



GAINLAB AUDIO

**GLA MC1
LIEUTENANT**



PLEASE NOTE THAT THE GLA-MC1 LIEUTENANT IS INTENDED FOR PROFESSIONAL USE. IT'S NOT A CONSUMER ELECTRONIC DEVICE. ITS INSTALLATION AND USE REQUIRE CERTAIN PROFESSIONAL SOUND ENGINEERING KNOWLEDGE AND SKILLS. LACK OF THIS KNOWLEDGE MAY RESULT IN MALFUNCTION, DAMAGE OR PERSONAL INJURY.

Op OPERATION AND SAFETY PRECAUTIONS

- Use only grounded electrical outlet!
- Do not open the device and don't do any modifications on it!
- Do not attempt to repair or replace any of the components unless specifically instructed to do so in this guide.
- Pay attention to not put any solid matter (flammable things, coin, nail etc) or liquid (water, alcohol etc.) inside device.
- Do not twist or break the power cord or place heavy objects on it. Doing so may damage the cable and cause a short circuit. Damaged cables can cause fire and electric shock!
- Protect the device from intensive external shock! (for example: falling down)

Never use the device in following conditions:



- Extreme temperature
- Moisture
- High humidity
- Rain
- Dust
- Heavy vibration

In the following cases, turn off the machine immediately, unplug the power cord, and contact us (support@gainlabaudio.com):

- If the mains plug of the appliance is damaged
- If you notice smoke or an unusual odor
- If any object or liquid gets inside the device,

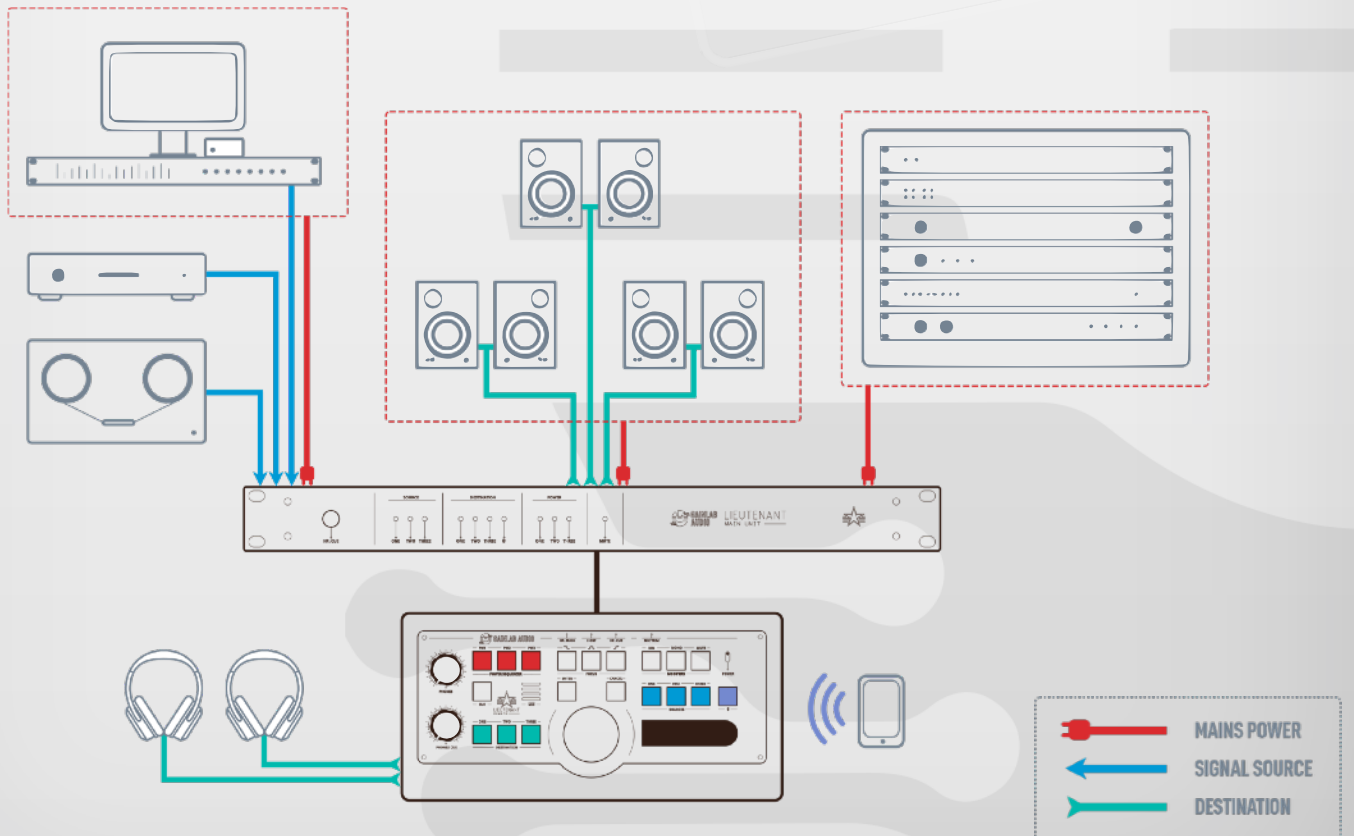
- If the device has been exposed to rain or other moisture,
- If the device does not operate normally
- Do not connect the appliance to a mains socket to which an electrical appliance controlled by an inverter, switching power supply (eg. refrigerator, washing machine, microwave, air conditioner) or a appliance with a motor is connected.
- Depending on the use of the electrical devices, power supply noises may cause a malfunction or audible noise on this unit. If a separate electrical outlet cannot be used, connect a noise filter between this and the other electrical appliance.
- The unit heats up during several hours of continuous operation. This is normal and not a cause for concern.
- Turn off all devices before connecting the device to other devices. This will prevent damage to speakers and other equipment.
- Use of the unit near amplifiers or other equipment that contains a transformer may cause noise. To resolve this issue, relocate the device or move it away from the interfering device.
- Noise may be caused by using a wireless communication device near the device, such as a mobile phone. Such noise can occur when making, receiving, and diverting a call. If you experience this problem, move the wireless device away from the device or turn it off.
- This unit may interfere with radio and television operation, so do not use near such receivers.
- If the device is transported to a location with a very different temperature and / or humidity, moisture may condense inside. Using the device in this condition may result in damage or malfunction. Therefore, wait a few hours for the moisture to completely evaporate before using the appliance.



