



Service Manual

VMA-1240 Commercial Series 1 Channel Mixer-Amplifier





Table of Contents

Safety and Compliance

Datasheets and Specifications

Front Panel

Rear Panel

Wiring and Connectors

Configuration Settings

VOX Function

Priority Muting

Remote Volume Control

Media Player

Troubleshooting

Block Diagram

PCB Boards

Schematics

Bill of Materials





IMPORTANT SAFETY INFORMATION



WARNING

RISK OF ELECTRIC SHOCK
DO NOT OPEN



AVERTISSEMENT: RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE

The symbols shown above are internationally accepted symbols that warn of potential hazards with electrical products. The lightning flash with arrow point in an equilateral triangle means that there are dangerous voltages present within the unit. The exclamation point in an equilateral triangle indicates that it is necessary for the user to refer to the owner's manual.

These symbols warn that there are no user serviceable parts inside the unit. Do not open the unit. Do not attempt to service the unit yourself. Refer all servicing to qualified personnel. Opening the chassis for any reason will void the manufacturer's warranty. Do not get the unit wet. If liquid is spilled on the unit, shut it off immediately and take it to a dealer for service. Disconnect the unit during storms to prevent damage.

SAFETY INSTRUCTIONS

NOTICE FOR CUSTOMERS IF YOUR UNIT IS EQUIPPED WITH A POWER CORD.

WARNING: THIS APPLIANCE SHALL BE CONNECTED TO A MAINS SOCKET OUTLET WITH A PROTECTIVE EARTHING CONNECTION.

The cores in the mains lead are colored in accordance with the following code:

GREEN and YELLOW - Earth BLUE - Neutral BROWN - Live

As colors of the cores in the mains lead of this appliance may not correspond with the colored markings identifying the terminals in your plug, proceed as follows:

- The core which is colored green and yellow must be connected to the terminal in the plug marked with the letter E, or with the earth symbol, or colored green, or green and yellow.
- The core which is colored blue must be connected to the terminal marked N or colored black.
- The core which is colored brown must be connected to the terminal marked L or colored red.

This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. If the attachment plug needs to be changed, refer servicing to qualified service personnel who should refer to the table below. The green/yellow wire shall be connected directly to the units chassis.

CONDUCTOR		WIRE COLOR	
		Normal	Alt
L	LIVE	BROWN	BLACK
N	NEUTRAL	BLUE	WHITE
E	EARTH GND	GREEN/YEL	GREEN

WARNING: If the ground is defeated, certain fault conditions in the unit or in the system to which it is connected can result in full line voltage between chassis and earth ground. Severe injury or death can then result if the chassis and earth ground are touched simultaneously.

WARNING FOR YOUR PROTECTION READ THESE INSTRUCTIONS:

KEEP THESE INSTRUCTIONS

HEED ALL WARNINGS

FOLLOW ALL INSTRUCTIONS

THE APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING LIQUID AND NO OBJECT FILLED WITH LIQUID, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS

CLEAN ONLY WITH A DRY CLOTH.

DO NOT BLOCK ANY OF THE VENTILATION OPENINGS. INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

DO NOT INSTALL NEAR ANY HEAT SOURCES SUCH AS RADIATORS, HEAT REGISTERS, STOVES, OR OTHER APPARATUS (INCLUDING AMPLIFIERS) THAT PRODUCE HEAT.

ONLY USE ATTACHMENTS/ACCESSORIES SPECIFIED BY THE MANUFACTURER.

UNPLUG THIS APPARATUS DURING LIGHTNING STORMS OR WHEN UNUSED FOR LONG PERIODS OF TIME.

Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or third prong are provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

Use only with the cart stand, tripod bracket, or table specified by the manufacture, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



POWER ON/OFF SWITCH: For products provided with a power switch, the power switch DOES NOT break the connection from the mains.

MAINS DISCONNECT: The plug shall remain readily operable. For rack-mount or installation where plug is not accessible, an all-pole mains switch with a contact separation of at least 3 mm in each pole shall be incorporated into the electrical installation of the rack or building.

FOR UNITS EQUIPPED WITH EXTERNALLY ACCESSIBLE FUSE RECEPTACLE: Replace fuse with same type and rating only.

MULTIPLE-INPUT VOLTAGE: This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. Connect this equipment only to the power source indicated on the equipment rear panel. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel or equivalent.

If connected to 240V supply, a suitable CSA/UL certified power cord shall be used for this supply.



IMPORTANT SAFETY INFORMATION

U.K. MAINS PLUG WARNING

A molded mains plug that has been cut off from the cord is unsafe. Discard the mains plug at a suitable disposal facility. NEVER UNDER ANY CIRCUMSTANCES SHOULD YOU INSERT A DAMAGED OR CUT MAINS PLUG INTO A 13 AMP POWER SOCKET. Do not use the mains plug without the fuse cover in place. Replacement fuse covers can be obtained from your local retailer. Replacement fuses are 13 amps and MUST be ASTA approved to BS1362.

ELECTROMAGNETIC COMPATIBILITY

This device complies with part 15 of the FCC Rules and the Product specifications noted on the Declaration of Conformity. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

Operation of this unit within significant electromagnetic fields should be avoided.

- Use only shielded interconnecting cables.

USE GROUNDED OUTLET ONLY!

Apparatet må tilkoples jordet stikkontakt

Apparaten skall anslutas till jordat uttag

Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan

MAGNETIC FIELD

CAUTION! Do not locate sensitive high-gain equipment such as preamplifiers or tape decks directly above or below the unit. Because this amplifier has a high power density, it has a strong magnetic field which can induce hum into unshielded devices that are located nearby. The field is strongest just above and below the unit.

If an equipment rack is used, we recommend locating the amplifier(s) in the bottom of the rack and the preamplifier or other sensitive equipment at the top.



If you want to dispose this product, do not mix it with general household waste. There is a separate collection system for used electronic products in accordance with legislation that requires proper treatment, recovery and recycling.

Private household in the 25 member states of the EU, in Switzerland and Norway may return their used electronic products free of charge to designated collection facilities or to a retailer (if you purchase a similar new one).

For Countries not mentioned above, please contact your local authorities for a correct method of disposal.

By doing so you will ensure that your disposed product undergoes the necessary treatment, recovery and recycling and thus prevent potential negative effects on the environment and human health.

FEDERAL COMMUNICATION COMMISSION INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC CAUTION

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter module must not be collocated or operated in conjunction with any other antenna or transmitter. This End equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

CANADA STATEMENT

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

1. This device may not cause interference; and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

1. l'appareil ne doit pas produire de brouillage;
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAUTION EXPOSURE

This device meets the exemption from the routine evaluation limits in section 2.5 of RSS102 and users can obtain Canadian information on RF exposure and compliance.

Le dispositif répond à l'exemption des limites d'évaluation de routine dans la section 2.5 de RSS102 et les utilisateurs peuvent obtenir des renseignements canadiens sur l'exposition aux RF et le respect.

THE FINAL END PRODUCT MUST BE LABELLED IN A VISIBLE AREA WITH THE FOLLOWING

The Industry Canada certification label of a module shall be clearly visible at all times when installed in the host device, otherwise the host device must be labelled to display the Industry Canada certification number of the module, preceded by the words "Contains transmitter module", or the word "Contains", or similar wording expressing the same meaning, as follows: "Contains transmitter module IC: 6132A-MB8811VMA"

This End equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Cet équipement devrait être installé et actionné avec une distance minimum de 20 centimètres entre le radiateur et votre corps.

The end user manual shall include all required regulatory information/warning as shown in this manual.



CE EC - DECLARATION OF CONFORMITY

Brand: JBL
Equipment Type: Commercial Mixer-Amplifiers
Model names: VMA160, VMA1120, VMA1240, VMA260, VMA2120

We, Harman International, declare under our sole responsibility that the product, to which this declaration relates, is in conformity with the following standards.

Report No.	Description
EN 55103-1:2009 +A1:2012	EMC Compatibility – Product Family Standard for Audio, Video, Audio-Visual and Entertainment Lighting Control Apparatus for Professional Use, Part 1: Emissions
EN 55103-1:2009 +A1:2012	Field Emissions – Annex A @ 10cm and 20cm
EN 61000-3-2:2014	Limits for Harmonic Current Emissions (equipment input current less than or equal to 16A)
EN 61000-3-3:2013	Limitation of Voltage Fluctuations and Flicker in Low-Voltage Supply systems Rated Current less than or equal to 16A
EN 55022:2010	Limits and Methods of Measurement of Radio Disturbance Characteristics of ITE: Radiated & Conducted, Class B Limits
EN 55103-2:2009	EMC Compatibility – Product Family Standard for Audio, Video, Audio-Visual and Entertainment Lighting Control Apparatus for Professional Use, Part 2: Immunity
EN 61000-4-2:2009 Ed 9	Electrostatic Discharge Immunity (Environment E2-Criteria B, 4k V Contact, 8k V Air Discharge)
EN 61000-4-3:2010 Ed 3.2	Radiated, Radio-Frequency, EMC Immunity (Environment E2, Criteria A)
EN 61000-4-4:2012 Ed 12	Electrical Fast Transient/Burst Immunity (Criteria B)
EN 61000-4-5:2014	Surge Immunity (Criteria B)
EN 61000-4-6:2014	Immunity to Conducted Disturbances Induced by Radio-Frequency Fields (Criteria A)
EN 61000-4-11:2004	Voltage Dips, Short Interruptions and Voltage Variation
Safety Standard:	
IEC 60065:2014 Ed8 EN 60065:2014	Safety Requirements – Audio, Video, and Similar Electronic Apparatus

Due to line current harmonics, we recommend that you contact your supply authority before connection.

We certify that the product identified above conforms to the requirements of the EMC Council Directive 89/336/EEC as amended by 92/31/EEC, and the Low Voltage Directive 73/23/EC as amended by 93/68/EEC.



Appendix A: Target Performance Specifications

Performance	VMA160	VMA1120	VMA1240	VMA260	VMA2120
Max Output Power per Channel into 4 Ω or 8 Ω ; 1kHz, \leq 0.5% THD	60W	120W	240W	60W	120W
Insertion Loss (70V & 100V outputs)	1 dB maximum				
Number of Input Channels	5	5	5	8	8
Number of Output Channels	1	1	1	2	2
Tone Controls (Bass and Treble non-detented potentiometers on each channel)	Bass +/-14dB @ 50Hz Treble +/-14dB @ 10kHz				
Input Sensitivity (to obtain full rated power into 8 Ω load)	Mic Input: 5.5mV _{RMS} Line Input: 1.3V _{RMS} RCA Input (stereo in): 130mV _{RMS}				
Frequency Response (measured at 2.83V _{RMS} into rated load impedance at any output)	4/8 Ω Output: 20Hz - 20kHz, +/-2dB 70V/100V Outputs: 80Hz - 15kHz +/-3dB				
Total Harmonic Distortion (THD) (measured at 2.83V _{RMS} into rated load impedance at any output)	Power Amp Output: <0.5%, 20Hz - 20kHz				
Signal-to-Noise Ratio (Ref. Rated Power, mixer levels @ min., master volume @ max. A-weighted)	>76dB				
Input Impedance (nominal)	Mic: 400 Ω Line: 20 k Ω (balanced) RCA: 50 k Ω				
Phantom Power	27VDC				
Crosstalk (reference rated power, volume at mid position, 1kHz)	-70 dB				
Nominal AC Line Voltages	100V, 120V, 220V, 220-240V, 50/60 Hz				
Minimum Load Impedance Low Impedance Output 70V Output 100V Output	4 Ω 80 Ω 160 Ω	4 Ω 40 Ω 80 Ω	4 Ω 20 Ω 40 Ω	4 Ω 80 Ω 160 Ω	4 Ω 40 Ω 80 Ω
Operating Temperature/ Humidity	0°C to 35°C @ 95% R.H. (non-condensing)				
Storage Temperature	-20°C to 85°C				
Dimensions & Weight					
Net Weight	19.4 lb (8.8 kg)	20.2 lb (9.2 kg)	25.5 lb (11.6 kg)	25.5 lb (11.6 kg)	29.3 lb (13.3 kg)
Dimensions	Width: 17.0 in. (432 mm) Depth: 16.3 in. (415 mm) Height: 3.5 in. (88 mm)				
Shipping Weight	24.6 lb (11.2 kg)	25.5 lb (11.6 kg)	30.8 lb (14 kg)	30.8 lb (14 kg)	34.5 lb (15.7 kg)



1.2 Front Panel Controls & Indicators

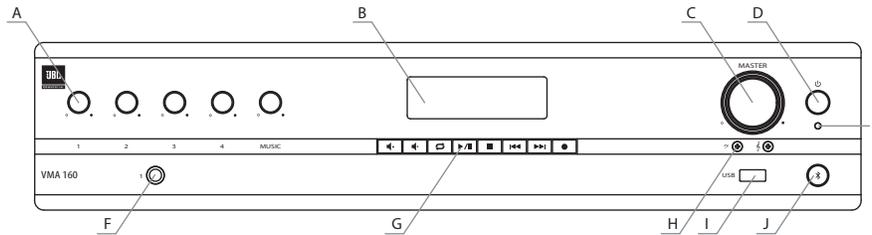


Figure 1.2.1 Front Panel, 1 Channel Model

- A. Input Level Controls
- B. Media Player Display
- C. Output Volume Control(s) Including an Illuminated ring around the output volume control will light green with signal presence while red indicates clipping, i.e. the signal has reached the threshold of audible distortion
- D. Power Switch
- E. Power on LED illuminates blue when power is switched on.
- F. Input 1 - Front panel audio input capability via 1/4" TRS connector. The two channel model includes a second, similar input (Input 4).
- G. Media Player Controls
- H. Tone Controls - Bass ♩ and Treble ♩ potentiometers for each output channel.
- I. USB Audio Input
- J. Bluetooth Key and Indicator

