="http://www.hill-audio.com">www.hill-audio.com</a>
ES	Este manual está escrito en Inglés. Para otros idiomas, visite:	<a href="http://www.hill-audio.com">www.hill-audio.com</a>
PT	Este manual está escrito em Inglês. Para outros idiomas, visite:	<a href="http://www.hill-audio.com">www.hill-audio.com</a>
IT	Questo manuale è scritto in inglese. Per altre lingue, visitare:	<a href="http://www.hill-audio.com">www.hill-audio.com</a>

## Important safety instructions

- Read these instructions and all markings on the product. Keep these instructions.
- Heed all warnings and instructions, both in this manual and on the product.
- Clean only with a dry cloth. Unplug from AC supply before cleaning.
- Do not use this product near water and avoid any exposure to water.
- Before connecting this product to any AC supply, make sure you check whether the AC mains voltage and frequency match the indication on the product and its packaging.
- Only connect this product to an AC supply with sufficient power handling, protective earth connection, ground-fault (earth-fault) protection and overload protection.
- Disconnect the product from the AC supply during thunderstorms. Also disconnect from the mains supply if the product is not being used for long periods.
- Make sure any heat sink or other cooling surface, or any air convection slot, is exposed sufficiently to free air circulation and is not blocked.
- Do not operate this product in environmental temperatures exceeding 35 degrees Celsius and/or 85% relative humidity.
- Position the product in a safe and stable place for operation, out of reach of unauthorized persons.
- Make sure any cable connections to and from the product are neither subject to potentially destructive mechanical impact nor present any risk of stumbling or other accident risk to people.
- Audio equipment may generate sound pressure levels sufficient to cause permanent hearing damage to persons. Always start up at low volume settings and avoid prolonged exposure to sound pressure levels exceeding 90 dB.
- Do not open this product for service purposes. There are no user-serviceable parts inside. Warranty will be void in any case of unauthorized service by the user or other unauthorized persons.
- Take any precaution required by local law, applicable regulations or good business practice to avoid injury to people or material damage by use of this product.

Explanation of symbols used in this manual and on the product:



**ATTENTION!**  
Read manual before installation and operation.



**DANGER!**  
Safety hazard.  
Risk of injury or death.



**WARNING!**  
Hazardous voltage.  
Risk of severe or fatal electric shock.



**WARNING!**  
Fire hazard.

## Description

The VMA-1120 is a combination of a basic mixer for music and three microphones, a media player, and a mono constant voltage power amplifier for installed sound systems. This comprehensive combination of basic features makes the VMA-1120 the ideal all-in-one solution for small to medium sized installed sound systems in commercial environments.

## Health advice

This unit produces and absorbs electromagnetic radiation. The strength of radiation and the sensitivity for disturbing interference matches the CE and FCC requirements. A corresponding sign is printed on the backside of the unit. Any change or modification may affect the behavior of the unit concerning electromagnetic radiation and it may not then meet CE requirements. The manufacturer takes no responsibility in this case.

## Functional advice

This unit is immune to the presence of electromagnetic disturbances – both conducted and radiated - up to a certain level. Under peak conditions, the unit is classified to show a “class C” performance criteria and may encounter temporary degradation or loss of function which may need manual help to recover. In such case, disconnect the AC power from the unit and reconnect it again to recover.

## Environmental advice

This unit is built to conform to the ROHS standards and the WEEE directive 2011/65/EU of the European Parliament and of the Council of the European Union. Under these regulations, the product shall not be discarded into regular garbage at the end of its life, but shall be returned to authorized recycling stations.

## Unpacking

Please check that the box contains the following items:

Main parts:   1 pc. VMA-1120 main unit  
                  1 pc. Mains cable  
                  1 pc. Operation manual

If any part is missing, please contact your dealer immediately.

## Warning



After unpacking, and before plugging the AC cord in the wall outlet, check whether the AC mains voltage and frequency is compatible with this product (see rear panel of product). Whenever the specified voltage or your AC plug should not match the local conditions, do NOT plug the AC cord into the wall outlet and contact your dealer immediately.

## Configuration setup

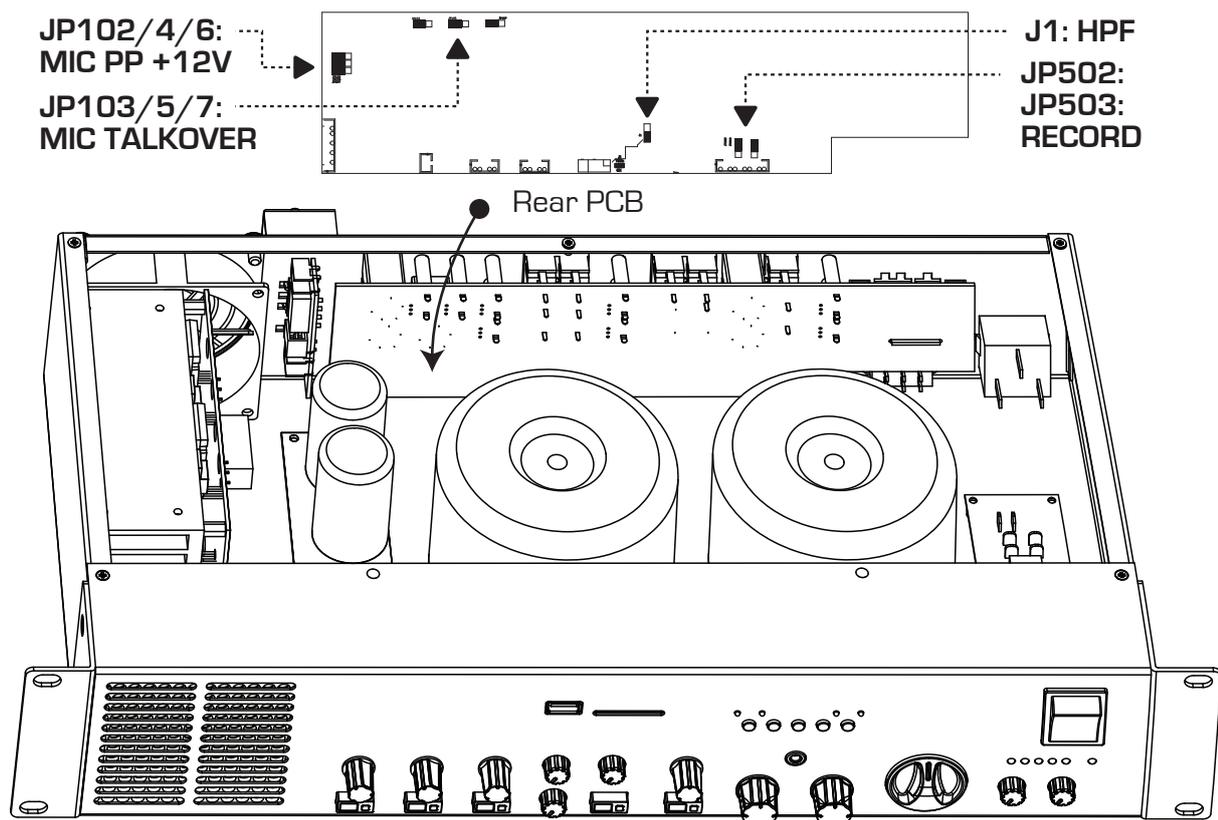
Before using the VMA-1120, it must be configured to match the application. Make sure the unit is unplugged from AC mains and remove the top cover to gain access to the internal elements, then set switches and jumpers and arrange connections as per following instruction.

