Grimm AUDIO

MU2 manual

MU2 Software Manual, to be read next to the MU2 Hardware Manual

Please read this manual before operating the unit!

For firmware version v1.0.3

Table of Contents

1 Introduction

Thank you for purchasing the Grimm Audio MU2 streaming DAC and 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. The MU2 is a network music streamer and offers three digital inputs too. Its core is our revolutionary '*Major*' DAC (Digital to Analog Converter), with the highest possible quality in analog and digital signal processing and de-jittering. After the DAC an analog pre amp with relay based analog volume control is found, that also offers source selection of two analog sources. The output can be switched between line and headphone.

The amount of innovation, 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.

The Grimm Audio Team
info@grimmaudio.com

Scope

In this manual you will find all information related to the software of your MU2. Since this software is regularly updated, we decided to offer this MU2 software manual only as download. Your MU2 was shipped with a printed MU2 hardware manual. Please read it carefully for your own safety. You can also download a pdf of the MU2 hardware manual on the MU2 page of our web site grimmaudio.com.

User interface description

The MU2 has 3 main user interface parts, the main knob on the top, the display on the front and the MU2 activity LED in the 'i' of the Grimm logo on the front. On the back are the connections and the power button, please read the hardware manual for more information.

With the main knob you can change the volume and source, and browse through the menu. Please see chapter 7 Main knob control for more information.

The display shows information about the system, depending on its state:

- System Off: display is black, no information.
- System in Stand-by: display is black, no information.
- System is booting: boot animation is running, after booting the welcome screen is shown until the software is ready.
- System On: this state has various menus where information is shown and settings can be adjusted. Note that depending on user settings the display can dim or even turn off automatically when no user interaction is present for a few seconds. So in the System On state, the display can in certain cases also be black.
- System shutting down: display is showing shutdown animation, with dimmed backlight. It goes to black when the system is fully shut down.
- System in support mode: display is showing an animation of 3 blue squares.
- System updating: display is showing an animation of 3 green squares.

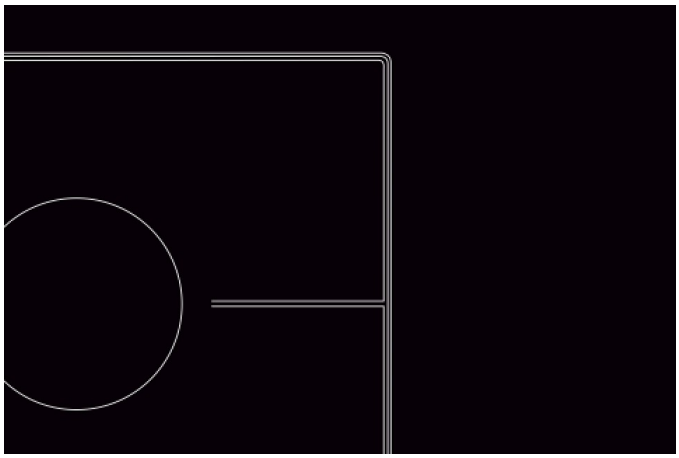
The MU2 activity led shows the current activity of the system. The table below shows the modes.

Off	MU2 is off.
On	MU2 is on or booting.
Fading slowly	MU2 is in stand-by mode.
Fading quickly	MU2 is updating.[1]

[1] The system will only update when the user has manually activated the update. See chapter Settings menu[6/7]: Software Version and Update.

Turning on the MU2

To turn on the MU2 press the power button on the back shortly. During start-up the unit will show a 3 white block animation and then a welcome screen with a line drawing of the top of the MU2 as shown below.



After that the MU2 waits for a network connection, it may take a few minutes before the MU2 is given a local IP address by the router. Until this happens you see “No Network Connection” on the display. The MU2 will enter the Music View, further described in chapter 7 Main knob control.

Support mode

The MU2 has a support mode feature, via this mode Grimm Audio staff is able to connect to your MU2 via the internet to check and if possible resolve software issues with your device. Grimm Audio may ask you to activate support mode, in chapter Settings menu[7/7]: Support you can find how to do this.

2 Playing audio

The MU2 can be used to play audio from different sources, like various streaming options and digital inputs. Let's have a closer look.

Roon labs

Working with the Roon software feels a bit as if you run your own streaming service in which you combine music from your local library with tracks from online streaming services such as Tidal, Qobuz or KKBOX. The Roon Server will neatly organize all of that music and offer suggestions for new music, find album art, show lyrics and give background information.

Roon consists of 3 parts, the Roon Server, Roon Ready endpoint and the Roon app. The Roon app is used to control the Roon Server which sends audio to the endpoint. The endpoint will process and play the music. In the MU2 the Roon Server and Roon Ready endpoint are pre-installed. The Roon Server in the MU2 can be disabled so you can use your own Roon Server on an external computer.

Note that Roon requires a paid subscription.

Tidal Connect

Tidal is a paid streaming service and contains a huge library of music. From the Tidal app on your phone or tablet you can stream music to the MU2 using Tidal Connect. The app sends an instruction to the MU2, which then requests an audio stream from the Tidal server. So the stream does not flow via the phone or tablet.

UPnP

UPnP stands for 'Universal Plug and Play'. It is a general purpose open source network protocol that allows you to stream music (and other media) over your network. There are many apps available that use UPnP to stream music.

UPnP consists of three parts: the UPnP server, renderer and control point. The control point app is used to control the server which sends audio to the renderer. The server stores and organizes the music files and the renderer will process and play the music.

Because UPnP is only a set of standard protocols there are various ways to implement this. Some control points have an integrated server but many require you to run a server somewhere in the network. Often such a server is already available since many routers and NAS devices have UPnP server capabilities. The MU2 contains a UPnP renderer to process and play music. It does not have a UPnP server.

Digital inputs

The MU2 has three digital inputs on the back: AES3 on XLR, S/PDIF on RCA and Toslink optical. These can be used to connect the MU2 to other sources such as a TV or CD transport. They can receive PCM rates up to 192 kHz and also DoP ('DSD64 over PCM'). Dolby, DTS and other encoded surround formats are not supported.

3 Roon Labs setup

Grimm Audio selected Roon Labs as its main music player user interface for file and stream playback on the MU2. In our opinion Roon offers the best High-End user experience to date, a real must have.

Both Roon Server and Roon Ready endpoint are pre-installed, so no other computer is needed. The Roon app that's needed to control the system can be downloaded from the app store of your phone, tablet or computer brand. Please mark that Roon Labs is a paid subscription so you need to enter your account details via the Roon app. Roon Lab supports Tidal, Qobuz and KKBOX lossless music streaming services. These are separately paid subscriptions. You need to enter your account details of these services via the Roon interface.

Operating the Roon system in the MU2 is identical to that of any other Roon equipped system. First you need to install the Roon remote control software on a tablet, smart phone, PC or Mac to get access to the Roon Server in the MU2. Please visit the app store of your OS manufacturer, or use this link: https://roonlabs.com/downloads.html. For general operational guide lines of the user interface, we refer you to the Roon Labs documentation: https://help.roonlabs.com. Within Roon various signal processing options (like volume control) are available, but we strongly recommend to use the MU2 volume control instead of the Roon offerings, and disable any other type of processing to achieve the highest sound quality level. Roon is a capable multi-room system. If you like, you can use the Roon Server in the MU2 to stream music to other Roon Ready endpoints in your network (for instance a system in the bedroom). Of course, the volume control, de-jittering and analog signal processing qualities of the MU2 can only be enjoyed from the physical outputs on the MU2 itself.

The MU2 can play all file formats that Roon supports, such as wav and flac, and has native support of PCM formats up to 8x the base rate (8FS, also called 'DXD') and of DSD formats up to DSD256.

Using an external Roon Server

Some customers have an extremely large catalog of albums on their local storage. We selected a powerful PC for the MU2 that runs quiet, without forced cooling. It is more than capable to serve the majority of our customer's needs. However, the demands of the Roon

Server for catalogs larger than 100.000 tracks are serious and you then may experience a slower response with the built-in Roon Server. In those cases we recommend to buy a Roon Nucleus Titan or install a strong Windows, Mac or Linux PC somewhere in your network and run Roon Server on that. Installation instructions can be found at the Roon website https://roon.app/en/core.

If you use an external Roon Server, turn off the MU2 internal Roon Server via the “advanced” settings of the MU2 GRUI web interface (see chapter 8 of this manual). The Roon Ready endpoint will still run and be available as a destination for your external Roon Server.

Volume settings

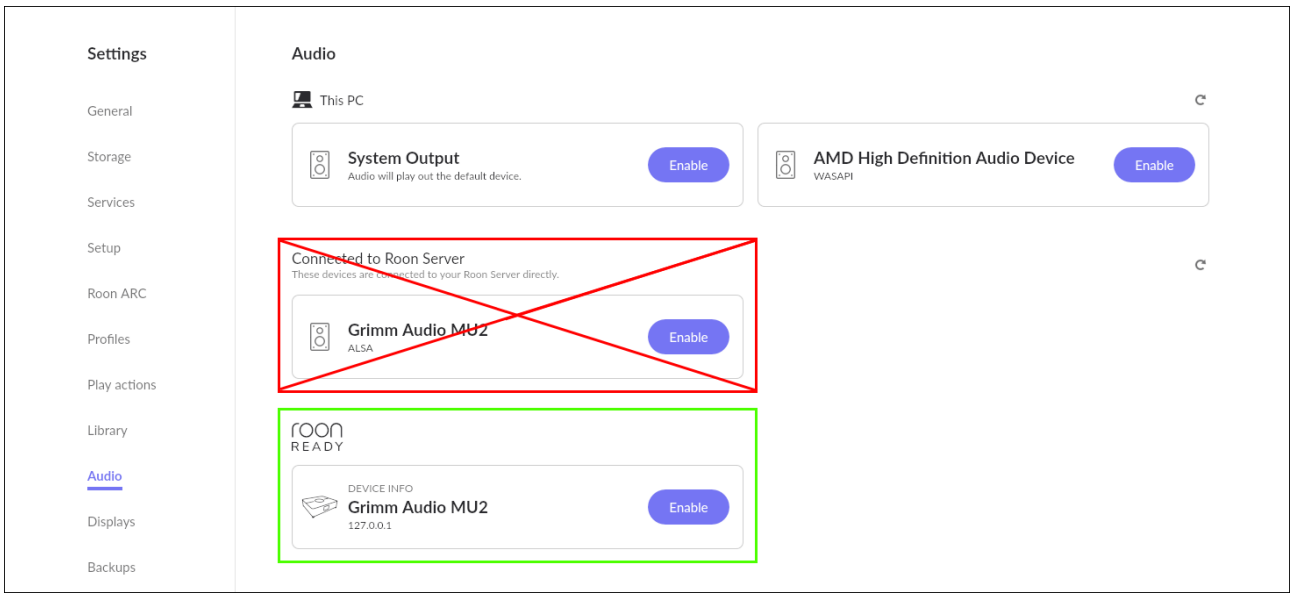
We recommend setting a “Comfort limit” for the Roon fader in the device setup of Roon so you cannot accidentally set the volume very loud by sliding the volume bar too far to the right. In case you do like to play louder than the limit, you can still press the + button in the Roon interface to further increase the volume of the system. To set the comfort limit, please click the volume button in the bottom right corner of Roon and then press the cog wheel to enter the Zone settings. Here you press “Volume limits” and set it to your preferred limit.