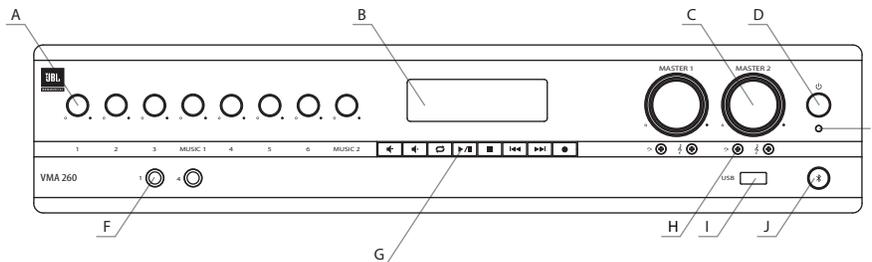


Figure 1.2.2 Front Panel, 2 Channel Model



1.3 Rear Panel Controls & Connectors (VMA160, VMA1120, VMA1240)

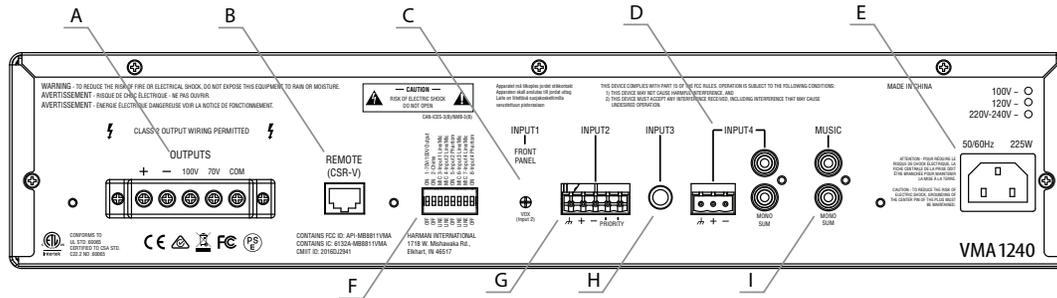


Figure 1.3.1 Rear Panel - VMA 1240

- A. Amplifier output connectors.
- B. Remote volume connectors – RJ-45 style connector to connect to JBL CSR-V control module.
- C. VOX sensitivity adjustment for Input 1.
- D. Input 4 may use either Euroblock or RCA style connector.
- E. AC Power Inlet – Detachable IEC.
- F. Configuration switches control mic/line gain settings and phantom power for the inputs as well as enable the chime and 70V/100V output mode.
- G. Input 2 – Euroblock connector provides for audio input and priority contacts that will duck other channels during an announcement when contacts closed using a switch.
- H. Input 3 accepts a 1/4” TRS connector.
- I. Music input uses a Dual RCA Connector. Stereo, unbalanced sources will be summed together.



1.4 Rear Panel Controls & Connectors (VMA260 & VMA2120)

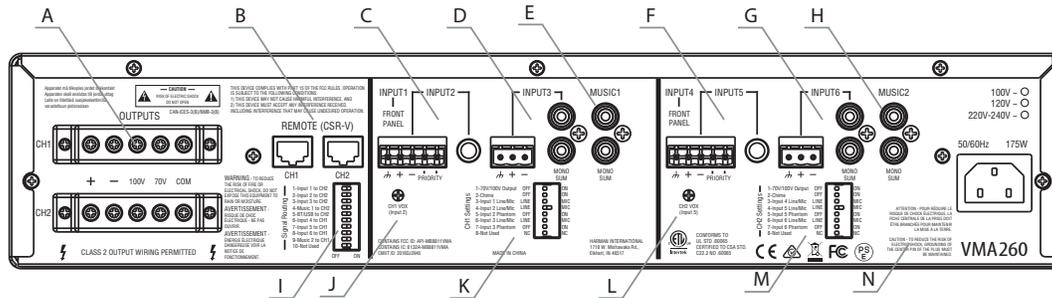


Figure 1.4.1 Rear Panel - VMA 260

- A. Amplifier output connectors.
- B. Remote volume connectors – RJ-45 style connector to connect to JBL CSR-V control modules.
- C. Input 2 – Input audio through either the Euroblock connector or the 1/4" TRS connector. Pins 4 and 5 of the Euroblock are priority contacts that will duck other channels during an announcement when the contacts are closed using a switch.
- D. Input 3 accepts input through either the 3-pin Euroblock or the Dual RCA jacks. Stereo, unbalanced sources will be summed into a mono signal.
- E. Music1 input uses a Dual RCA Connector. Stereo, unbalanced sources will be summed together.
- F. Input 5 – Input audio through either the Euroblock connector or the 1/4" TRS connector. Pins 4 and 5 of the Euroblock are priority contacts that will duck other channels during an announcement when the contacts are closed using a switch.
- G. Input 6 accepts input through either the 3-pin Euroblock or the Dual RCA jacks. Stereo, unbalanced sources will be summed together.
- H. Music2 input uses a Dual RCA Connector. Stereo, unbalanced sources will be summed together.
- I. Signal Routing DIP switch is used to route inputs to both output channels. By default, each group of inputs is routed only to its respective output channel (Input 1 – Music1 are routed to output CH1, Input 4 – Music2 are routed to output CH2).
- J. VOX sensitivity adjustment for Input 1.
- K. CH1 Settings DIP switch is used to enable the 70V/100V output option, turn on the chime feature, select input gain, and enable phantom power for CH1.
- L. VOX sensitivity adjustment for Input 4.
- M. CH2 Settings DIP switch is used to enable the 70V/100V output option, turn on the chime feature, select input gain, and enable phantom power for CH2.
- N. AC Power Inlet – Detachable IEC.

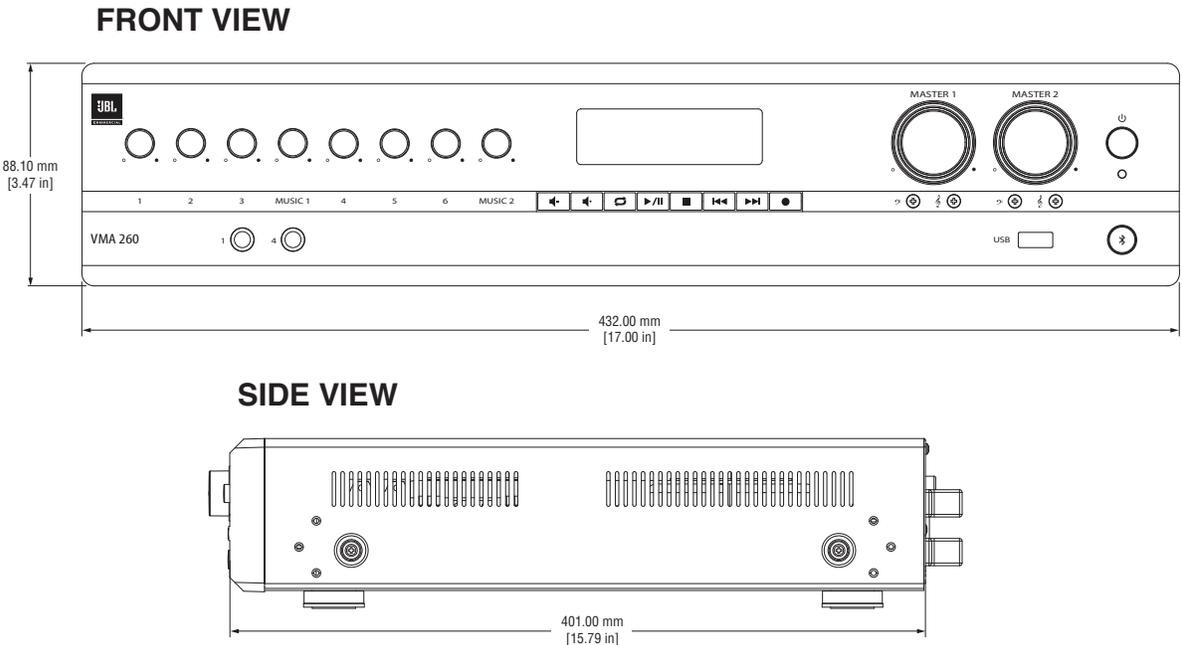


Figure 2.2.1 Dimensions

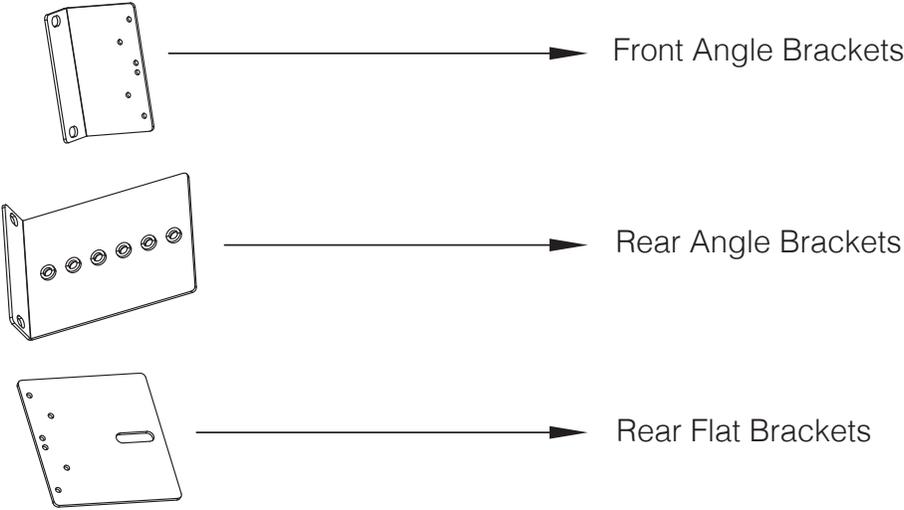


Figure 2.2.2 Mounting Kit



2.3 Ensuring Proper Cooling

When using an equipment rack, keep a minimum space of 4 inches (10 cm) from the top surface of the unit. Close any open spaces in the rack with blank panels. DO NOT block any air vents. The side walls of the rack should be a minimum of 2 inches (5 cm) from the amplifier sides. The back of the rack should be open.

2.4 Choosing Input Wire & Connectors

We recommend using pre-built or professionally wired balanced line (two-conductor plus shield) 22-24 gauge cables to connect the amplifier balanced input by using the included Euroblock connectors, see Figure 2.4.1. Unbalanced lines may be used, but may result in hum or RF noise if using very long cable runs.

You can also use RCA connectors to connect audio devices, for example, CD/DVD player. However, do not use both Euroblock and RCA audio input connectors on a single channel at the same time.

NOTE: Custom wiring should only be performed by qualified personnel.

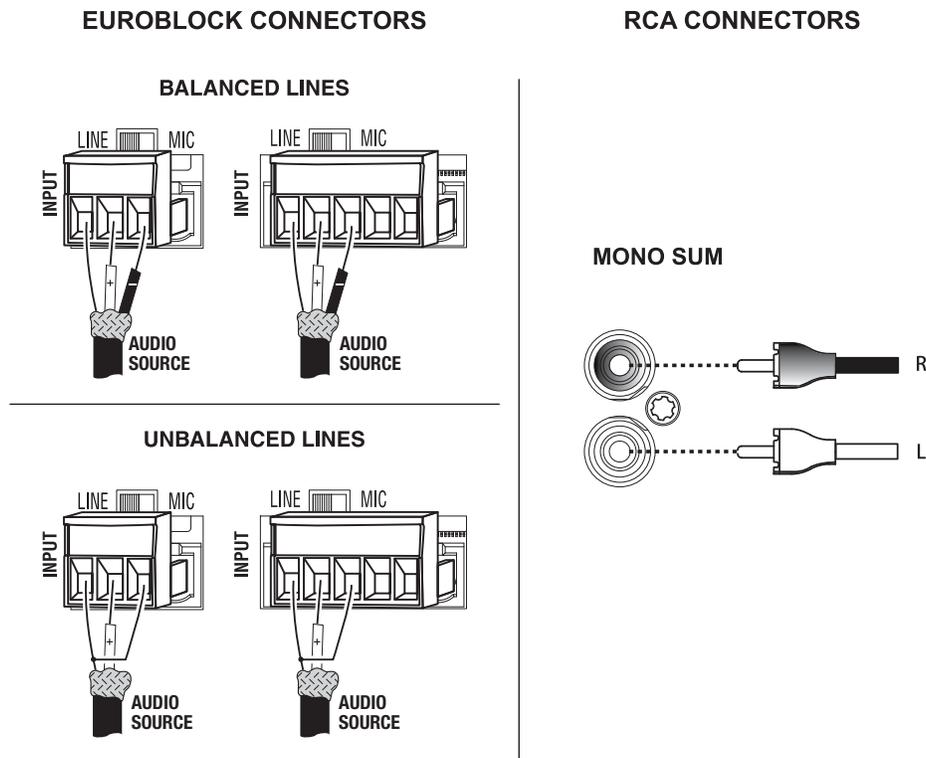


Figure 2.4.1 Input Wiring

NOTE: Two RCA connectors are provided for summing left and right channels from a stereo source. Do not use both Euroblock and RCA connectors concurrently for any single input channel.



2.5 Output Wiring & Connectors

To drive distributed speaker systems designed to operate at 70V or 100V, connect to the corresponding output terminals.

JBL recommends using pre-built or professionally wired, high-quality, two-conductor, heavy gauge speaker wire. Speaker wires should be twisted cable, if possible. To prevent the possibility of short-circuits, the wires should be stripped back no greater than 6 mm (1/4 inch), see Figure 2.5.1.

Suggested below are guidelines to select the appropriate size of wire based on the distance from amplifier to speaker. Check with local code as this may vary.

