User Instructions for the Mini Audio Lab V3

Congratulations to your new Mini Audio LabV3!

No time for reading manuals?

We know, it´s the same to us... But please read at least this manual to get to know all the functions of the Mini Audio Lab V3 and what it can for you!

The Mini Audio Lab V3 is made for the most common test applications on stage without the need to spend time to search for the right tool. Just plug your Mini Audio Lab V3 and check whether there is a correct signal or not. With the integrated measuring options you are able to find out faults in the Signal-flow including Cables, Speakers, Batteries and so on.

Before you use the Mini Audio Lab V3, you should acquaint yourself with the different functions and how you can use them, to make sure that you are choosing the right menu item.

This manual will guide you through the functions and possibilities of the Mini Audio Lab V3. But in your own interest, educate yourself in Audio measuring techniques also used in different systems. You will find happiness in working with the Mini Audio Lab V3 when you know, what it can do for you. It´ll be easy!

Now, let´s start working with the Mini Audio Lab V3!

The following functions are integrated:

- Precision sine wave generator from 16 Hz. up to 20 kHz in 1/3 Octave ISO steps, plus 440 hz,
- Burst Signal, works also with the Precision sine wave generator
- Pink noise generator
- Internal 1 Watt amplifier for the impedance test of loudspeaker boxes between 1 Ohm up to 20 Ohm at the different iso frequencies.
- Internal measuring microphone with the signal level indicated at the display for the level control with different frequencies for a rough eqalizer pre setting.
- Detection and indication of feedback frequencies that need to be cut with an Equalizer.
- Delay Measurement
- Polarity measurement
- Inline check
- Cable/Bat Check

Installation:

Decide whether the Mini Audio Lab V3 is to be powered by batteries or an external 9V DC power supply:

Battery Power:
The Mini Audio Lab V3 is powered by a 9V Block Battery. When changing the Battery, ensure the correct Polarity!   Please keep looking after your Battery! The Mini Audio Lab V3 can do some malfunctions if the 9V Block Battery doesn´t give enough power to the unit!

External Power:
Connect a suitable 9V stabilized power supply. **Always remove the battery when you use an external power supply!** The 2.5mm connector for the supply is located at the Front of the Mini Audio Lab V3. **Be careful when connecting the psu: The tip is plus and the ring is minus.**

Using the Touchscreen to operate the Mini Audiolab V3:

You can choose between the functions of the Mini Audiolab V3 by using the Touchscreen. Just press on the "button" to make your selection.

In each Menu item, you´ll find the "Help"-Button to get further information. We did the "Help"-level as easy as possible by using pictures instead of words. But nevertheless, you will find what you need to operate correctly.

Assingment of buttons / switches and potentiometers:

On/Off: Switches on the Mini Audio Lab V3.

 IN: Sensitivity pot for the mic and jack input
OUT: Output level for the XLR Connector, the Jack and the NL4-connector.

Now let´s come to the different Functions, activated by pressing the button on the touchscreen:

The signals of the different modes will be out via the Output-Sockets. So it can be neccessary to connect the Mini Audiolab V3 Desk.

The **Sine** mode will switch on the precision sine wave generator and the Display will show the sound level at the different frequencies. Every level above 65 dB will be indicated. So you can easily check frequencies. To make your work even more easy, the choosable frequencies are geared to the Frequencies on a 1/3 Octave Equalizer. Please note that frequency levels above 5 kHz will rise the level of error due to reflections on the surface of the Mini Audio Lab.

In the **Burst** mode, the precision sine wave generator will be switched on for 1 second and the internal processor will display the sound level after 1 second off time. This allows the user to get an impression of reverb times at different frequencies. It is a great help for making „Sound" in difficult places such as Churches, Assembling-Halls or Railway-Stations.

The **Pink Noise** mode gives a precisly defined Noise Signal. The pink noise signal can be given out to the XLR-Connector and to the NL4 connector. With the XLR connector you can check for example active Speakers or the Signal flow through your Equipment and the NL4 Connector sends the signal directly to the speaker. In that mode you can change the configuration from 1+/1- to 2+/2-.
You the use the Pink Noise Signal to find out problematic Frequencies f.e. coming from reflections.

The Mini Audiolab V3 cannot measure itself! To evaluate the Signals, there´s an external Device needed.

In the **Delay** mode you can let the Mini Audiolab V3 calculate the delay time in meters and ms. Please note, **the minimum indicated distance is 8m!** The test result might change with different thresholds and levels. Please note that an exact result is only possible in environments with low reflections and without wind and with low background noise around. Just play a bit with the "In" pot and the threshold value and you will find out the right settings for your speaker system and the distance.

The **Polarity** mode will show a response of a speaker system after a small dirac signal. The Symbols (+/-) show you, whether the speaker "In Phase" or "Out of Phase".
Notice: Make Polarity checks as close as possible to the selected Speaker. The Speaker response is different at low frequency speakers compare to mid or high frequency speakers. A correct polarity check is only possible if the Mini Audio Lab V3 is close enough to the speaker that needs to be checked. Polarity checks should always be done with the lowest possible level, just above "Low sig."
As in the "Delay"-Mode, please note that an exact result is only possible in environments with low reflections and without wind and with low background noise around. Just play a bit with the "In" pot and the threshold value and you will find out the right settings for your speaker system and the distance.