Device Setup

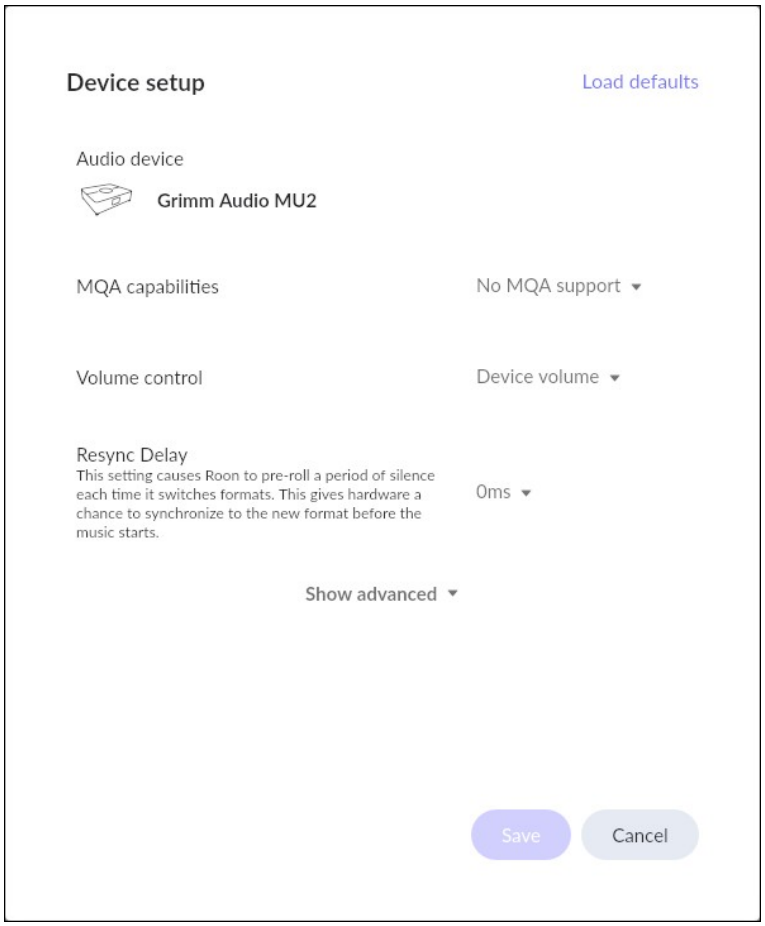
Roon offers various options for connected devices. We walk you through the preferred and required settings for the MU2.

Note: since update V2.0.0 the MU2 is an official Roon Ready endpoint which means you should select the MU2 endpoint under the Roon Ready category rather than the “Connected to Roon Server” category, as shown below. The MU2 endpoint always has IP address 127.0.0.1 when the Roon Server in the MU2 is used. ***Selecting the wrong audio device will cause problems with information on the display and volume control via the knob or GRUI****.*

The MU2 is shipped with the Roon Ready endpoint enabled and properly configured. In case you have updated the MU2 from a previous version or when you have reset the Roon database you will need to manually select the Roon Ready device “Grimm Audio MU2” under the “Roon Ready” category in the Audio tab of the Roon settings as shown in the picture below. In a normal setup where the Roon Server runs on the MU2 the endpoint will have IP address 127.0.0.1.



After you enabled the Roon ready endpoint you can press the cog-wheel to open the device settings. The default settings are the right settings for a stereo setup. By clicking “Device setup” you get the following window:



In Device Setup it is recommended to keep the default settings, if you encounter problems you might want to press the “Load defaults” button in the top right corner.

You can change settings here but some settings might give problems, like changing “Volume control”. It should always be set to “Device volume”. When you switch off all volume control via the GRUI, Roon will show “Volume control is fixed” since it follows the MU2 settings. The other way around does not work, you cannot disable volume control in the MU2 settings by changing the “Volume control” setting in Roon to “Fixed Volume”.

“MQA capabilities” defaults to “No MQA support” and that is fine. When playing an MQA stream, the ‘unfolds’ will be performed by Roon and in “No MQA support” mode Roon will not add the MQA metadata into the audio.

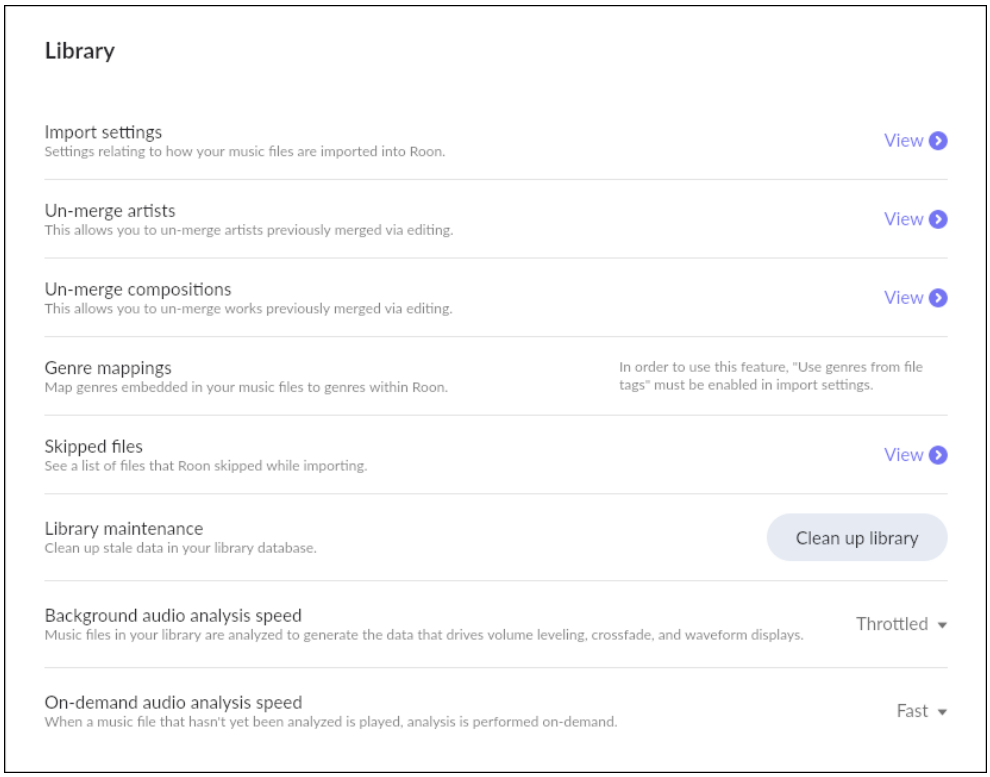
“Resync Delay” is set to 0 ms by default, when the MU2 also acts as Roon Server this is the right setting.

In the ‘Advanced’ part of the Device setup window (click “Show advanced”) you can check whether the max sample rate (PCM) is set to “up to 384kHz” and the max sample rate (DSD) is set to “up to DSD256”.

“Clock master priority” should be on “Default”, “Enable MQA core decoder” should be set to “Yes” and “Buffer size” to “Default”.

Background analysis speed

In the Library page of the Settings menu Roon offers several options for the “Background Audio Analysis Speed“. We recommend to set this to “Throttled” and not to one of the “Fast” options. This makes sure most of the processing power of the CPU is dedicated to audio playback. You may also set it to “Off”, Roon will then calculate the UI waveform graphic on the fly when the file is played.



Updates of Roon software

Roon Labs offers frequent updates to both the Roon Server in the MU2 and the Roon Remote app in your tablet or smart phone. Updates on your phone/tablet are usually installed automatically. When a Roon Server update is available, the Roon Remote app will inform you about that. You are permitted to start a Roon Server update process in the MU2 from the Roon Remote phone/tablet app, but we are not liable for the impact of problems that may occur from Roon updates. Of course we will offer support to help you solve the problem, where possible.

Known issues with Roon Server on the MU2

#1 Hampered playback or unresponsive interface when analyzing a large catalog.

When you add a folder with lots of albums, Roon will analyze the files, download artwork etc. It will also do an analysis of the audio data to store waveforms that are shown in the user interface and to store the average loudness of the track for loudness normalization use. During the initial setup, the Roon processing can cause the system to be less responsive. Although possible, we recommend to not use the system for music playback while Roon runs this analysis for the first time on a large set of albums. If you let it run overnight, it is usually finished the next day.

When you add a few albums only, playback is not affected. Nevertheless we recommend to use the “Throttled” mode for the analysis to keep the CPU load low. This can be selected in the Roon settings, see chapter “Background analysis speed”. Consult the Roon manual for more information.

The MU2 supports a catalog of up to 10.000 albums (100.000 tracks). A bigger catalog can cause crashes or freezes of the Roon Server. If you have a larger catalog we recommend to use a separate Roon Server such as the Roon Nucleus Titan or a powerful Mac/Windows/Linux computer.

#2 Soft glitches in DSD album playback.

Please mark that when playing albums in DSD format, the end and start of the files are not reproduced 100% gapless by design, which means that a soft glitch can be heard at the start of a new track. This glitch is in the master files and cannot be solved in the MU2 or Roon software. Also, a short moment after playback of a DSD file has stopped, Roon will switch to a ‘silent’ PCM stream and this may also cause a soft glitch.

#3 Adding the root system folder to Roon.

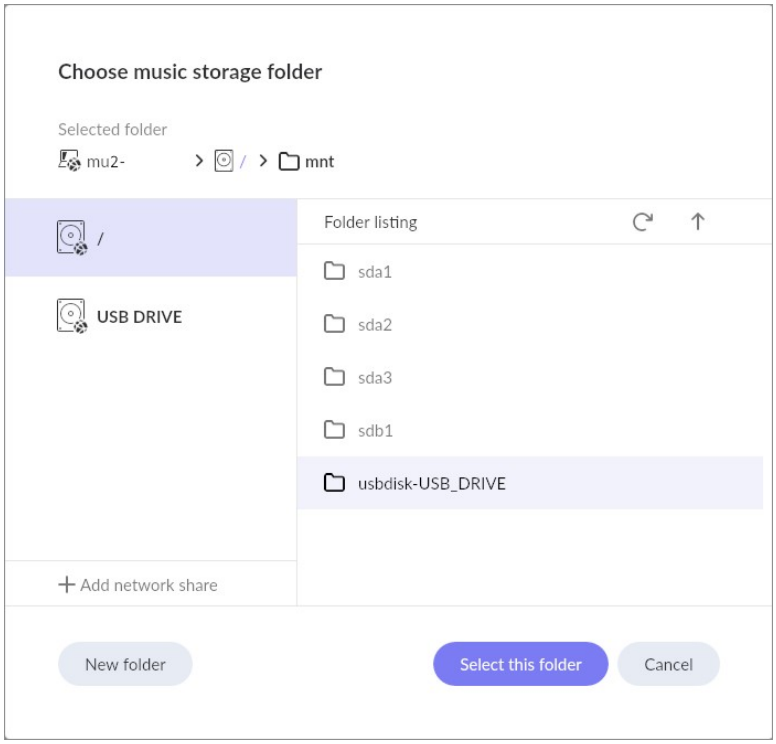
When adding the root directory (“/”) or a Roon backup folder in the music storage settings of Roon, problems may occur. Roon tries to index the OS file system making it slow and in some cases Roon might even crash. Instead of adding the root directory, please only add the music folders as explained in the next chapter.

USB storage (Only for Roon Server)

On the back of the MU2 is one USB port which may be used for connecting an external USB drive (flash drive, SSD or HDD) extending the disk space of the Roon server. You may play music files from this drive via Roon. The MU2 supports the following file systems: **FAT32, FAT16, NTFS, HFS+, exFAT, EXT2** and **EXT4**. When a USB device is plugged in, it will automatically be mounted in the system.

It is not necessary to 'safely remove' the USB device from the system, since USB drives are mounted in 'read only mode' (the device is unmounted automatically when you unplug it). This also means you cannot use a USB drive to make Roon backups, nor add or delete music from these disks through Roon or the network.

The mounted folder can be found through the Roon storage settings. Go to the *Roon Settings* → *Storage* and press the button "+ *Add Folder"*. The following screen will show up:



The USB disk should appear in the menu on the left. The name of the usb disk is shown. If you don't see it here, go to the root directory "/" and open "mnt". There you will find your usb drive with the preface "usbdisk-". Select this folder to add it.