Distance	Wire Size
Up to 25 ft. (7.6m)	16AWG
26-40 ft. (7.9-12.2m)	14AWG

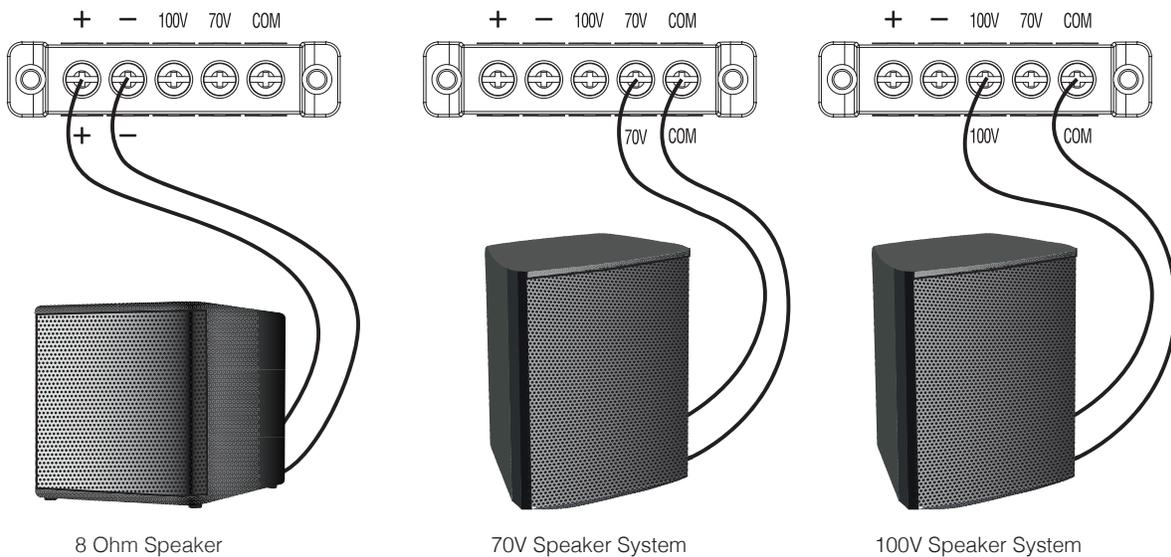


Figure 2.5.1 Output Wiring



2.6 Wiring Your Audio System

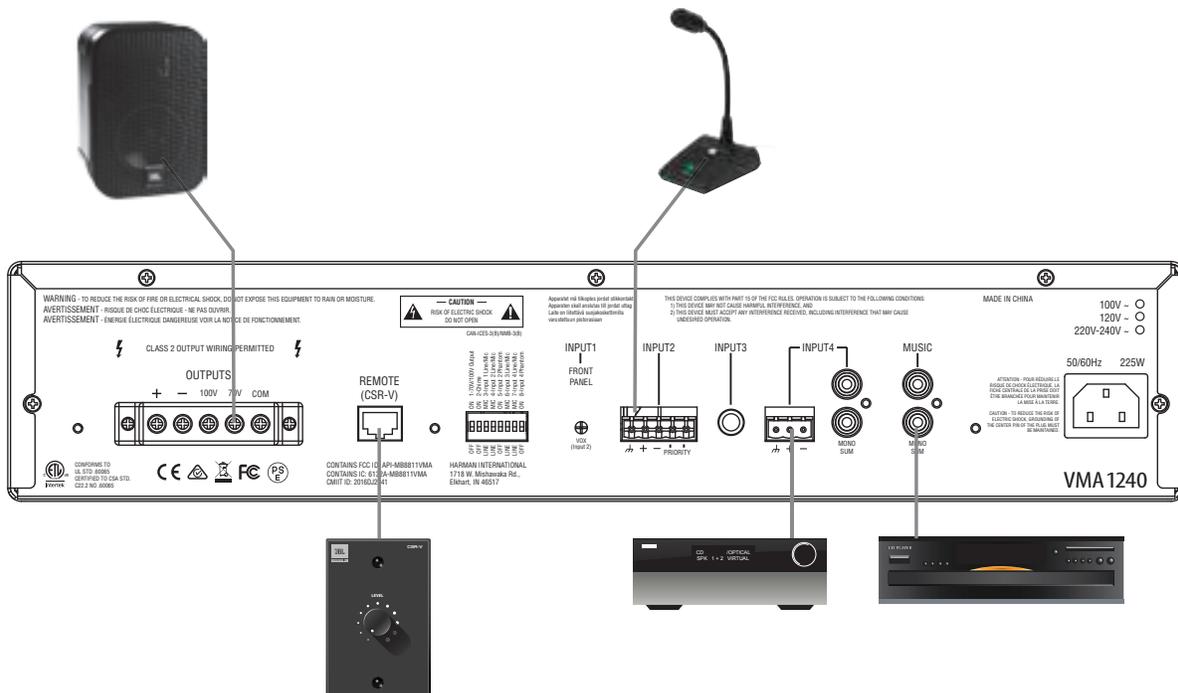


Figure 2.6.1 Wiring Audio System

Typical input and output connections are shown in Figure 2.6.1.

INPUTS: Connect input wiring for both channels using either the RCA or the Euroblock input for each channel.

OUTPUTS: You may use either low impedance or high impedance speakers. Always be sure to maintain the proper polarity when wiring speakers.

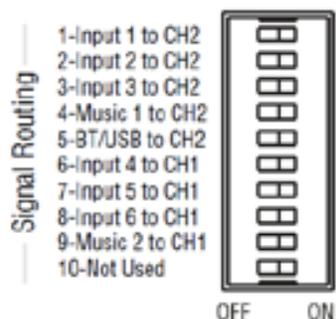
Low Impedance Speakers should be driven using the +/- pins of the amplifier output connector. The minimum impedance an amplifier channel can drive is 4 Ohms. Therefore, you can connect up to four 16 Ohm speakers, two 8 Ohm speakers or one 4 Ohm speaker to an amplifier output channel.

High Impedance Speakers should be driven using the appropriate (70V or 100V) pin to speaker (+) and the COM pin to speaker (-) of the amplifier output connector. The minimum impedance that can be driven from each output is provided in Appendix A. Note that the HI-Z switch must be ON in order to provide audio to the high impedance outputs.

WARNING: Do not connect to both low impedance speakers and high impedance speakers from the same audio output channel.



3.2 Input Routing



The two-channel models, VMA260 and VMA2120, include a default routing of Input channels 1-3, Music 1 and the Bluetooth/USB source to amplifier 1. Input channels 4-6 and Music 2 are routed to amplifier 2. The user may take any input and have it routed to both outputs by selecting the appropriate switch. For example, if you set switch 1 to ON, Input 1 will be routed to both AMP1 and AMP2.

3.3 Configuration Settings

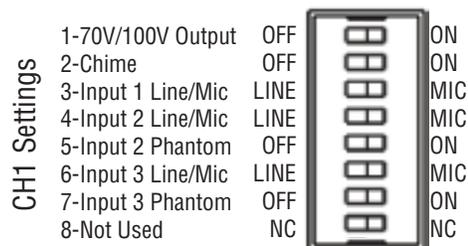
A DIP switch is available for each output channel to configure the unit to your specific system.

3.3.1 70V/100V Output Selection

When this switch is in the “OFF” position, the amplifier is configured to drive low impedance speakers, (4 Ohms ,minimum) The 70V/100V switch will activate the built-in output transformer allowing the unit to directly drive 70V or 100V speaker systems when connected to the appropriate output terminals. As an added feature when driving the high impedance speakers, the system automatically apply a 70Hz high pass filter.

3.3.2 Chime Function

Turning chime ON will enable a chime sound at the onset of an announcement when priority muting is invoked. (See section 3.5, Priority Muting, on the following page.)



3.3.3 Line/Mic Gain Switch

Additional gain is available for use with sources, in particular microphones, that have low output levels. Switching to MIC position activates 48dB additional gain. Use only when necessary as the added gain may cause higher noise levels.

3.3.4 Phantom Power

Phantom power (27V) can be applied to specific mic inputs by turning on the appropriate Phantom Power switch.



3.4 VOX Function

Voice activated ducking is available on input channel 2 of the VMA160, VMA1120 and VMA1240. The feature is available for both input channels 2 and 5 of the VMA260, and VMA2120. The audio input level required to activate ducking is set using the trim pot on the rear panel. Adjusting in the counterclockwise direction will reduce that level while the full clockwise setting will disable the VOX function.

3.5 Priority Muting

VMA160, VMA1120 and VMA1240 may use Input channel 2 as a priority channel, muting all other channels when pins 4 and 5 are shorted using a switch closure.

The VMA260, and VMA2120 lets Input2 operate with priority over all inputs into output amplifier CH1. Similarly, Input5 can exercise priority over all inputs into output amplifier CH2. Input2 will have priority over both amplifiers CH1 and CH2 if the routing DIP switch #2 is set to ON.

3.6 Remote Volume Control

Remote volume control can be implemented using a CSR-V controller connected via an Ethernet cable to the RJ45 connector on the back panel. For the VMA260 and VMA2120, there are two connectors, one for each amplifier output.



3.7 Media Player

3.7.1 Bluetooth Operation

To activate Bluetooth, perform the following:

1. Press the Bluetooth Key until the Bluetooth Indicator begins to flash.
2. Enable Bluetooth of your source media player and search for “JBL COMMERCIAL (XX)”. Establish a connection. (Note that the “XX” represents the last two digits of the MAC address which allows the user to have multiple systems in close proximity.)
3. Once connected, the Bluetooth Indicator will stop flashing and remain illuminated.
4. Press the VOLUME UP/VOLUME DOWN keys to increase or decrease the volume.
5. Press the NEXT key to jump to the beginning of the next track.
6. Press the PREVIOUS key once to jump to the beginning of the current track or twice to the previous track.
7. Press the STOP key to stop playing. (**Note: This may not work for some Bluetooth devices.**)
8. Press the PLAY/PAUSE key to pause or resume playing.
9. To disconnect, either press the Bluetooth Key or disable Bluetooth at the media player source device. (**Note: Play will resume automatically upon reconnect if disconnected by pressing the Bluetooth Key.**)
10. Press the REC key to start recording. (**Note: Media player signals are not recorded.**)

Note: Bluetooth signal is muted when broadcasting the chime tone.

3.7.2 USB Operation

1. Insert a USB Drive to the USB Audio Input and the number of folders and files on the USB Drive will be displayed.
2. Press PREVIOUS or NEXT Key to scroll the playable media.
3. Press the VOLUME UP/VOLUME DOWN keys to increase or decrease the volume.
4. Press the REPEAT Key to enter different repeat modes:
 - REPEAT CURRENT – Repeat the current track.
 - REPEAT ALL – Repeat all tracks.
 - REPEAT ALL 30Min Message – Play the track with the predefined name, “MESSAGE_1.mp3” every 30 minutes while repeating all other tracks.



- REPEAT ALL 60Min Message – Play the track with the predefined name, “MESSAGE_1.mp3” every 60 minutes while repeating all other tracks.
 - REPEAT OFF – No repeat.
5. Press the PLAY/PAUSE key to pause or resume playing.
 6. Press the STOP key to stop playing.
 7. Press the PREVIOUS Key once to jump to the beginning of the current track or twice to the previous track.
 8. Hold down the PREVIOUS Key to rewind.
 9. Press the NEXT Key to jump to the beginning of the next track.
 10. Hold down the NEXT Key to fast forward.
 11. Press the REC key to start recording. (**Note: Media player signals are not recorded.**)

3.7.3 Additional Media Player Information

Bluetooth playback will always have priority over USB.

The default media player volume is maximum.

USB and Bluetooth signals cannot be recorded.

While playing from the USB or Bluetooth source, the signal being played is interrupted momentarily when a chime tone is sounding in another channel.

Hidden functions are available by pressing and holding a media player key for more than 1 second then pressing and holding the Bluetooth key along with it.

- RECORD (>1s) + BT Displays the BT MAC address
- STOP (>1s) + BT Displays the firmware version
- PLAY (>1s) + BT Illuminates all dots in the display
- REPEAT (>1s) + BT Factory Reset

3.7.4 Firmware Upgrade Procedure

1. Place the firmware file “*.mcs” onto a blank USB Drive.
2. Insert the USB Drive.
3. Display will show “USB UPGRADE”.
4. Wait until display shows “USB SUCCESS” and the display turns off.
5. Power off the unit.
6. Remove the USB Drive.
7. Power on the unit, the upgrade procedure is finished.



4.0 Troubleshooting

CONDITION: No power to the mixer-amplifier so that the power LED is not illuminated.

POSSIBLE REASON: The mixer-amplifier is not plugged into the power outlet.

CONDITION: No sound or low sound.

POSSIBLE REASON: The input signal is not present or at a very low level.

POSSIBLE REASON: The Master Volume control is turned down.

POSSIBLE REASON: A CSR-V is connected and turned down.

POSSIBLE REASON: Mixer channel inputs are turned down.

POSSIBLE REASON: A Priority switch is closed, muting all except the priority input.

POSSIBLE REASON: The 70V/100V switch is OFF while using the 70V or 100V outputs.

CONDITION: Distorted sound.