## Warning



The following chapter contains work on an open unit, with contacts, wires and parts carrying life voltage exposed. Work must be expedited strictly and only when the unit is disconnected (not only switched off) from the AC supply, and all work must be expedited by a qualified technician familiar with necessary safety precautions. Removing the top cover and expediting this work is not permitted for the end user, as indicated by the outside marking "no user-serviceable parts inside - do not open". Contact your dealer to make these settings for you if you do not have the required qualification. The manufacturer takes no liability for damage to health or goods evolving from disobedience of these instructions.

## Internal jumper settings

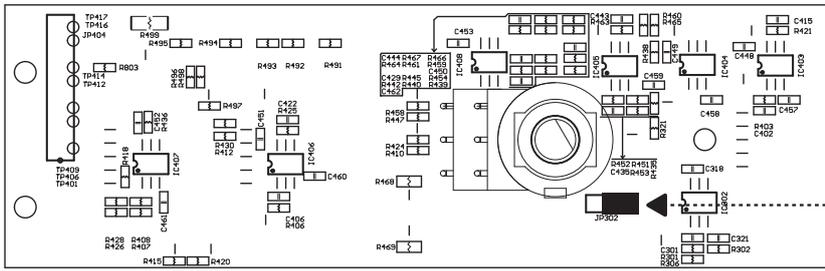


**JP102/104/106:** These jumpers enable or disable a +12V DC phantom power supply to the microphone inputs (12), separately for every microphone. Factory default: disabled.

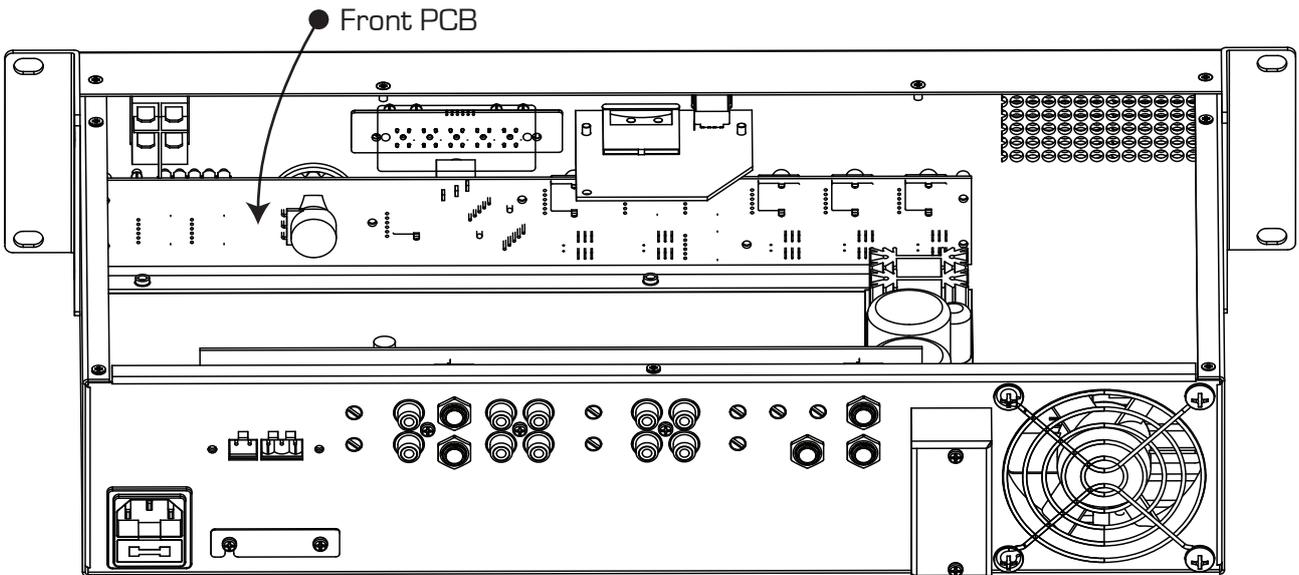
**JP103/105/107:** These jumpers enable or disable the microphone inputs to contribute to the talkover (priority) trigger, separately for every microphone. Factory default: enabled.

**J1:** This jumper enables or disables a 75Hz HPF filter for transformer-output configurations to avoid saturation. Factory default: disabled.