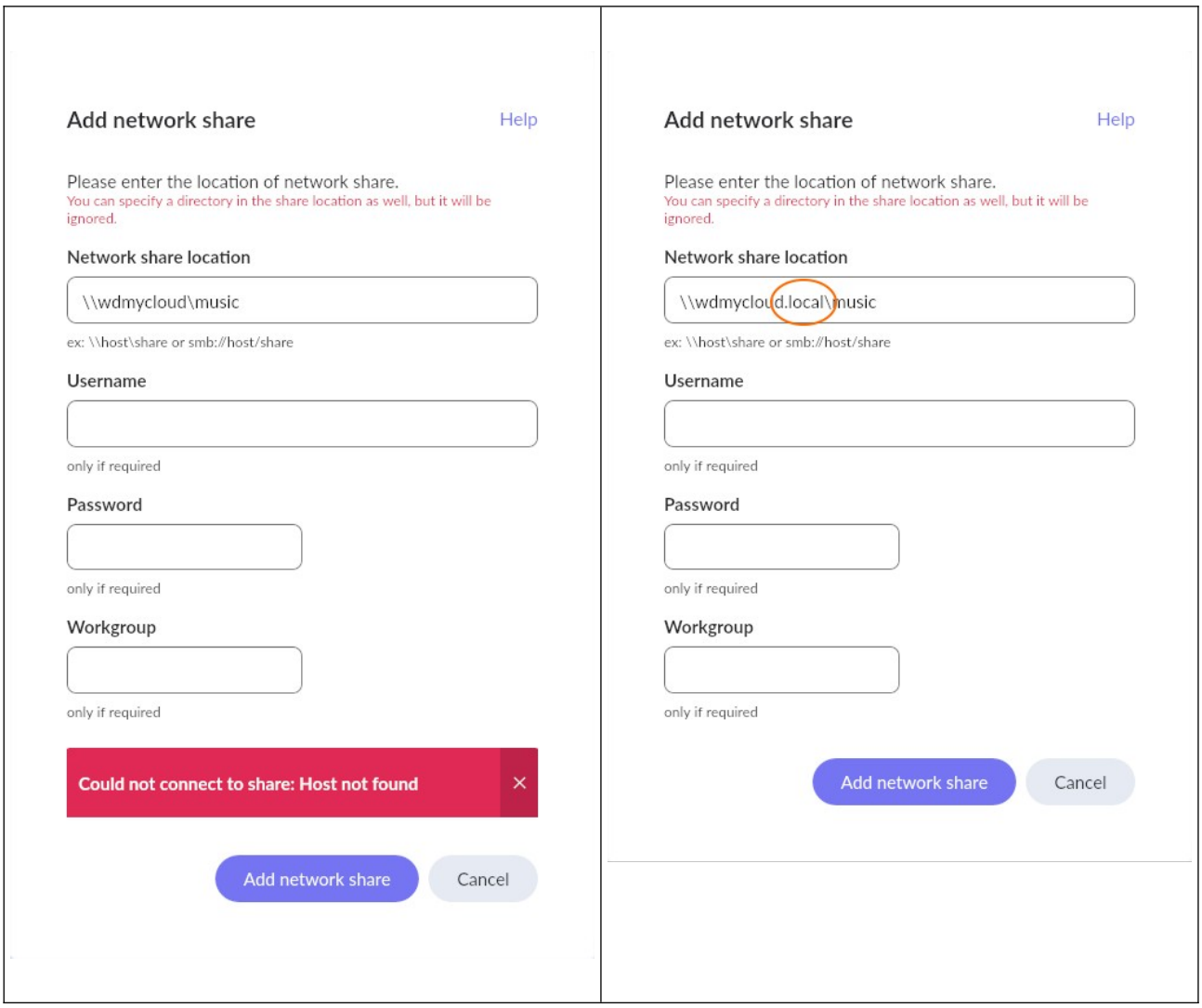
Note: the USB drive will not mount in the network and is therefore not available as music storage source for other servers than the built-in Roon Server.

Roon network storage

In Roon you can add a network drive or NAS for music storage and backup location. Roon has a knowledge base article about this topic which you can find here.

Depending on your router settings it is possible that the hostname of your NAS is not resolved in the network. When this is the case you can make use of the MU2's name resolve client by adding '*.local*' to the hostname of your NAS as is shown below.

Below you find an example for a NAS with the hostname *wdmycloud* and share *music*.

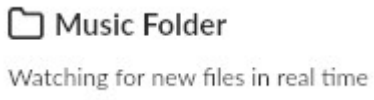


In case adding the disk via the hostname does not work you should try to add it via the IP address, but always include the name of the share ('music').

Internal storage

The MU2 has an optional internal disk for music files and Roon backups. Adding music to the folders of this drive is done via the network, how to do this is described below for Windows and Mac-OS.

In the MU2 disk there are two static folders: Music and Backup. Music added to the Music folder is automatically added to the Roon Storage as “Music folder“. Use the backup folder for making Roon backups.



Note: always use a wired connection between your computer and the network to copy music to the internal disk, doing this via a Wireless connection is slow. Through a wired connection you can expect transfer rates of about 50MB/s. Transferring 1TB will take at least 5 to 6 hours.

First of all, open the help page of the MU2 menu (see chapter Settings menu[2/7]: Help) and note the hostname and IP-address. The hostname depends on the serial number of the unit.

To connect to the internal storage over the network you need to fill in these credentials (since V1.0.3):

Username: mu2-user

Password: mu2-pass

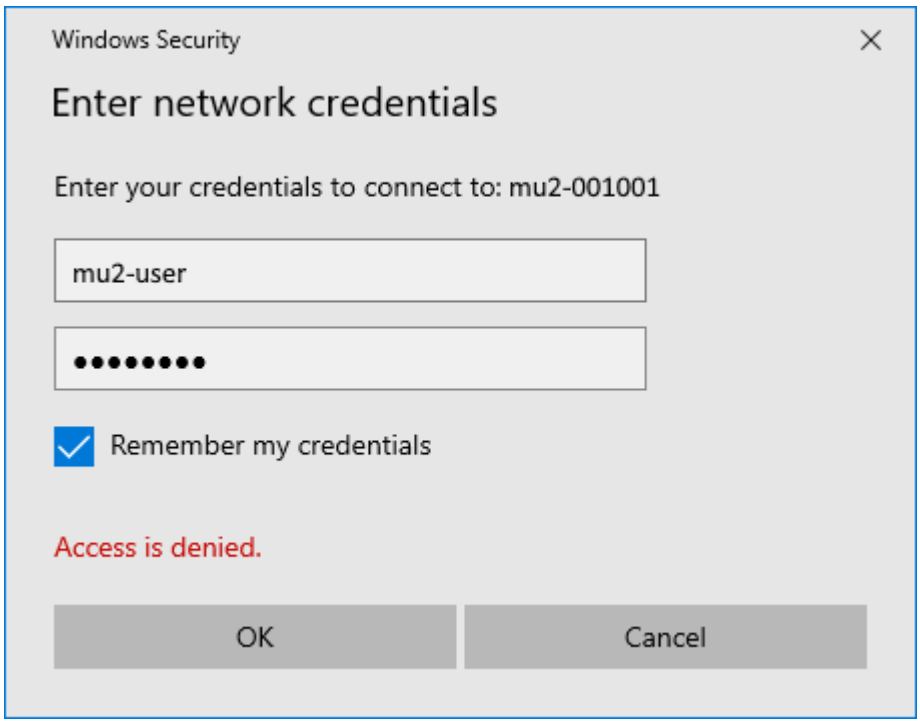
Windows users

Note: not all Windows computers can use the hostname for finding an internal disk in the network. This is because ‘mDNS’ is not natively supported by Windows. However, on many Windows computers software has been installed that added support for this protocol and therefore we advice to first try to use the hostname and if this doesn’t work, use the IP address.

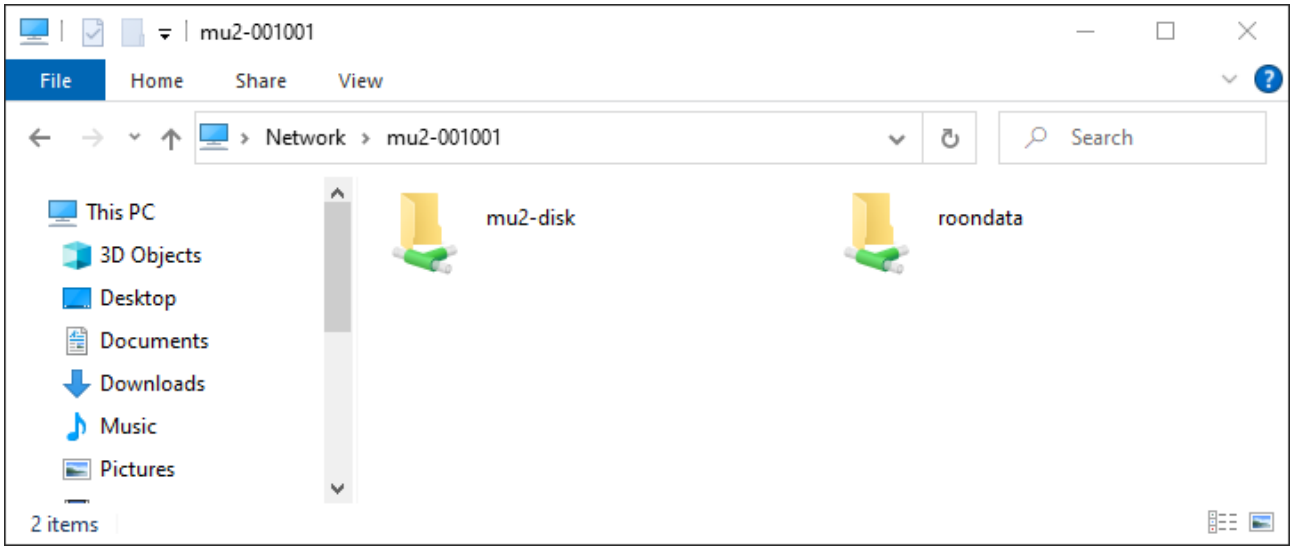
1. Open the File Explorer (this is done by opening a random folder).
2. Enter two backslashes followed by the hostname of the MU2 in the address bar. For example “\\mu2-001001” when the hostname of your MU2 is mu2-001001.
    - If the hostname does not work, try adding “.local” to the hostname, for example “mu2-001001.local”.

Note: if you do not have ‘mDNS’ this doesn’t work. Use the ip-address of the MU2: ‘\\”ip-address” ’ instead.

You will be asked to fill in your credentials in the following screen:



The username is: mu2-user, the password is: mu2-pass.

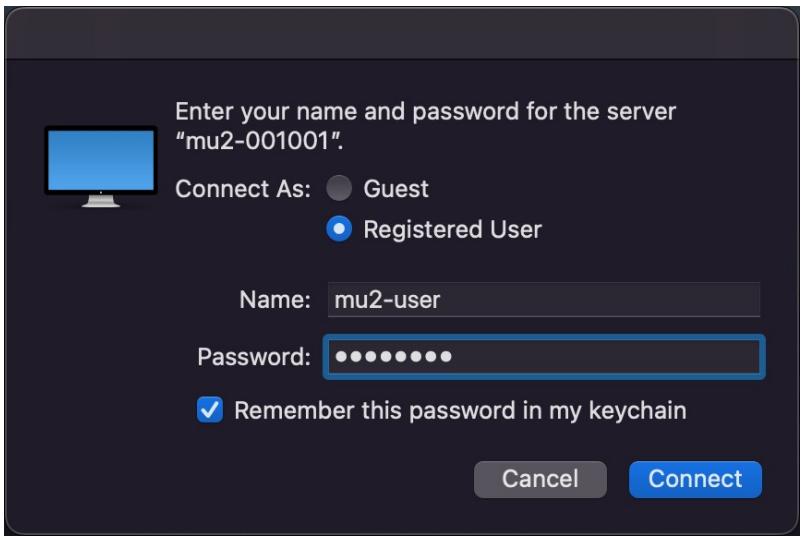


The internal disk is now present in the File Explorer as “mu2-disk“. In the mu2-disk folder there are two static folders: Music and Backup. Use the Music disk to add, delete and move music on the MU2 internal disk from your Windows computer.

Tip: make a shortcut to this folder so you can easily find it instead of typing the hostname.

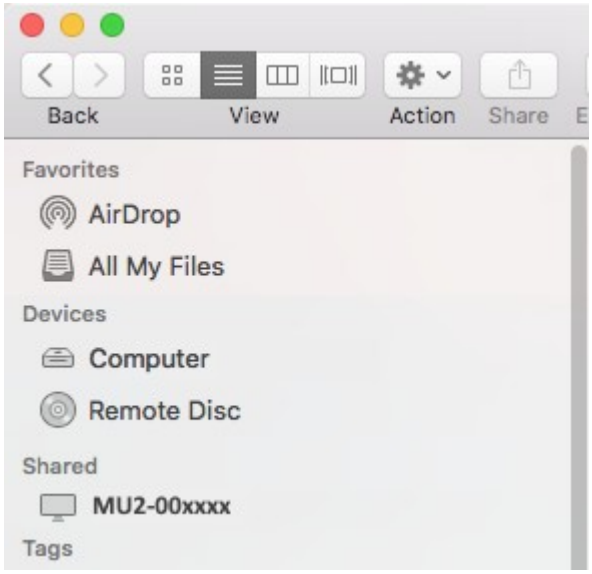
Mac users

The shared folder can be found in the Finder via “Network”. Open the MU2 and in the new windows select “Connect as…” and “Connect” in the popup. You will get a new popup to log in:



Fill in the credentials: The username is: mu2-user, the password is: mu2-pass. It is a good idea to select “Remember this password in my keychain”.