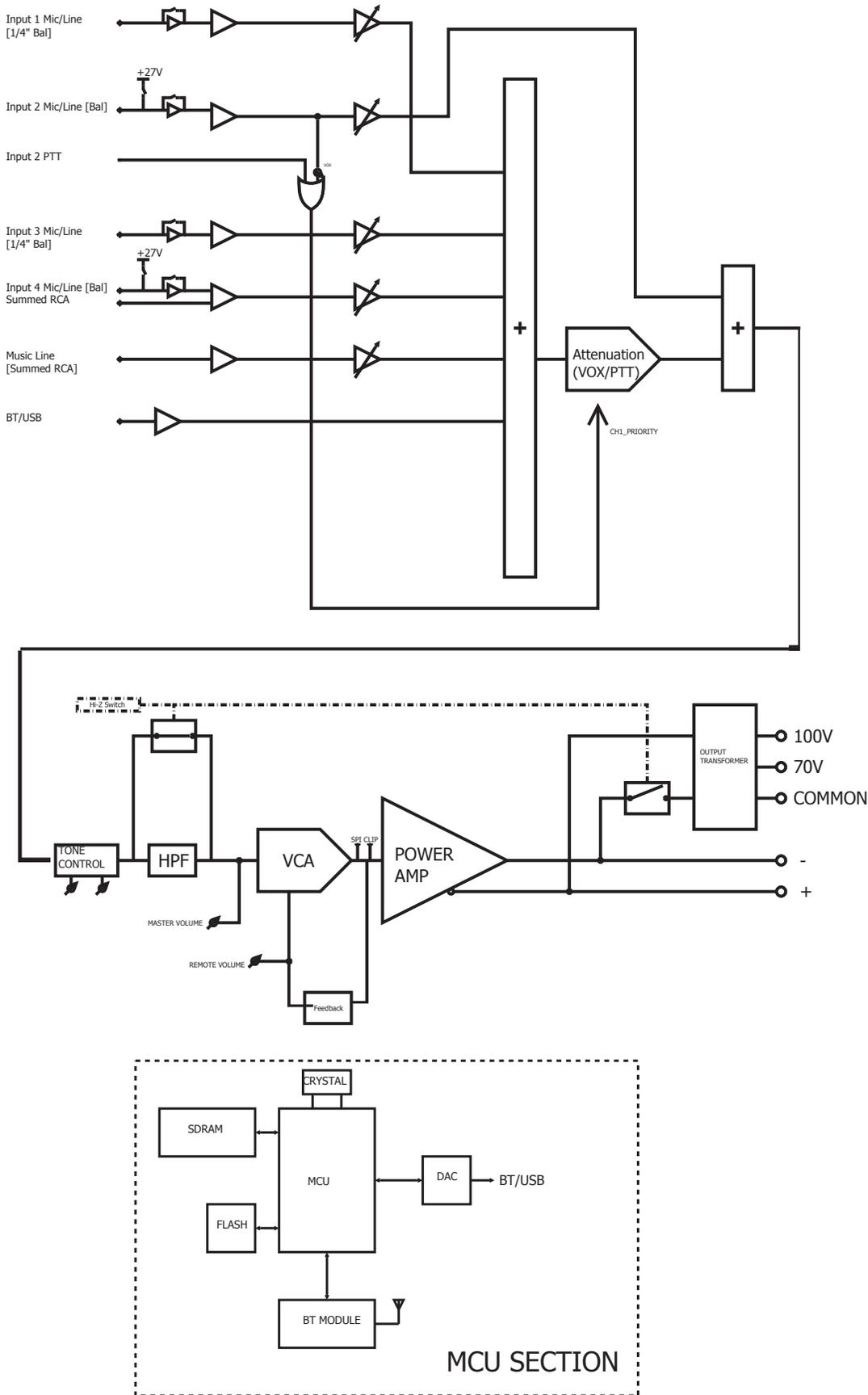
POSSIBLE REASON: Input signal level is too high. Please turn down the input level controls. Note that the mixer-amplifier should not be operated at a level that allows the clip indicator (red ring around the Master Volume) to be constantly ON.

POSSIBLE REASON: Master Volume is too high.

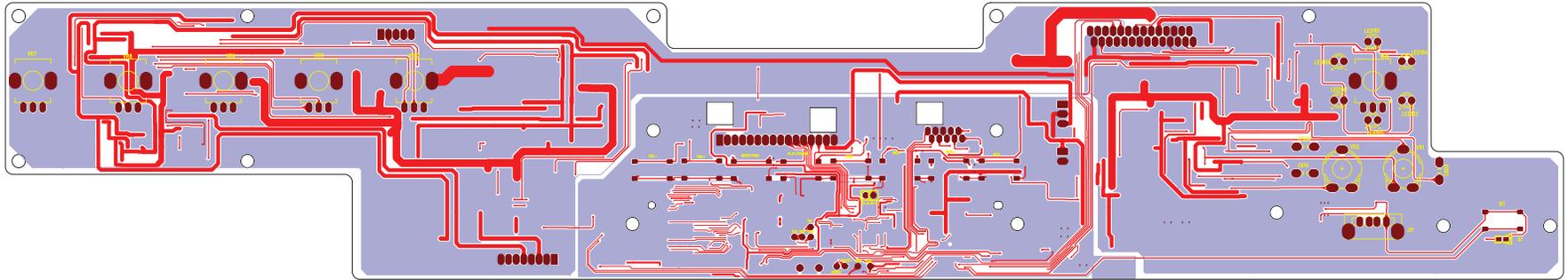
POSSIBLE REASON: MIC/LINE switch is in MIC position when using a line level source.



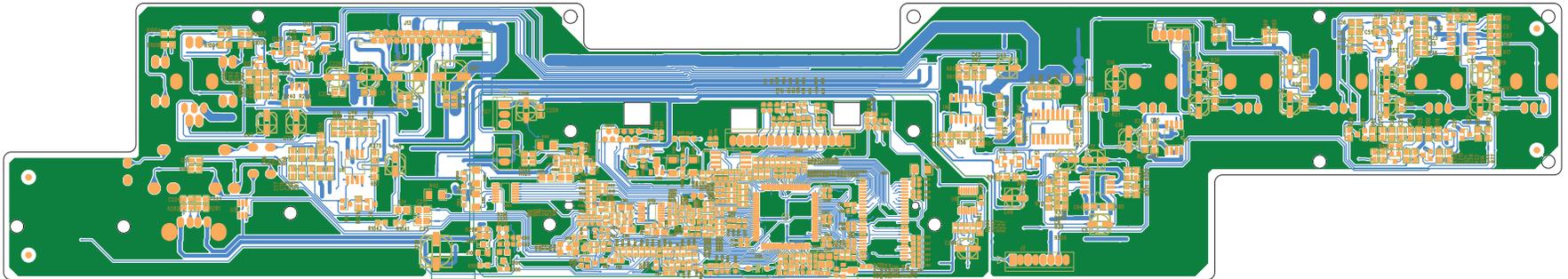
Block Diagram - VMA160, VMA1120 & VMA1240



