mini map

The hardware companion of MadMapper

User guide

MINIMAD VIDEO

MINIMAD LIGHT

www.madmapper.com

mini **mad**

GENERAL

MiniMad is an all-in-one dedicated media playback device for video and LED mapping, based on the Raspberry Pi platform.

Easy to use, small and versatile, it can be a good replacement for a computer in your future audiovisual installation. The possibilities and limitations will be detailed in this guide.

The MiniMad works with a SD-card that contains both the system and the software of the MiniMad.

The MiniMad system can be updated or reinstalled if needed, by following the procedure described in the chapter called "Flash your MiniMad SD-card".

The MiniMad software is getting automatically updated when exporting from an updated version of Mad- Mapper.

MiniMad can either be installed with MiniMad Video to play video-mapping, or with MiniMad Light to play recorded DMX sequences.

Note that MiniMad Video and MiniMad Light cannot be installed at the same time on the same MiniMad.

Finally, the SD-card must be activated for each new MiniMad it is used into.

The SD-card is already activated in any brand new MiniMad.

If you want to use a SD-card other than the one the MiniMad shipped with, please make sure to flash the latest system by following the chapter called "Flash your MiniMad SD-card" prior to activate it.

At export time, MadMapper will remind you to activate when trying to export to a SD-card that was not yet activated.

TURNING THE MINIMAD ON

Turning the MiniMad On is as simple as plugging it in.

To avoid plugging it in and out, you can use an AC power-switch.

If you want to schedule MiniMad's playback during the day, please refer to the TIPS & TRICKS section at page 21

TURNING THE MINIMAD OF-

Depending on the chosen export settings, you can safely disconnect the MiniMad from power, or be required to shutting it down properly to avoid data-corruption on the SD-card.

Basically, data-corruptions happens when cutting the power of the MiniMad while it's writing on the SD-card, which can happen:
- when changing media, when the "start last played media" export setting is checked - when changing master luminosity
- when changing audio volume
- when changing playback mode
- when editing using the mapping or image control modes in MiniMad Video

By consequence, we strongly advice against turning off the MiniMad by cutting the power if you use any of the following features.

Instead, you should perform a proper shutdown using either the MiniMad buttons, a USB keyboard, MiniMad Controller or using OSC.

Please refer to the CONTROLS sections of the selected application for more details.

ACTIVATE YOUR MINIMAD SD-CARD

If you flashed your MiniMad SD-card, or slot-in an SD-card that was used in another MiniMad unit, you will need to activate it prior to being able to export to, or use in the MiniMad.

The activation procedure is quick though:
1. Insert the SD-card in the MiniMad
2. Connect the MiniMad to a HDMI display *
3. Plug the power cord to turn the MiniMad on 4. Follow the on-screen procedure

Note that the MiniMad red LED is blinking when the activation process is required, and stops blinking once the SD-card is activated.

(*) If you cannot connect to a HDMI display, wait for the red LED to start blinking, then successively press the red, yellow and blue buttons. If the operation was successful, the LED should stop blinking,
meaning the SD-card is now activated, and can be export to.

FLASH YOUR MINIMAD SD-CARD

Flashing a SD-card with MiniMad system can be necessary in the following cases:
- A newer version of the system is available, providing new features to the MiniMad. MadMapper will warn you if flashing is necessary.
- You want to use a brand new SD-card in the MiniMad.
- The system does not work anymore because of some data corruption. (cf. Turning off the Minimad)

You first need to download the latest image of the MiniMad system (8, 16GB and 32GB versions are available) as well as the Etcher flashing tool.

All those files are available to download in MadMapper Downloads.

Note that you don't need to decompress the downloaded zipped images.

Then:
1. Insert your MiniMad SD-card in your computer's card-reader.
2. Launch Etcher application.
3. Select the downloaded .zip disk-image file as source.
4. Select the SD-card drive as target.
5. Click "Flash!" to start the operation.

The flashing operation can take up to 20-30 minutes.

The MiniMad image disk is big - if the image file doesn't work it may be due to a failed download and
you'll have to download the image disk again.
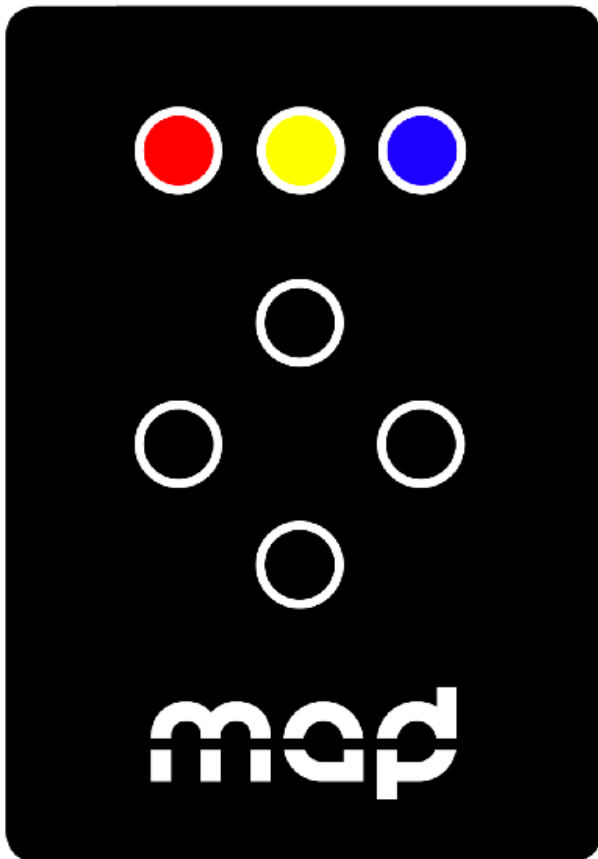
SURFACES

MiniMad supports 4 types of surfaces:
- Quad
- Triangle
- Circle
- Mask

Other surface types (line, 3D surface) and FX are not supported yet.

MEDIA

MiniMad Video supports a single media at a time on every surfaces.

Every image files supported by MadMapper will be exported to MiniMad.

During the export process, movie files will be transcoded and their resolution adapted to maximize smoothness, depending on the selected projector's resolution and various settings found in the **Advanced** panel.

There is no duration limit for your video files, but they will not be able to exceed a size of 4GB (the maximal size of a file on a FAT32 partition) for a 16GB SD-card, the largest capacity supported by MiniMad.

PROJECTOR

The device supports a single projector connected to the HDMI port.

The maximum supported resolution is 1080p (1920×1080).

In case the selected resolution is not supported by the actual connected projector, the device will use the projector's default resolution and display a notification.

EXPORT

In MadMapper, click File > Export Video Mapping to MiniMad.

FFmpeg Tools is required to export MadMapper project to MiniMad, so please download FFmpeg Tools Installer using the provided link.

You can either insert the MiniMad SD-card in your computer, or select a remote MiniMad.

To connect remotely, your MiniMad must be powered on and connected to the same local ethernet network as MadMapper, or even through a VPN connection.

In MadMapper, you can either select your MiniMad in the list of MiniMad units found on the network using Bonjour, or connect manually by entering the MiniMad's hostname or IP address (if you chose to disable Bonjour in a prior MiniMad export, or you want to connect to the MiniMad through a VPN for instance).

When selecting a remote MiniMad, MadMapper may inform you that your MiniMad operating-system is not yet compatible with remote export. In this case, you would need to flash your MiniMad SD-card using the latest MiniMad Disk Image in order to export to the MiniMad remotely.

The whole flashing procedure is detailed in the dedicated section "UPDATE YOUR MINIMAD SD-CARD".