After doing this once, you can find a shortcut to the disk in the finder in the left hand column under “Shared”.



After selecting this folder you find a “mu2-disk” and a “roondata” share. In the mu2-disk share there are two static folders: Music and Backup. Use the Music folder to add, delete and move music on the MU2 internal disk from your Mac. Please mind to ‘eject’ the mounted folder before disconnecting from the network (for instance with a laptop).

If the MU2 does not show up in the Shared section, open the Finder and press ⌘ - K to open the Connect to Server window. Enter the *hostname* and press Connect. The hostname of your MU2 is indicated on the second page of the MU2 menu, see chapter Settings menu[2/7]: Help of this manual. In the unlikely event that connecting to the hostname does not work, please enter the IP address of your MU2, which is found on the same menu page of the MU2.

Note: on the internal disk you will find a directory lost+found, you can ignore this folder.

Tip: after mounting you can make a backup of music that is stored on the MU2 internal drive via your Windows or Mac computer by using your favorite backup application.

Roon Server database access and reset

In case you encounter a problem with the Roon Server software on the MU2 and consult with Roon Support, they may ask you to view, copy, rename or reset your Roon database. The database folder contains all settings, log files and database items. The MU2 mounts this folder in the network under the share name “roondata”, and it is password protected to prevent accidentally resetting the database. The credentials are as follows:
username: mu2-user; password: mu2-pass.
How to mount this internal disk in your PC or Mac is explained in the chapter Internal storage above, use the mount name “roondata” instead of “mu2-disk”.

In case you need to reset the Roon database to solve a problem, the MU2 (GRUI) web interface offers a convenient “Reset Roon Server” button. This button should be used with care, and only after a Roon Labs or Grimm Audio support engineer instructs you to use it. More information about the GRUI and the Roon database reset button can be found in chapter GRUI MU2 Web Control.

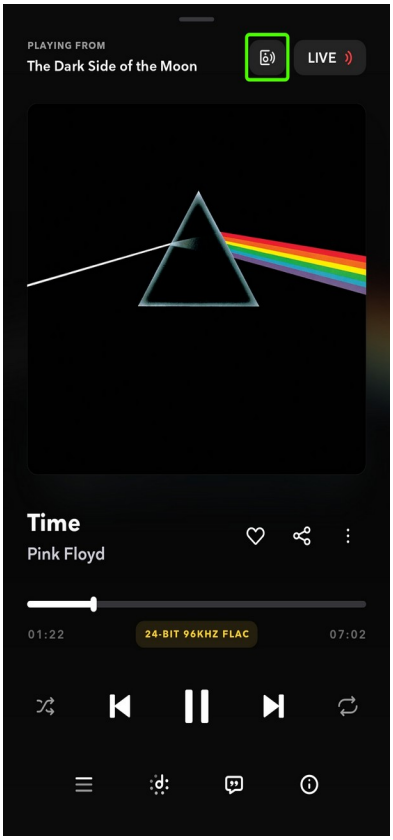
Note: the files in the roondata folder are in use when the Roon Server is running. To edit or remove files in the roondata folder you have to stop the Roon Server and then restart the MU2. For more information about stopping the Roon Server, see Advanced settings of the GRUI MU2 Web Control chapter in this manual. ***Do not forget to restart the Roon Server when you have finished your work in the roondata folder!***

4 Tidal Connect

The MU2 supports Tidal Connect which means you can play music from your Tidal app to the MU2. More information and support can be found via the Tidal website: https://support.tidal.com/hc/en-us/articles/360004565898-TIDAL-Connect

How to use Tidal Connect on the MU2

- In the Tidal app, open the Now Playing screen while playing a track.
- From the Now Playing screen, select the device output icon.
- Choose the MU2 from the list, it is shown as MU2-xxxxxx (the hostname of your MU2).



The MU2 will automatically switch the source to Tidal when the MU2 is selected via the Tidal app and music plays. You can also manually switch the MU2 to Tidal Connect via the GRUI or by using the main knob.

Requirements for Using Tidal Connect

- Your mobile device version is at least iOS 15 or Android 7.
- Ensure your mobile device is on the same network as the MU2.

5 UPnP

On the MU2 a UpnP/DLNA compatible renderer is implemented, this means you can stream music to the MU2 via various apps and programs in your home network.

UPnP works via a control point (usually an app), a server and a renderer. The server can be a dedicated server on a computer, router or NAS, or can be integrated in the control point. On the control point you decide what music to play and the music is then streamed from the Server to the renderer which is in the MU2.

How to use UPnP

Every UPnP control app has a function to check for UPnP renderers on the local network. The renderer in the MU2 is named “MU2 UPnP Renderer [MU2-xxxxxx]” (the hostname of your MU2).

The MU2 will automatically switch its source to UPnP when the MU2 is selected as renderer via the control point and playback starts. You can also manually switch the MU2 to UPnP as source via the GRUI web interface or by using the main knob.

Depending on your UPnP control app you can play locally stored music, streaming services or internet radio. To play music from the internal disk of the MU2, you must add it as network disk to the storage setting in the control app.

Tested UPnP apps

Because UPnP is only a standard without a central authority, there exist implementation differences between servers and control points. This may lead to problems when using your favorite UPnP control point app.

The following UPnP apps are tested with the MU2 and are fully functional:

- mConnect (iOS and Android)
- BubbleUPnP (Android)
- Hi-Fi Cast (Android)

Playing music with the following UPnP apps has been tested, but there are known control problems like volume, play/pause control and issues when switching sources on the MU2.

- JPLAY (iOS)
- Elmedia Player (Mac OS)

The following UPnP servers are tested with the MU2:

- Asset UPnP
- MinimServer

6 Bit test function

The MU2 has a built-in bit test function that can check if audio is modified somewhere in the digital audio path between the storage location and the MU2. The bit test function works by playing a specific album with an embedded signature, prepared by Grimm Audio. This album is called “Polder Sunrise”. It is a one hour recording of birds waking up in a Dutch polder made in the 90’s by the late Onno Scholtze, a Philips Classics balance engineer. We cut the recording into many tracks and converted them to all possible sample rates and word lengths so these can all be tested for bit transparency.

How to use the bit test function

Simply play the album into the MU2 through the audio path that you want to test. The complete album can be downloaded from our website: https://download.grimmaudio.com/bittest. It comes in two versions; the ‘extended’ version adds sample rates of 8fs (“DXD”) and word lengths wider than 24 bits.

The MU2 will recognize the track and show “BITTEST xx[2]-BIT TRANSPARENT” on the display when the track arrives untouched. If the track is modified in any way the notification will not be shown on the display.

[2] xx is the bit depth of the current track, 16, 24, 32-bit or 32-bit float in which case only FLOAT is displayed.

The tracks can be played through Roon and UPnP, or via one of the digital inputs of the MU2 using digital audio sources such as the UC1 or the LS1i usb interface or a digital source from any other brand.

Note that Roon does not support bit transparent playback of files in float format.

Which file formats can be tested

The following stereo file formats are included in the extended bit test album:

- 44.1, 88.2, 176.4 and 352.8k PCM in 16, 24 and 32 bit
- 44.1, 88.2, 176.4 and 352.8k float in 32 bit
- 48, 96, 192 and 382k PCM in 16, 24 and 32 bit
- 48, 96, 192 and 382k float in 32 bit

How does it work

A specific semi-random pattern has been added to the bottom bits of the audio file. In the FPGA this pattern is recognised and reported to the user via the MU2 display. When the pattern is not recognised there is no notification on the display. The pattern recognition is always enabled, monitoring these patterns by the FPGA has no impact on the sound quality.

Unfortunately DSD does not lend itself for such a test as there are no ‘bottom bits’ in DSD. So the test files are limited to PCM format.

7 Main knob control

This chapter describes the user menus and settings of the MU2 that you can access using the main knob in the music view and the menu view.

Music View

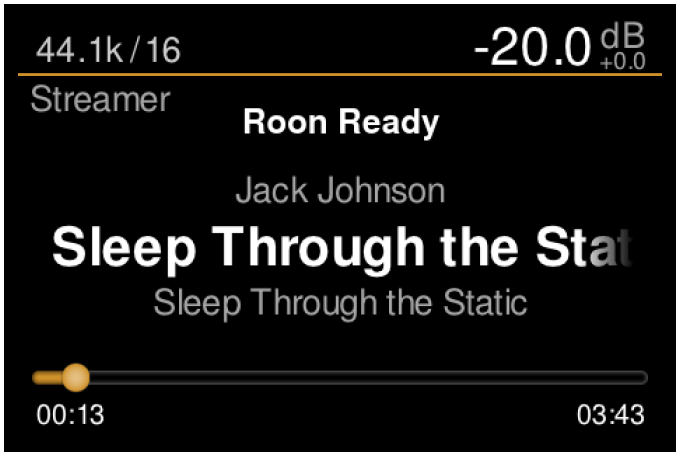
The music view is the default view, the MU2 will boot up in this view.

Function of the main control knob:

- Turn counter-clockwise for lowering the volume.
- Turn clockwise for increasing the volume.
- A short press pauses or starts stream playback or mutes the sound with other sources.
- Two short presses (“double click”) toggle the MU2 between main out and headphone out playback. When in headphone mode, ‘Headphones’ is indicated on the display.
- A long press brings you into the settings menu.
- Press and turn selects the source.

A short press is shorter than 2 seconds, a long press is longer than 2 seconds.

When the selected source of the MU2 is a streaming service it will be shown on the display as in the image below.



In Music View, the display offers the following information:

- Sample rate and format
- Current user set volume in dB
- Offset volume in dB[3]

- Streamer service (Roon ready, Tidal, UPnP) or source
- Headphones (when active)
- Artist
- Song title
- Album name
- Progress bar
- Current time stamp
- Track length

[3] The offset shows the difference between the user set volume and the actual volume, for instance when volume normalization is present or when source offsets are applied through the GRUI.

When there is no audio playing and the queue is empty, the progress bar will not be shown. *Note: in Tidal Connect mode the progress bar will jump to the start of the current track in pause mode.*

When turning the MU2 main control knob, the volume changes and the track progress bar at the bottom is temporarily replaced by a bar that indicates the current volume setting. You will hear the relays of the analog volume control clicking inside the MU2 box when you change the volume.

Tip: you may disable the volume control of the MU2 via the GRUI.

The user set volume indication in the top right corner has a max level of 0dB for digital sources and +8dB for analog sources.

Data detection on digital inputs

The MU2 supports PCM and DoP on the digital inputs, the output is muted when the MU2 receives a data flag in the AES3. Dolby AC3, DTS, etc cannot be decoded by the MU2.

When an unsupported format is detected the display of the MU2 will show the following:

Source selection

By pressing, holding down and then rotating the main knob you enter the source selection menu. Here you can select sources. To leave this menu just release the main knob when the desired input is selected.

There are 3 source categories visible and each has one or more inputs[4]. The list below shows each category and their available inputs:

- Analog in:
  - Analog XLR
  - Analog RCA
- Streamer:
  - Roon Ready
  - Tidal

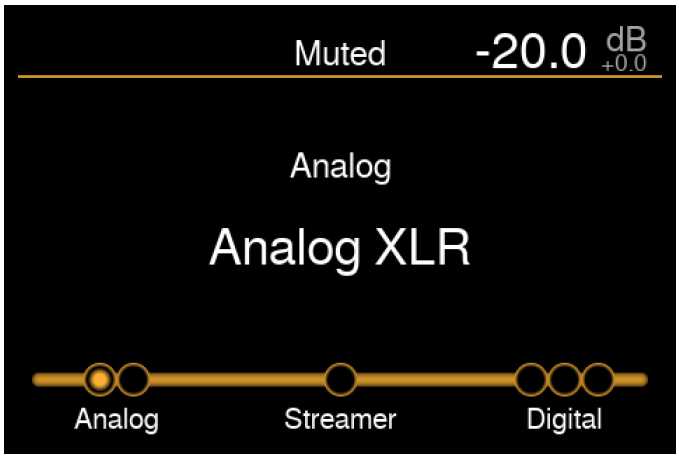
- UPnP

- Digital in:
  - AES XLR
  - AES RCA
  - Toslink

[4] You may disable each source through the GRUI, they will not show up when disabled.