CLEANING AND MAINTENANCE

Clean the appliance daily with a soft, dry or slightly damp cloth. Use a soft, abrasion-free cloth to remove stubborn dirt. Then wipe the device with a dry cloth. Never use benzine, thinner, alcohol or other solvents, strong alkaline or acidic cleaners as they may cause discoloration and deformation.

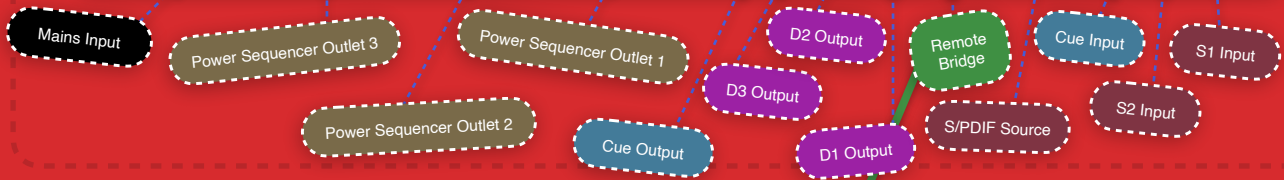
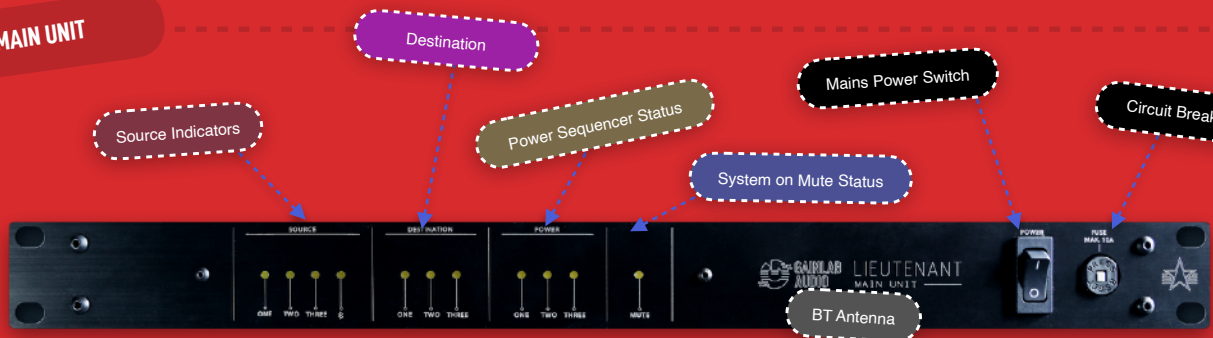
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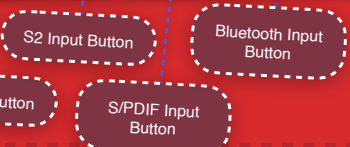
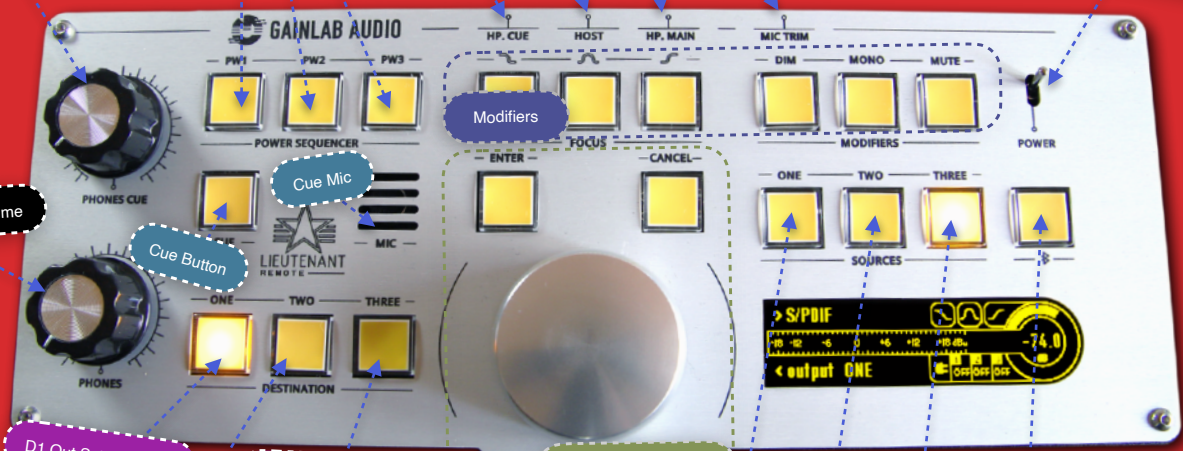
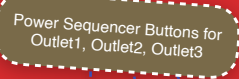
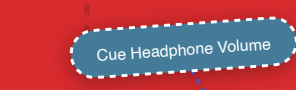