If necessary, MadMapper will update the MiniMad Video application automatically prior to export.
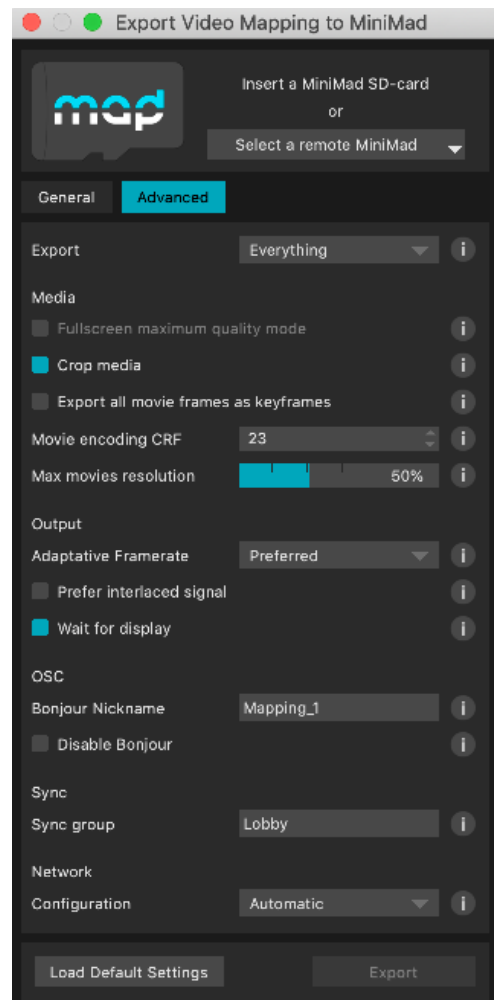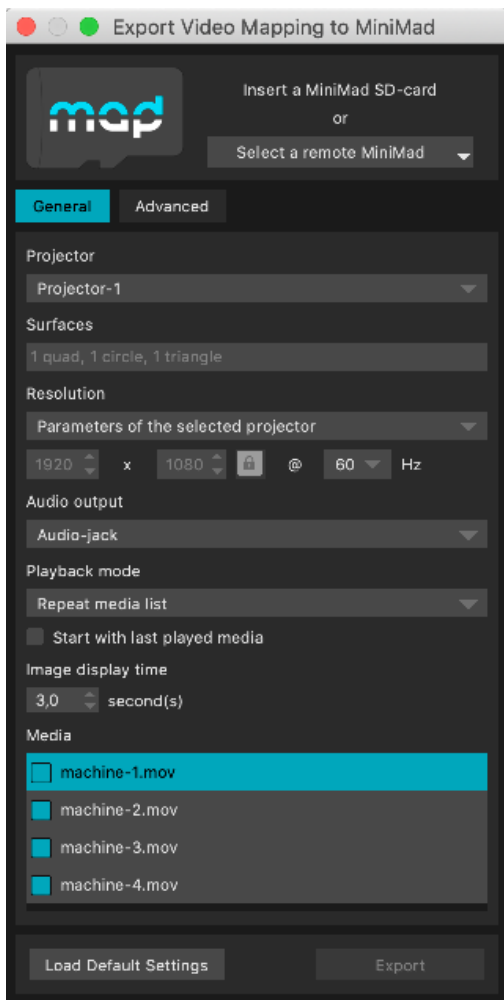
Then, select the projector you want to export to MiniMad, adjust the output resolution, the audio output, the playback options, optionally unselect and reorder your medias.

In the case your mapping consists in a single fullscreen-quad with no color correction applied - typically when displaying on a TV-screen, a video-wall, a straight video-projection or perspective-corrected by the projector itself - MadMapper will propose you to switch the Fullscreen maximum quality mode on, so your media will be exported using the best possible resolution (up to 1080p30).

Note that when this mode is on, mapping and color correction controls are disabled on the MiniMad. You can also specify a nickname for the the Bonjour OSC Discovery, or disable it completely to prevent the MiniMad from appearing in applications supporting Bonjour.

(cf CONTROLS / OSC section for more details).

EXPORT

For OSC control, you can either select automatic network configuration or manual network configuration and input the IP-address and mask the MiniMad will use on the network.
When using automatic network configuration, the MiniMad will try to acquire its IP address and mask from a DHCP server if there's one available on the network, else it will use its internal network configuration mechanism, getting a random 169.x.y.z IP address with a 255.0.0.0 network mask.
When using manual network configuration, and in case you export to several MiniMad units on the same network, make sure each MiniMad has a unique IP address.

Once your mapping and media has already been exported to the MiniMad, you then have to option to either export the mapping or the media.
You can also reset all of the export settings to default by clicking "Load Default Settings".

Finally, click the "Export" button to start the export.

The process may take some time depending on the number of movie files and their duration.
MadMapper will avoid transcoding movie files that are already optimised on the SD-card.
Once exported, the SD-card should be automatically ejected so you can directly stick it in your MiniMad.

SYNCHRONISATION

Connect the MiniMad units on the same ethernet network to synchronise media-playback automatically.
Movie synchronisation happens on every MiniMad units playing a movie with the exact same frame count and framerate, even though their file names are different.

Every media-related action made on any MiniMad happens instantly and automatically to every MiniMad units:
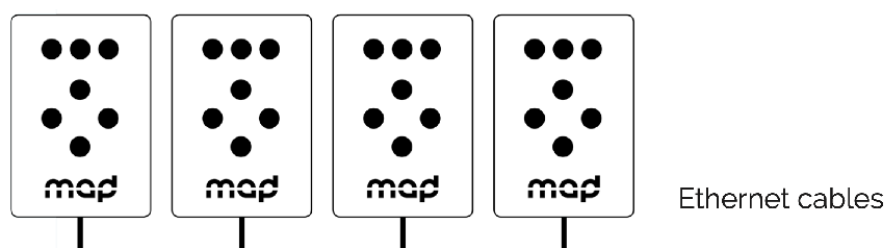- media change
- pause
- restart
- playback mode
- audio mode
- image display-time

Note that media change works properly if every MiniMad units contain a file with the same name, even though its content is different.

Create a MadMapper project using the video-wall template, import your pictures and videos, and export the different projectors to as many synchronised MiniMad units.

The setup couldn't be easier: Just connect all your MiniMad with an ethernet cable to a network switch, and wait until they automatically synchronise.

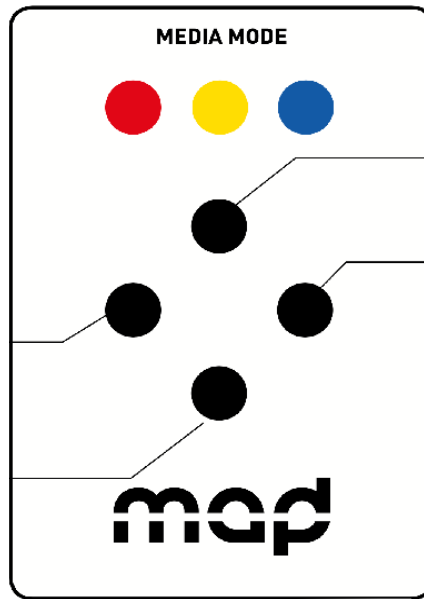Note that you can also connect two MiniMad units directly using an ethernet cable.