By turning the main knob (while holding it down) the sources can be picked. When releasing the main knob the selected input can be heard. Note that the output is muted when changing source selection.

Note: pressing 'play' in a streamer app while a different source is selected will cause the MU2 to jump to that source directly.



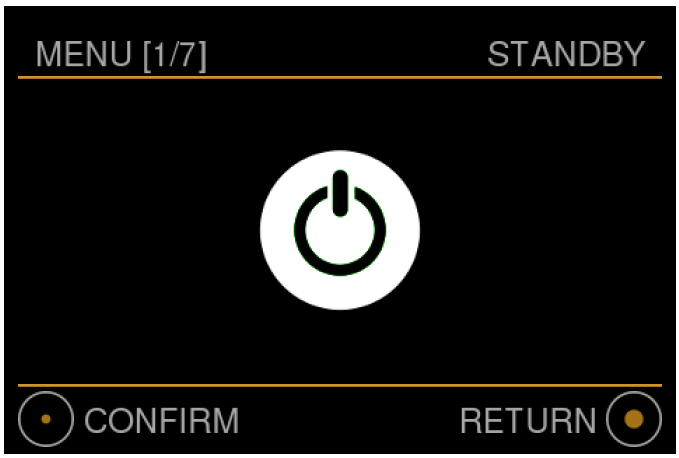
Mark that the MU2 shows the sample rate of digital inputs in the top left corner when there is a signal lock. "No Signal" will be shown if there is no signal detected.

When shutting down the system, the MU2 will remember the last used source and select it when powered on later.

Menu View

By pressing and holding the main control knob for 2 seconds or longer, the MU2 display enters the 'Menu View' mode.

Settings menu[1/7]: Standby



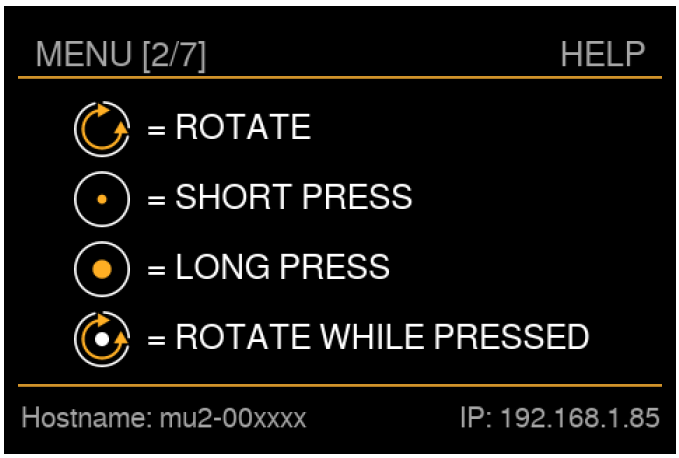
In this first menu you can put the MU2 in stand-by mode.

- Turn clockwise to go to the second menu.
- A short press (“Confirm”) will put the MU2 in stand-by mode.
    - When the MU2 is in stand-by you can simply press or turn the main control knob to initiate start-up of the system.
- With a long press you will exit the menu and go back to the Music View.

When in stand-by the power consumption decreases and the screen is turned off after a short animation. Most of the internal electronics is shut down, but some of it still functions. If you like to completely turn off the system, please switch off the device with the small mains power button on the back of the device. Always turn off or put the system in stand-by before unplugging the power cord to prevent damage to your MU2 computer system!

Hint: the white LED on the front indicates if the device is in stand-by (LED ‘breathes’) or if the MU2 is shut down (LED off).

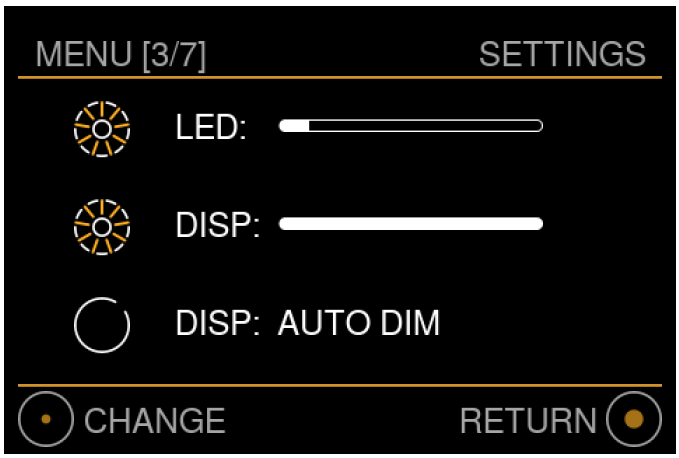
Settings menu[2/7]: Help



This menu shows the pictograms that are used in the MU2 for operating the main knob. At the bottom of the screen the current network information is shown. The indicated hostname depends on the serial number of your MU2. If the IP address shows “unknown”, there is no network connection and in that case the MU2 cannot be found by the Streamer App in your tablet or smart phone. In that case, please check the network connection of your MU2.

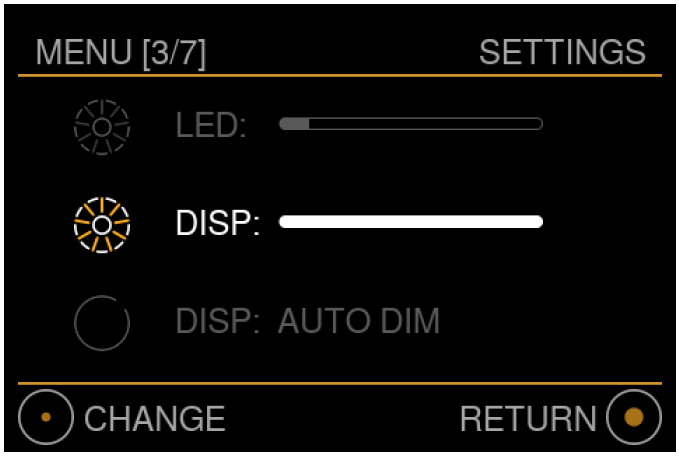
- Turn counter-clockwise to go to the first menu, turn clockwise to go to the third menu.
- With a long press you will exit the menu and go back to the Music View.

Settings menu[3/7]: Settings



In this menu you can change operational settings of the MU2, note that all of these settings can also be changed via the GRUI.

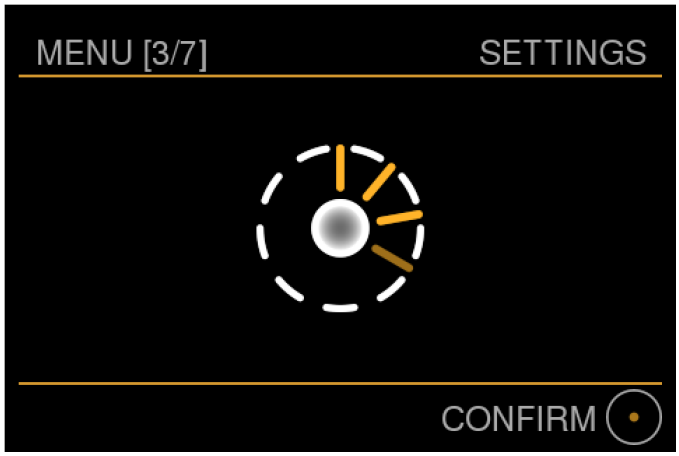
- Turn counter-clockwise to go to the second menu, turn clockwise to go to the fourth menu.
- With a long press you will exit the menu and go back to the Music View.
- To change any of these three settings, apply a short press on the main control knob. You will then enter the menu and the selected option will be highlighted. In the next image you can see that the second option is highlighted.



- To select another option, turn the main knob until the desired option is highlighted. To change it, press the main knob briefly.
- To leave this menu, apply a long press of the main knob.

LED and Display

The brightness of the LED or Display on the front of the MU2 can be adjusted with this option. For the LED this influences the brightness both in operation and in stand-by mode.



Turn the main knob clockwise to increase the brightness and counter-clockwise to decrease the brightness. Please note that the LED can not be turned off completely to facilitate showing whether the MU2 is in operation/stand-by or power off.

- A short press or long press confirms the current setting.

Settings menu[4/7]: GRUI control QR

This menu shows the information you need to connect to the Grimm User Interface (GRUI). The GRUI is the web control interface of the MU2. You can scan the QR code with your tablet or mobile device. As an alternative you can manually enter the link shown at the bottom of the screen in your browser. More information about the GRUI can be found in chapter GRUI

MU2 Web Control. This menu page will always be shown at maximum screen brightness for optimal scannability.

Note: your browser device must be connected to the same network as the MU2 to be able to connect to the GRUI.

- Turn counter-clockwise to go to the third menu, turn clockwise to go to the fifth menu.
- With a long press you will exit the menu and go back to the Music View.

Settings menu[5/7]: Infrared remote programming

You can control the MU2 via the supplied Grimm Audio IR remote.

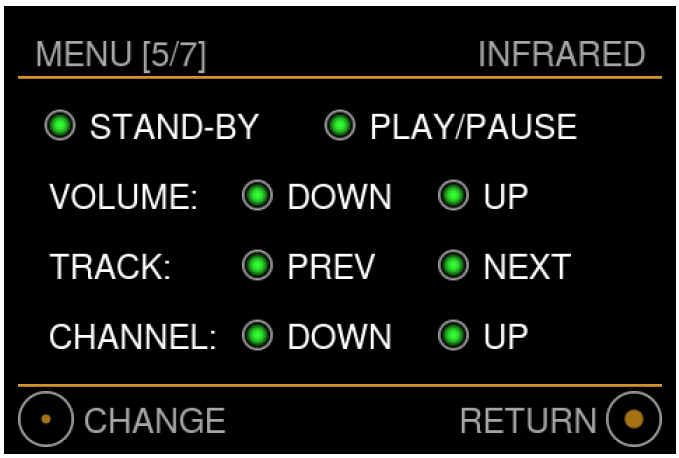
The following functions can be controlled with the IR remote, from top to bottom: Stand-by, Mute or Play/Pause (depending on the source), volume control, next/previous track (for streaming sources) and source selection.

To override the Grimm Audio IR remote you can make the MU2 respond to any[5] other IR remote via this menu, note that this can also be done in the GRUI.

Note: please make sure to connect an IR extension cord to the 3.5mm jack on the back when the unit is turned off, plugging in the jack while the unit is on may cause the display to flicker and stop working properly. Please see the hardware manual for the connector and pinout.

[5]The MU2 supports the following types of IR remotes: RC5, RC6, JVC, NEC, NEC extended and SIRC. Also some Apple remotes are supported, the types are shown in the picture below:

Other protocols may be added in the future, please contact info@grimmaudio.com if your favorite remote is not supported and we will check if it is possible to add support for your remote.

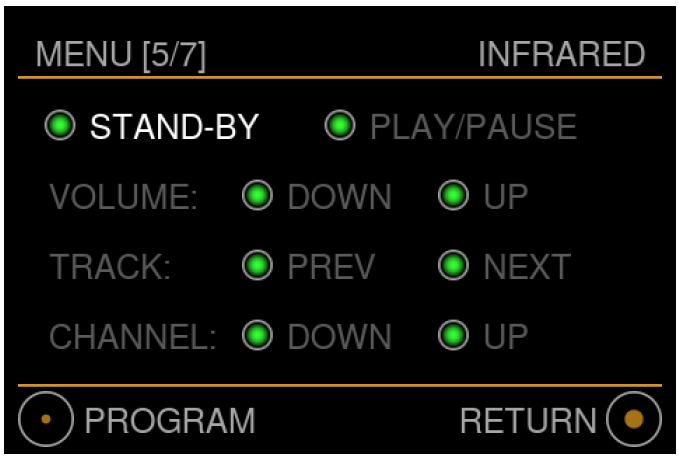


- Turn counter-clockwise to go to the fourth menu, turn clockwise to go to the sixth menu.
- With a long press you will exit the menu and go back to the Music View.
- A short press will enter the menu and highlight the selection function.