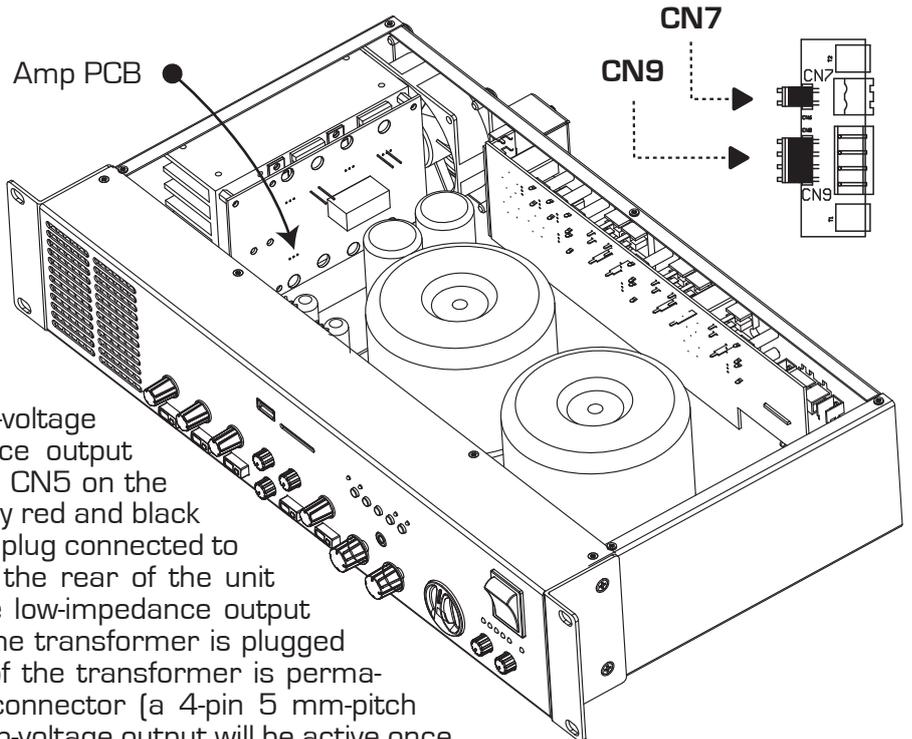
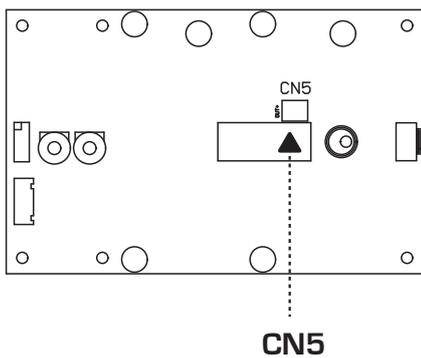
**JP502/503:** Determine whether the signal at the SL stereo link preamp output (8) is affected by the emergency signal or not. Factory default: enabled.



**JP302 - Mic Emergency.**  
 This jumper decides whether the internal mics remain active when an emergency signal is present at the emergency input. Shown position = active (default) Move jumper to de-activate internal mics in emergency.



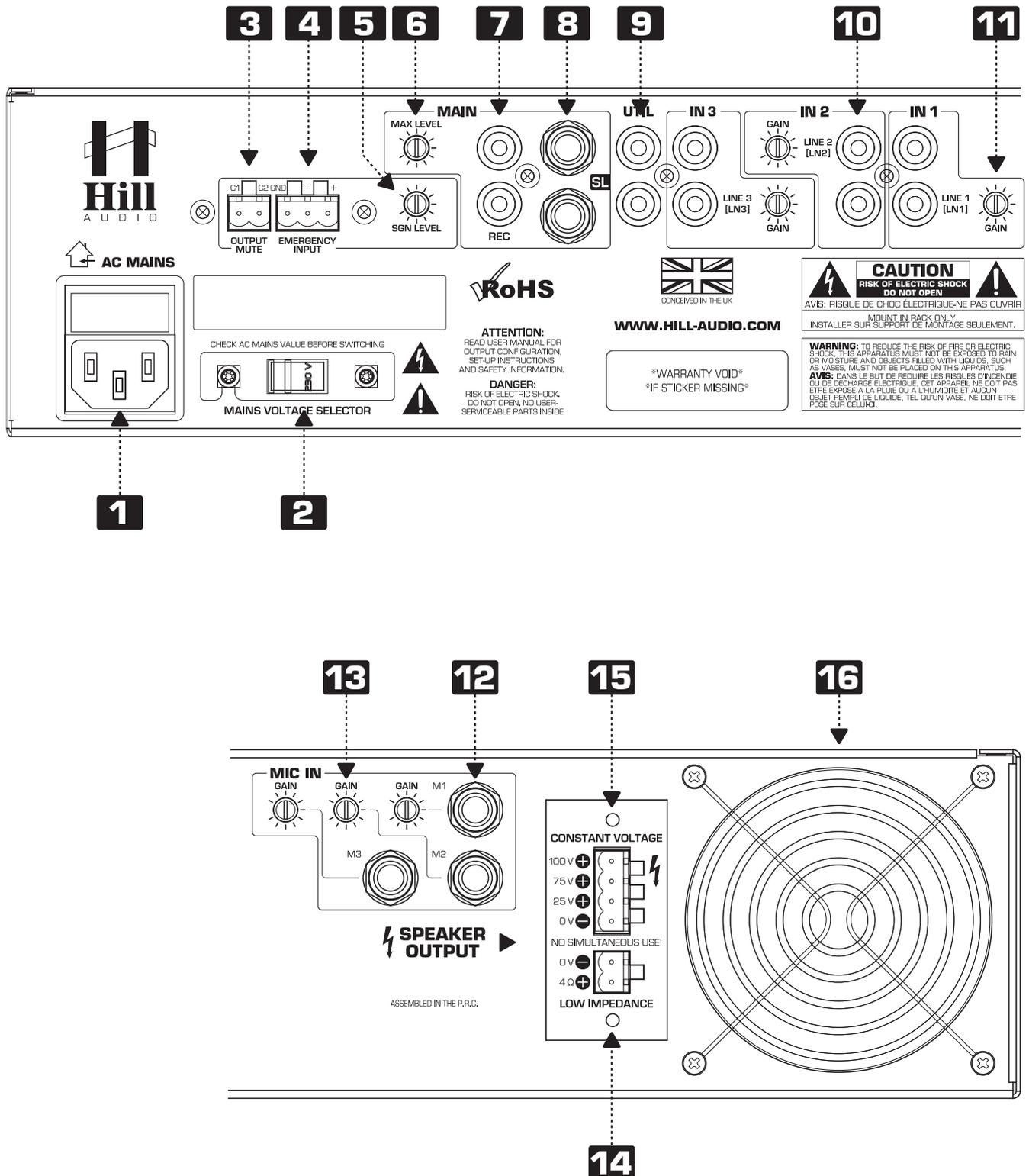
**Low-Z or LINE (Transformer) output configuration**