Ethernet cables

MiniMad VIDEO

BUTTONS

MEDIA MODE

Red + Blue
hold to shutdown

Up
change playback mode

Right
next media

Left
previous media

Down
pause media / start media
over in "Play once…" modes
long press: restart movie

MAPPING MODE

Red (toggle ON/OFF)
activate mapping control

Blue
next control point

Yellow
previous control point/

Up
control point position

Right
control point position

Left
move control point

Down
control point position

IMAGE MODE

Red
previous surface / all surfaces

Blue
next surface / all surfaces

Yellow(toggle ON/OFF)
activate image control

Up
selected surface luminosity

Right
Contrast +

Left
Contrast -

Down
selected surface luminosity
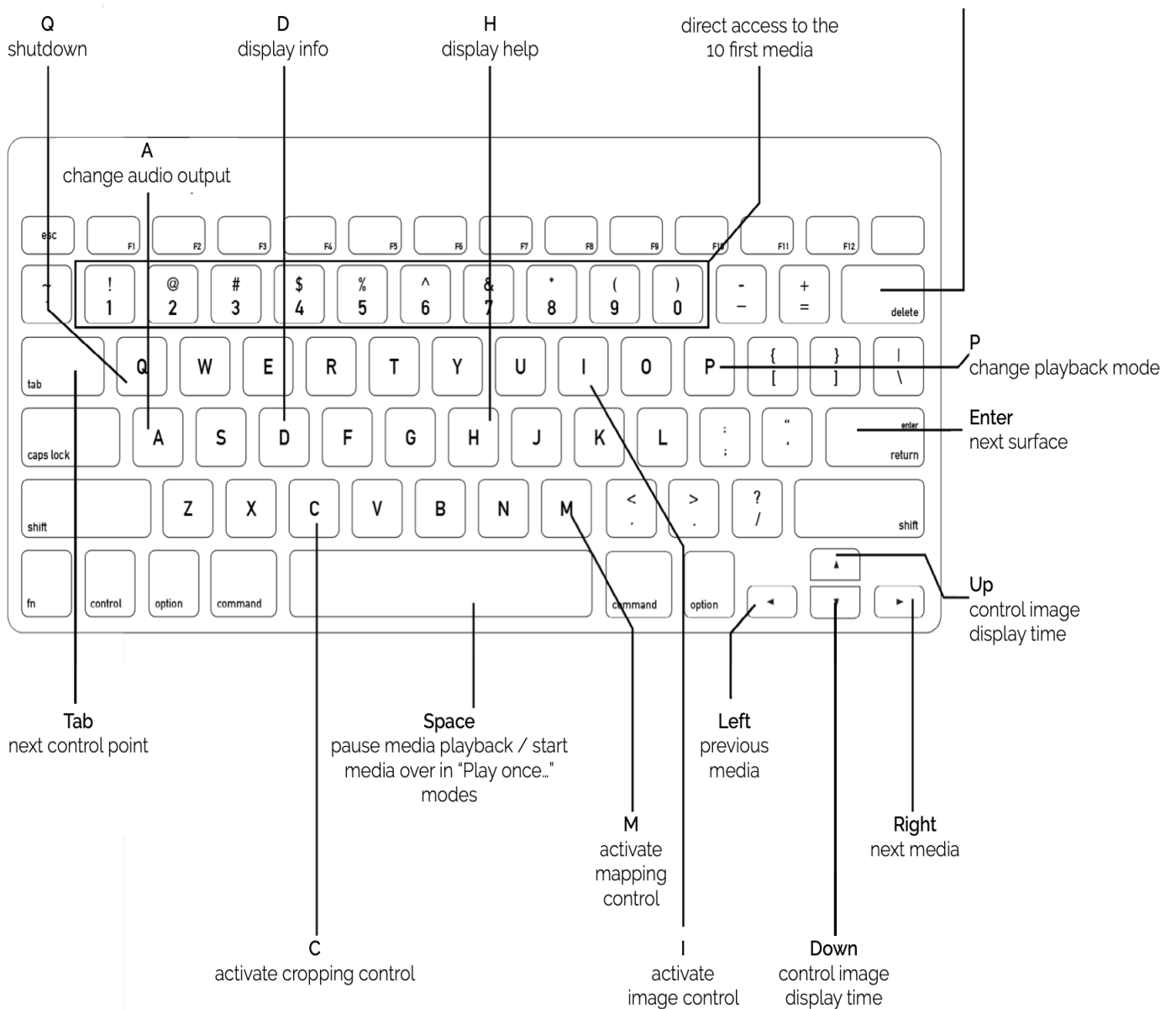
Blue + Yellow
display info

Red + Blue
hold to shutdown

KEYBOARD

As an alternative to the MiniMad's buttons, you can use any USB keyboard as a remote.

Using a wireless USB keyboard may be particularly interesting when the device is not easily accessible.

Attach the keyboard to one of the four USB ports prior to powering it on and follow the following keyboard map to control all functions:

Q
shutdown

D
display info

H
display help

direct access to the
10 first media

A
change audio output

P
change playback mode

Enter
next surface

Up
control image
display time

Tab
next control point

Space
pause media playback / start
media over in "Play once…"
modes

Left
previous
media

Right
next media

M
activate
mapping
control

C
activate cropping control

I
activate
image control

Down
control image
display time

MICROMODUL8

- **Blue buttons**: direct access to the 16 first media
- **First master knob**: master luminosity
- **Second master knob**: master audio-level

OSC

The MiniMad declares itself as "MiniMad Video(- Nickname)(- ProjectorName)", using the Bonjour protocol, where Nickname can be specified in the Advanced tab of the Export Video Mapping to MiniMad dialog, and ProjectorName is the name of the corresponding projector in MadMapper if there are several projectors in the project, for example: "MiniMad Video - LOBBY - Projector-1".

MiniMad listens to OSC commands on **port 1111**, in case the OSC software you're using doesn't support Bonjour.

List of commands:

- **/playing + integer OSC value (0 = pause, 1 = play)**: play/pause the media playback
- **/pause**: pauses the playback
- **/play**: starts the playback after a pause
- **/replay**: restarts the current media / starts media over when in "Play once…" modes
- **/previous_media**: previous media
- **/next_media**: next media
- **/playback_mode/{playback mode index}**: set the playback mode (cf media playback mode list in MadMapper's export window), example: /playback_mode/1 will set "Repeat media list" playback mode
- **/media_name/{media name}**: set the current media by name, example: /media_name/machine-1. mov will play movie called machine-1 (on miniMAD movies have the .mov extension, images the .png extension)
- **/media_index/{media index}**: set the current media by index, example: /media_index/2 will play the third media in the playlist
- **/media_index + integer OSC value**: set the current media by index using a variable
- **/image_time + integer OSC value**: change the image display time in seconds
- **/master_audio_level + float OSC value**: master audio-level for the targeted MiniMad
- **/master_luminosity + float OSC value**: master luminosity for the targeted MiniMad
- **/master_luminosity/all + float OSC value**: master luminosity for all connected MiniMad units
- **/shutdown + int OSC value**: value = 1 will trigger the MiniMad shutdown which will be effective after 2,5 seconds, unless cancelled by a value = 0
- **/shutdown/all + int OSC value**: identical to /shutdown except it applies for all MiniMad units in the same group

Note that all indices start at 0.

MiniMad Controller (OSC)

In MadMapper, create a new MiniMad Controller module and get the full-control of the selected MiniMad (Video or Light) at a glance, control its parameters using control mapping (Keyboard, Midi, OSC, BPM, Oscillators, etc) and Cues.

