



MADRIX AURA Advanced LED Lighting Controller User Guide

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MADRIX AURA Advanced LED Lighting Controller



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Limited Warranty

Five years of limited manufacturer's warranty are granted to the purchaser of this product with regards to constructional fault, material defect, or incorrect assembly the manufacturer has caused or is to be held responsible for. This warranty will be void if the interface is opened, modified, or damaged through inappropriate handling, wrong usage, overvoltage, or damaged through any other cause. All details are available online at www.madrix.com/warranty.

Package Contents

- 1x MADRIX® AURA
- 1x SDHC card (inserted into the device)
- 1x Network cable
- 1x Pluggable screw terminal (2-pin)
- 2x Wall-mount brackets
- 1x This technical manual / quick start guide


Please note: Check the package contents and the condition of the interface after unpacking! Contact your supplier if something is missing or damaged.
Do not use the device if it seems to be damaged!

Please note: A power supply is not included in the package contents.

Safety Instructions

Please follow the instructions below to avoid mishandling, damage to the device, or personal injury:

THE DEVICE WORKS WITH LOW VOLTAGE (DC 5 V – 24 V). DO NOT USE ANY OTHER VOLTAGE!

External USB power supplies: Using non-permissible units poses risk of fire. 5.5 V  500 mA max. output is allowed.

Any connected external power supply needs to be fused according to its output and/or short-circuit proof.

In order to cut off the supply of power completely, you need to disconnect any external power-supply unit as well as USB.

Recommendation: DIN-Rail Power Supply 12 V (MEAN WELL HDR-15-12, DC Output, 12 V, 1.25 A, 15 W, 1 SU, DIN Rail) / Order Number: IA-HW-001027 or DIN-Rail Power Supply 24 V (MEAN WELL HDR-15-24, DC Output, 24 V, 0.63 A, 15.2 W, 1 SU, DIN Rail) / Order Number: IA-HW-001031.



Beware that the interface works with electrical power. Only use the device in dry environments (indoor use). The IP Rating of the device is IP20. Do not use the interface in humid environments and avoid contact with water or any other liquids. Turn off the power if you are not using the device for a long time. Avoid unwanted voltage on the cables at all times. Do not remove any parts from the unit or connect to an ungrounded circuit. Do not connect the unit to LEDs that are switched on. Only connect the unit to lighting fixtures and controllers that are initially powered off. There are no user-reparable parts inside or outside the interface. Repair service lies only within the responsibilities of the manufacturer. If the interface appears to be defective, please contact your dealer. After expiration of the warranty period, you may contact your supplier or the manufacturer to have the unit repaired against payment of an individual service fee if possible. The interface has several ports and slots. Only connect or insert devices, cables, and connectors to the individual ports and slots using connectors of the same type as the port. Do not use inapplicable equipment. This device should be used by professionals. The device is not designed to be operated by non-professionals or children.

Usage

- In general, this device is designed to record the lighting control data it receives over Ethernet network (Art-Net / Streaming ACN). It then plays it back independently from the inserted memory card as a stand-alone unit. It is a hardware interface to be connected towards various types of compatible controllable lights or lighting controllers.

- Do not use the interface for any other, deviating purpose. The device can be connected to and disconnected from USB or Ethernet network during use and without a reboot (Hot Swapping & Plug and Play). Multiple interfaces can be used at the same time.

Technical Specifications

- **Supply Of Power:** DC 5 V – 24 V; over A) 2-pin, pluggable screw terminal or B) 5 V USB
- **Power Consumption:** < 1.5 W (300 mA) during normal operation (500 mA max. fused)
- **Network Protocols:** Art-Net (I, II, 3, 4, incl. ArtSync), Streaming ACN (sACN / ANSI E1.31)
- **RDM Role:** Acts on commands and replies to requests with its own status and sensor data via ArtRdm (RDM Responder)
- **Output:** 2x / 12x / 32x 512 DMX channels output over Ethernet network
- **Recording Input:** 2x / 12x / 32x 512 DMX channels input over Ethernet network
- **Remote-Control Input:** 8x 512 DMX channels received over Ethernet network, or Remote HTTP
- **SD-Card Slot:** Supports SD, SDHC, and SDXC cards (Tested up to 64 GB)
- **Ethernet:** 2x RJ45, Auto MDI-X, daisy-chain support, 10/100/1000 MBit/s
- **Ethernet Switch:** Lookup Table (ALU) for 4096 unicast MAC addresses
- **USB:** 1x port, USB 2.0, type-B female socket
- **Handling:** 8 control buttons, 5 status LEDs (+ 4 network status LEDs)
- **Case:** Non-conductive, V-0 flammability rating (UL94 test method), designed for 35 mm DIN-rails or wall mounting
- **Dimensions:** 86 mm x 105 mm x 49 mm (Length x Width x Height)
- **Weight:** 148 g | 154 g incl. screw terminal, SD card, and wall mounts
- **Temperature Range:** -10 °C to 70 °C (Operating) | -20 °C to 85 °C (Storage)
- **Relative Humidity:** 5 % to 80 %, non-condensing (Operating / Storage)
- **IP Rating:** IP20
- **Certificates:** CE, EAC, FCC, RoHS
- **Warranty:** 5 years of limited manufacturer's warranty

End-Of-Life

This electrical device and its accessories need to be disposed of properly. Do not throw the device into normal trash or household waste. Please recycle packaging material whenever possible.