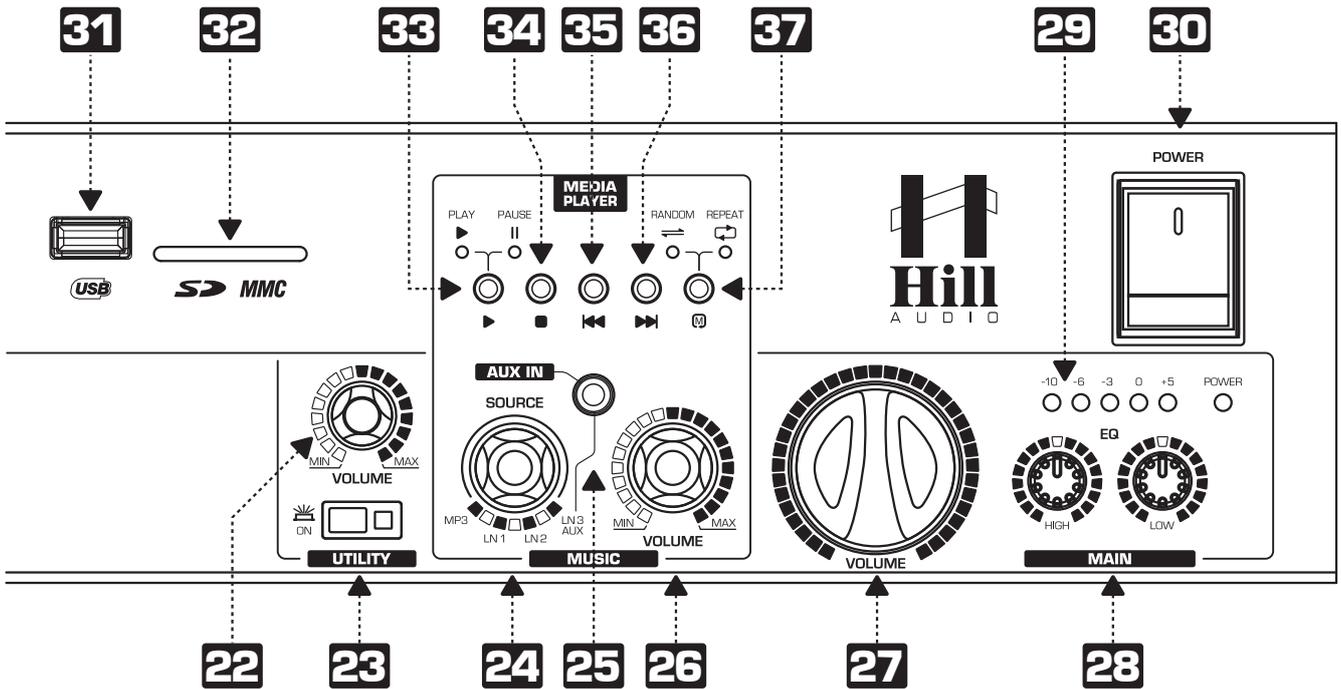
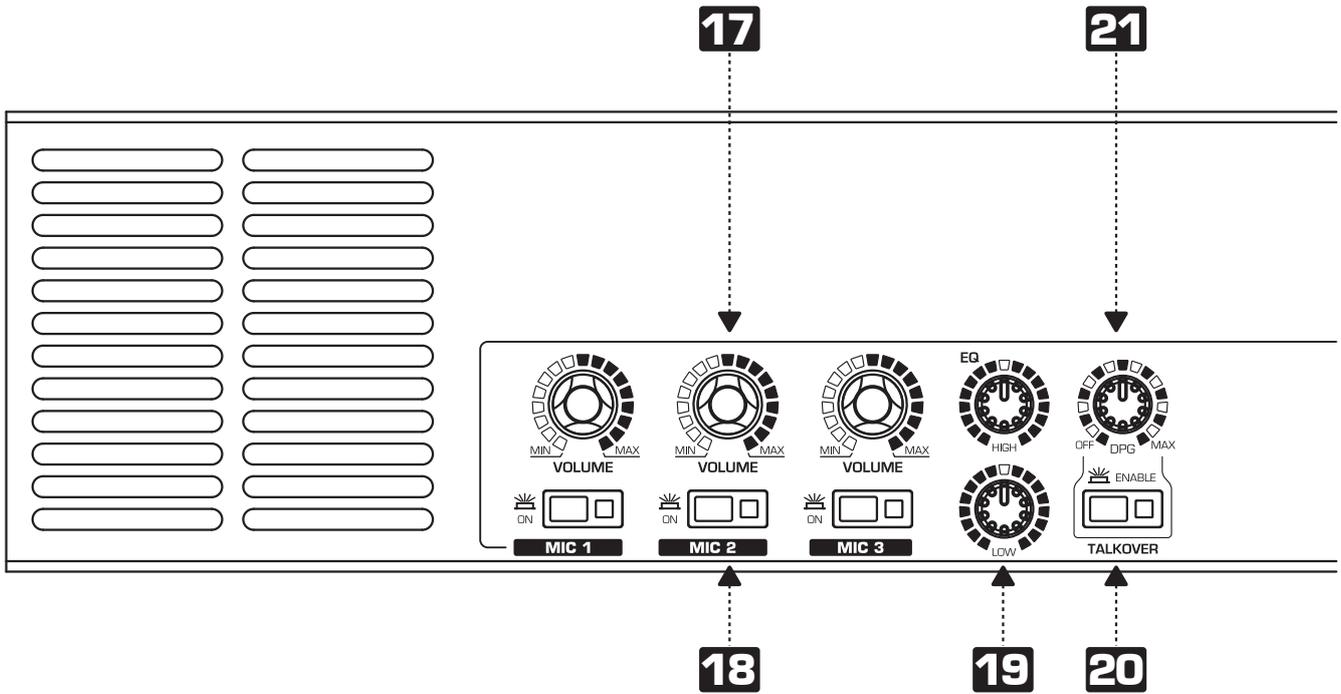
To convert the amplifier to high-voltage line operation, the low impedance output socket should be unplugged from CN5 on the amplifier pcb (a short pair of heavy red and black wires), and replaced by the spare plug connected to the toroidal transformer nearer the rear of the unit (same wire types). Note that the low-impedance output will no longer be available once the transformer is plugged in. The secondary (output side) of the transformer is permanently wired to the line output connector (a 4-pin 5 mm-pitch screw terminal type), thus the high-voltage output will be active once the internal connector change has been made. In high-voltage line operation, always use the safety cover fitted over the connector!