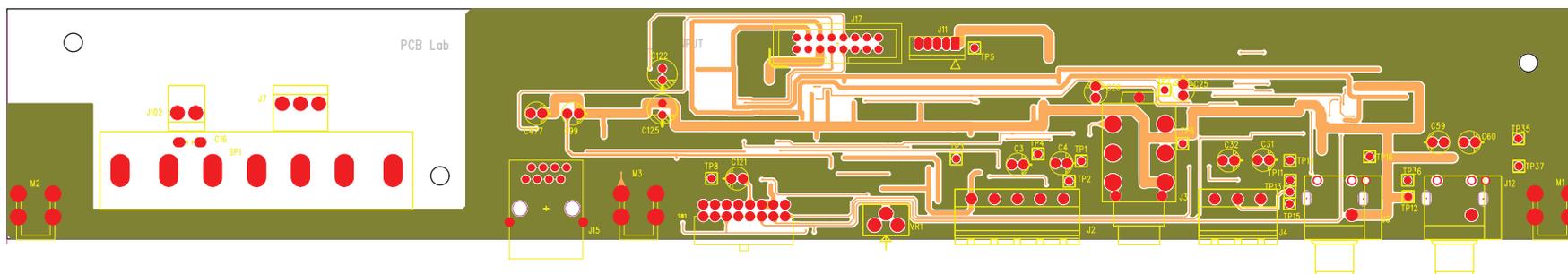
5087020_PCB,ASY,VMA_1CH_FRONT_PANEL



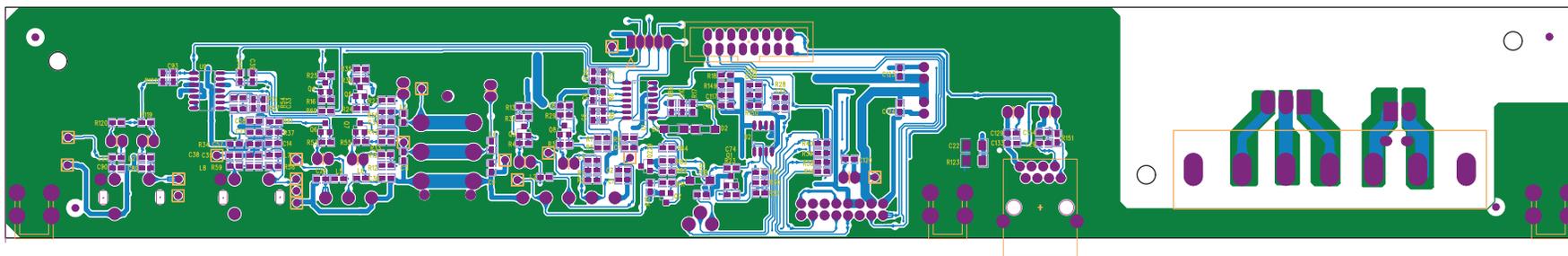
5087020_PCB,ASY,VMA_1CH_FRONT_PANEL



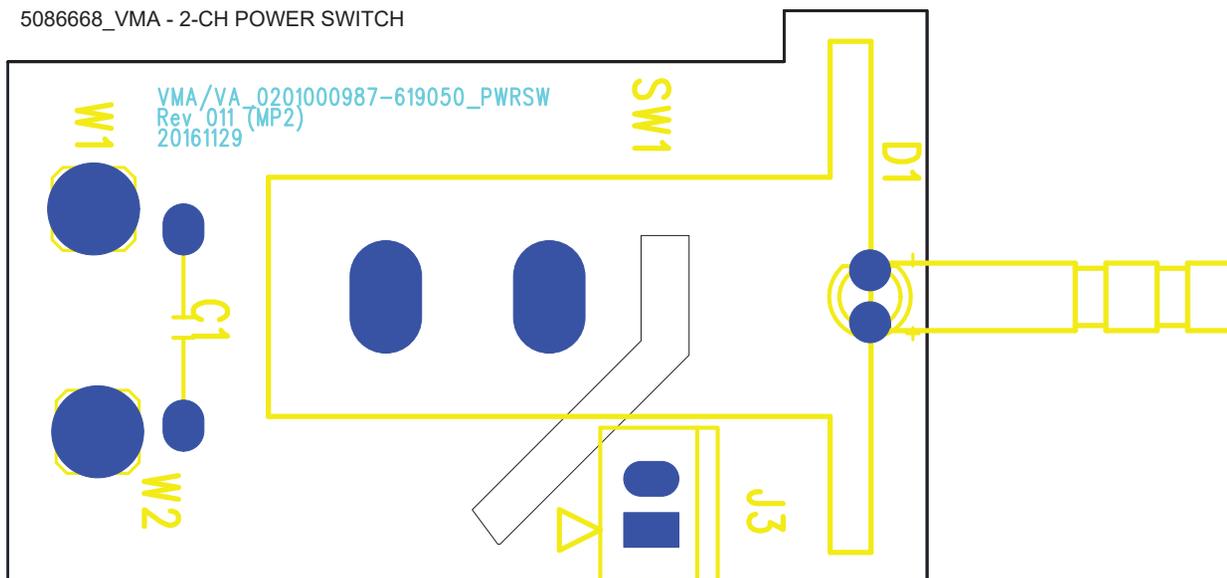
5087024_PCB,ASY,VMA_1CH_REAR_INPUT



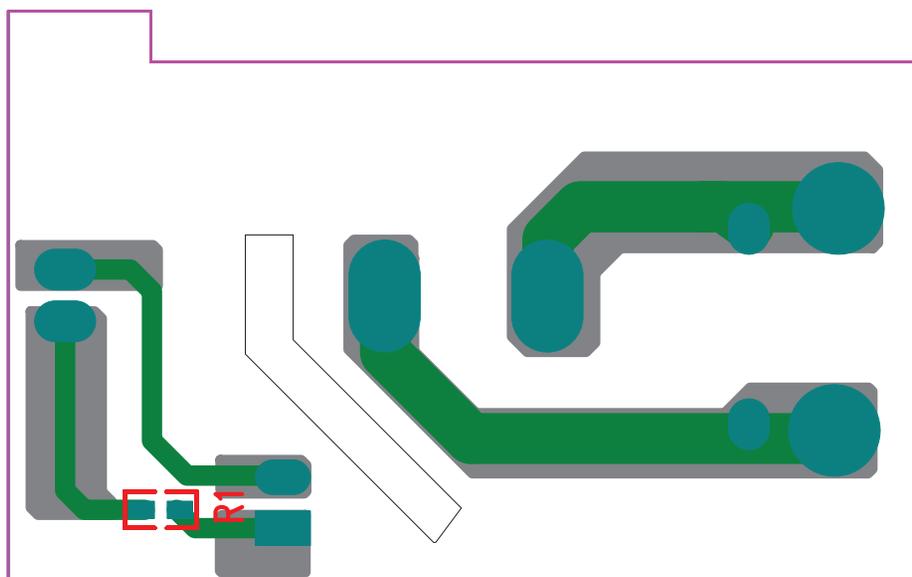
5087024_PCB,ASY,VMA_1CH_REAR_INPUT

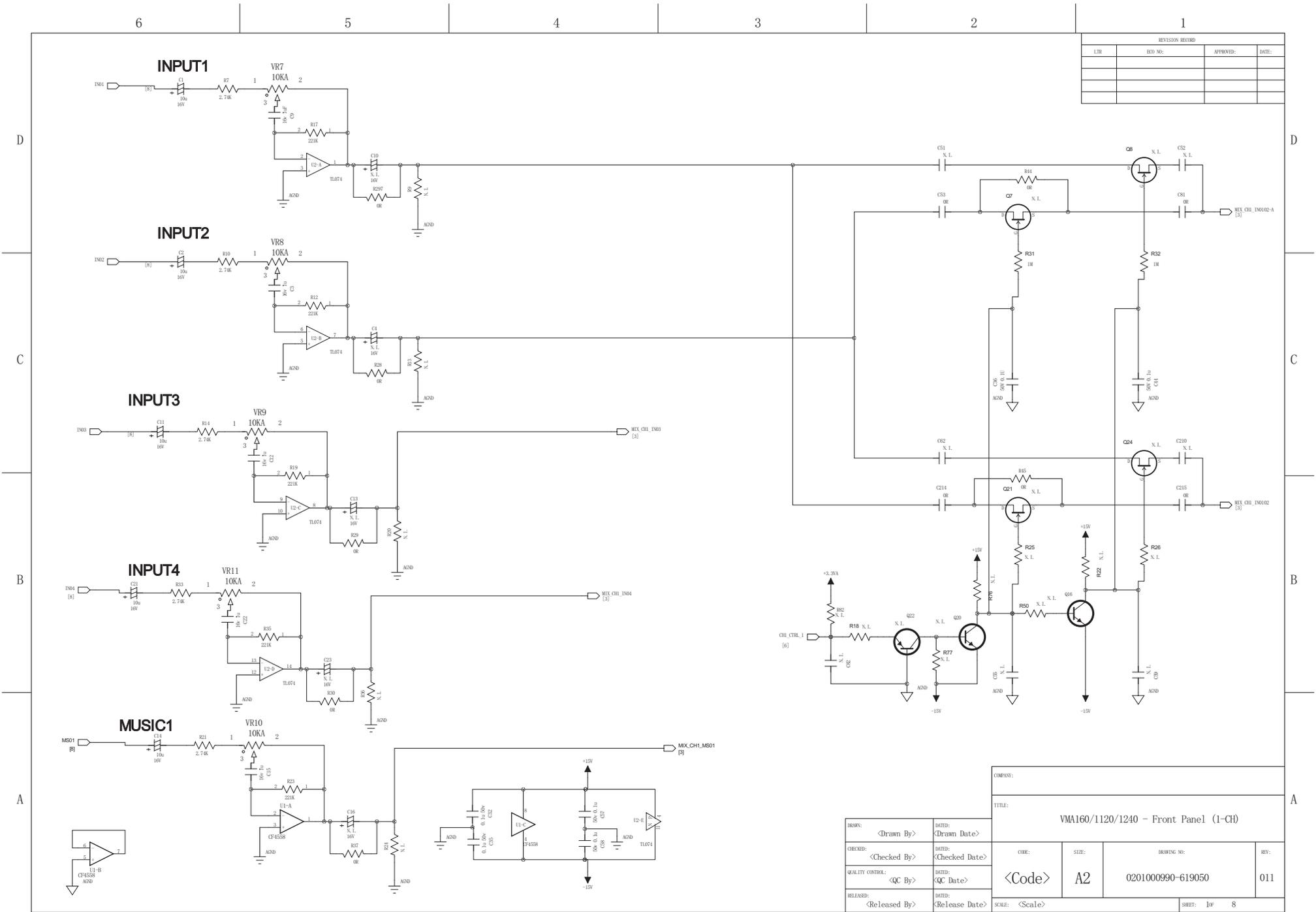


5086668_VMA - 2-CH POWER SWITCH



5086668_VMA - 2-CH POWER SWITCH





REVISION RECORD			
LTR	ECO No.	APPROVED:	DATE:

COMPANY:			
TITLE: VMA160/1120/1240 - Front Panel (1-CH)			
DATE: <Drawn Date>	CODE: <Code>	SIZE: A2	DRAWING NO: 0201000990-619050
CHECKED: <Checked By>	DATE: <Checked Date>	REY: 011	
QUALITY CONTROL: <QC By>	DATE: <QC Date>		
RELEASED: <Released By>	DATE: <Release Date>	SCALE: <Scale>	SHEET: 10F 8

6

5

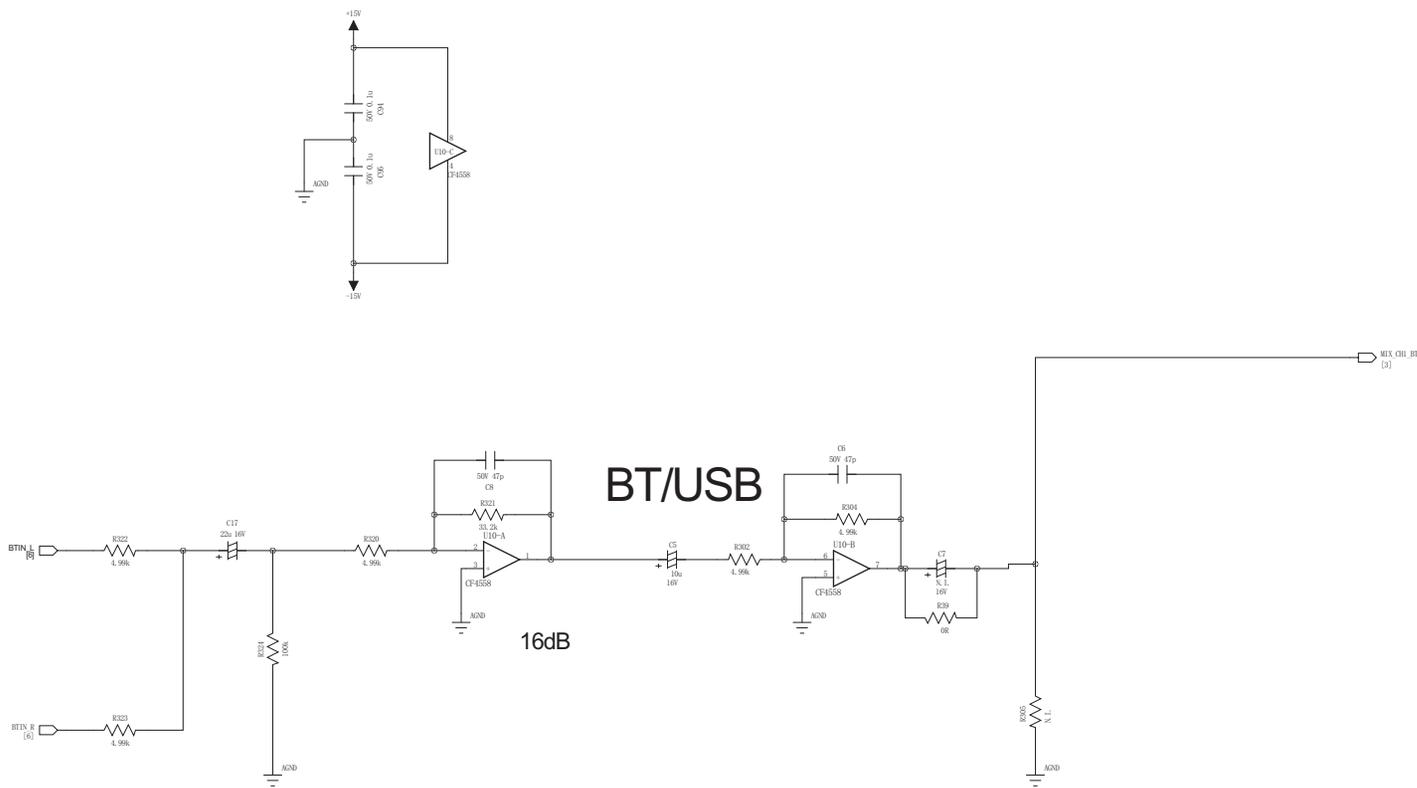
4

3

2

1

REVISION RECORD			
LTR	REV. NO.	APPROVED:	DATE:



COMPANY:			
TITLE: VMA160/1120/1240 - Front Panel (1-Ch)			
DATE: <Drawn Date>	DATE: <Checked Date>	CODE: <Code>	SIZE: A2
DATE: <Released By>	DATE: <Release Date>	DRAWING NO: 0201000990-619050	REV: 011

DRAWN: <Drawn By>	DATE: <Drawn Date>
CHECKED: <Checked By>	DATE: <Checked Date>
QUALITY CONTROL: <QC By>	DATE: <QC Date>
RELEASED: <Released By>	DATE: <Release Date>

SCALE: <Scale> SHEET: 2F 8

6

5

4

3

2

1

REVISION RECORD			
LT#	REV. NO.	APPROVED:	DATE:

D

C

B

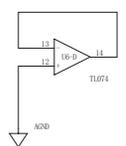
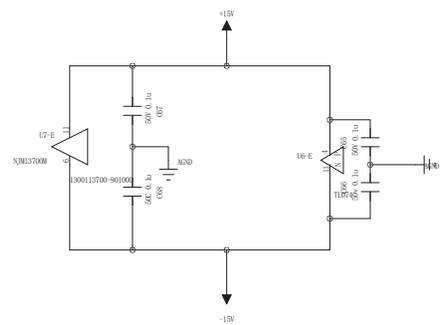
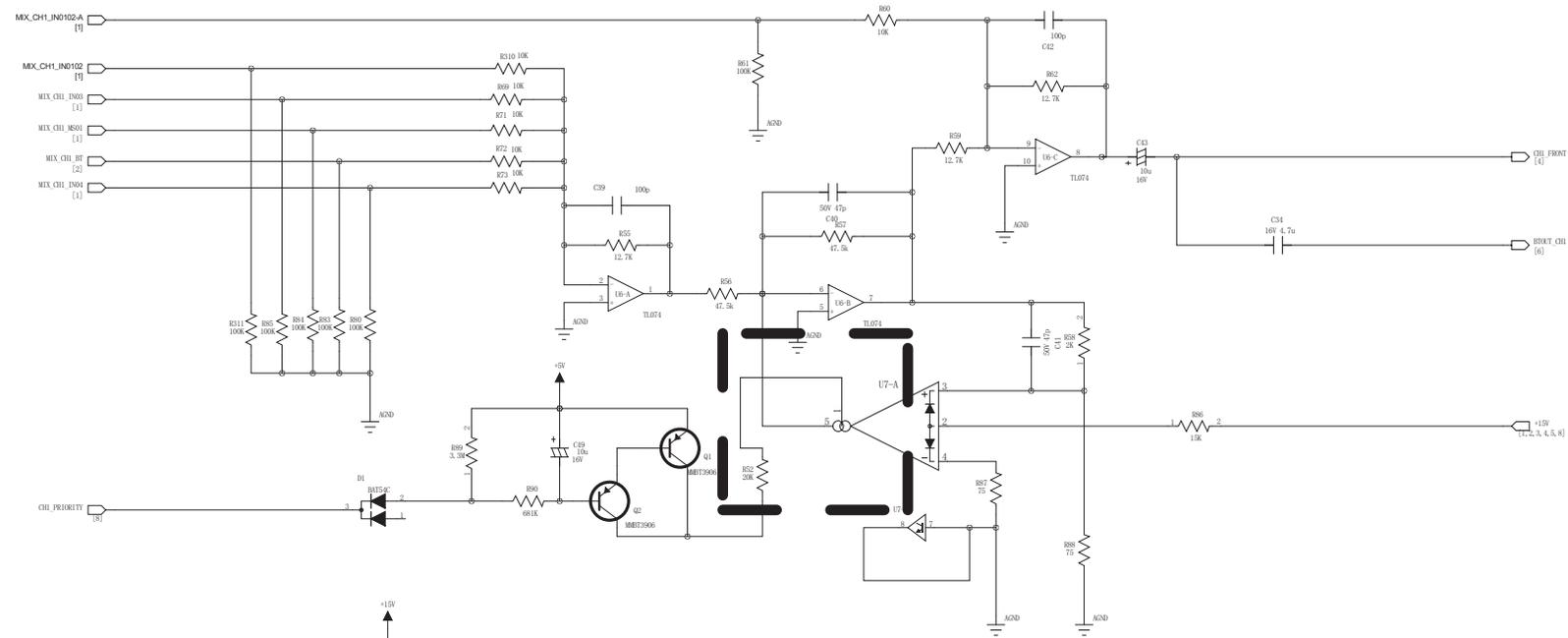
A

D

C

B

A



COMPANY:			
TITLE: VMA160/1120/1240 - Front Panel (1-CH)			
DRAWN: <Drawn By>	DATE: <Drawn Date>	CODE: <Code>	
CHECKED: <Checked By>	DATE: <Checked Date>	SIZE: A2	DRAWING NO: 0201000990-619050
QUALITY CONTROL: <QC By>	DATE: <QC Date>	REV: 011	
RELEASED: <Released By>	DATE: <Release Date>	SCALE: <Scale>	SHEET: 3F 8

6

5

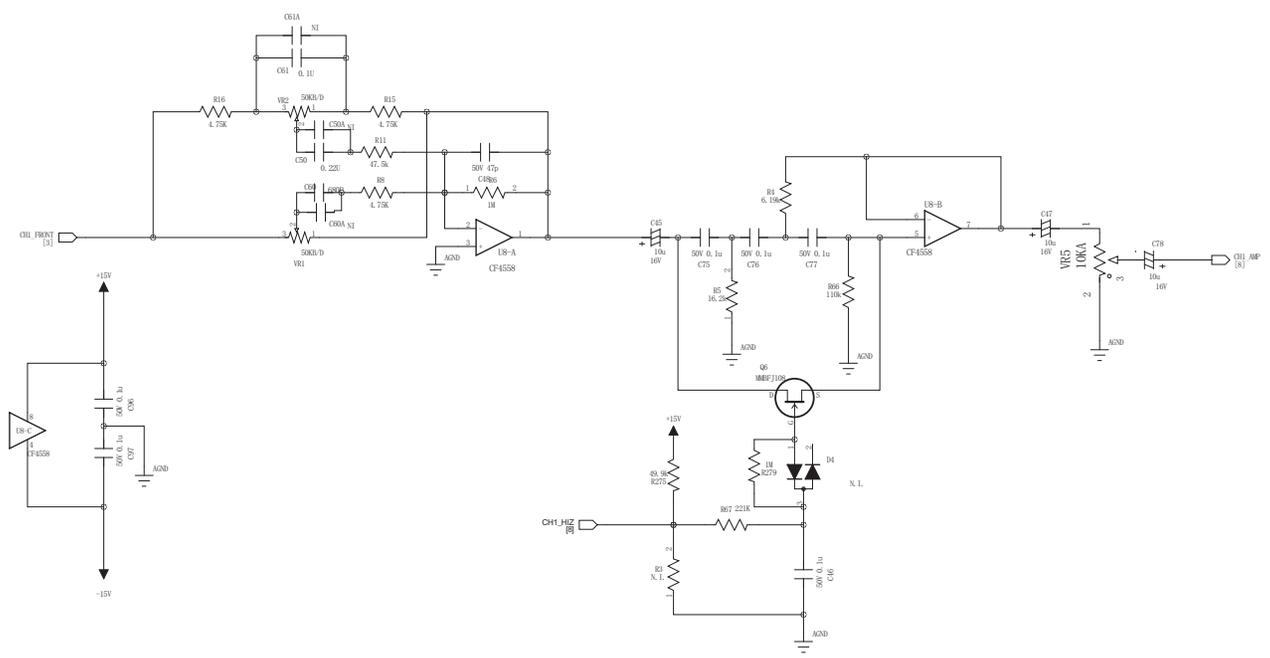
4

3

2

1

REVISION RECORD			
LT#	REV. NO.	APPROVED:	DATE:



