

Grimm | **AUDIO**

MPI manual



Please read this manual before operating the unit!

TPInLB

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Introduction

Thank you for choosing the Grimm Audio MP1 power supply for tube condenser microphones. The MP1 is eminently fit to be used with modern tube microphones, but it has been especially designed to replace the traditional (usually passive) power supplies that originally came with the now unique and very costly tube microphones from the fifties and sixties. Contrary to what many believe, these old power supplies can be improved upon, both with regard to stability, noise level and last but not least sound quality. And this is not just because the electrolytics in the old supplies tend to dry out, and carbon composite resistors have shot up in value or gone noisy: even if these have been replaced with modern good quality components, the classical supply is still no match for the MP1.

Important Safety Instructions

Grimm Audio gaat er van uit dat u deze Engelstalige tekst volledig begrijpt. Als u hier moeite mee heeft dient u contact op te nemen met Grimm Audio. Op verzoek sturen wij u een vertaling toe.

Grimm Audio nimmt an, dass Sie diesen Englischen Text völlig verstehen. Wenn notwendig, nehmen Sie bitte Kontakt auf mit Grimm Audio. Auf Wunsch wird Ihnen eine Übersetzung zugeschickt.

Grimm Audio suppose que le lecteur comprend parfaitement le texte en Anglais ci-dessous. En cas de doute s.v.p. contacter Grimm Audio. Si nécessaire, on pourra vous envoyer une traduction.

Grimm Audio da por supuesto que el texto en versión Inglesa no ofrece ninguna duda de interpretación y se entiende íntegramente. Si este no fuese su caso rogamos contacte con Grimm Audio quien, a petición, se encargaría de enviarle la correspondiente traducción.

Please follow these precautions when using this product:

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Dangerous voltage is inside this apparatus. Opening is only allowed by qualified service personnel.
6. Verify line voltage before use.
7. 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 the third prong are provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
8. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
9. Unplug this apparatus during lightning storms or when unused for long periods of time.

10. Do not use this apparatus near water.
11. Do not use this apparatus outside.
12. Do not expose the apparatus to dripping or splashing. Do not place objects filled with liquids (flower vases, drink cans, coffee cups, etc) on the apparatus.
13. Clean only with a dry, soft, non-fluffy cloth. Do not spray any liquid cleaner onto the cabinet, as this may lead to dangerous shocks. Do not spray any liquid cleaner onto the faceplate, as this may damage the front panel.
14. Install in accordance with the manufacturer's instructions.
15. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat. Avoid exposure to direct sunlight.
16. Use only attachments or accessories specified by the manufacturer.
17. Use only with a cart, stand, bracket, or table designed for use with professional audio or music equipment. In any installation, make sure that injury or damage will not result from cables pulling on the apparatus and its mounting. If a cart is used, use precaution when moving the cart/apparatus combination to avoid injury from tip-over.
18. This unit runs slightly warm when operated normally. Operate in a normal ventilated area. If this product will be installed in a rack, make certain there is sufficient air movement within the rack.
19. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the 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.
20. **WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

1. Operation

Upon delivery, an MP1 is factory set to the typical supply voltages of your microphone model. This microphone type is indicated at the back of the MP1. If the microphone features remote control of its polar pattern, this can be controlled with the optional knob on the front panel of the MP1. There is a multi-pin XLR cable connector supplied with the MP1. You will need to attach this connector to your own microphone cable (or let your dealer do that). For wiring data, refer to the 'specifications' chapter of this manual. Please make sure you double check if you soldered the right wire to the right XLR pin, your microphone can get damaged if you fail to do so!

In general, we advise to first connect all cables and then turn on the MP1. By doing so one avoids potential damage to the connectors' plating. It is good to know that due to characteristics of our 'shunt regulator' circuitry the peak current is limited, which will lengthen your microphones' tube life.

The MP1 is delivered with a detachable foot. This can be removed by gently twisting the foot counter clock wise. Without feet, two MP1's can be connected together to form a stereo 1U 19" unit. An MP1 generates some heat. When using a stereo set of MP1's in a 19" rack, it is advised to keep one free rack space below and above to provide optimal cooling.