The colored dots next to each function can have 3 different colors with the following meaning:

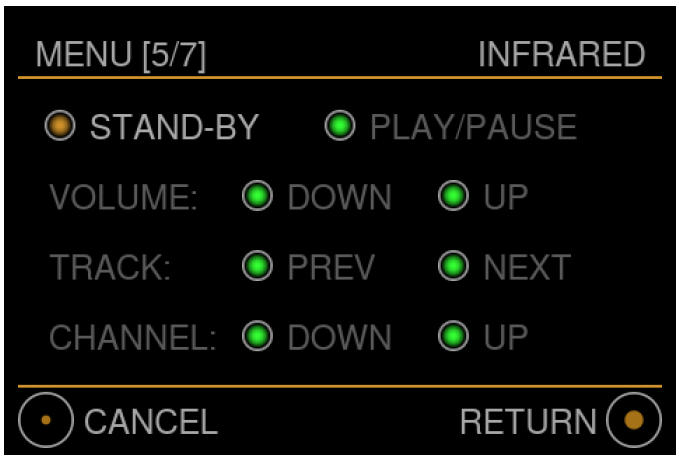
- Red: function not programmed.
- Orange: in programming mode, waiting for an infrared command.
- Green: infrared command paired with the function.

The image below shows the Stand-by function selected. Turn the main knob to switch the selection to the desired function. Short press the main knob to start programming the highlighted function.



The dot will turn orange until the MU2 receives an infrared command. Press the desired button on your infrared remote to link this infrared command to the selected function. When the MU2 receives an infrared command the dot will turn green and it returns to the infrared selection menu as shown in the previous image.

The image below shows the menu while programming the stand-by function, note that the volume up and volume functions are already programmed.

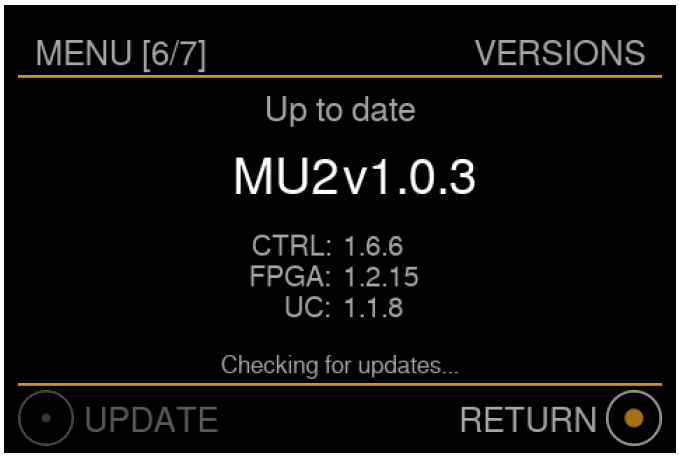


Note: programming stand-by may take a little more time than the other functions.

To cancel, apply a short press with the main knob. The dot of the selected function will turn back to the original (red or green, resp. not programmed or programmed) and no changes are made. To cancel and leave the menu, apply a long press.

One button of the infrared remote can only be paired with one function of the MU2. If you use the same button of your remote for another function, the previous function is overwritten and the new one is paired. The dot of the previously paired function will turn red and the new function will become green.

Settings menu[6/7]: Software Version and Update



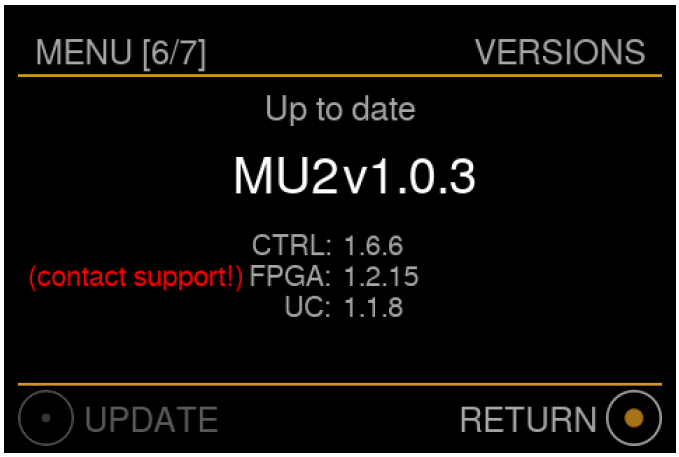
In this menu you can view the current software version and start an update. The MU2 automatically checks for an update every hour and also when entering this menu page from menu page [5/7]. If the MU2 is checking for updates, this is shown at the bottom of this menu.

If your software is up to date this is indicated in the display and the bottom left icon is greyed out.

The software versions of CTRL (Control software), FPGA and UC (Microcontroller) are also shown in this menu. When you experience problems with your MU2 we may ask you to send us this information.

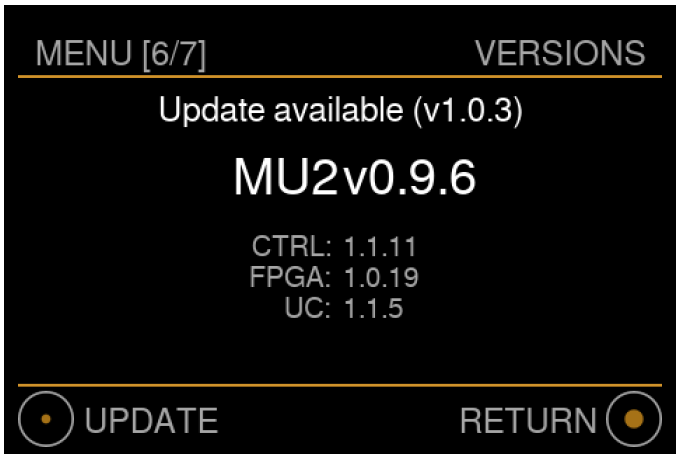
- Turn counter-clockwise to go to the fifth menu, turn clockwise to go to the seventh menu.
- With a long press you will exit the menu and go back to the Music View.

The MU2 performs a hardware self-test to check if everything is in good order to start the update. In case something is wrong the text “contact support!” is shown in red as shown in the image below.



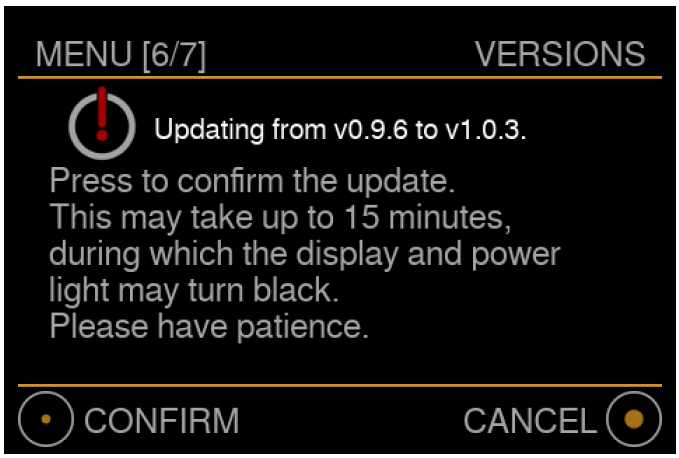
In such a case, please contact Grimm Audio through our support form via www.grimmaudio.com/support-form and we will help you.

The image below is shown when there is an update available.



In case an update is available and downloaded, the text “Update available” is shown.

- Start the update with a short press. After reading the warning message, confirm with another short press.



Depending on the type of update the install can take up to about 30 minutes. During this time you will not see information on the display, the power LED is fading quickly and the power button on the back is disabled.

Note: during some updates the display will hang and/or even turn all-white for 30 seconds. The fading power LED might turn off as well. This is normal behavior.

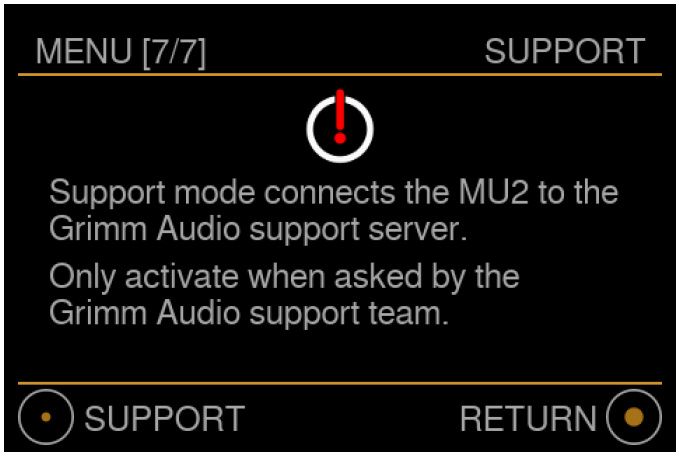
Please remain patient and do not unplug the device while updating since this causes the update to fail and the procedure has to start again when the device is powered up.

During the update process the internal PC will shut down and it will reboot at least twice. When the update is complete the system will turn back on in normal mode and show the update status briefly.

Updates for the Roon Server are not included in the MU2 software update, this is done separately via the Roon App.

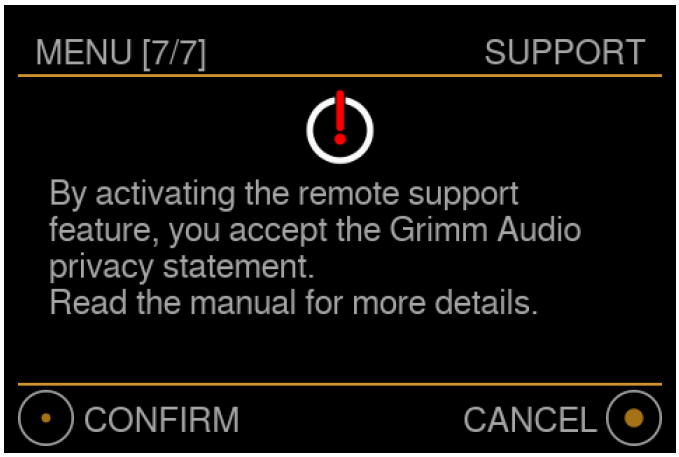
Note: also the Music View display will show the text ""Update available" whenever a new update has become available.

Settings menu[7/7]: Support



In this menu you can activate Support Mode. This should only be activated when you have reported a problem with your MU2 to Grimm Audio and our people asked you to activate Support Mode. In this mode Grimm Audio engineers can get remote access to your device to help solve your problem.

When you've activated Support Mode and wish to return to normal mode, press the power button on the back of the MU2 to turn off the device, and press the power button again to boot the MU2 in normal mode. After rebooting, Grimm Audio has no access to your MU2 any more.



- Activate Support Mode with a short press on the main control knob, confirm by another short press. The MU2 will reboot in Support Mode and a continuous animation screen with blue instead of white squares is shown on the display.
- With a long press you will exit the menu and go back to the Music View.

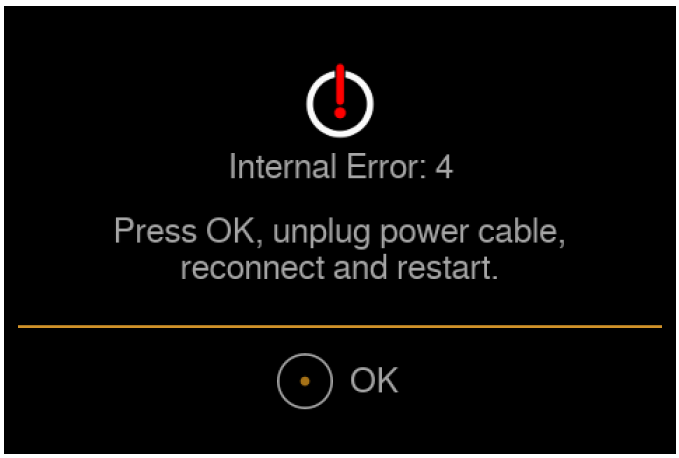
Note: while the MU2 is in Support Mode, the blue dot animation will keep running and no other information is shown.