## Controls and Connections

### Connections - Rear



Controls - Front



## Functional Description

The VMA-1120 is a combination of a triple-microphone & music mixer, a media player, and a mono constant voltage power amplifier which can optionally be wired for low-impedance operation. Packed in a rugged 19" | 2U case and fitted with forced fan cooling, it's a comprehensive and reliable centre piece for commercial sound systems in retail and hospitality.

- 1** AC inlet and fuse holder. Use the supplied AC cord to connect the unit to AC mains. Make sure voltage and frequency stated and set on the unit comply with your local AC supply. The fuse can be accessed by the small drawer at the AC inlet. To change the fuse, unplug the AC cord first, pull out the fuse drawer and replace the fuse **ONLY** with a fuse of **SAME** voltage and rating. If the fuse blows again after replacement, hand over the unit to qualified service personnel.
- 2** AC mains voltage switch. If the AC mains voltage of your power outlet and the setting of the AC supply voltage on your unit do not match, contact your dealer, contractor or a qualified service workshop to change the setting of the AC voltage selector. Such change requires the AC cord to be unplugged, to loosen the screws in order to turn the safety cover, and to move the switch slider to the desired position, which will be revealed by the embossed text on the slider. Leave this work to qualified professionals only.
- 3** Output Mute connector. This is a terminal block input which allows to remotely mute all output signals (Speakers, PreAmp) by simply shortening the contacts.
- 4** Emergency input. This is an auto-sensing, balanced terminal block input which allows the connection to an emergency evacuation system. Once a signal is present on this input, all output signals (Main, Zone) will be muted and the emergency message/signal from this input will become audible instead. Please note that the internal microphones may or may not be included in this muting process, depending on the setting of Jumper J302 (see section "configuration setup") and may hence not be used while an emergency message is broadcasted. Also note that the emergency input will have effect on the speaker output (14 or 15); whether it also affects the Stereo Link (SL) preamp output (8) depends on the setting of jumpers J502 and J503 (see chapter "configuration settings")
- 5** Emergency volume control. This control allows to set the level with which the signal fed into the emergency input (4) will be replayed on the speakers (14 or 15) and the Stereo Link (SL) preamp output (8).
- 6** Maximum Volume control for MAIN speaker output (14 or 15). Allows to limit the maximum output volume which the user can set with the front-panel MAIN volume control (27).
- 7** Record output. This is an unbalanced stereo output carrying the same signal as the main output, but not influenced by the main volume control (24). This is normally used for recording the output to an external tape, CD or memory device.
- 8** Stereo Link (SL) preamp output. This is a pair of 1/4" TRS sockets which carries a balanced line level signal. The signal is the same as the signal at the MAIN speaker output (14 or 15), but on line level and unaffected by the MAIN volume controls (6 and 27).
- 9** Utility Input. This is a pair of RCA input jacks at line level, with the signal fed into this input being independently controllable in its volume via the Utility volume control (23). This input is useful for the external connection of chime players, message players or jukeboxes.
- 10** Line Inputs. These are 3 pairs of RCA input jacks, with one of the signals fed into these inputs being selectable as the music source via the source selector (24) and then being controllable in its volume via the music volume control (26). The input gain is adjustable via controls (11).