Technology

The MP1 features a specially designed discrete shunt high-voltage regulator fed from a current source to maximise suppression from mains induced anomalies. It also offers very low noise (typ. -96 dBV or 16 μ V 20-20.000Hz unweighted). More importantly, this shunt supply sounds more natural than the more commonly used modern series regulators, due to the absence of electrolytic capacitors at the output.

It would have been quick and easy to rely on industry standard voltage regulators for the heater supply. However, in quite a few classical mics the heater voltage is also used to bias the grid of the amplifying tube in the microphone, implicating an open gateway from heater supply to the sensitive input of the mic's amplifying stage. We therefore chose to design a clean and ultra low noise discrete voltage regulator for the heater supply as well. It features a very low drift to ensure the heater voltage always remains within specs.

Both the high-voltage and the heater supplies have an extra 'crowbar' protection circuit that will switch on in case one of the supplies breaks down. This is an extra line of defence to protect the valuable tube in your microphone.

2. Modifying factory settings

Your MP1 is factory set to the supply voltages of the microphone specified in your order. In case you need to adjust the MP1 to the supply voltages of a different microphone, there are various internal settings to facilitate this. We have to warn you however that selecting a wrong voltage will very probably lead to damage of the (sometimes very expensive) tube. So unless you are an experienced engineer or like living dangerously, we do not advise to change the factory voltage settings! In any case Grimm Audio cannot accept liability for damage to microphones. For those people that still want to change the internal settings, please read the following instructions carefully.

In appendix 1 a list can be found of known microphone types with their factory advised supply voltages. Should your microphone not be listed, please consult the original manufacturer. Please also check this MP1 manual on Grimm Audio's website, it might have had an update of the microphone list. Three preset high voltage are available from the MP1: 120, 145 and 210 V. These are set internally using jumpers and not by external controls, to avoid costly mistakes while a microphone is connected. A trimpot allows some (+/-8%) adjustment of these voltages. The HT supply is inherently short-circuit proof as it is a shunt supply. As an extra safety a "crowbar circuit" will shut down the current source in case the output voltage exceeds the nominal value by more than 12% due to malfunctioning. However, Grimm Audio cannot accept liability in case of damage to microphones should even the protection circuit fail.

For the heater voltage two preset values are available: 6.0 and 3.9 V. These values are chosen in conjunction to what is prescribed for most classical microphones. They too are set by internal jumpers. A third jumper position enables a trimpot and allows the heater voltage to be set at any desired value between 3.6 and 7.0 V. In addition, the output polarity can be reversed as some mics require negative heater voltage. Noise is very low: typ. < -120 dBV (< 1 uV), an improvement of at least 30 dB over industry standard voltage regulators. The output is short-circuit proof, the current limits at 0.5 A. As an extra safety a crowbar circuit has been added to protect the mic against unforeseen failures should the heater voltage exceed the nominal value by 10% (in case of the variable heater voltage setting a second trimpot allows the user to set an appropriate threshold). However, Grimm Audio cannot accept liability in case of damage to microphones should even the protection circuit fail.

Check the voltages output of your MP1

How the MP1 is set, can easily be measured from the outside: a blue test socket allows the measurement of the heater voltage, a red socket gives access to the HT divided by 10 (for safety reasons); a black socket provides a ground reference. These

are 2 mm sockets so multimeter test pins fit directly. Please check these voltages before connecting the microphone. Mark that the heater voltage will measure approximately 0.1 V higher at this socket than indicated above. This is on purpose to compensate for cable voltage loss.

To minimize the risk of accidental damage to microphones equipped with 3.9 V tubes by plugging these into a 6 V MP1 supply, Grimm Audio has decided to deliver its 3.9 V version with an XLR6 socket and the 6 V version with an XLR7 socket. The factory set voltage is indicated on the back. Of course, if a user chooses to change the internal voltage settings, the XLR pin count no longer gives the right indication! This is one of the reasons we discourage the change of factory settings.

The MP1 features a rotary switch to allow a choice of polar pattern on microphones equipped with such a remote control input. The corresponding pin on the XLR6 or XLR7 microphone connector can be varied between 0 V and the 120 or 145 HT voltages or between 0 V and HT + 40 V, depending on the internal jumper setting. For example: if HT is set to 120 V, it can be varied between 0 and 120 V or 0 and 160 V. (The 40 V over-voltage is not available at the 210 V setting as there are no microphones that require that).