OVERVIEW

MAIN UNIT



REMOTE UNIT





SETUP YOUR COMMAND STATION



Connect the Lieutenant Main Unit to the Remote Unit using the supplied Bridge cable. Plug the Bridge cable into the port labeled REMOTE on the Main Unit. Then connect the other end of the Bridge cable to the port labeled HOST on the Remote Unit.



! WARNING! THE CONNECTORS ON BOTH THE MAIN UNIT AND THE REMOTE UNIT ARE NOT HDMI CONNECTORS!

Although they may physically resemble HDMI ports, they are NOT HDMI compatible under any circumstances. Never connect any HDMI device to these ports, as doing so may cause serious damage to the Lieutenant and/or the connected device.

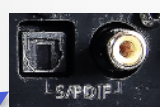
Connect the supplied mains cable to the AC MAINS connector. Then connect the mains cable to the electrical power outlet. Set the Power switch located on the front panel of the Main Unit to the upper position. Finally, switch on the Remote Unit as well. After a short boot process, the basic status information will appear on the display of the Remote Unit.

St SETUP YOUR INPUTS, SOURCES

If you would like to connect balanced stereo audio source devices, you can connect them to the S1 and S2 inputs on the Main Unit, via TRS Jack cable.



S1 Input
S2 Input

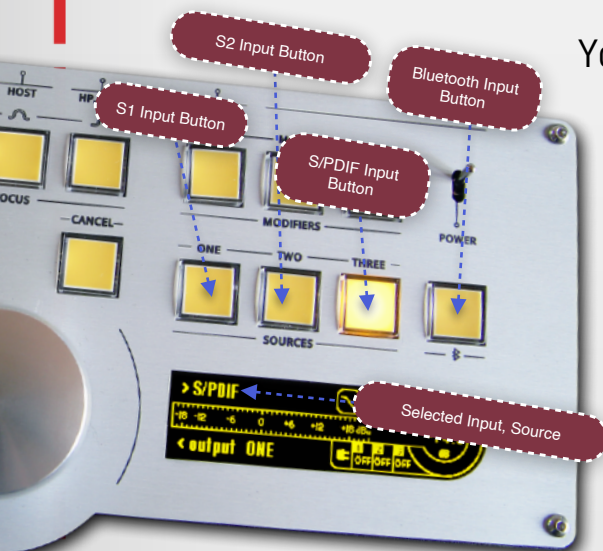


S/PDIF Source

If you would like to connect an S/PDIF audio source, this can be done via either the coaxial or TOSLINK interface. Don't connect to TOSLINK and coaxial source in the same time.