COMPANY:			
TITLE: VMA160/1120/1240 - Front Panel (1-CH)			
DATE: <Drawn Date>	DATE: <Checked Date>	DATE: <QC Date>	DATE: <Release Date>
CODE: <Code>	SIZE: A2	DRAWING NO: 0201000990-619050	REV: 011
SCALE: <Scale>		SHEET: 4 of 8	

6

5

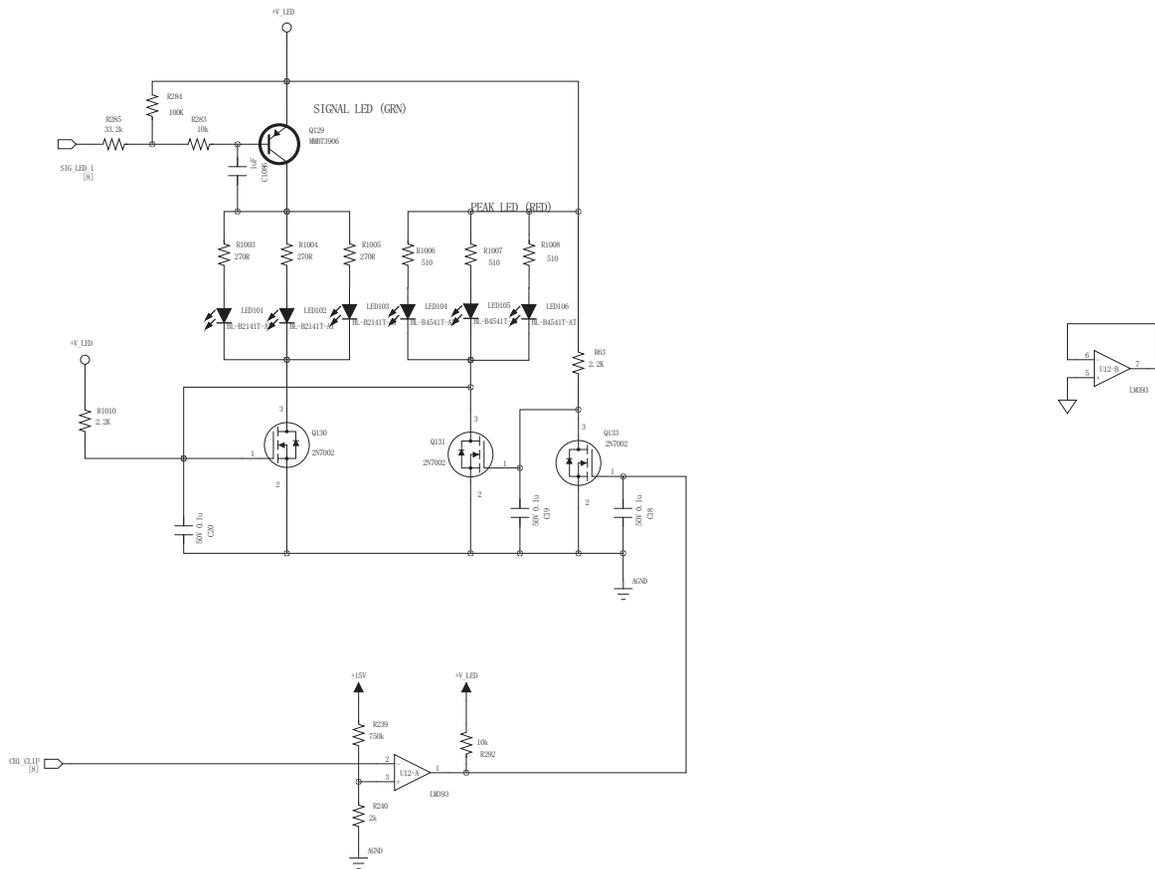
4

3

2

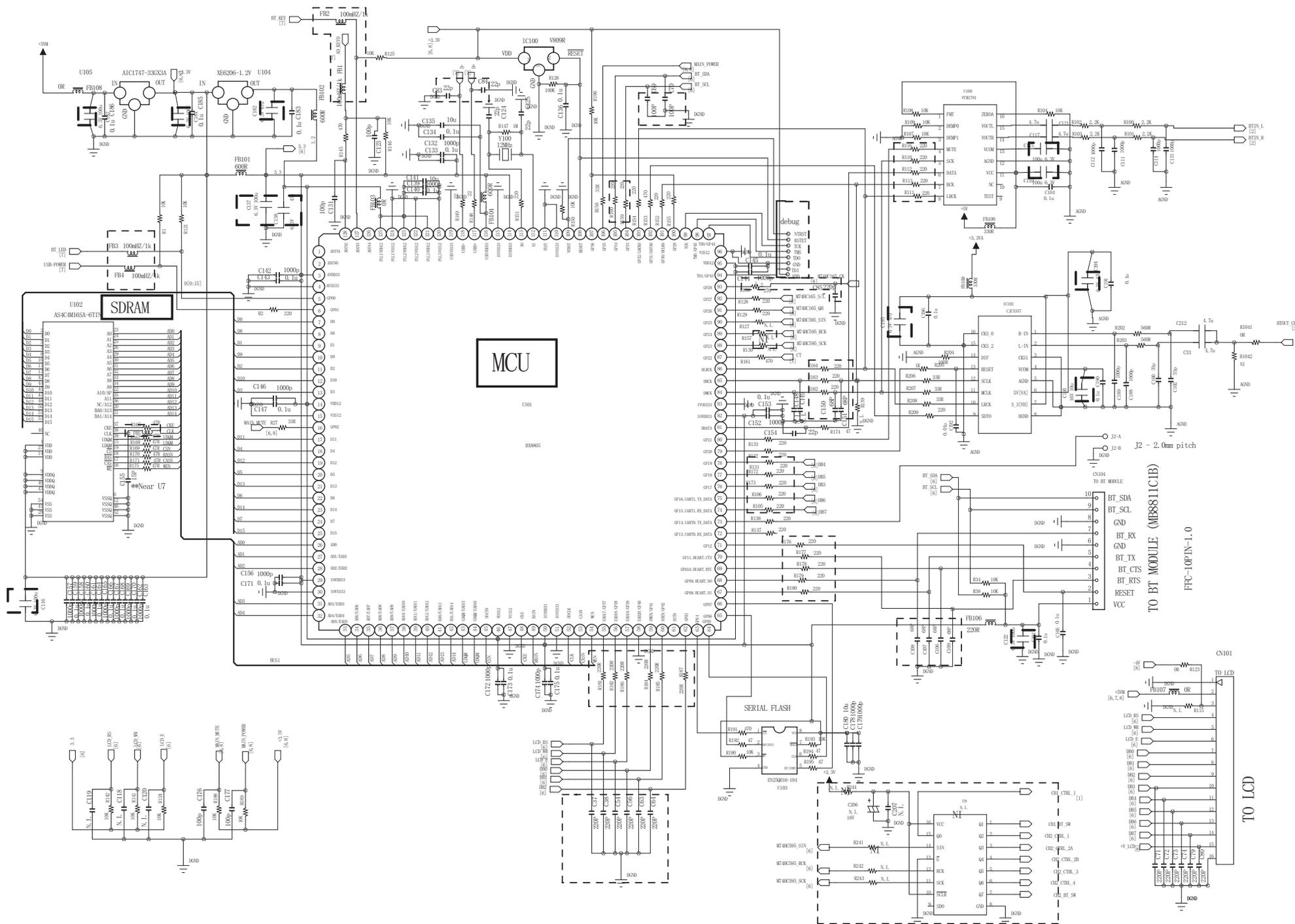
1

REVISION RECORD			
LT#	REV. NO.	APPROVED:	DATE:



COMPANY:			
TITLE: VMA160/1120/1240 - Front Panel (1-CH)			
DATE: <Drawn Date>	DATE: <Checked Date>	DATE: <QC Date>	DATE: <Release Date>
CHEKED: <Checked By>	DATE: <Checked Date>	DATE: <QC Date>	DATE: <Release Date>
QUALITY CONTROL: <QC By>	DATE: <QC Date>	DATE: <QC Date>	DATE: <Release Date>
RELEASED: <Released By>	DATE: <Release Date>	DATE: <Release Date>	DATE: <Release Date>

CODE: <Code>	SIZE: A2	DRAWING NO: 0201000990-619050	REV: 011
SCALE: <Scale>			SHEET: 5W 8



6

5

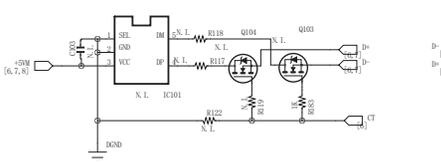
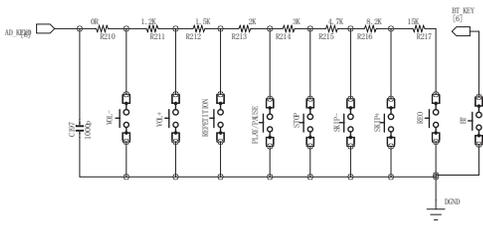
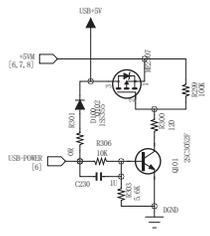
4

3

2

1

REVISION RECORD			
LT#	ECO NO.	APPROVED:	DATE:



6

5

4

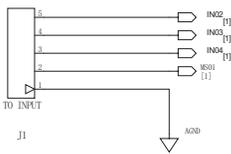
3

2

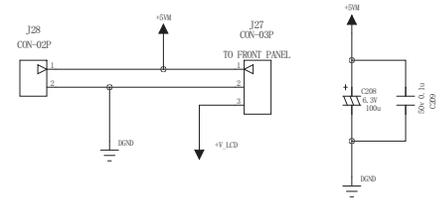
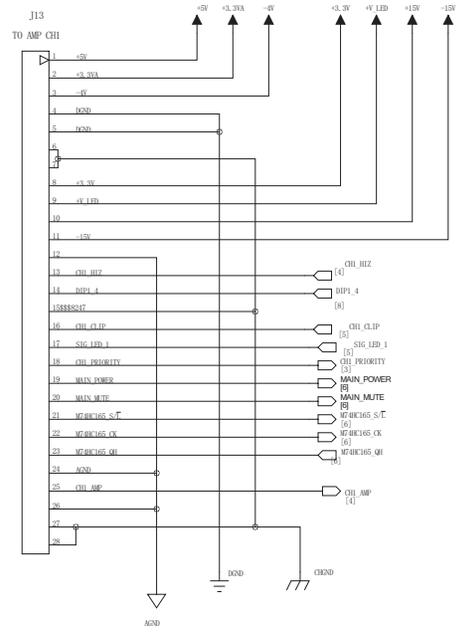
1

REVISION RECORD			
LTB	EDT NO.	APPROVED:	DATE:

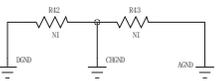
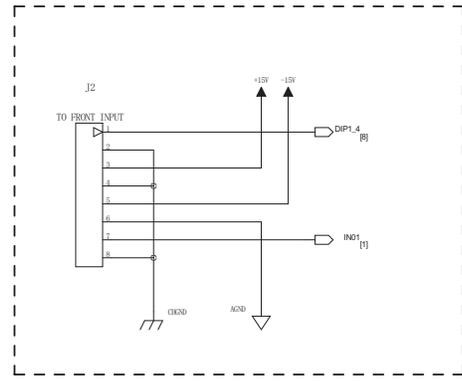
FRONT PANEL TO INPUT



FRONT PANEL TO AMP CH1



SP2 SP3 SP4 SP5
♀ ♀ ♀ ♀



COMPANY:

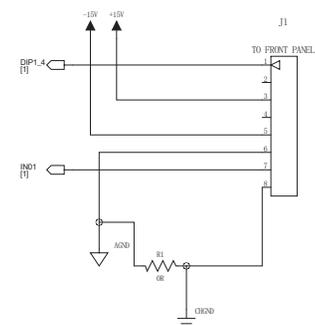
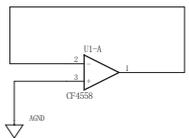
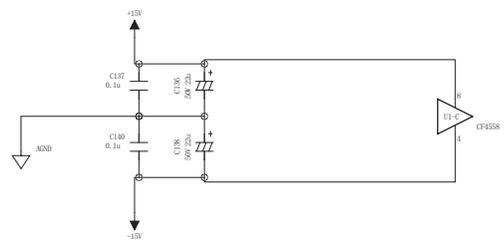
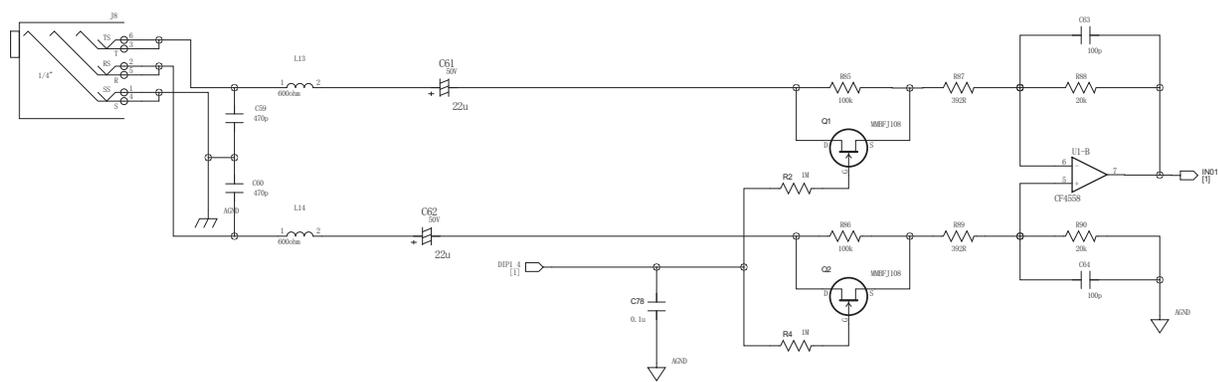
TITLE: VMA160/1120/1240 - Front Panel (1-CH)