Changing the internal settings

Opening up the MP1 and changing its internal presets or trimmings is best left to a trained technician. When switched on, there are potentially dangerous voltages as high as 300 V inside. Grimm Audio cannot accept any responsibility for damages to either persons, or the MP1 itself, or to any microphone connected by unwittingly chosen voltages or polarities.

Before opening the MP1, switch off the mains power and remove the power cord. Also remove any audio cables. Wait 30 seconds to allow the HT on the electrolytics to reach a safe value (< 40 V). Remove the 2 screws from one side of the cover as well as the 2 screw opposite of them on the other side. Carefully slide the cover backwards, away from the wooden front. The electronics will then become visible.

An overview of setting and trimpots of the pcb is given in fig.1 on the next page.

High Tension (HT) settings

Jumpers 7 to 10 set the HT (high voltage to the microphone) to 120, 145 or 210 V. The jumper on the left-hand row sets the voltage, the jumper on the right-hand row sets the crowbar protection. They should always be changed in pairs: both in the 120 V position, or both in the 145 V position, or both in the 210 V position. Failure to do so may shut the MP1 down, or incriminate correct protection against over-voltage.

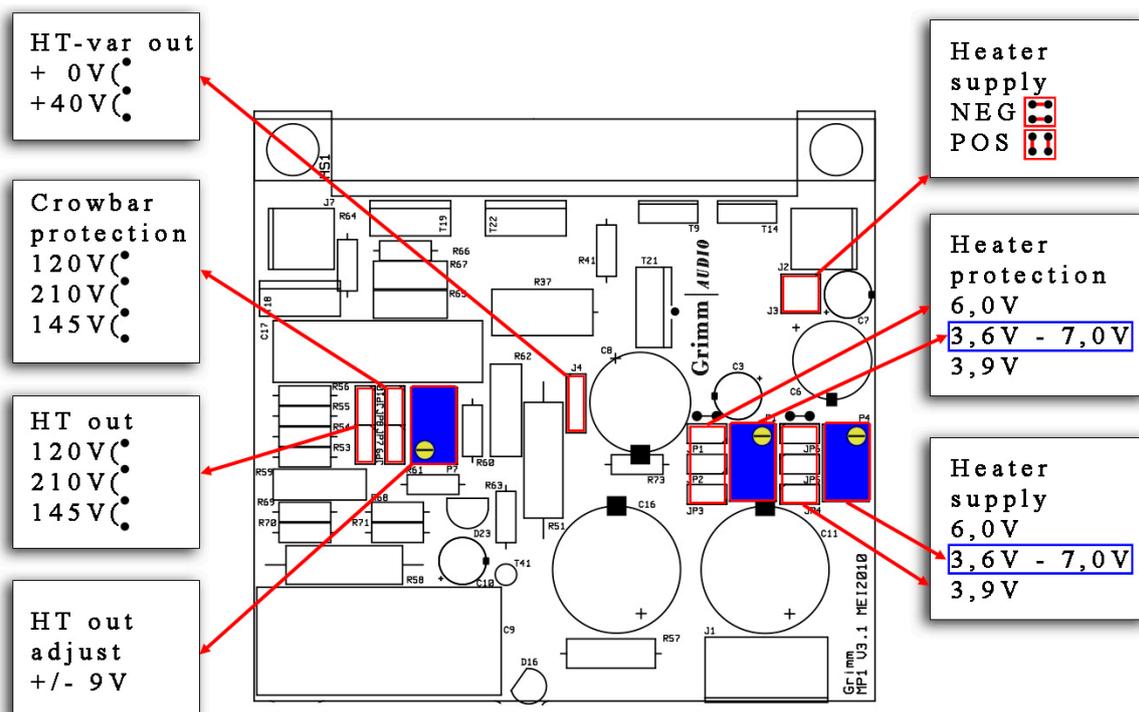


Fig 1. Voltage adjustment jumpers inside the MP1.

In addition, J4 must be set to the upper position when 210 V HT is chosen. (Failure to do so will still output 210 V but the shunt supply will not be able to function optimally, possibly degrading sound quality).