- 11** GAIN control for input channels. This allows the sensitivity (input gain) for every line input to be adjusted, so that sources of different output level can be played at properly balanced levels.
- 12** Microphone inputs. These are balanced ¼" TRS connectors, which can be internally set to either carry phantom power (+12V DC) or not, thus this input can be used both with condenser and dynamic microphones (see chapter "setup configuration", jumper JP102, JP104, JP106 - default is phantom power = OFF).
- 13** GAIN control for microphone inputs. These controls allow the sensitivity (input gain) for the input to be adjusted to the microphones in use.
- 14** Low impedance speaker output. This is a 2-pin 5 mm-pitch screw terminal connector. The internal amplifier is able to deliver its rated power into a 4 ohm load, with the maximum output power reduced with higher load impedances. When using multiple low-impedance loudspeakers (normally 8 ohms) with a single amplifier, series and/or parallel wiring should be employed to produce a total load impedance of not less than 4 ohms. Note that one of the output pins is connected internally to 0 V. Note that this output can NOT be used at the same time as the LINE level speaker output (15). To avoid simultaneous use, the unit has to be internally configured for either Low impedance or Line level operation. As a factory default, this Low Impedance output is active, and the Line level output (15) is disabled.
- 15** Line level (Constant Voltage / High impedance) output. This amplifier is fitted as standard with an output transformer that can be enabled by moving an internal connector (see chapter "setup configuration"). The transformer should be placed in circuit if the amplifier is to be used with a 100 V, 70 V or 25 V line speaker distribution system. Once the output transformer is enabled, make sure that the provided safety cover is fitted over the connector (15), which may have been removed to connect the speaker cable. Note that the transformer secondary has 3 line outputs: 100 V, 70 V and 25 V; whilst these have a common 0 V connection, the output is fully floating i.e. it is isolated from the rest of the amplifier. When the transformer is in use the maximum total combined load should not exceed the rated power of the amplifier. Note that this output can NOT be used at the same time as the Low impedance speaker output (14). To avoid simultaneous use, the unit has to be internally configured for either Low impedance or Line level operation. As a factory default, this Low Impedance output is active, and the Line level output (15) is disabled. Once this Line level output (15) is enabled, the Low impedance output (14) will be disabled.
- 16** Fan cover. For extended reliability under full rated power, this amplifier has an internal cooling fan. Make sure to not obstruct the fan vent, and also keep the fan inlet on the front panel clear.
- 17** Microphone volume controls. These rotary controls adjust the volume of the microphones connected to the inputs (12).
- 18** Microphone On-Off switches. Enable the relative microphone when being pressed, and disable the microphone when being released. A LED indicates enabled status.
- 19** Microphone Equalizer. Allows the adjustment of the tonal balance for all three microphone input together in two voice-specific frequency bands with an adjustment range of  $\pm 10$ dB.
- 20** TALKOVER On/Off switch. Engages or disengages the talkover function, which allows to reduce the music level automatically when the microphone is spoken into (also called priority). The amount of damping applied to the music signal is controlled by the damping control (21).
- 21** Talkover Damping Control. Provided the talkover on/off switch (20) is set to ON, this control determines the amount of damping applied to the program signal when the microphone is spoken into. Fully turned clockwise, maximum attenuation is applied, being turned fully counter-clockwise, the damping is negligible.

- 22** Utility volume control. Controls the volume of the line level source connected to the rear-side UTILITY input (9).
- 23** Utility On/Off switch. Enables (pressed) or disables(released) the Utility input. A LED indicates the enabled status.
- 24** MUSIC source selector. This rotary 4-position switch allows to choose any of the 3 rear-side Line inputs (10) to be the music source, or the internal media player. Additionally, a front-side 3.5mm TRS input (25) can be the source, which automatically replaces the Line3 signal if a plug is plugged into the socket (25).
- 25** AUX (Line3) Front-side socket. This 3.5mm TRS jack has an auto-switching function which replaces the rear-side Line3 input signal automatically once a jack is plugged into the socket. This is mainly suitable for MP3 players, smartphones etc. Plug the source into this socket and set the selector switch (24) to AUX | Line3.
- 26** MUSIC volume control. Controls the level of the source chosen via the MUSIC source selector switch (24). Note that the microphone volume controls (18), the utility volume control (22) and this MUSIC volume control are all summed before the overall volume is adjusted by the MAIN volume control (27).
- 27** MAIN volume control. Allows to set the level of the MAIN output signal, which is composed of the music signal selected by the MUSIC source selector switch and volume control (24 & 26), the microphone signals determined by its relative controls, plus the Utility signal.
- 28** MAIN Equalizer. Allows the adjustment of the tonal balance for the MAIN output signal in two music-specific frequency bands with an adjustment range of  $\pm 10$ dB.
- 29** MAIN level meter. Indicates the MAIN output level in 5 steps via relative LEDs. Note that the meter only indicates the signal strength after the MAIN volume control (27), but does not account for level reductions set by the rear side maximum volume control (6). If the level meter indicates full volume but the output appears low, check the setting of the rear-side maximum volume control (6) first.
- 30** Power switch. Switches the unit on and off. A LED indicates the status. Make sure you switch the unit off when not in use.

## Media Player

The media player accepts USB 1.0 and 2.0 media of up to 16GB and SD card media of up to 4GB. File systems supported are FAT16 or FAT32. Note that compatibility may not only depend on the memory size, but also specific brands of media. The manufacturer of this unit cannot test all available brands; if any media brand does not work, change to another.

The player will replay audio files recorded in either WMA (32 kbps to 384 kbps) or MP3 formats (MPEG 1/2/2.5, layer 2 or 3 decoding at bit rates from 32 kbps to 384 kbps, including VBR; sample rates of 8 kHz, 11.025 kHz, 12 kHz, 16 kHz, 22.05 kHz, 24 kHz, 32 kHz, 44.1 kHz and 48 kHz).

The files may be in the root directory of the memory, or in folders, or folders within folders. When the memory device is plugged in, the media player will scan it and identify all compatible files in all folder locations, and make them available for playing. Only one memory device at a time (USB device or SD card) may be connected. Note that it is not possible to create a playlist.