Chose the one you prefer to use

If you would like to connect a Bluetooth audio source, search for the device named "Gainlab Audio Lieutenant" in the list of available Bluetooth devices. Do not forget to connect the supplied Bluetooth antenna to the Main Unit to ensure a stable connection. If you want to connect a new device please first disconnect from the old one.



You can select the connected input source into the signal path using the dedicated buttons in the Sources section of the Remote Unit.

IN ORDER:

- One = S1 input
- Two = S2 input
- Three = S/PDIF input
- Bluetooth

Each Input Source has its own customizable properties. The most fundamental properties are its name and Trim value.

The Trim value determines how many dB the volume control compensates relative to the base 0 dB reference level when the given Source is selected in the signal path.

IN INPUT SOURCE NAME



To rename a Source, press the Enter button to enter the menu. Using the Encoder, navigate to the Rename Source menu



then press Enter again. Rotate the Encoder to select characters. Use the Dim and Mute buttons to move between character positions. Once you have set the desired name, press the Enter button to save it. The Cancel button will always take you back to the previous screen without applying or saving any changes.

item, then press Enter. Select the Source you would like to rename,

IN INPUT SOURCE TRIM



There are multiple ways to adjust the Input Source Trim. One option is to set it from the menu as follows:

Press the Enter button to enter the menu. Using the Encoder, select the Input Volume Trim option, then press Enter. Use

the Dim and Mute buttons to select the Input Source you would like to

adjust. Rotate the Encoder upward or downward until the Trim value expressed in dB matches your desired setting. Press the Enter



button to save the setting. The Cancel button will always take you back to the previous screen without applying or saving any changes.

IN INPUT SOURCE QUICK TRIM



You can also access the Trim function using a shortcut. Simply press and hold the button of the Source you would like to trim, and the **Quick Trim screen will appear**. While keeping the button pressed, rotate the Encoder to set the desired Trim value expressed in dB.



St

SETUP YOUR OUTPUT, DESTINATIONS



If you would like to connect balanced destination devices or outputs, you can do so **via the D1, D2, and D3 connectors on the Main Unit using TRS jack connectors**. The connected destinations can be selected into the signal path using the buttons in

the Destination section of the Remote Unit.

ACCORDINGLY:

D1 = One
D2 = Two
D3 = Three



Each Output Destination has **its own customizable properties**. The most fundamental properties are **its name and Trim value**.

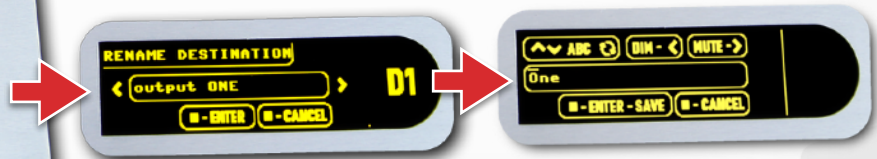
The Trim value determines how many dB the volume control compensates relative to the base 0 dB reference level when the given Source is selected in the signal path.

OP OUTPUT DESTINATION NAME

To rename a Destination, press the Enter button to enter the menu. Using the Encoder, **navigate to the Rename Destination menu item**, then press Enter. **Select the Destination you would like to rename**, then press Enter again. Rotate the Encoder to select characters. **Use the Dim and Mute buttons to move between character positions**. Once you have set the desired name, **press the Enter button to save it**. The Cancel button



will always take you back to the previous screen without applying or saving any changes.



OP OUTPUT DESTINATION TRIM

There are multiple ways to adjust the Output Destination Trim. One option is to set it from the menu as follows: Press the Enter button to enter the menu. Using the Encoder, **select the Output Volume Trim option**, then press Enter. **Use the Dim and Mute buttons to select the Output Source you would like to adjust**. Rotate the Encoder upward or downward until the Trim value expressed in dB matches your desired setting. **Press the Enter button to save the setting**. The Cancel button will always take you back to the previous screen without applying or saving any changes.

OP OUTPUT DESTINATION QUICK TRIM

You can also access the Trim function using a shortcut. Simply press and hold the button of the Destination you would like to trim, and the **Quick Trim screen will appear**. While keeping the button pressed, rotate the Encoder to set the desired Trim value expressed in dB.



St

SETUP YOUR POWER OUTLETS AND POWER SEQUENCER

The MC1 is capable of **switching three different mains power circuits** on and off, either manually or automatically as part of the boot and shutdown sequence.



To set this up, proceed as follows:

First, connect the three power circuits you would like to control to one of the PW IEC connectors on the Main Unit. The **three switchable power circuits are, respectively, PW1, PW2, and PW3**. These three circuits can be switched on and off using the buttons in the Power Sequencer section of the Remote Unit.