Choose the lower position for J4 if you want a wider range of 0-160 V available for polar pattern control in the 120 V HT case. This will also work for the 145 V HT, resulting in a 0-184 V variable voltage, although no microphone is known to us that needs this setting.

The trimpot allows some adjustment of the HT output voltage. The crowbar protection thresholds remain fixed. Trimming the output voltage close to the threshold values is not recommended as this increases the risk of ill-triggered shutdown. To reset a crowbar action it suffices to switch off the MP1, wait a few seconds and switch on again.

Heater Voltage Settings

The jumpers setting the heater voltage are located to the right in fig.1.

First take a look at the two jumpers J2 & J3 in the right-hand top corner. They set the heater voltage's output polarity: || is positive. Change their orientation by 90 degrees: == is negative. Check with the red (plus) probe of the multimeter inserted into the blue test socket (no mic connected yet!).

Lower in fig.1 two rows of headers, and two trimpots can be seen. The right-hand row sets the voltages, the left-hand row changes the according crowbar protection levels. Again, the jumpers in both rows must be moved in unison, failure to do so may shut the MP1 down, or incriminate correct protection against over-voltage. Both jumpers are set to the upper position if 6,0 V heater voltage is desired. In the lower position the MP1 delivers 3.9 V heater voltage; the value is intentionally chosen as deviating from the nominal 4.0 V found in the datasheet of the AC701 (+/- 0.2 V is allowed), as many manufacturers specify a slightly lower value for longer tube life or for the subtle change in mic sound reported by some users. However, if long mic cables with thin wires are being used, the voltage at the mic end of the cable may be lower than desired, so if the exact value is considered critical the actual resulting value should be measured at the microphone itself. Normal tube microphone cables of 10 meter typically show a 0.1 V loss at the microphone. At the factory, the voltages are therefore set to slightly above 6.1 and 4.0 V respectively, which can be measured at the multimeter sockets on the back of the unit.

With the jumpers in the mid position both trimpots become active. This allows to set any desired heater voltage between 3.6 and 7.0 V. One can use this for tube microphones with unusual heater voltage requirements, or in case of very long cables to adjust the heater voltage at the microphone to an exact value (e.g. 5.8 V or 3.8 V). The best procedure is as follows. First disconnect the mic cable. Decide what the voltage V_x should be which would set off the crowbar protection (as a rule 10% higher than the desired working voltage). Turn the protection trim (left-hand one) totally anti-clockwise until soft clicks are heard. Switch the MP1 on (no mic connected!). Adjust the right-hand trim until $V_x + 10\%$ is reached at the blue test socket; anti-clockwise will increase the voltage. Now slowly turn the protection trim clockwise until the crowbar steps in: a red led will glow. Back to the voltage trim (R-H) again: do 10 clockwise half-turns (5 full rotations) to lower the setting of V_{out} . Reset the MP1 by switching it off, and after a few seconds on again. Now trim V_{out} to the wanted V_x (do NOT touch the protection trim anymore) and make sure you have set the right HT as well. Switch the MP1 off again, connect the microphone, switch on. If desired measure the heater voltage at the microphone and make further small adjustments if necessary. This makes sense for instance if one uses longer cables or cables without a thicker heater wiring. The heater voltage can be adjusted to an exact target value by measuring the voltage in the tube microphone itself. Needless to say this adjustment is better left to a trained technician.

3. Specifications

High Tension voltage: adjustable 120 / 145 / 210 V, with 8% trim.

Variable High Tension voltage for remote polar pattern control: HT +0 V / HT +40 V.

Heater voltage: adjustable 6.0 / 3.9 / 3.6-7 V

Voltages factory preset for microphone type, indicated on the back. 4V heater supply MP1's are factory shipped with a 6 pin XLR, 6V heater supply MP1's are factory shipped with a 7 pin XLR.

Maximum ambient temperature for operation: 40 °C.

Life expectancy power supply electrolytics > 45.000 hours.