Support Mode privacy statement:

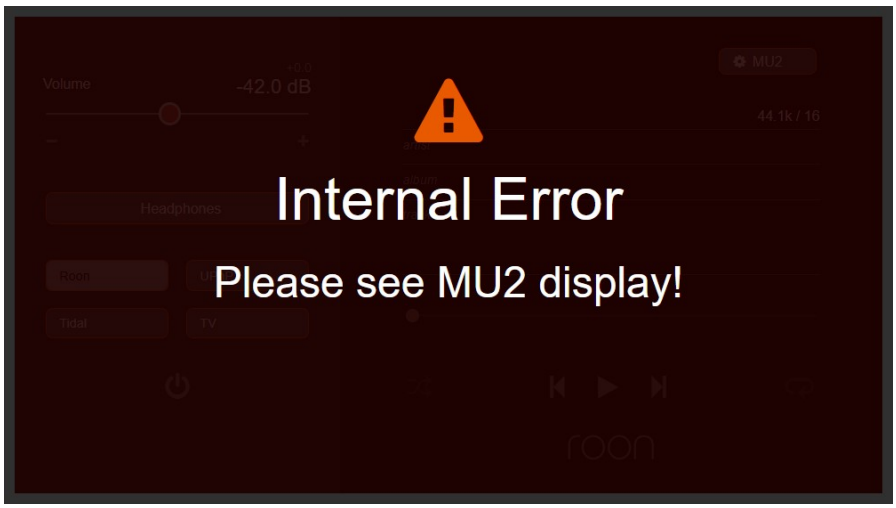
Support Mode reboots the MU2 and establishes a secure connection to a Grimm Audio server. Through this secure connection we can log in to your device, read log files and change settings. Grimm Audio will not copy information from your MU2 in any form without your consent. Grimm Audio will never share your data with any third party.

Internal error message

In very rare cases it is possible that the MU2 shows an error message like in the image below.



When this happens the GRUI will show the following:

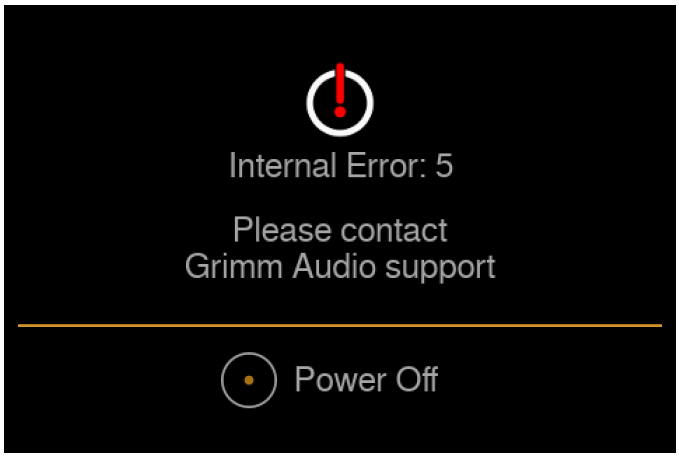


The MU2 does a self-test to guarantee the FPGA conversion quality. Whenever something is wrong it will instruct you to do a full power cycle by pressing the main dial. The unit will then shut down. Please wait until the MU2 is completely shut down, then disconnect the power cable and reconnect it. You can power up the unit again.

Note that there is no hardware problem with your MU2, after the power cycle the MU2 is working as normal again.

Error code 5 or 6:

Another possible error is internal error 5 or 6 as shown in the image below:



This indicates a hardware problem with the MU2, please contact Grimm Audio support via the support form: https://www.grimmaudio.com/support-form/

8 GRUI MU2 Web Control

GRUI stands for Grimm User Interface, it is a web interface for controlling the MU2. There are settings available via the GRUI that cannot be set via the menu system of the MU2 hardware display.

Connecting to the GRUI

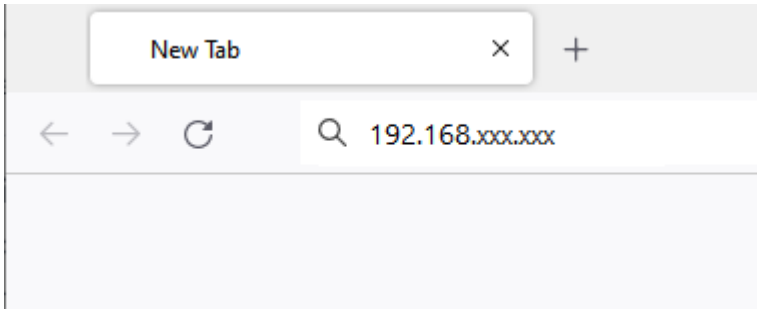
You can connect to the GRUI via a web browser on a device that is connected to the same network as the MU2.

You can scan the QR code shown in Settings menu[4/7]: GRUI control QR or enter the indicated address in your favorite browser to open the GRUI.

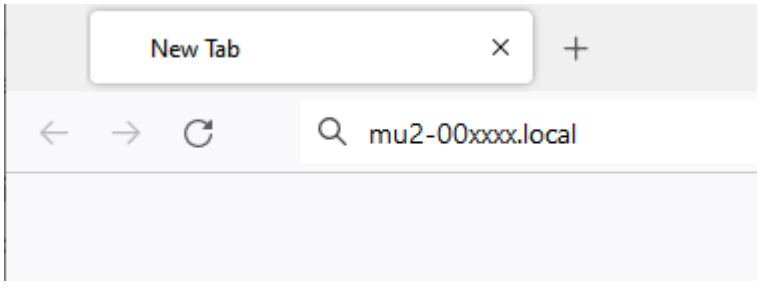
Hint: once the web page is opened, you may store it for direct access as an icon on the home screen of your iOS or Android device. In iOS this is achieved by clicking the 'share' icon (square with arrow), scrolling down and select "Add to home screen". In Android (depending on the browser) you can tap the menu icon (3 dots in upper right-hand corner) and tap Add to home screen. You'll be able to enter a name for the shortcut and then it will be added to your home screen.

Note that if the MU2 receives a different IP address from your router, the url link in this stored 'app' does not work any more. In that case it does not connect. Please use the QR code again to establish a new connection. You may delete the old icon and create a new one.

Alternatively you can enter the IP address of the MU2 in your browser manually:

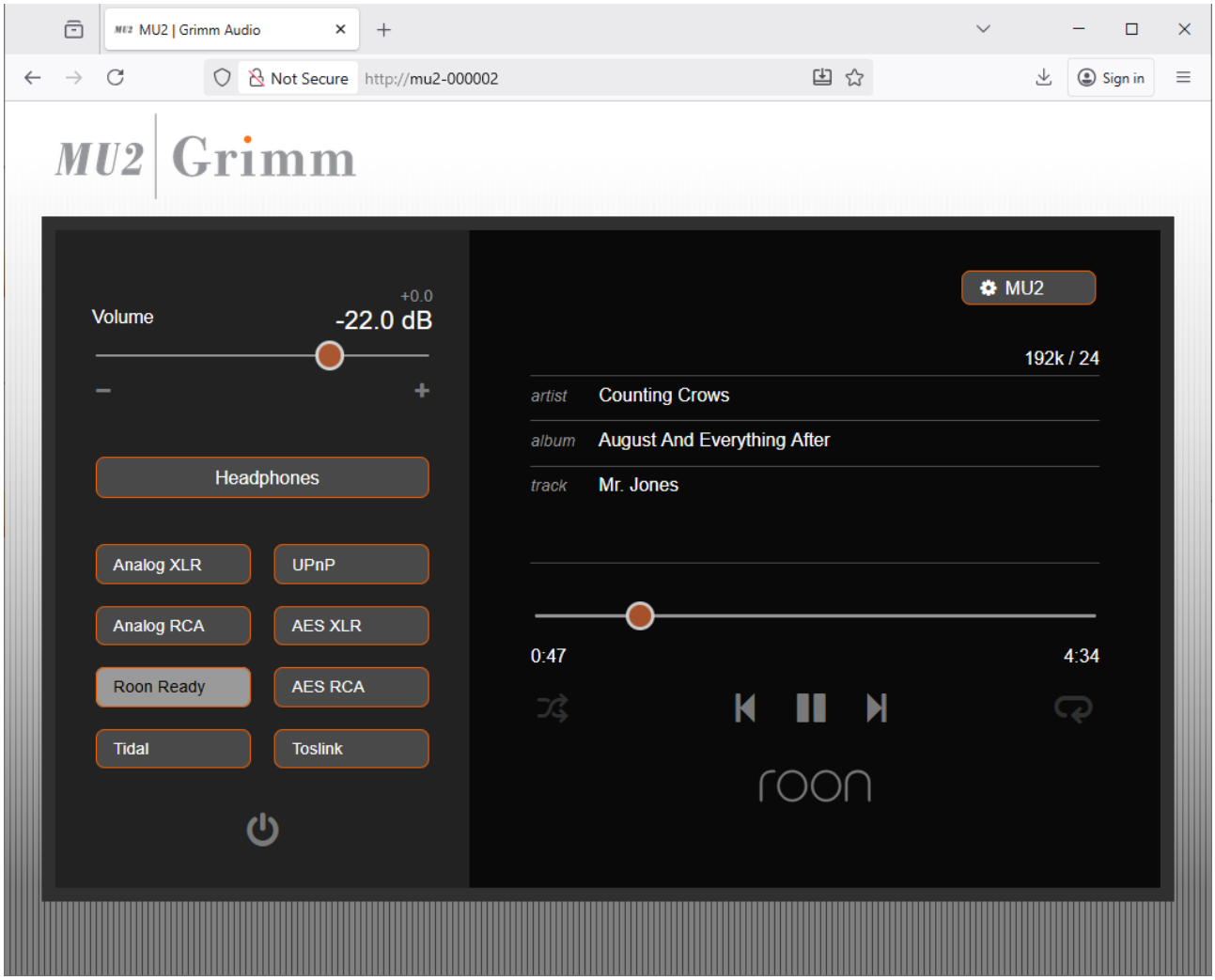


Some devices support connecting using the hostname, you can find the hostname in Settings menu[2/7]: Help in the bottom right corner. Enter the hostname in your browser to browse to the GRUI. Depending on your router settings you might have to add ".local" to the hostname and enter it in your browser as shown below:



Main page

The main page of the GRUI offers access to all basic functions of the MU2. The image below shows how it looks in a desktop environment. On mobile devices the volume control bar and source buttons will be placed below the artist play/pause buttons.



There are two sections: on the left is the control area. You can change the volume and select a source. Below the inputs you can find the stand-by button.

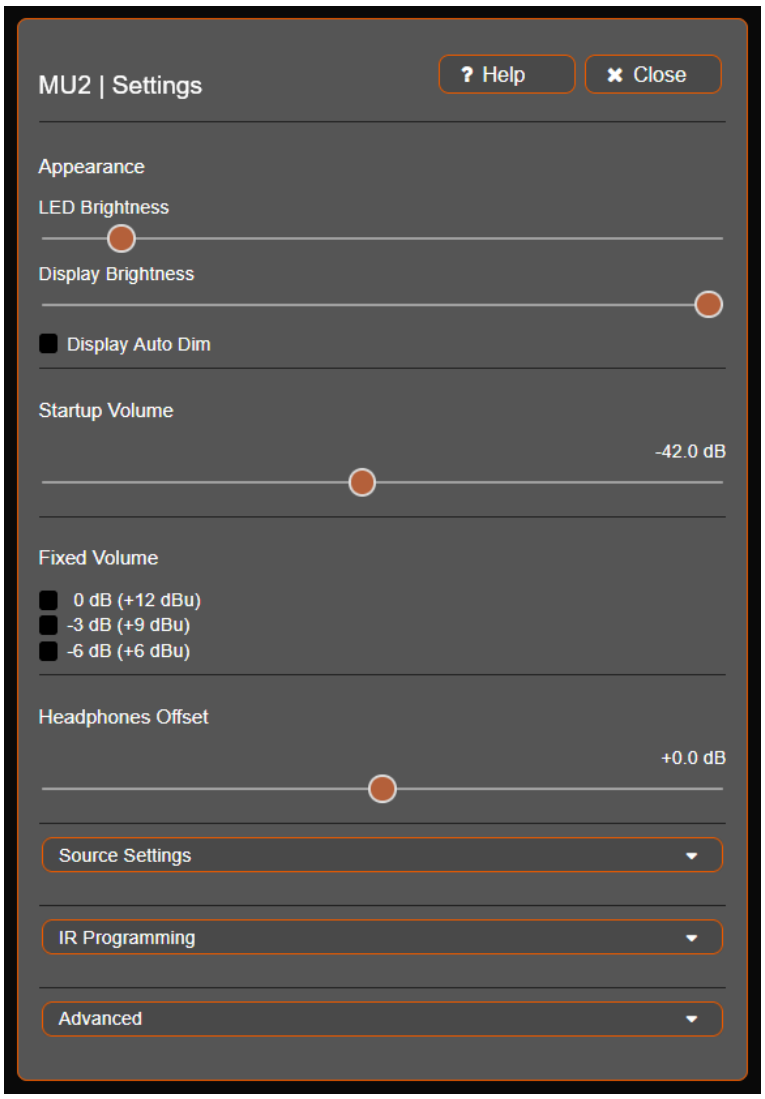
On the right is the track information and playback control. You can move the dot on the progress bar to skip or re-play parts of the current song. With the buttons below the bar you can select play, pause, next track and previous track. These operations are fully synchronised with the steamer interface, the hardware controls of the MU2 and the infrared control of the MU2.