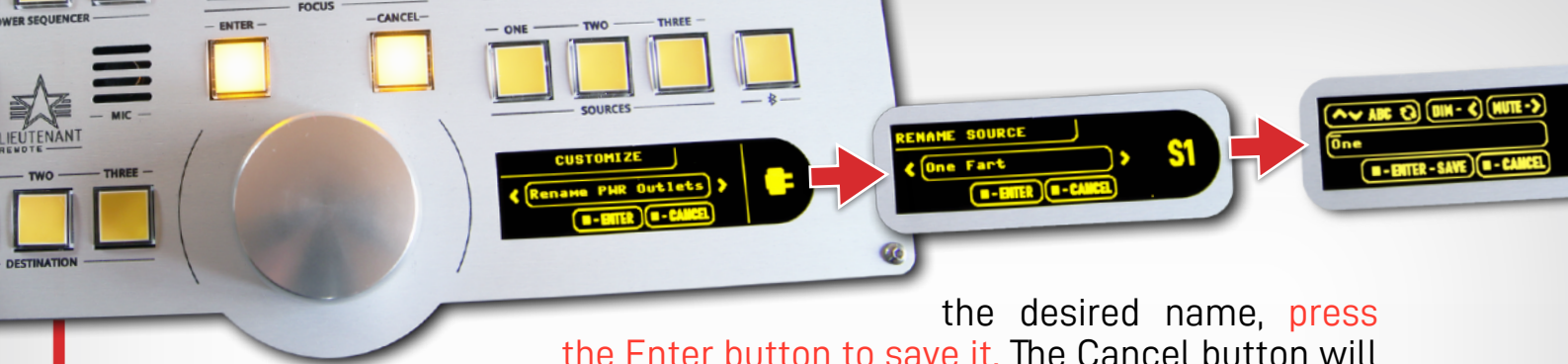


For safety reasons and to prevent accidental switching, the buttons must be pressed and held for a longer period in order to switch the Power circuits on or off.

Pw

POWER OUTLET NAME

To rename a Power Outlet, press the Enter button to enter the menu. Using the Encoder, **navigate to the Rename PWR Outlets menu item**, then press Enter. **Select the Outlet you would like to rename**, then press Enter again. Rotate the Encoder to select characters. **Use the Dim and Mute buttons to move between character positions**. Once you have set

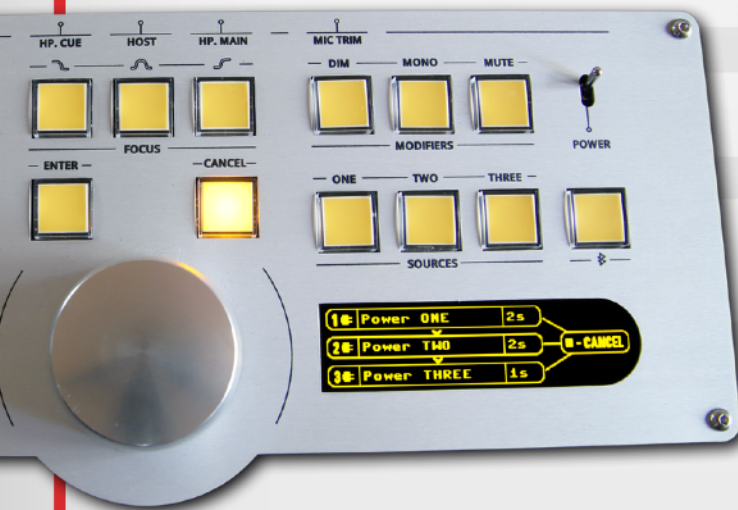


the desired name, **press the Enter button to save it.** The Cancel button will always take you back to the previous screen without applying or saving any changes.

Ps POWER SEQUENCER AUTOMATION

The Lieutenant allows you to define Power Sequences for the **automatic sequential switching on and later switching off of individual power outlets** during the startup and shutdown process of the system. Such a sequence determines whether a given Power Outlet should automatically switch on during the Lieutenant startup process, and how much delay should occur between the activation of each outlet.

A typical example would be:



the first Power Outlet connected to the audio interface,

the second connected to the studio monitor speakers,

and the third connected to the side rack.

When the user begins working in the studio, they switch on the Lieutenant. A Power Sequence then runs automatically, powering on the audio interface first, followed a few seconds

later by the studio monitors, while leaving the side rack powered off, since the user may prefer to switch it on manually later in the workflow when the outboard equipment is needed.