Power supply voltage range + 6 % /- 10%

Fuses:

120 V (USA): fuse 500 mA-T

100 V (Japan): fuse 500 mA-T

230 V (EU): fuse 250 mA-T

Weight: 2.3 kg

Dimensions: 215 x 175 x 44 mm

Power consumption: 20 W

Wood type of front: Cherry

XLR pinning (of both 6 and 7 pin XLR's):

Pin 1: GND

Pin 2: Audio +

Pin 3: Audio -

Pin 4: Heater

Pin 5: High Tension

Pin 6: Variable HT (for remote polar pattern control)

The XLR audio output is internally hard wired to the corresponding pins of the multi-pin XLR.

4. Appendix 1, Microphone voltages list

AKG

C12, C12VR: 120 V & 6.3 V, HT-var +0 V position

C24: 120 V & 6.3 V, HT-var +0 V position (this microphone is stereo and needs two power supplies and a cable splitter).

(Telefunken) Ela M250, Ela M251, US version: 120 V & 6.3 V

(Telefunken) Ela M250, Ela M251, EU version: 120 V & 3.9 V

C12a: 120 V & 5.2 V, HT-var +0 V position

C28A, C29A, C30A, C60/CK28, C60/CK26: 120 V & 3.9 V: the MP1 cannot be used with these microphones because their output transformer is mounted in the supply.

Microtech Gefell

CMV563: 120 V & 6 V

UM57: 120 V & 6 V, HT-var +0 V position

UM92, UM75: 120 V & 5.8 V, HT-var +40 V position

M990: 120 V & 5.8 V

Neumann (Telefunken)

KM(2)53, KM(2)54, KM(2)56, KM(2)64, KM(2)66, M50, M250: 120 V & 3.9 V

M49, M249, M269: 120 V & 3.9 V, HT-var +0 V position

U67: 210 V & 5.8 V

SM69, SM23: 120 V & 3.9 V, HT-var +0 V position (these microphones are stereo and need two power supplies and a cable splitter).

U47, U48: the filament supply of these microphones is derived from the HT supply.

Please buy our MP47 in stead of the MP1, because it is especially designed for this.

M147, M149, M150: these microphones are partly solid state. They need + and -70 V and 32 V and cannot be used with an MP1.

Schoeps (Telefunken / Philips / Siemens equivalent)

CV60, CM61: 145 V & -5.7 V

M200, M201: 150V & -6.3 V

M221b: 120 V & 3.9 V

M222: the MP1 cannot be used with this microphone because the output circuitry is mounted in its power supply.

Sony

C37A: the MP1 cannot be used with this microphone because the output transformer is mounted in its power supply.

C800, C800G: These microphones need 276 V which the MP1 cannot deliver. The C800G also needs an additional 6 V for the Peltier element.

For power supply voltage information of other (contemporary) tube microphones, please consult the original manufacturer. The MP1 will most likely support them.

Grimm Audio contact information

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5. Grimm Audio Limited Warranty

Grimm Audio CV (“Grimm Audio”) warrants this product to be free of defects in material and workmanship for a period of one (1) year for parts and for a period of one (1) year for labor from the date of original purchase. This warranty is enforceable only by the original retail purchaser and cannot be transferred or assigned.

During the warranty period Grimm Audio shall, at its sole and absolute option, either repair or replace free of charge any product that proves to be defective on inspection by Grimm Audio or its authorized service representative. In all cases disputes concerning this warranty shall be resolved as prescribed by law. To obtain warranty service, the purchaser must first call or write Grimm Audio at the address and telephone number printed below to obtain instructions where to send the unit for service. All enquiries must be accompanied by a description of the problem. All authorized returns must be sent to Grimm Audio or an authorized Grimm Audio repair facility postage prepaid, insured and properly packaged. Proof of purchase must be presented in the form of a bill of sale or some other positive proof that the product is within the warranty period. Grimm Audio reserves the right to update any unit returned for repair. Grimm Audio reserves the right to change or improve design of the product at any time without prior notice.

This warranty does not cover claims for damage due to abuse, neglect, alteration or attempted repair by unauthorized personnel, and is limited to failures arising during normal use that are due to defects in material or workmanship in the product.

In no event will Grimm Audio be liable for incidental, consequential, indirect or other damages resulting from the breach of any express or implied warranty, including, among other things, damage to property, damage based on inconvenience or on loss of use of the product, and, to the extent permitted by law, damages for personal injury.

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