In addition to controlling the media playback, you can adjust manually the mapping and the image settings:
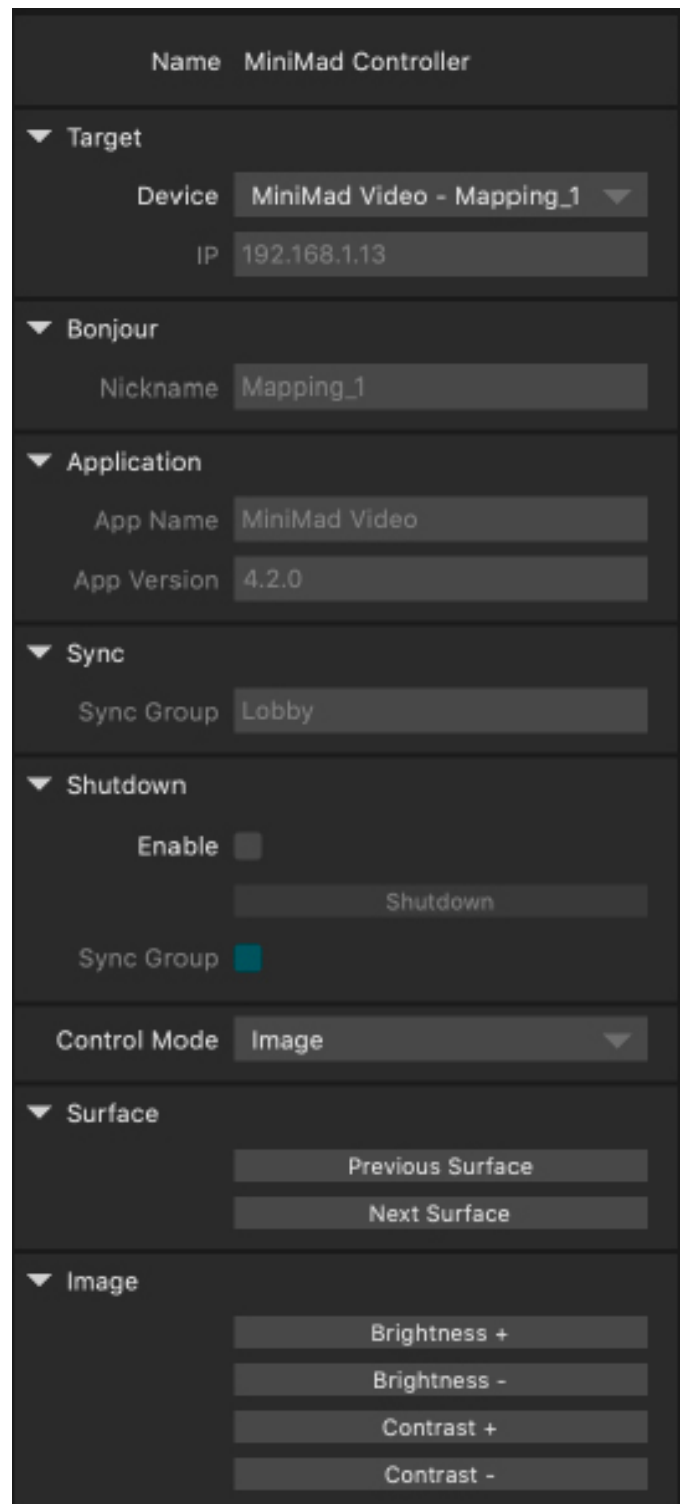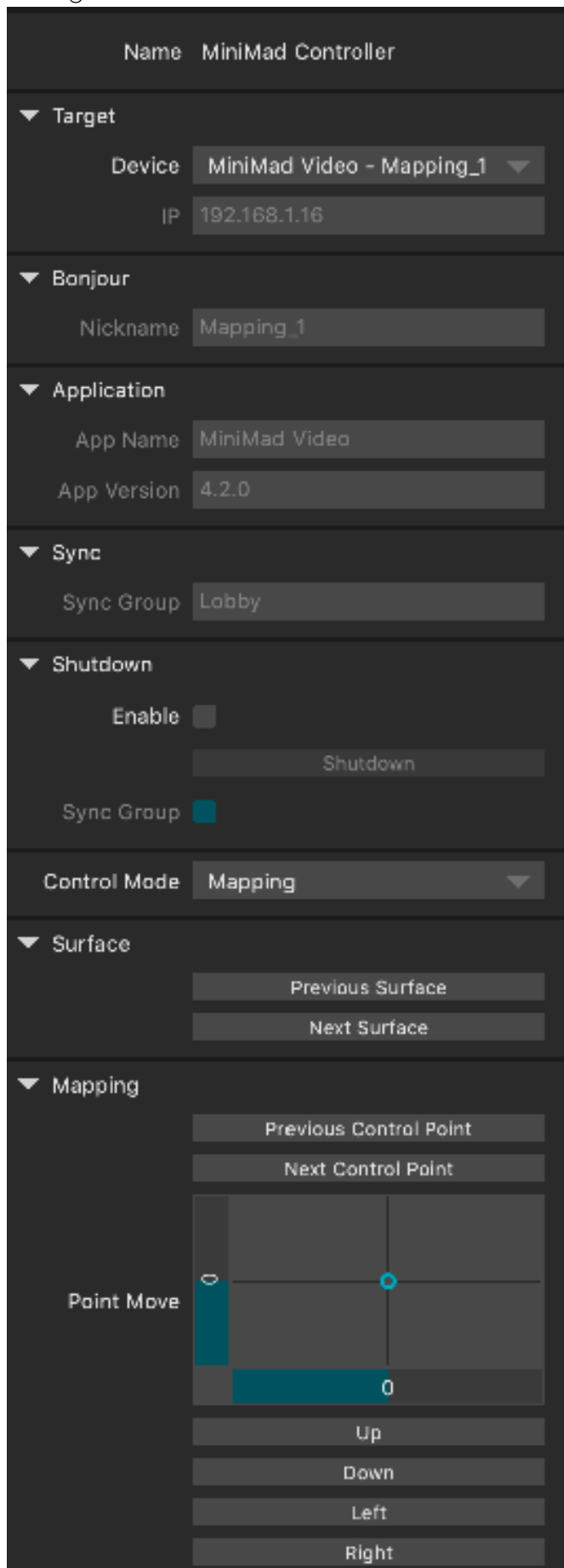
TOUCH OSC

Please refer to the dedicated TOUCH OSC section.

NETWORK SYNCHRONISATION

When connected to a network, all the MiniMad units share the same media controls (media change, pause, restart, playback mode, audio mode, image display time) which means that every change that's made on any MiniMad is instantly reflected on all of them.

DISCLAIMER

MiniMad network synchronisation can induce a one-frame delay between the different MiniMad units.

Therefore MiniMad is not the best solution for setups using edge-to-edge screens, side-by-side or soft-edge projections, using content that would highlight this delay.

For such a setup, we advice you to use MadMapper software on a computer with several video-outputs.

For better synchronisation, we also advice you prefer 720p over 1080p projector resolution..

RECORD

In MadMapper, once your fixtures are setup, open Tools --> MadLight Recorder.

Click "Start Recording" to start recording the DMX output.
Click "Stop Recording" to stop the recording.

Optionally, you can select an audio track to be played back while recording.

The newly recorded DMX sequence will be added in the sequences list.

Click **Edit Sequence** to make adjustments to your sequence - adjust the in & out frames by using the dedicated Loop controls (keyboard shortcuts are available for quicker operation), add an audio track and select the way it synchronises with DMX playback.
Click **Edit Sequence** again to stop editing.