The startup Power Sequence can be interrupted at any time using the Cancel button on the Remote Unit.



During shutdown, the Power Sequence runs in reverse order. If Outlet Three has been switched on in the meantime, the controller will switch it off first, followed by Outlet Two, and finally Outlet One.

The shutdown process can naturally be interrupted at any time by switching the Power button on the Remote Unit back on again.

If you would like to enable the Power Sequencer, press the Enter button to enter the menu. Rotate the Encoder until you reach the System Preferences menu item. Press Enter to enter the System Preferences menu. Using the Dim and Mute buttons, navigate to the Power Seq. Auto menu item. Then, using the Encoder, set it to the ON position.



Press the Enter button to save the setting.

The Cancel button will always take you back to the previous screen without applying or saving any changes.

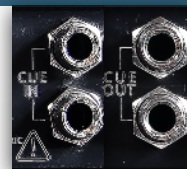
If you would like to change the switching times of the Power Sequencer, press the Enter button to enter the menu. Rotate the Encoder until you reach the Power Seq Times menu item, then press Enter to enter the menu. Using the Dim and Mute buttons, navigate to the Power Outlet whose switching time you would like to modify. Using the Encoder, select the desired delay time expressed in seconds. Press the Enter button to save the setting. The Cancel button will always take you back to the previous screen without applying or saving any changes.

If you leave a power outlet in the OFF position, it will be skipped during the sequence process. However, you can still switch it on or off manually at any time by pressing its button.



St SETUP CUE SUBSYSTEM

The Lieutenant is equipped with a **Cue subsystem** designed to provide a communication system within the studio environment.



By default, the signal arriving at the **Cue In input** of the Main Unit is routed to both the **Cue Out output** on the Main Unit and the independently adjustable **Cue Headphone** output on the Remote Unit.



When the user **presses the Cue button**, the signal from the **Cue Mic on the Remote Unit** is mixed into the **Cue output signal**. The gain of the Cue Mic can be adjusted using the control located on the rear panel of the Remote Unit.

The **Cue button** has **dual operating modes**. It can function as a momentary switch, meaning the Cue microphone remains active only while the button is being held down. Alternatively, it can operate in latch mode, where pressing the button once activates the Cue microphone and keeps it active until the user presses the button again to deactivate it. This behavior can be configured from the menu system.



CUE BUTTON SETTING

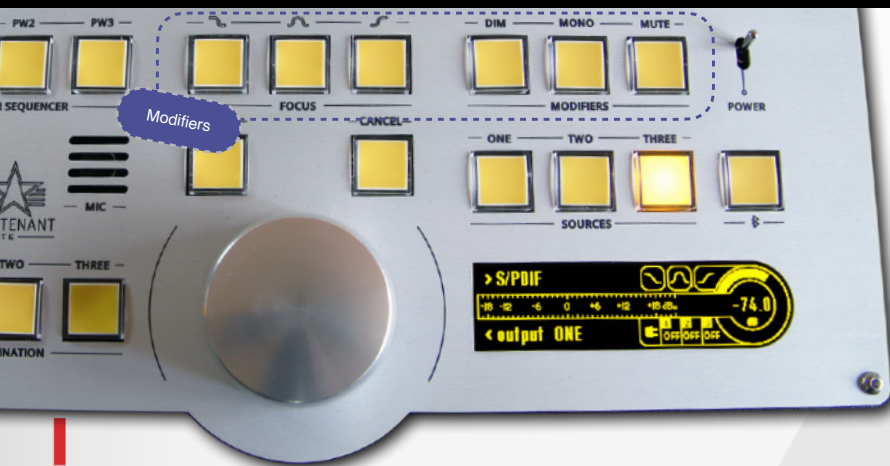
If you would like to change the behavior of the Cue button, press the Enter button to enter the menu. Using the Encoder, **navigate to System Preferences**, then press Enter to enter the menu. Using the **Dim and Mute buttons**, **navigate to the Cue Latch menu item**. Using the Encoder, choose whether the Cue button should operate in latch mode or not.

Press the Enter button to save the setting. The Cancel button will always take you back to the previous screen without applying or saving any changes.





MODIFIERS AND MODIFIER SETTINGS



The MC1 Lieutenant is equipped with several convenience features that we call Modifiers. **Modifiers essentially alter the sound of the main output** independently of the selected source or destination.

MANY OF THESE FUNCTIONS WILL ALREADY BE FAMILIAR:

MUTE instantly silences the main output.

MONO sums the two channels of the main output for mono monitoring.

DIM reduces the main output level by a predefined amount.

THE FOCUS FILTERS allow only a well-defined spectral portion of the signal to pass to the main output through **High Pass, Band Pass, or Low Pass filtering**.