DRAWN: <Drawn By>	DATED: <Drawn Date>	CODE: <Code>	SIZE: A2	DRAWING NO: 0201000990-619050	REV: 011
CHECKED: <Checked By>	DATED: <Checked Date>				
QUALITY CONTROL: <QC By>	DATED: <QC Date>	SCALE: <Scale>			SHEET: 8 of 8
RELEASED: <Released By>	DATED: <Release Date>				

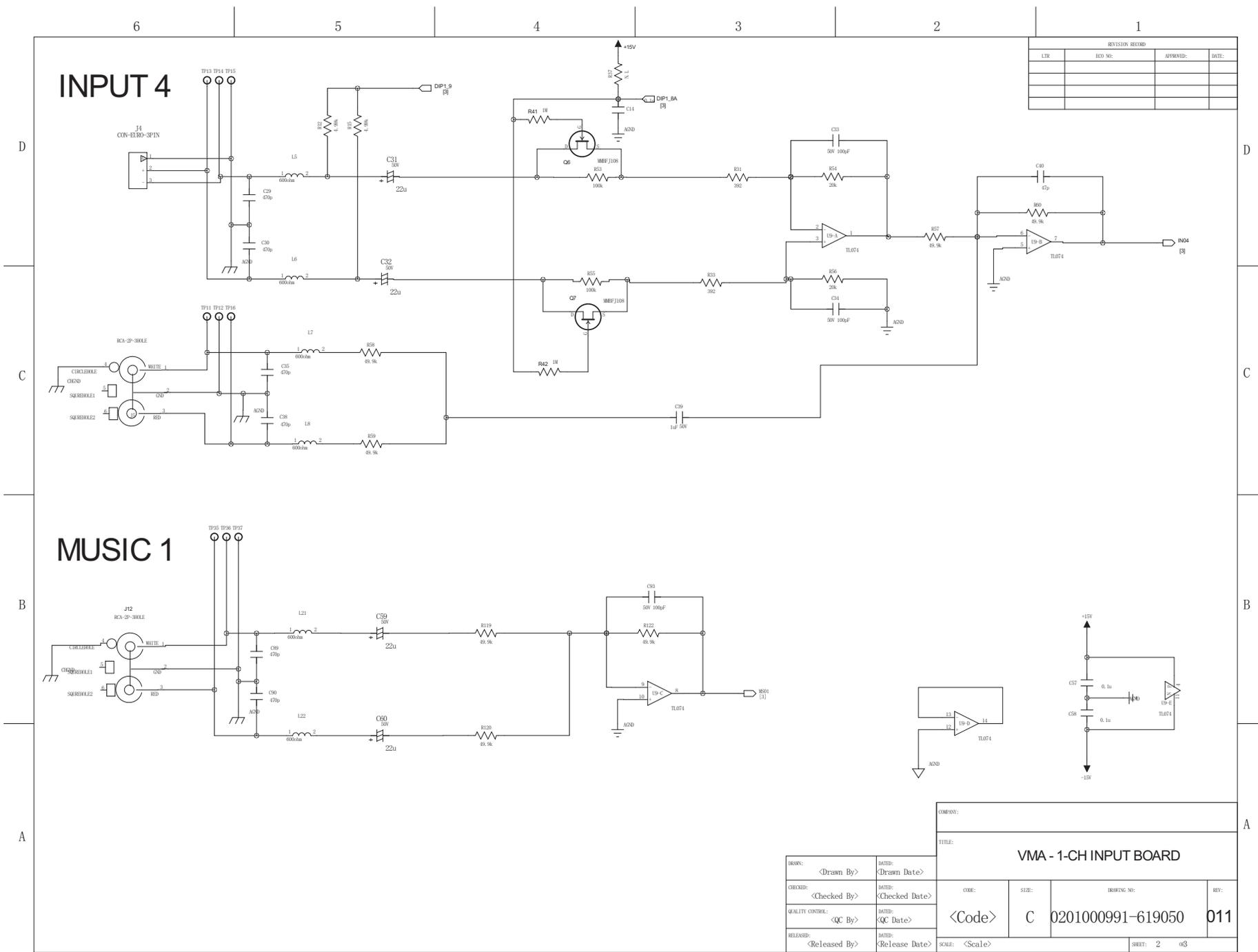
6 5 4 3 2 1

REVISION RECORD			
LT#	ECO NO:	APPROVED:	DATE:

INPUT1

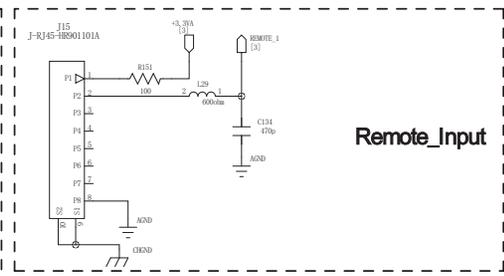
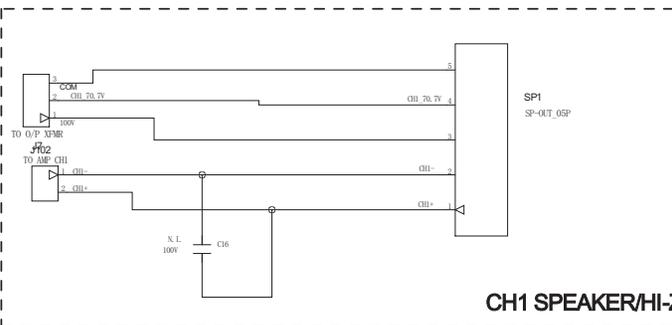
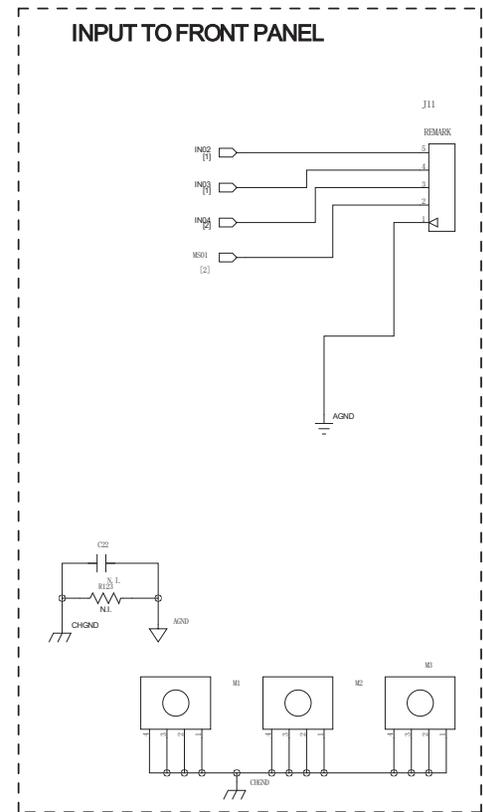
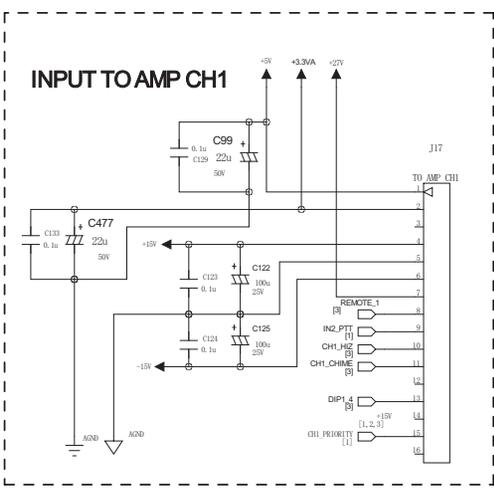
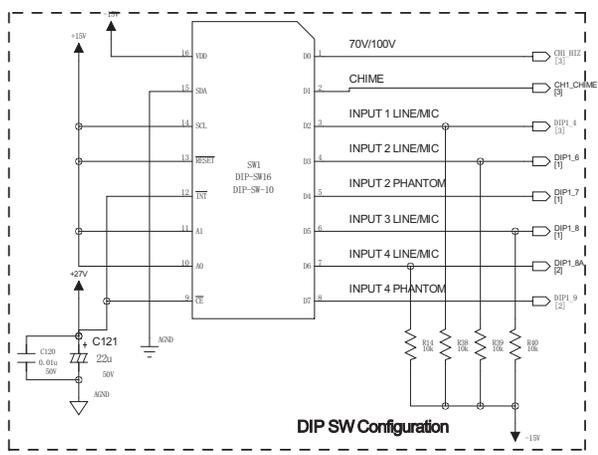


COMPANY:			
TITLE:			
VMA - 1-CH Front Input			
DRAWN:	DATE:	CORE:	REV:
<Drawn By>	<Drawn Date>	<Code>	011
CHECKED:	DATE:	SIZE:	DRAWING NO:
<Checked By>	<Checked Date>	C	0201000991-619050
QUALITY CONTROL:	DATE:	SCALE:	SHEET: 1 OF 1
<QC By>	<QC Date>	<Scale>	
RELEASED:	DATE:		
<Released By>	<Release Date>		



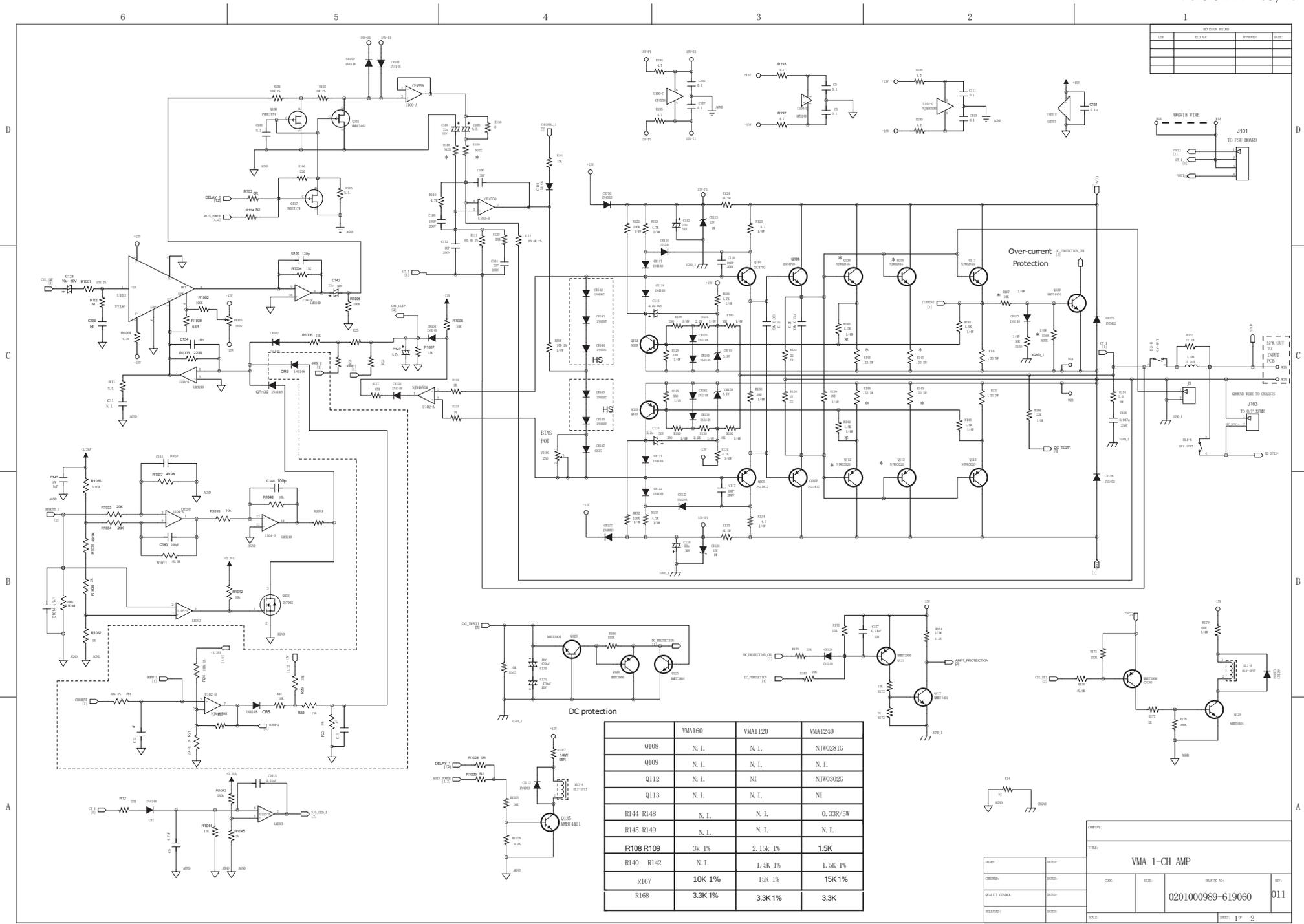
6 5 4 3 2 1

REVISION RECORD			
LT#	ECO NO:	APPROVED:	DATE:

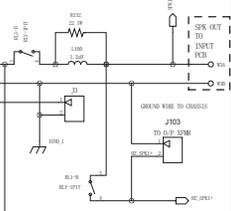
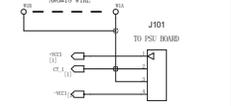


SP2 SP3 SP4 SP5
♀ ♀ ♀ ♀

COMMENTS:			
TITLE: VMA - 1-CH INPUT BOARD			
DESIGN: <Drawn By>	DATE: <Drawn Date>	CORE:	SIZE:
CHECKED: <Checked By>	DATE: <Checked Date>	DRAWING NO: 0201000991-619050	REV: 011
QUALITY CONTROL: <QC By>	DATE: <QC Date>	SCALE: <Scale>	SHEET: 3 3#
RELEASED: <Released By>	DATE: <Release Date>		



REV	REV BY	APPROVED	DATE



DATE:	ISSUE:	TITLE:	REV:
		VMA 1-CH AMP	
DESIGN:	ISSUE:	CODE:	SIZE:
QUALITY CONTROL:	ISSUE:		
RELEASED:	ISSUE:		