- 31** USB memory socket. Insert a FAT-formatted USB memory stick of max 16GB with WMA or MP3 files here. Note that only one of the two media sockets can be used at a time; either the USB socket (31) or the SD socket (32). Note: this socket does NOT support USB hard drives, both for memory size and power requirements.
- 32** SD card socket. Insert a FAT-formatted memory card of max 4GB with WMA or MP3 files here. Note that only one of the two media sockets can be used at a time; either the USB socket (31) or the SD socket (32).
- 33** PLAY/PAUSE button – starts or pauses playback of current track/file. Two LEDs indicate the current status of operation: PLAY LED – illuminates in PLAY mode; PAUSE LED – illuminates in PAUSE mode.
- 34** STOP button – stops playback.
- 35** PREVIOUS button – moves playback point to start of previous track or file.
- 36** NEXT button – moves playback point to start of next track or file.
- 37** MODE button – selects Random and Repeat Modes. The two status LEDs indicate: RANDOM mode – illuminates when Random mode is selected; REPEAT mode – illuminates when Repeat mode is selected. If Repeat Mode is enabled while a track is playing, the track will be repeated when it has finished. This repetition will continue until Repeat Mode is cancelled. Repeat Mode may also be selected from Stop Mode; the next track played when H is pressed will then repeat until Repeat Mode is cancelled. Note that Repeat Mode only applies to individual tracks; it is not possible to repeat a sequence of tracks. If neither RANDOM nor REPEAT are selected, the player will be in Normal Mode, and will play through all the available audio files in order of filename, regardless of which folder they are in on the memory device. Numeric characters are given higher priority than alphabetic ones, so audio tracks whose filenames begin with numbers will be played first. This makes it very simple to pre-ordain track playing order; if the tracks are given filenames beginning “01”, “02”, etc., they will be always be played in that order in Normal Mode.

## Operation

### A. Connections

For connecting this unit to AC mains, please note:

- Check whether the AC mains voltage and frequency is the same as this product is specified for (see rear panel of product). Whenever the specified voltage or your AC plug should not match the local conditions, do NOT plug the AC cord into the wall outlet and contact your dealer immediately.
- Do not operate this unit without the line cord earth ground connected. To do so may increase the risk of electric shock and increase line cord conducted emissions.

For making audio signal connections, always remember that good and reliable connections are a basic requirement for good sound and reliable operation. Bad soldering of cables can result in intermittent audio signals or temporarily lost ground connections, hence always use good cables. In case of doubt about making proper connections, please see check the standard pin assignments required for proper operation in the following section of this manual.

### B. Powering up

Following a proper power-up sequence protects your equipment – specifically speakers – and your ears. Follow the below procedure:

- Turn down all output volume controls of any equipment in your audio system.
- Switch on your audio sources first (Tuners, CD Players, PC's with soundcards, Tapedecks, etc.)
- Switch on this unit, and set it to the desired audio source
- Turn up the audio level on your sources if such controls are provided.
- Set the MAIN and ZONE volume controls of this unit to a low level.
- Make adjustments to all volume settings as needed.

For switching off, follow the inverse sequence – always switch off this unit first, then the connected audio sources.

### C. Use

Apart from using good equipment, good sound comes from using it correctly. Level setting mistakes are one of the common reasons why even good equipment may not perform as desired. For setting levels, please be reminded that two guidelines need to be followed:

- Avoid distortion by leaving some headroom. Never overrun any audio-equipment's inputs. Level meters and displays allow you to make sure that signals do not enter critical levels.
- Avoid unnecessary amplification by using as little attenuation as possible. For example, if you turn down the input gain of a mixer to minimum, and then increase the main output of the mixer to maximum to drive your amplifier properly, you will create unnecessary noise, as you first dispose of some already existing signal level, and then later apply amplification (tainted with noise) to make it up.

Obviously, these two requirements are marking a levelling window that the operator must match to achieve a good sound with as little distortion and noise as possible.

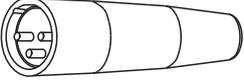
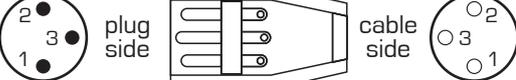
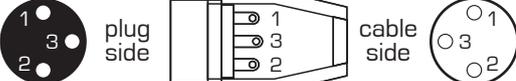
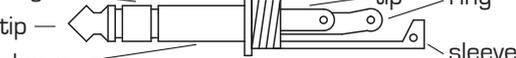
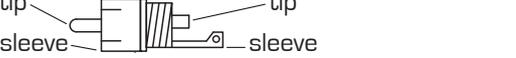
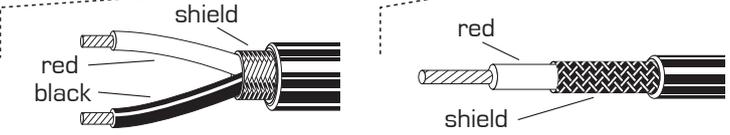


#### **WARNING - HEALTH RISK**

Excessive volume levels on headphones or other sound systems may cause hearing damage. Always turn the volume control to minimum when you switch the unit on, and avoid prolonged exposure to sound pressure levels exceeding 90dB.

## Connections

This unit uses the below connector types, for which the pin assignment must comply with the following specification. Always make sure to use good connectors and cables to ensure proper operation. Balanced connections are to be preferred over unbalanced connections where applicable and feasible. Avoid unbalanced connections exceeding 2m of cable length.