Ds SETUP DIM LEVEL

The amount by which the Dim function attenuates the main output can be adjusted using a shortcut. Press and hold the Dim button until the Dim Trim screen appears on the display. While keeping the button pressed, use the Encoder to set the desired Dim value. From this point on, whenever you press the Dim button, the main output will be attenuated by the selected amount.





SYSTEM PREFERENCES AND ATTENUATOR SETTINGS



The following chapter describes the remaining System Preferences settings that have not yet been covered, but which provide important additional functionality to the operation of the system.



VOLUME MIN START: When enabled, the system will always start at the minimum volume value defined in the Attenuator Settings. *If not then the unit remembers the last volume set and wakes up from there.*



ATT. DB STEP: Determines the dB step size used by the built-in relay attenuator when adjusting the volume by rotating the Encoder. *It can be 0.5dB, 1dB or 2dB.*



FACTORY RESET: Restores all settings to their factory default values, so use this function with caution! *You can also arrive to this function by pressing the HPF and LPF buttons during the boot-up sequence.*



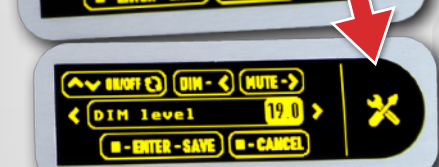
VU SPEED: Controls the response speed of the signal indicator on the main screen. The higher the value, the slower the display response will be.



SCREEN SAVER: Enables a screen saver function. If the Remote Unit is left untouched, a dimmed animation will appear on its display. *You can setup the time after the screen saver will turn on. Any activity on keypad or incoming music will turn the screen saver off.*



MUTE ON BOOT: When this function is enabled, the system will enter Mute state at every startup for safety reasons.



DIM LEVEL: This function is also accessible from the System Settings menu and determines by how much the Dim Modifier attenuates the level of the main output.

As ATTENUATOR SETTINGS



An important function is the Attenuator Settings menu. It determines the maximum and minimum levels to which the central relay



attenuator can be adjusted using the Encoder. To access this function, press the Enter button to enter the menu. Using the Encoder, **navigate to the Attenuator Settings menu** item, then press Enter to enter the menu. Using the Dim and Mute controls, **select whether you would like to adjust the minimum or maximum value**. **Using the Encoder, set the desired minimum and/or maximum values**. **Press the Enter button to save the configured values**. Pressing the Cancel button will return you to the main menu without saving any changes.

Fc MAIN UNIT'S FRONT PANEL CIRCUIT BREAKER

To prevent the Power Sequencer mains circuits from being overloaded, the Main Unit is equipped with an automatic circuit breaker that allows a

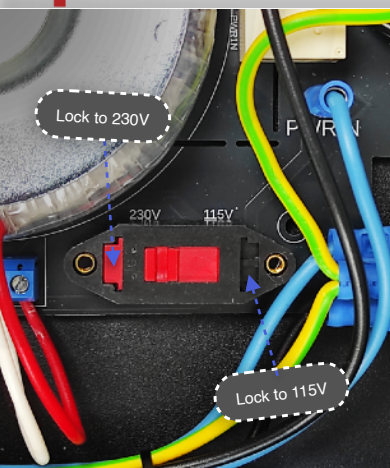


maximum load of 10 A on the three rear IEC connectors of the Main Unit. If an overload occurs, the white button will pop out from its recessed position and the power circuit will be interrupted. Once the overload condition has been resolved, the white button can be pushed back in and normal operation can continue. **Practically the 10A current rating corresponds to a maximum load of approximately 2.3kW on a 230V supply, or 1,2kW on a 120V supply.**



SPECIFICATIONS

THD% @ 1 kHz (bw.:22 Hz-22 kHz)	0dBu output	<0,002
	10dBu output	<0,0007
	20dBu output	<0,0007
Frequency response Balanced input	20Hz-150kHz	-+0,1dB
Dynamic range (10Hz -22kHz no filter)		118dB
Output noise	0dB input	-100dBu
Crosstalk between any channel	100Hz	<116dB
	1kHz	<108dB
	20kHz	<84,2dB
Balanced input CMRR	100Hz	<90dB
	1Khz	<90dB
	10Khz	<86dB
Gain range		-100dB - +2dB
Attenuator step accuracy		0.1dB
Attenuator Channel to channel accuracy		0.01dB
Maximum output level		+26dBu
Maximum monitor input level		+24dBu
Maximum cue input level		+21dBu
Impedances	Balanced input	>25k
	Balanced output	<250Ohm
S/PDIF Interface	Bitrate	16/24bit
	Input Lock	44.1 kHz, 48 kHz, 88.2 kHz, 96kHz, 192 kHz
	Dynamic Range A-weighted	103dB
	THD+N	90dB
Dimensions	Main Unit	482x270x42, 4,1kg
	Remote Unit	300x150x60, 1,1kg