The **Impedance** mode let´you check your speaker´s impedance. Other impedances than the mentioned ones on your speaker could point to malfunctions. Checking the speakers before using them is helpful.

It´s important to know, that the impedance mode will disable the out pot in order to get a fixed signal value at the NL4 connector.

You can also change the output between 1+/1- and 2+/2- of the NL4 connector on the display of your Mini Audio Lab V3.

The impedance will be indicated between 1 Ohm and 25 Ohm. Please note that an empty battery will affect the result!

There can be a need of calibrating the Impedance: You can calibrate the impedance by using a small screwdriver and adjust the potentiometer which is placed directly under the little hole at the bottom side of the Mini Audio Lab V3.

For calibrating you can create our own Calibrating Plug like we did:

Use a NL4-Speakon plug (it can be an old one as well...). Now screw an 5 Ohm resistor between the 1+ and 1- Pins, and a 10 Ohm Resistor between the 2+ and 2- pin. Ready!

With the **Inline** mode you can check the phantom power voltage at Pin 2 and Pin 3. The indicated voltage has to be the same on Pin2 and Pin3. The phantom power is fine if the voltage is just above 34Volt. Excepting a connected condenser microfone to the input. A condenser microfone will reduce the indicated value, because of sucking power.

You also can listen via headphone to the xlr mic. - or line signal in the **Inline** mode when you switch on the "Mon.on" button.

*With the just declared function of „listening" to the Signal in the Inline Mode (Mon. On!) you can use this device as a **1 channel in ear system** as well. Plug the Monitor-Signal into the Jack or the XLR Connector and your headphone to the phone Plug. Don´t forget to connect an external power supply if you use it as in ear system. A constant use will suck the battery empty soon...*

The **Cable/Bat** mode is made for checking cables and also Batteries. On the rear of the Mini Audiolab V3 are two Jacks for plugging the delivered measuring cables.

Just hit the same Pin on both ends of the cable and the Mini Audiolab V3 will show you if the chosen Pin is okay. You can directly check a **battery voltage** by holding the red cable to the + and the black cable to the -. The battery voltage will be indicated at the Display.

We know, if there´s no signal, everyone will first change the cable and sometime´s in okay after changing. With the Mini Audio Lab V3 you have an easy way to check your cables „on the road". So if your cables are okay, your smart enough to tell your stagehands arrogantly that it has been their fault, not yours...

By the way: You can also check your microfone cables in the Inline-Mode! Only an unimpaired cable can use phantom power. So, if the Displays shows no phantom power or great differences between Pin 2 and 3 you should not use this cable (of course, you first have to make shure, that the phantom power comes out correctly from your desk...)

The **Feedback** mode is an easy way to let the Mini Audio Lab V3 show where are the difficult Frequencies that can lead to feedbacks.

The frequence of the loudest signal is shown in the first row of the display. The second line shows the frequency what should be pulled down on your 1/3 otave Equalizer. Mini Audio Lab will first search for an average level after activating the "Feedback"-mode. This level might change after a while what leads to a higher threshold before the relevant frequency will be indicated. Just start the measurement again if the threshold is too high for a good result.

The Feedback mode gives the chance, to make a good sound also after after a 3-days Festival with 30 bands, no sleep and totally tired ears.

You can also connect the Mini Audio Lab V3 to the headphone amp of your monitor desk as well and you will get the feedback frequencies direct from the desk.

That´s all folks!
Now you know what your Mini Audio Lab V3 can do for you. And as you see, that´s quite a lot.
Just „play" with it! The more you use the Mini Audio Lab V3, the more you don´t want to miss it!
Finally, we want you to know, that you shall always be critical to the Results, shown on the Display. Only in correct Measurement requirements, you can have rational results!

Technical Specifications:

Dimensions	167 mm x 116 mm x 46 mm
Power Supply	9V, The current is between 45 and 400 mA, depending of the speaker load and level.
Accuracy sinus-wave generator	Deviation 0.3 cycles per second/distortion factor < 0.1%
Accuracy amplitude measurement	1.5 dB, +/- 1 digit (50 Hz – 6,3 kHz)
Accuracy impedance measurement	+/- 1 ohm, 1 digit (50 Hz - 12.5 kHz)
Pink Noise Accuracy	+/- 1 dB between 100 Hz to 10 kHz.
Connectors	2 x 3 pin XLR, 2x 6,3mm Jack, 1 x NL4, 1+ / 1- , 2+ / 2-, 2x measuring connectors
Max input signal Jack socket	+3 dBu
Input impedance Jack socket	2,2 k-Ohm
Max. Output signal XLR	0 dBu with external input, - 12 dBu with internal signals
Max. Output signal NL4	+ 3 dBu / 8 Ohm / external input, 0 dBu, internal signals

Service and Warranty:

The warranty on this product is 2 years from invoice date. Legal references: Please note that these devices may be used only by trained technicians in combination with professional public-address systems. A responsibility of the manufacturer for possible damage or disadvantages of the user by the use of the devices is hereby expressly excluded. The respective laws are to be kept by the user. The company Axel Joost Elektronik explained further that these devices are made under the applicable CE-standards and ROHS regulations, as well as the registration as b2b equipment under the number DE54933725 WEEE. Please feel free to contact us at info@optogate.com if you have further questions.