Note: for the track functions to work, there needs to be some music in the queue.

The two cogwheel buttons in the top right offer access to the MU2 and (when connected) LS1 settings.

MU2 settings

The MU2 settings page looks like this:



Appearance

The Power LED brightness and Display brightness can be set here. When enabling “Display Auto Dim“, the display will go to a very low brightness a few seconds after you stopped adjusting a setting. Whenever you use the main knob or IR remote, it will light up for a few seconds again.

Startup Volume

After starting the MU2, it defaults to the “Startup volume”. You can set it to your preferred average listening volume, at a value between -79dB and +0dB. Please note that different recordings have a different ‘perceived loudness’ so it is generally advised to keep this level low.

Fixed Volume

In case you prefer to use the volume control of a connected preamplifier, it is suggested to check one of the Fixed Volume options. The startup volume option is disabled as the volume control cannot be changed.

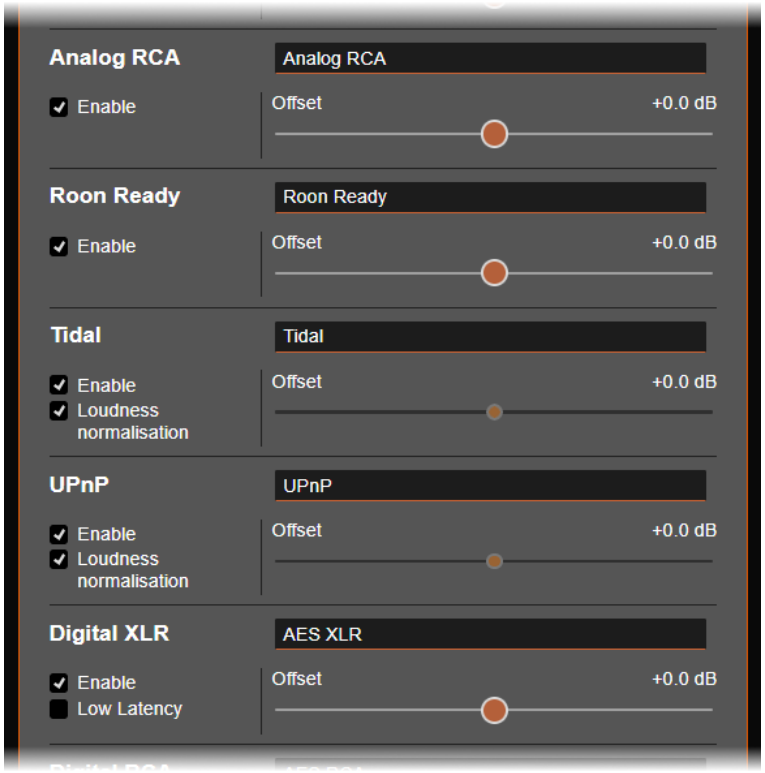
Headphone Offset

Here you can give your headphone output an offset, for instance to match its sensitivity with the loudness when listening to loudspeakers. This offset will be applied to the 'main' output volume.

Source Settings

The source settings allow for the following personalization:

- Enable or disable a source: disabling an input source removes it from the control part of the GRUI and from the source selection menu in the MU2. In case Roon Ready, Tidal or UPnP are disabled, these services also stop running and are not visible in your network anymore.
- Change the name of the input which appears in the control part of the GRUI and on the display of the MU2.
  (E.g. the 'Digital RCA' could be renamed to 'CD' when your CD transport is connected to that input)
- The source related volume offset setting allows you to achieve a similar average loudness for different sources. It can be used to achieve similar perceived average loudness between sources.
- By enabling Loudness Normalisation (currently available for Tidal Connect and UPnP sources) track loudness information from the source is passed on to the MU2. The volume setting in the MU2 will receive an offset so that every album's loudest track will have equal loudness. The target loudness is -18LUFS, so tracks that are recorded louder than -18LUFS will receive an offset to make them softer. The resulting offset is indicated in the volume display of the MU2. Note that by enabling Loudness Normalisation the source related volume offset of this source is disabled.

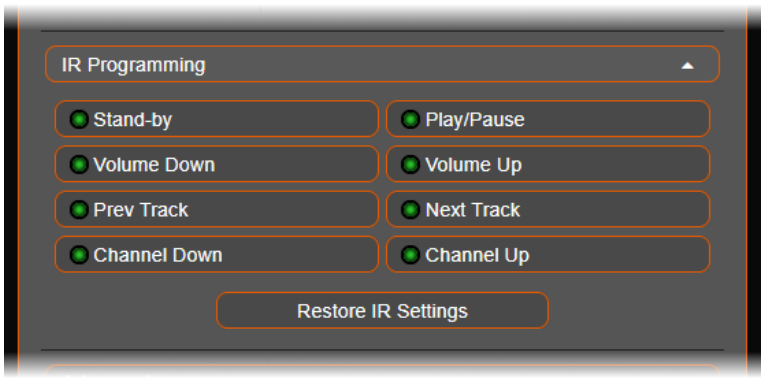


IR Programming

The MU2 works with the Grimm Audio IR remote by default.

If you wish to use a different infrared remote, you can program it via this menu. See chapter Settings menu[5/7]: Infrared remote programming for more information.

Programming codes of another remote will override the Grimm Audio IR remote preset. The “Restore IR Settings” button will restore the preset, overriding any changes you made.



The infrared remote functionality requires an IR extension cord connected to the 3.5mm jack on the back. An extension cord is included in the packaging of the MU2.

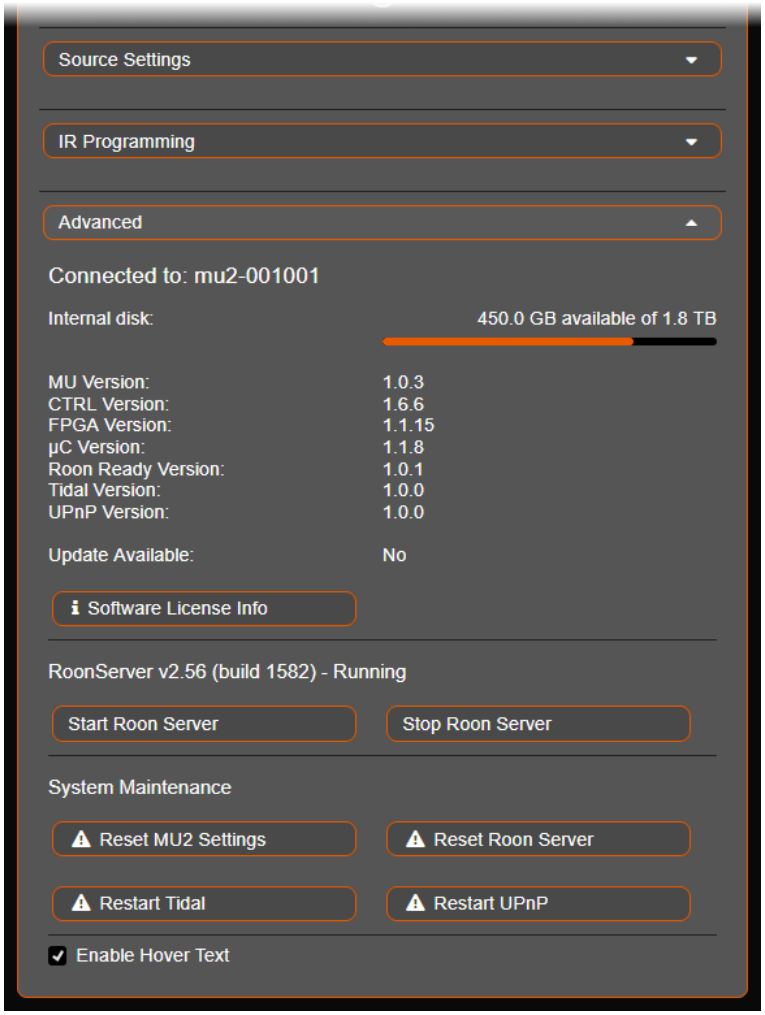
To start programming, press the function that you would like to program in the GRUI, the little dot will turn yellow and the label will fade until you press a button of your IR remote. When the MU2 receives a command from the remote it will save the button that you pressed under

that function. You can cancel the programming mode by pressing the selected function again, it will return to its last state.

If you already used the IR remote button for a different function, that function will turn back to red as you cannot program two functions under one button.

Advanced settings

The advanced tab offers access to more information about the MU2 and to options that reset parts of the MU2 software, please be cautious using these.



The first thing you see under advanced is the hostname of the MU2 that you are connected to, this consists of a part of the serial number.

In case your MU2 has an internal Music disk, its free space and the total space of the disk are shown. Note that the displayed disk space will be somewhat lower than advertised as this is in 'JEDEC 100B.01' format which differs from the 'IDEMA' standard used by disk manufacturers.

Furthermore you can see the exact software versions of each part of the MU2, this information might be requested by a Grimm Audio employee when you run into problems.

Also you can see if an update is available, this will be shown in the display of the MU2. Note that you cannot start an update from the GRUI, you have to use the main dial and go to the update menu as described in Settings menu[6/7]: Software Version and Update.

The Software License Info button brings you to a page where all the licenses of the software we use are stated, if you are interested.

Roon Server Status

Here you can see the version and build of the Roon Server. Also it shows the status of the Roon Server.

Next you have options to start and stop the Roon Server. Note that this setting is saved throughout a reboot of the system; when stopped the Roon Server will not start when the system restart.

System maintenance

Reset options

The button “Reset MU2 Settings” resets the MU2 settings to the default value. This rolls back all settings you changed in the GRUI and the MU2 menus (including the IR remote settings). You will see a pop-up to confirm that you are sure, please note that your browser may block this pop-up, unblock popups for this page to use the reset function.

The “Reset Roon Server” button will stop the Roon Server on the MU2 and erase the complete Roon Server database from the MU2 and restart the Roon Server. This will also reset your login (you will have to press the “Select Different Server” button on your Roon remote), the audio device settings, playlists (excluding Tidal, Qobuz and KKBOX playlists), favorites, tags, storage settings and all other changes you made to Roon in your MU2. Use this button only when a Roon employee or a Grimm Audio employee requests you to do this. You will get a pop-up asking you if you are sure to do this. We recommend to make a backup using the Roon backup functionality before executing a reset.

Restart options

Using the “Restart Tidal” button will stop and start the Tidal Connect service on the MU2. Using the “Restart UPnP” will do this for the UPnP services.

Use these restart options only in cases where you experience problems with these services like not being able to detect the MU2 on the network.

Enable Hover Text

The last function in the Advanced tab is to toggle the hover-over help text on and off. This setting is memorized in your browser which means the hover-over text will be shown again if you use a different browser or device.

Grimm Audio, The Netherlands
General questions: info@grimmaudio.com
Support questions: grimmaudio.com/support-form
Tel. +31 40 213 1562

Check grimmaudio.com for news about your MU2.

For software version v1.0.3
J.V. M.S. P.M and E.G. 05-12-25