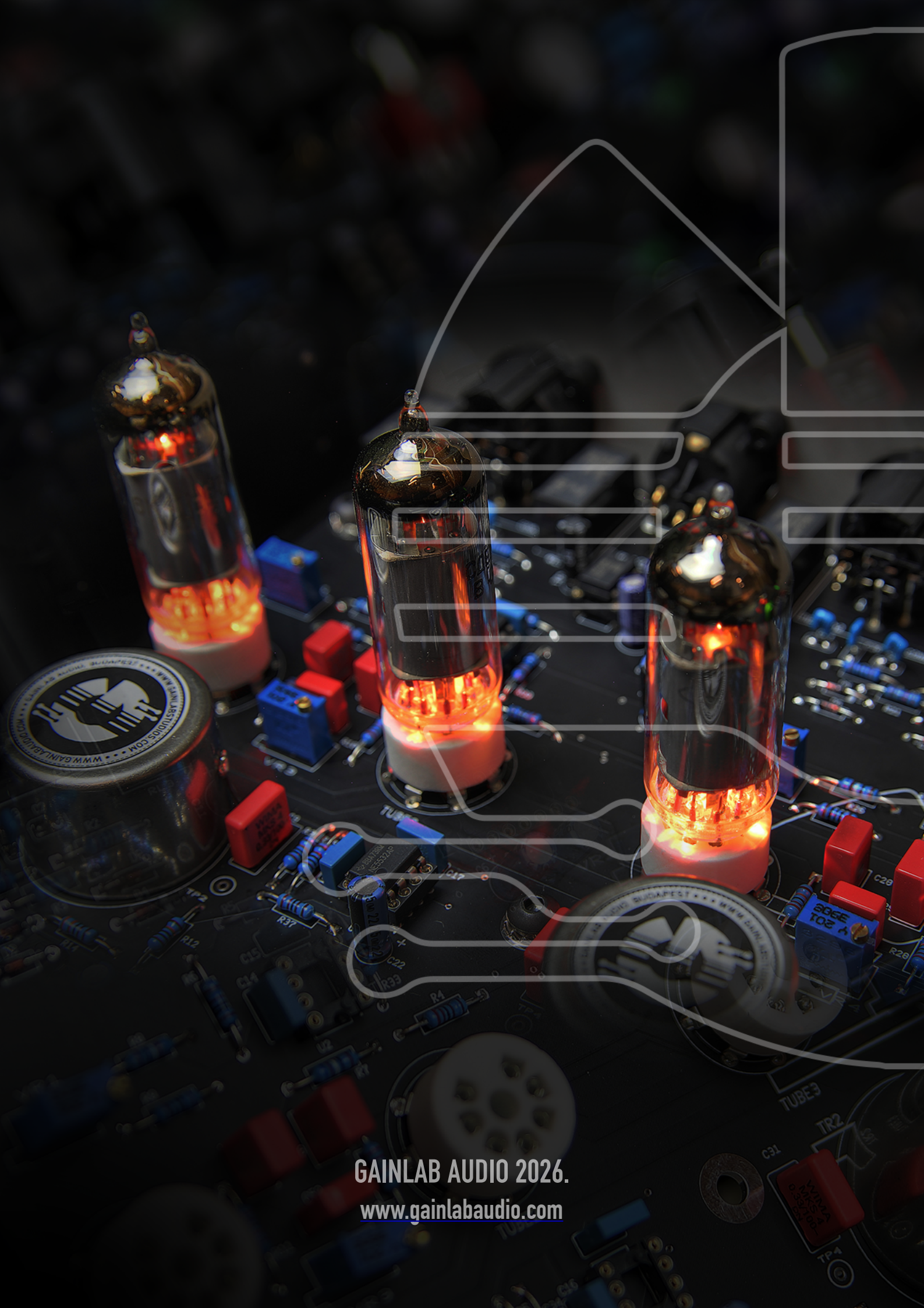


Mains voltage selection is possible via the internal voltage selector switch.

Units shipped to the United States and Canada are delivered set to 115 VAC, while units shipped to the rest of the world are delivered with the default 230 VAC setting and the corresponding fuse.

For 230 VAC operation, a 125 mA slow-blow internal fuse must be used.

For 115 VAC operation, a 250 mA slow-blow internal fuse is required.



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