Then, check and reorder the sequences you want to export to the MiniMad, select the **Playback mode**, press **Play** and use the **Previous** and **Next** buttons to get a preview within MadMapper.
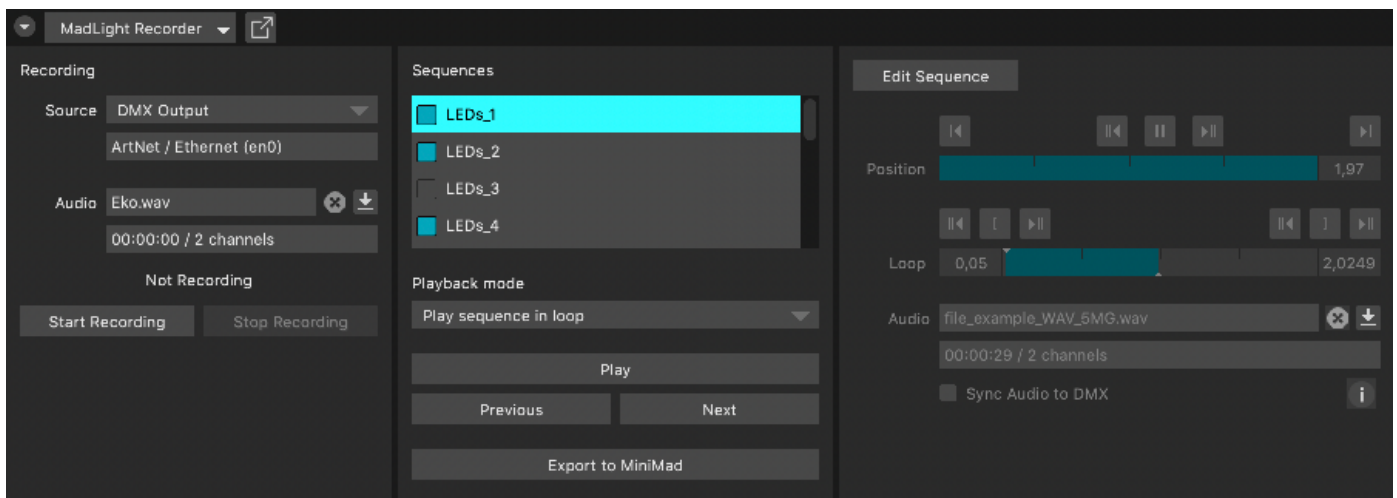

EXPORT

In the MadLight Recorder dialog, check the sequences you want to export then click **Export to MiniMad** to open the export dialog.

By default, MiniMad will use the same DMX interface as MadMapper, but you can select a different one using MiniMad DMX Output.

For ArtNet, SACN or OSC control, you can either select automatic network configuration (using DHCP) or manual network configuration and input the IP-address and mask the MiniMad will use on the network.
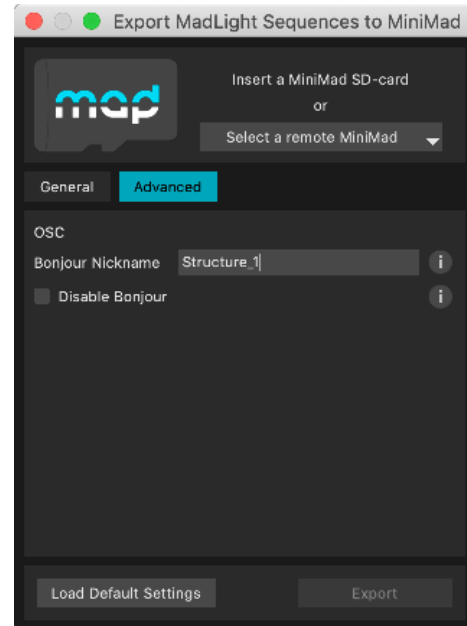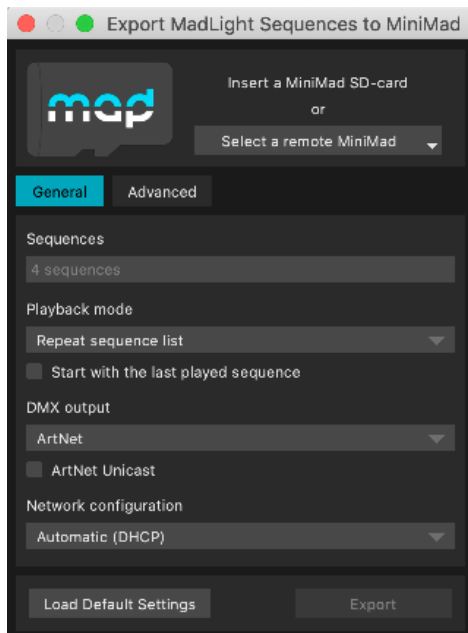
In Advanced tab, you can also specify a nickname for the the Bonjour OSC Discovery, or disable it completely to prevent the MiniMad from appearing in applications supporting Bonjour.
(cf CONTROLS / OSC section for more details)
You can reset all of the export settings to default by clicking "Load Default Settings".
To connect remotely, your MiniMad must be powered on and connected to the same local ethernet network as MadMapper, or even through a VPN connection.
In MadMapper, you can either select your MiniMad in the list of MiniMad units found on the network using Bonjour, or connect manually by entering the MiniMad's hostname or IP address (if you chose to disable Bonjour in a prior MiniMad export, or you want to connect to the MiniMad through a VPN for instance).
When selecting a remote MiniMad, MadMapper may inform you that your MiniMad operating-system is not yet compatible with remote export. In this case, you would need to flash your MiniMad SD-card using the latest MiniMad Disk Image in order to export to the MiniMad remotely.
The whole flashing procedure is detailed in the dedicated section "UPDATE YOUR MINIMAD SD-CARD".
If necessary, MadMapper will update the MiniMad Light application automatically prior to export.
Once the SD-card is ready, click Export to export selected sequences to the SD-card.
Once exported, the SD-card should be automatically ejected so you can directly stick it in your MiniMad.

AUDIO

MiniMad can either play audio through its audio mini-jack connector, or through an external USB system-compliant audio device, enabling the MiniMad to play audio file with as many channels as your device provides, in addition to an enhanced audio quality.

Make sure to plug the audio USB device prior to powering the miniMAD on.

Note also that the MiniMad might not be able to provide enough USB-power to your device depending on its power consumption.
In this case please use an externally-powered USB hub in between the MiniMad and your device.