6

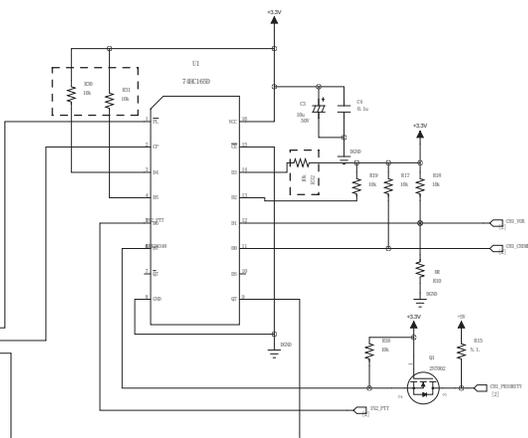
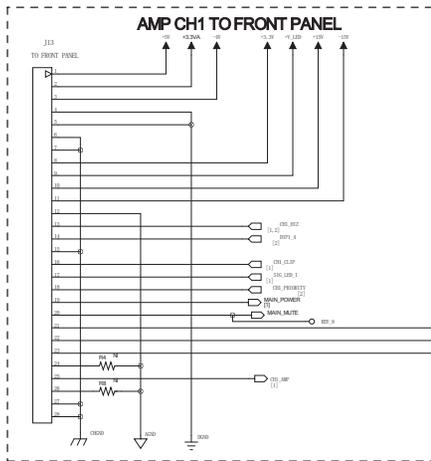
5

4

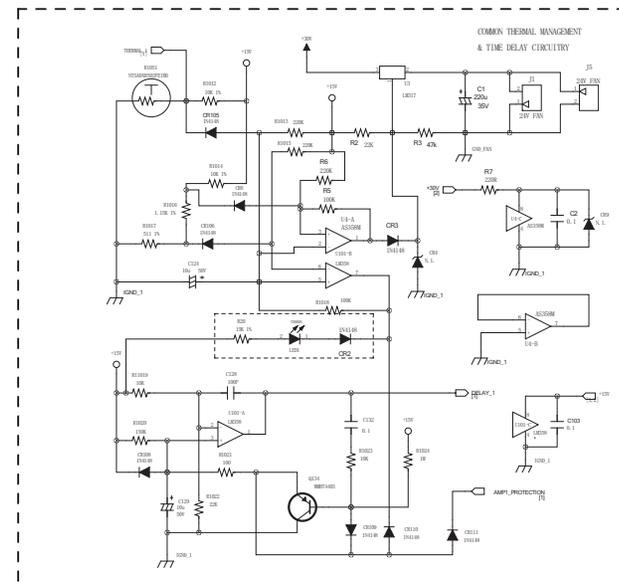
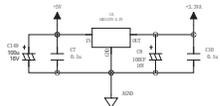
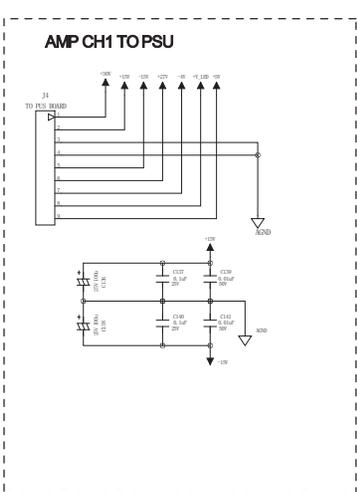
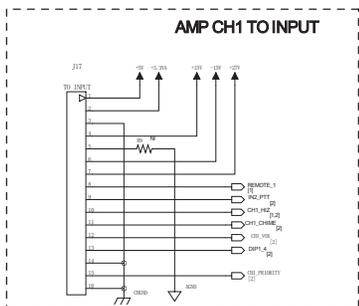
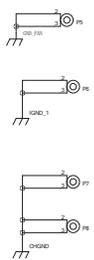
3

2

1



REVISION HISTORY			
REV	REV NO.	REVISION	DATE



DRAWN:		CHECKED:		DATE:	
DESIGNED:		REVISION:		REV:	
QUALITY CONTROL:		CAGE:		MILITARY NO.:	
RELEASED:		SIC:		0201000989-619060	
				011	
				SHEET: 20F 2	

6

5

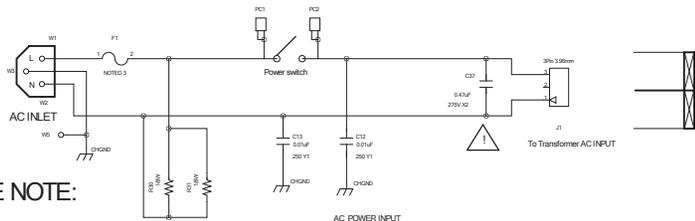
4

3

2

1

REVISION RECORD			
LTR	ECC NO.	APPROVED	DATE



SEE NOTE:

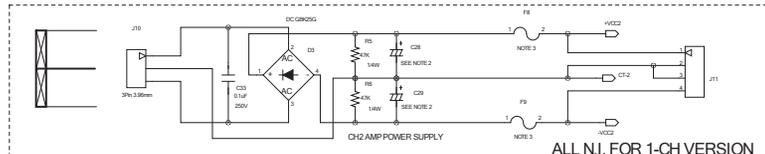
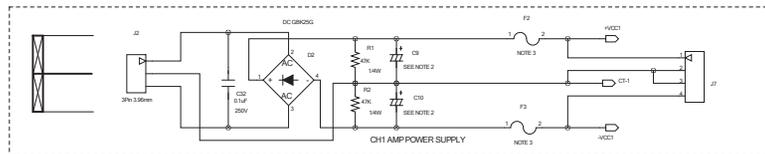
1. D3,R5,R6,C28,C29,C30,C31,C33,F8,F9,J10,J11 NO USE IN CSMA2260V,CSMA2120V

2.

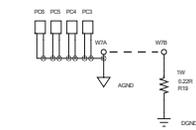
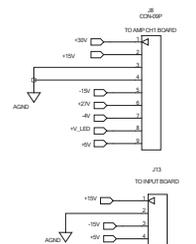
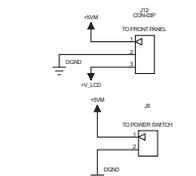
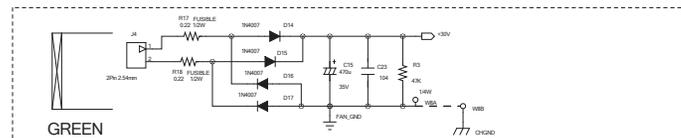
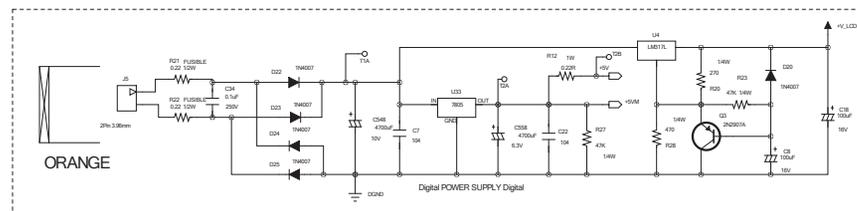
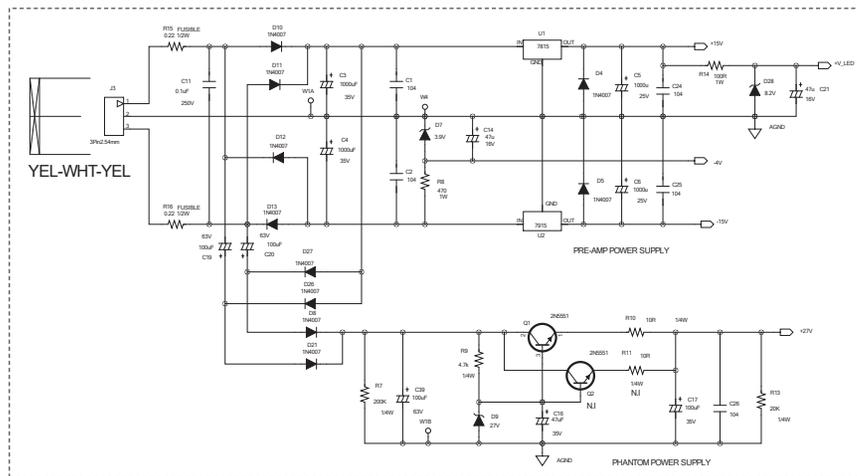
	CSMA160V	CSMA1120V	CSMA1240V	CSMA260V	CMA2120V
C9, C10 C28, C29	2200uF/50V P=10mm	3300uF/63V P=10mm	4700uF/87V P=10mm	2200uF/50V P=10mm	3300uF/63V P=10mm

3.

	CSMA160V	CSMA1120V	CSMA1240V	CSMA260V	CMA2120V
F2, F3 F8, F9	F4A/250V	F6.3A/250V	F8A/250V	F4A/250V	F6.3A/250V
F1 @230VAC	F5A/250V	F6.3A/250V	F8A/250V	F6.3A/250V	F8A/250V
F1 @120VAC	F6.3A/250V	F8A/250V	F10A/250V	F8A/250V	F10A/250V



ALL N.I. FOR 1-CH VERSION



COMPANY:			
TITLE: CSMA160V/260V/1120V/2120V/1240V PSU			
CODE: 2015-11-13	SIZE:	DRAWING NO.	REV. 011
SCALE:		SHEET: 0F	

6

5

4

3

2

1

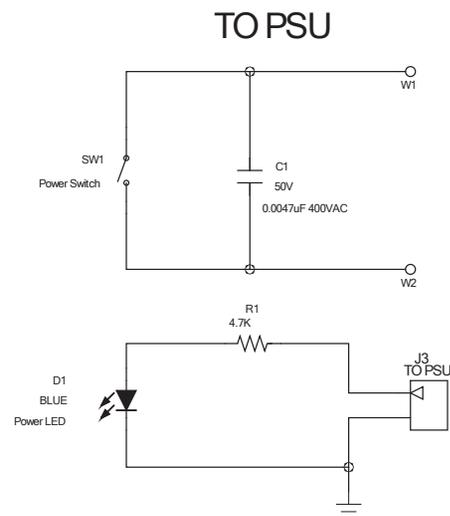
D

C

B

A

REVISION RECORD			
LTR	ECO NO.	APPROVED:	DATE:



COMPANY:			
TITLE: VMA - 2-CH POWER SWITCH			
CODE:	SIZE:	DRAWING NO.	REV.
<Code>	B	0201000987-619050	011
SCALE: <Scale>			SHEET: 1 OF 1

DRAWN: <Drawn By>	DATED: <Drawn Date>
CHECKED: <Checked By>	DATED: <Checked Date>
QUALITY CONTROL: <QC By>	DATED: <QC Date>
RELEASED: <Released By>	DATED: <Release Date>

Refer to the corresponding Service Bill of Materials (SBOM) to order parts stocked by Harman.

Spare Parts List		
Ref ID	Description	QTY
	VMA 1X240W MIXER AMP 120V	
1	PCB,ASY,VMA_2CH_PWR_SW	1
2	ENCL,PNL,SUB_FRNT,VMA	1
3	ENCL,LID,TOP,VMA,FIN	1
4	ENCL,CHAS,BOTTOM,VMA,FIN	1
5	HDW,BRKT,VMA,FIX HEADPHONE JACK	1
6	HDW,BRKT,VMA,FRONT ANGLE,FIN	2
7	HDW,BRKT,VMA,REAR PLAT,FIN	2
8	HDW,BRKT,VMA,REAR ANGLE,FIN	2
9	HDW,KNOB,VMA,FUNCTION KEY w/ARTWORK	1
10	HDW,KNOB,VMA,POWER BLACK	1
11	HDW,KNOB,VMA,BLUETOOTH BLACK	1
12	HDW,KNOB,VMA,VOLUME BLACK	1
13	HDW,KNOB,VMA,MIXER BLACK	5
14	OPT,LENS,VMA,PMMA w/ARTWORK	1
15	OPT,LIGHT RING,PMMA,TRANSPARENT	1
16	HDW,GSKT,BIG,SECC,BLACK	1
17	HDW,GSKT,SMALL,SECC,BLACK	2
18	FSTNR,SPCR,COPPER,4.75x20.8mm	4
19	HDW,FT,PAD,35x9mm	4
20	SHPMAT,CTN,544x504x172mm	1
21	SHPMAT,EPE,LEFT,480x160x100mm	1
22	SHPMAT,EPE,RIGHT,480x160x100mm	1
23	PCB,ASY,VMA_1CH_FRONT_PANEL	1
24	PCB,ASY,VMA_1CH_FRONT_INPUT	1
25	PCB,ASY,VMA_1CH_REAR_INPUT	1
26	PCB,ASY,VMA1240_AMP	1
27	PCB,ASY,VMA1240_PSU	1
28	ENCL,PNL,FRNT,VMA1240,FIN	1
29	ENCL,PNL,REAR,VMA1240,FIN	1
30	CBL,PCRD,IEC,US,10A,18AWG,2m	1
31	CBL,FFC,28P,1.0MM,110MM	1
32	CBL,FFC,10P,1.0MM,280MM	1
33	CBL,WA,16AWG,100MM,GRN/YEL,UL1015	1
34	CBL,WA,16AWG,100MM,BRN,UL1672	1
35	CBL,WA,16AWG,100MM,BLU,UL1672	1
36	CON,HDR,1X16,2.5MM,ST	1
37	CON,HDR,M,PLUG,3P,5.0MM,GRN	1
38	CON,HDR,M,PLUG,5P,5.0MM,GRN	1
39	XFMR,PWR,TOROIDAL,120V,VMA1240	1
40	XFMR,SIG,TOROIDAL,240W,70V/100V	1
41	OPTO,DSPL.LCD,16X2,CHAR,NEG,WHT	1
42	MDL,ELEC,BLUETOOTH,AUDIO,MB8811C1B	1
43	CKT PROTN,FUSE,8A,250V,CERAMIC,5X20MM	2
44	CKT PROTN,FUSE,10A,250V,CERAMIC,5X20MM	1
45	THRMMGT,FAN,60X60X20MM,24V,4500RPM	1
45	CON,PWR,IEC,AC,INT,10A,250V,3P	1