

MU1 *Digital audio can offer perfect reproduction.
If... the implementation is of the highest accuracy.
MU1: **Your Music Source.** For life.*



MU1 - manual

Please read this manual before operating the unit.

Grimm | **AUDIO**

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1. Introduction

Thank you for purchasing the Grimm Audio MU1 media player. It is designed to be the most sophisticated and best sounding music player on the market and at the same time blend seamless in your daily music playing routine. Core of the MU1 technology is an fpga processor board of our own design that offers the highest quality oversampling and de-jittering possible. The amount of work and knowledge that went into this project can hardly be overestimated. All this effort resulted in an elegant box of minimalistic design that humbly steps out of the way for the music. We are grateful that we were allowed to develop this gem and wish you many pleasurable hours of listening.

In this manual you will find all information related to the hardware of your MU1. Since the software of the MU1 is regularly updated, we decided to offer the MU1 software manual only as download. You can find the latest version of the MU1 software manual on the MU1 page of our web site grimmaudio.com.

The Grimm Audio Team
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2. 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. Use the supplied power cable as intended. 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.

7. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
8. Unplug this apparatus during lightning storms or when unused for long periods of time.
9. Do not use this apparatus near water.
10. Do not use this apparatus outside.
11. 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.
12. 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.
13. Install in accordance with the manufacturer's instructions.
14. 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.
15. Use only attachments or accessories specified by the manufacturer.
16. This unit runs slightly warm when operated normally. Operate in a normal ventilated area.
17. 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.
18. **WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

3. Installing

Unpacking and Installation

Your MU1 was carefully packed at the factory and the packaging it came in was designed to protect it from the trials and tribulations of shipping. Keep the box and all packing materials, so that in the unlikely event that you need to return the MU1 for servicing, you can do so safely.

Placement

The MU1 does not produce strong RF fields nor is susceptible to them. You can position it near other digital gear such as computers and disk recorders without worry. In general it is a good idea to keep some distance between monitors (LCD and CRT) and audio cables because of risk of induced low level noise due to stray magnetic fields.

AC Power Hookup

The MU1 has a switch mode power supply that works with AC mains voltages from 90V to 240V +/-10%. Make sure this complies with your local mains voltage. The MU1 is shipped with a proper mains cable. Grimm Audio cannot be held responsible for problems caused by using the MU1 with improper AC wiring or voltage. The MU1 has a small power switch on the rear panel. A short press will initiate start-up of the system. Another press will initiate the power-down cycle. Please wait till the power led turns off before unplugging the AC power cable.

The MU1 relies on safety earth in the mains cable to guarantee your safety. It also needs this connection as a low impedance path for mains leakage current to prevent hum or sound quality degradation in your system. For this reason, please connect all audio equipment in your system to a common mains outlet with safety earth connection. If you do not have safety earth available on the outlets in your listening room, please consult an electrician to have him add it.

4. Signal Connections

Front:

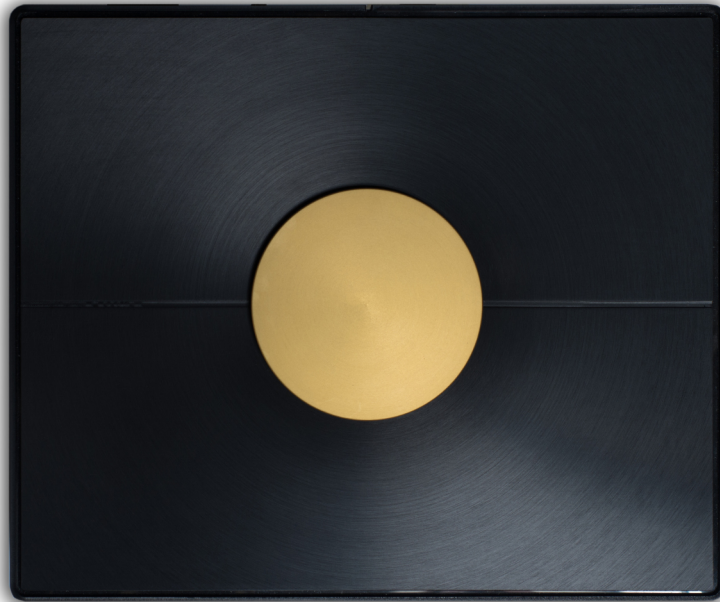


On the front you find the MU1 activity LED in the 'i' of the Grimm logo. The display shows all user information.

Rear:

On the back of the MU1 you find, from left to right: three digital audio outputs (two generic AES3 and one Grimm LS1), three digital audio inputs, an FM cable input, an ethernet network input, 2 USB connections for external storage, a 3.5mm socket for an external IR remote sensor, a small mains power switch and the mains power connector.

Top:



The top of the MU1 carries the main control knob. It is used for all user input of the MU1 via turning and pressing. *For more information about the control of your MU1, please refer to the MU1 software manual pdf from our web site.*

5. Specifications

General:

- Max. ambient temperature for operation: 50 °C.
- Fuse (worldwide): 630 mA fast blow.
- Weight: 4.5 kg.
- Dimensions: width x depth x height: 355 x 295 x 100 mm or 14" x 11.6" x 3.9".
- Package dimensions: 536 x 392 x 219 mm.

Clock specifications:

- Internal intrinsic clock jitter <0.6 ps RMS (> 10 Hz).
- Can slave to 44.1 kHz and 48 kHz based digital sources at 1FS, 2FS and 4FS +/- 50 ppm.
- The output will mute for 80 ms when changing clock base rates.

Sample rate conversion with fpga processor:

- Upsampling of 1FS and 2FS files, streams and digital sources to 4FS or 2FS with "Pure Nyquist" decimation filter.
- Downsampling of DSD64, DSD128, DSD256 and DXD files and streams to 4FS or 2FS with "Pure Nyquist" decimation filter.
- Optional FPGA volume control on Digital 1 and 2 outputs: from 0 dB to -63 dB in 1 dB steps.
- Latency from digital in to digital out: 11 ms at 48 kHz.

Power supply:

- Mains voltage range: 90 – 240 V AC +/- 10% (50 and 60 Hz).
- Power factor: > 0.98.
- Power consumption: Normal use 17 W, maximum 50 W.

Internal computer properties:

- Intel i3 CPU, > 2.4 GHz.
- 2 cores, 4 threads, with Hyper-threading.
- 4GB DDR4-2133 RAM 2400 MHz.
- 1000 Mb/s Ethernet.
- 2x USB 3.0 port.
- Internal SSD for OS.
- Optional internal SSD for music data storage.

Display specifications:

- Full colour TFT LCD.
- 3.5 inch diagonal.
- 480 x 320 pixels

6. Grimm Audio Limited Warranty

Grimm Audio BV (“Grimm Audio”) warrants this product to be free of defects in material and workmanship for a period of two (2) years for parts and for a period of two (2) years for labor from the date of original purchase. This warranty is linked to the serial number of the device and can be transferred to second hand owners if they can show their purchase bill. The original owner can extend his limited warranty to a period of five (5) years for labor and parts if he sends the original warranty card that came with the unit to the Grimm Audio factory. The extended warranty is enforceable only by the original retail purchaser and cannot be transferred or assigned. The extended warranty does not apply to the built in computer and SSD drive parts of the MU1.

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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