MiniMad LIGHT

BUTTONS

Yellow + Up/Down
control Luminosity
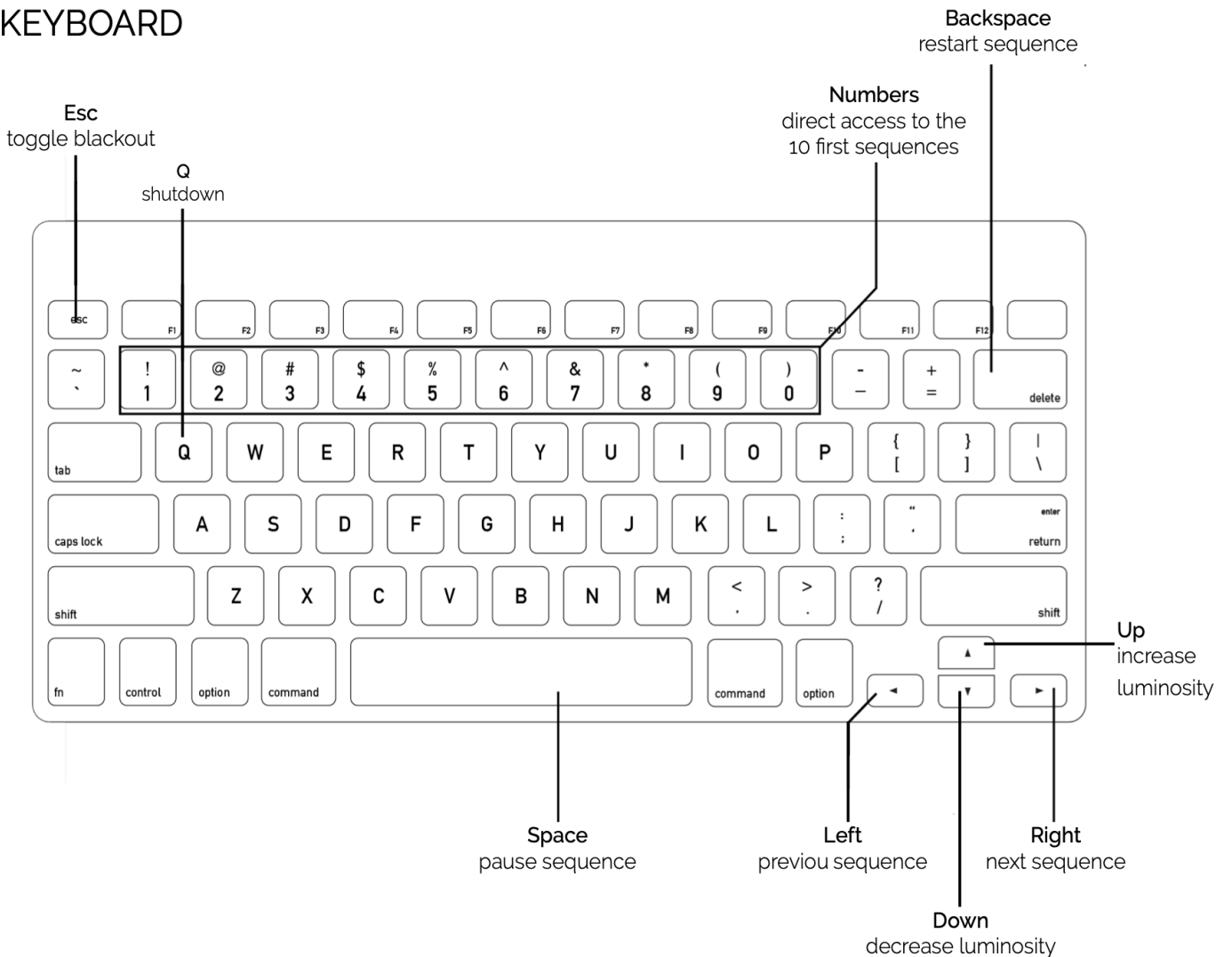
Yellow +Red
toggle Blackout

Blue + Up
increase audio level

Blue + Down
decrease audio level

Left
previous sequence

Down
pause media
long press: restart sequence

Red + Blue
hold to shutdown

Up
change playback mode

Right
next sequence

mad

KEYBOARD

Backspace
restart sequence

Numbers
direct access to the
10 first sequences

Esc
toggle blackout

Q
shutdown

Up
increase
luminosity

Space
pause sequence

Left
previou sequence

Right
next sequence

Down
decrease luminosity

MICROMODUL8

- **Blue buttons**: direct access to the 16 first sequences
- **First master knob**: master luminosity
- **Second master knob**: master audio-level

OSC

The MiniMad declares itself as "MiniMad Light(- Nickname)" using the Bonjour discovery protocol, where Nickname can be specified in the the **Export MadLight Sequences** to **MiniMad** dialog, for example: "MiniMad Light - MAIN ROOM"

MiniMad listens to OSC commands on **port 1111**, in case the OSC software you're using doesn't support Bonjour.

List of commands:

- **/playing + integer OSC value (0 = pause, 1 = play)**: play/pause the media playback
- **/pause**: pauses the playback
- **/play**: starts the playback after a pause
- **/replay**: restarts the current sequence
- **/previous_media**: previous sequence
- **/next_media**: next sequence
- **/playback_mode/{playback mode index}**: set the playback mode (cf media playback mode list in MadMapper's export window), example: /playback_mode/1 to set the Repeat sequence list playback mode
- **/media_name/{sequence name}**: set the current sequence by name, example: /media_name/light_sequence_3 to play the sequence called light_sequence_3
- **/media_index/{sequence index}**: set the current sequence by index, example: /media_index/2 to play the third sequence
- **/media_index + integer OSC value**: set the current sequence by index
- **/master_audio_level + float OSC value**: set the master audio-level
- **/master_luminosity + float OSC value**: set the master luminosity
- **/shutdown + int OSC value**: value = 1 will trigger the MiniMad shutdown which will be effective after 2,5 seconds, unless cancelled by a value = 0

Note that all indices start at 0.

MiniMad Controller (OSC)