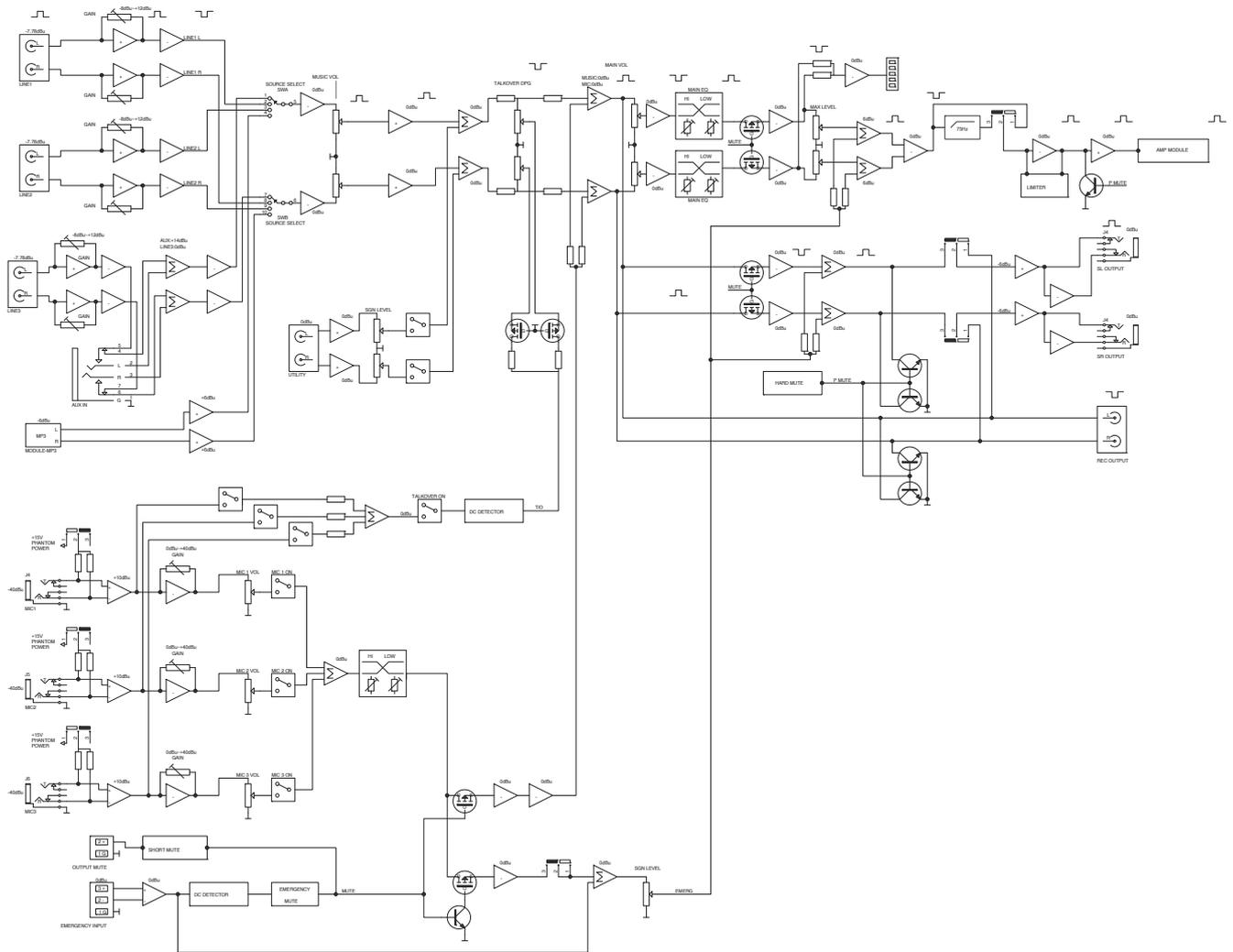
	Structure	Balanced connection	Unbalanced connection
<b>XLR male</b> 		red = 2 black = 3 shield = 1	red = 2 shield = 1+3
<b>XLR female</b> 		red = 2 black = 3 shield = 1	red = 2 shield = 1+3
<b>6.35mm TRS-stereo</b> 		red = tip black = ring shield = sleeve	red = tip shield = sleeve+ring
<b>6.35mm TRS-mono</b> 		red = tip black = sleeve shield = uncon.	red = tip shield = sleeve
<b>3.5mm TRS-stereo</b> 		red = tip black = ring shield = sleeve	red = tip shield = sleeve+ring
<b>RCA</b> 		red = tip black = sleeve shield = uncon.	red = tip shield = sleeve
<b>Terminal Plug</b> 			red = 1 black = 2
<b>CABLE Types</b>			
	2-conductor shielded cable (for balanced connections)		
	1-conductor shielded cable (for unbalanced connections)		

## Technical Specifications

Power (RMS) .....1x120W@4 Ohms (LoZ) / @400hms (HiZ)  
 Signal/Noise..... >72dB (Line)  
 Crosstalk Damping..... >65dB (Line)  
 THD..... <0.05% (Line)  
 Frequency response (LoZ w/o HPF).....20Hz – 20 kHz

AC IN (230V setting).....AC220-250V~ 50Hz  
 AC IN (115V setting).....AC110-120V~ 60Hz  
 Power consumption.....max. 295W  
 Dimensions.....W483.0×H88.0×D263.0mm  
 Weight.....8.16 kg

## Block Diagram



## Maintenance and warranty

While we have chosen the best components to make this product as rugged and reliable as possible, some parts in audio products (potentiometers, faders, switches) are subject to wear which is a matter of operation cycles, and not of time. While providing a full time-based warranty according to the country's of purchase requirements on the function of the electronic circuitry, we hence have to limit the warranty on such electro-mechanical parts to 90 days from the date of purchase.

In many cases, malfunction of electro-mechanical parts occurs due to dust contamination, which may require cleaning of such parts. As the inside of such parts is not accessible, a common practice is to use cleaning fluids in the shape of sprays. Please be reminded that many of such fluids contain chemicals which may wash away the dust but at the same time corrode or damage contact surface and may cause cosmetic damage to other parts. We hence explicitly exclude any claims for exchange of damaged part due to mechanical or chemical impact.

# EC Declaration of Conformity

Manufacturer: Adelto Technologies Limited  
Address: Unit 2A Springfield Road, Springfield Industrial Estate  
Burnham-on-Crouch, Essex CM08UA, England

We declare on our own responsibility, that the equipment

## Hill Audio VMA-1120

is in conformity with the following directives and standards or regulations:

**EMC Directive 2014/30/EU**  
EN55032:2012 (Emissions)  
EN55103-2:2009 (Immunity)  
EN61000-3-2:2014  
EN61000-3-3:2013

**LVD Directive 2014/35/EU**  
EN60065:2014

**ROHS2 Directive 2011/65/EU**

and is marked as follows:



Burnham-on-Crouch, 30.06.2017  
Place and date of issuing

  
Authorized Signature