In MadMapper, create a new **MiniMad Controller** module and get the full-control of the selected MiniMad at a glance, control its parameters using control mapping (Keyboard, Midi, OSC, BPM, Oscillators, etc) and Cues.
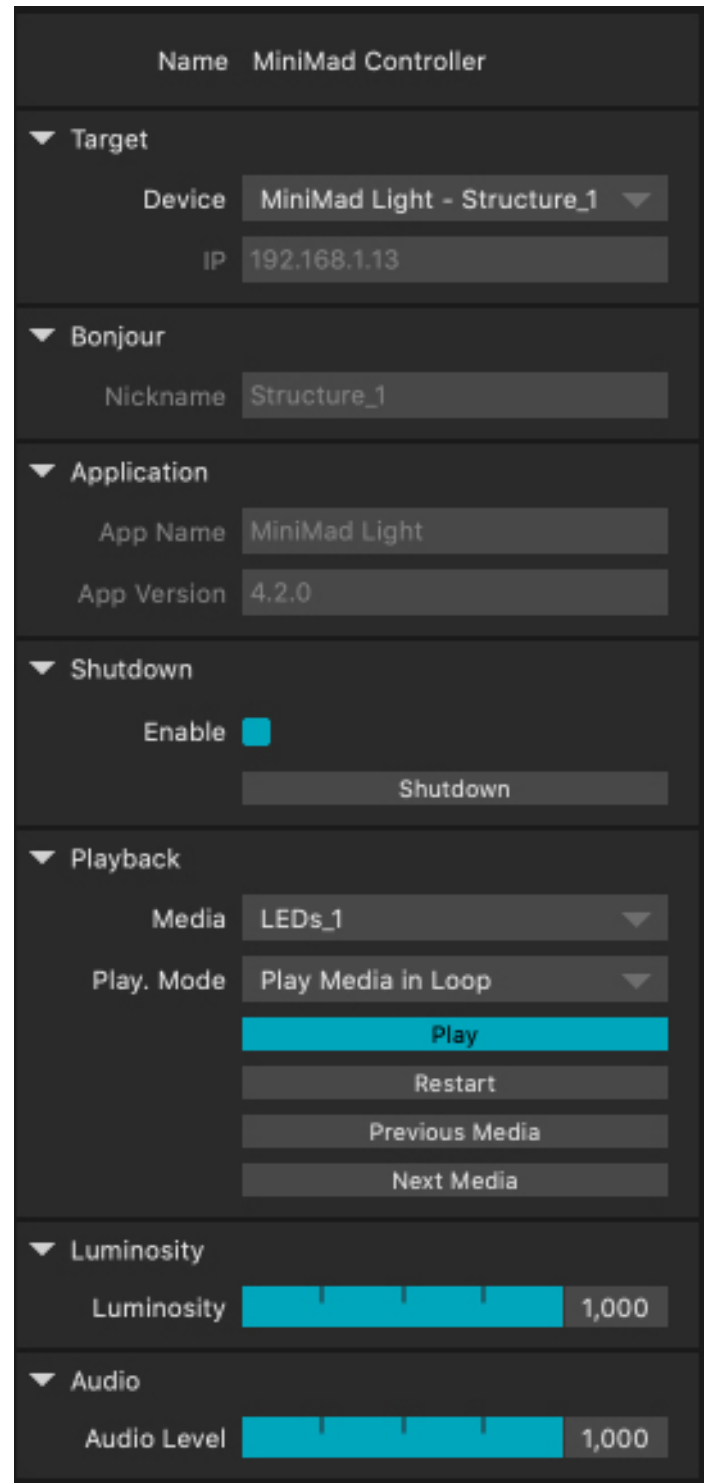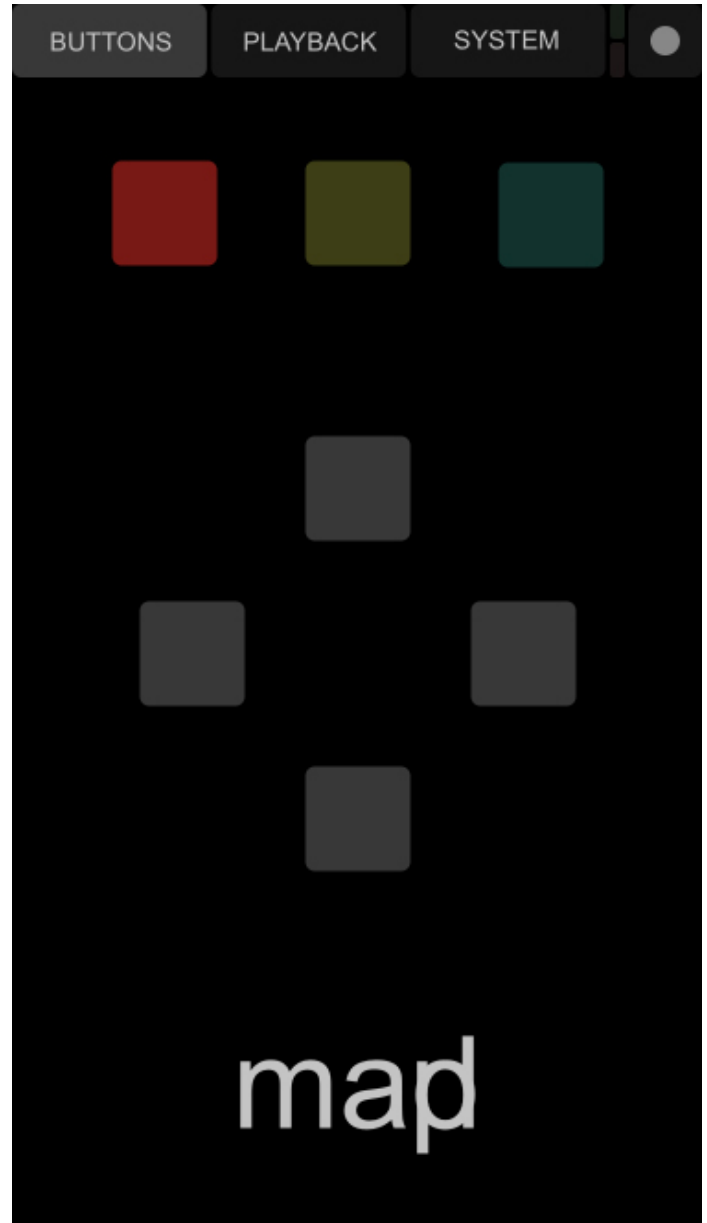
TOUCH OSC

Please refer to the dedicated TOUCH OSC section.

OSD

When connected to an HDMI display, the MiniMad will display some useful information like the software version, ethernet status, playback mode, currently playing sequence, etc. .

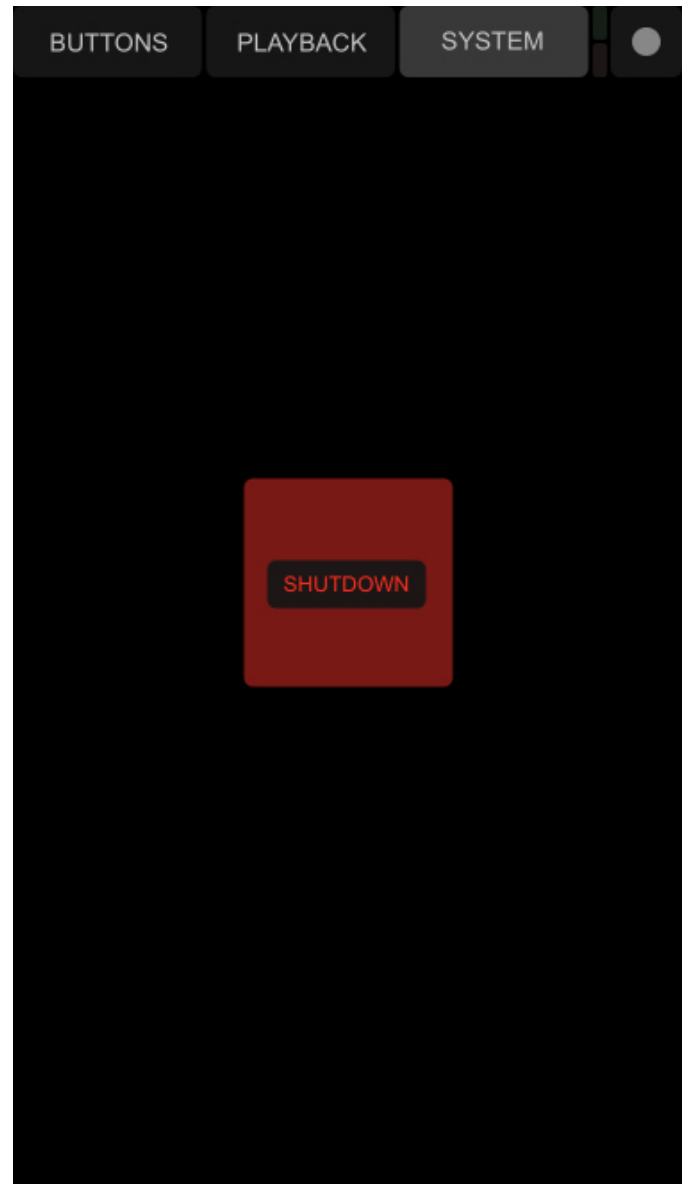## TOUCH OSC

The following TouchOSC layout controls both MiniMad Video and MiniMad Light.

Works exactly like the MiniMad physical buttons
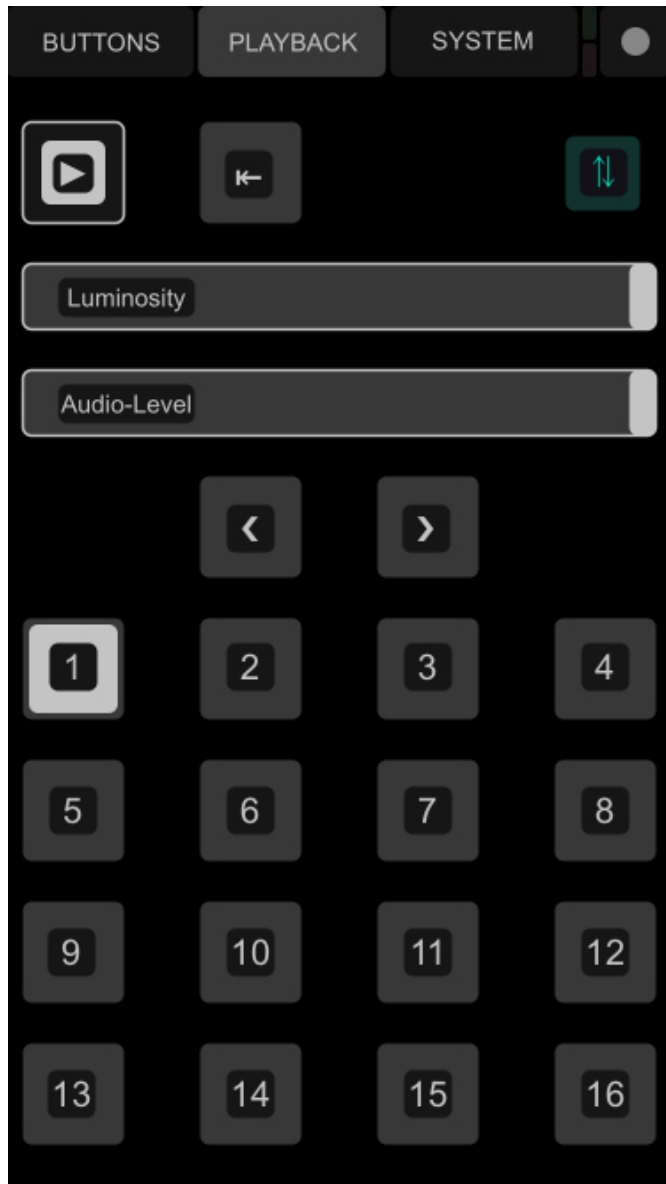
Touch the blue SYNC button on top-right at startup to receive the MiniMad status

Hold "SHUTDOWN" for 2.5 seconds to turn off the MiniMad

The layout is available in [MadMapper Downloads](#).

The [TouchOSC app](#) is required to load and use the layout.

TIPS AND TRICKS

BEHAVIOUR AFTER A POWER CUT

The MiniMad does support power cuts and failures, it will restart by itself once the power is back
However, we advise to make a clone of your SD-card(s) in case a data corruption happens that could prevent the MiniMad from starting.

CONTROL YOUR MINIMAD WITH A MIDI CONTROLLER

MiniMad supports the MicroModul8 controller, in addition to buttons and USB-keyboard.
We might have plans for universal MIDI support for the MiniMad in the future, stay tuned.

EXPORT MATERIALS OR GENERATORS

MiniMad Video can natively play video and image files exported by MadMapper but doesn't come with Materials support. A solution to get them playing on the MiniMad would consist in recording your MadMapper projector's output using Syphon Recorder on Mac or Spout on Windows, then create a new project with a single fullscreen quad displaying you projector's recording, which will be exported to the MiniMad.

INDUSTRIAL GRADE SD-CARD

In some situations where space is limited, the MiniMad units might get hot. If too hot for a long time, data corruption may appear on entry level SD-card. In these situations we advise you to use an Industrial/ Military grade SD card. Such cards will allow you to run your installation for a very long time.
Industrial grade SD-cards are now available on the [garageCube online shop](#).

REBOOT THE MINIMAD

You can reboot the MiniMad by holding the three colored buttons at the same time.

SAVE MODIFICATIONS

No action is required: the MiniMad automatically saves all modifications you do with your mapping, when exiting the mapping mode (RED button).

SCHEDULE THE STARTING TIME OF THE MINIMAD

For now, the easiest way to schedule the MiniMad is to use a power plug with a timer: it will power the MiniMad on and off at desired hours of the day.
Please refer to TURNING THE MINIMAD OFF section to determine if your MiniMad can be safely turned off by cutting the power.

TROUBLESHOOT

STARTUP

After being power-on, the MiniMad will boot and display the "mad" logo for 30 to 60 seconds before starting the media playback.
If the mad logo doesn't appear, please refer to the RESTORE THE SD-CARD section.

Using MiniMad Light, if the sequence doesn't start playing after the boot sequence, first check the MiniMad LEDs and refer to the LED STATUS section, then plug the MiniMad to a HDMI display to get more info and feedback.

LED STATUS

Red

The red LED should always be static when powered and running.

The red LED blinking rapidly means the MiniMad requires activation: plug your MiniMad onto a HDMI display and follow the on-screen procedure. (cf. ACTIVATE YOUR MiniMad SD-CARD).

The red LED blinking slowly or randomly means the MiniMad doesn't get enough current from the power-supply: please make sure you use the official power-supply provided with the MiniMad, and that the connector is not damaged.

Green

The green LED blinks when accessing the SD-card.
The green LED should start blinking rapidely right after the MiniMad has been powered on.

If the green LED is not blinking at startup, you can start by cleaning the SD-card pins using a soft tissue, and make sure there's no dust preventing the internal SD-card reader to access the SD-card by blowing in the reader's cutout.

When shutting down using the embedded buttons, USB keyboard, MiniMad Controller or the dedicated OSC command, the green LED will blink 6 successive times to indicate the device can be electrically powered-off.

RESTORE THE SD-CARD

If you experience difficulties with your MiniMad, the first thing to do is to restore your SD card by following the procedure detailed on page 21 of this guide.
The MiniMad image disk is huge - if the downloaded file doesn't work it's mostly due to a download fail at some point, you'll have to download the image disk again.
By the way, always prefer the SD-card which comes with the MiniMad unit and above all avoid cheap ones.
Plus, if after flashing the SD-card your MiniMad fails to start, it's possible that there's some dusk stuck in the unit SD-card reader - you can try removing the card and blowing air in the slot to clean it.

Also make sure you are using the latest version of MadMapper available in MadMapper Downloads.

INFORMATION

TECHNICAL SPECIFICATIONS

• Raspberry Pi 2 Model B
• 7 buttons control panel
• HDMI output up to 1080p60 (1920×1080 at 60Hz)
• 16 GB MicroSD-card + adapter
• 2 Amps power supply
• Size 9x6x3 cm

IN THE BOX

• 1 x 16 GB microSD-card class 10 installed with MiniMad software and an
  SD-card adapter
• 1 x power supply 100-240V including EU, AUS, UK and US plug
• Size 9x6x3 cm

REGULATORY COMPLIANCE AND SAFETY INFORMATION

WARNINGS

• The MiniMAD shall only be connected to an external power supply rated at 5V dc and a minimum current of 2000 mA. Any external power supply used with the MiniMad shall comply with relevant regulations and standards applicable in the country of intended use.
• This product should be operated in a well ventilated environment and should not be cov- ered.
• All peripherals used with the MiniMad should comply with relevant standards for the country of use and be marked accordingly to ensure that safety and performance requirements are met.

INSTRUCTIONS FOR SAFE USE

To avoid malfunction or damage to your MiniMad, please observe the following:
• Do not expose it to water or moisture.
• Do not expose it to heat from any source.
• Take care whilst handling to avoid mechanical or electrical damage to the enclosure and connectors.

COMPLIANCE INFORMATION

This product is in conformity with the following applicable community harmonised legislation:
• Electromagnetic Compatibility Directive (EMC)
2014/30/EU
• Restriction of Hazardous Substances (RoHS) Directive
2011/65/EU
The following harmonised standards have been used to demonstrate conformity to the EMC directive:
• EN 55032:2015
• EN 55035:2017
The following harmonised standards have been used to demonstrate conformity to the ROHS directive:
• EN IEC 63000:2018

MiniMad is a product from MadMapper Sarl

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mini **mad**

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