IP Address And Other Device Information

You will find the following important information on the right side of the device:

- Serial Number
- Default IP (Default and pre-configured IP address) (See p. 7 to reset the device to the default IP address if needed.)

- The QR code includes: Model, Serial Number, Default IP, MAC Address

Compatibility

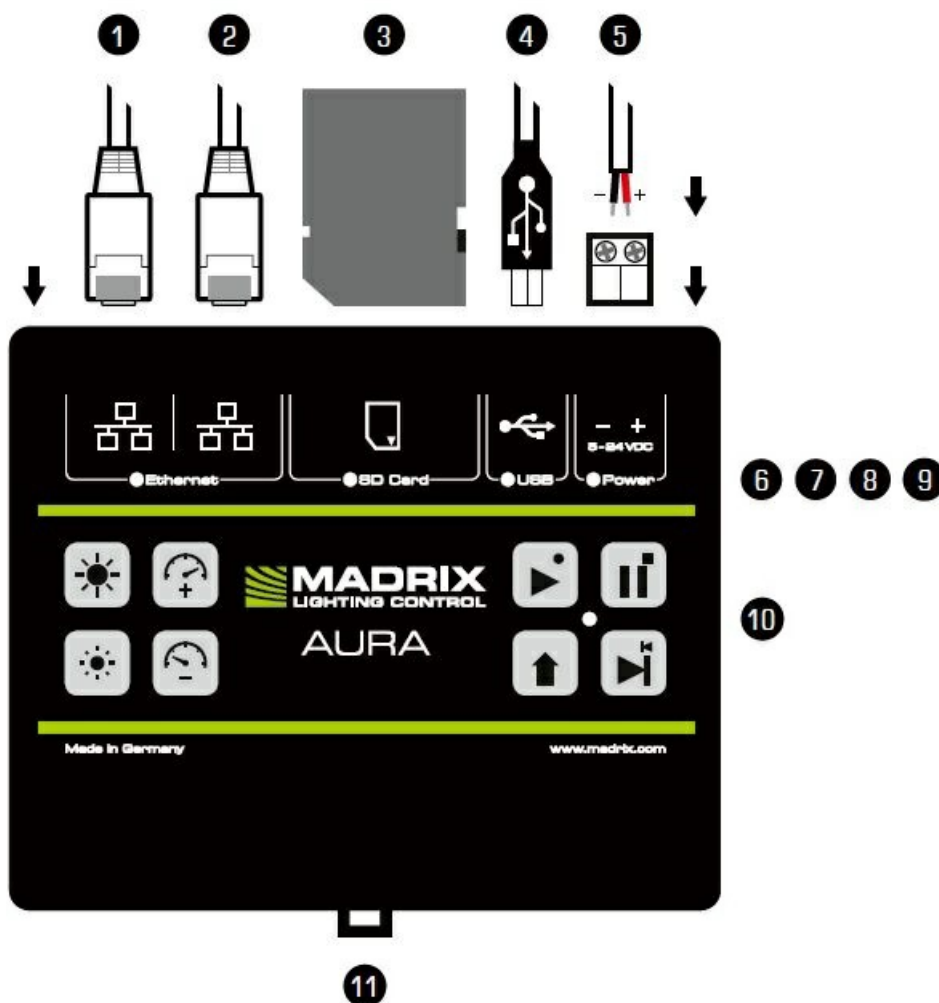
- MADRIX® AURA is a standard network node for Art-Net or Streaming ACN.
- You can use the device with any compatible software, console, or controller.
- See chapter 'Technical Specifications' on p. 4 for detailed information.

Using The MADRIX® 5 Software

MADRIX® 5 is a professional and advanced LED lighting control software. It supports Art-Net and Streaming ACN; among many other communication protocols. It is recommended for usage in combination with MADRIX® AURA to take advantage of a fully integrated system. Record directly from the software onto MADRIX® AURA: In MADRIX® 5, go to 'Preferences' > 'Options...' > 'Devices Network' > enable 'inoage – MADRIX' and go to 'Preferences' > 'Options...' > 'Recording' > 'General' > 'Target' to choose 'Network Records'. Confirm with 'Apply'. For more information about MADRIX® 5, including its minimum system requirements and supported operating systems, visit www.madrix.com.

Please note: In order to record data (effects and visuals) from MADRIX® 5, a MADRIX® 5 software license is required (sold separately)!

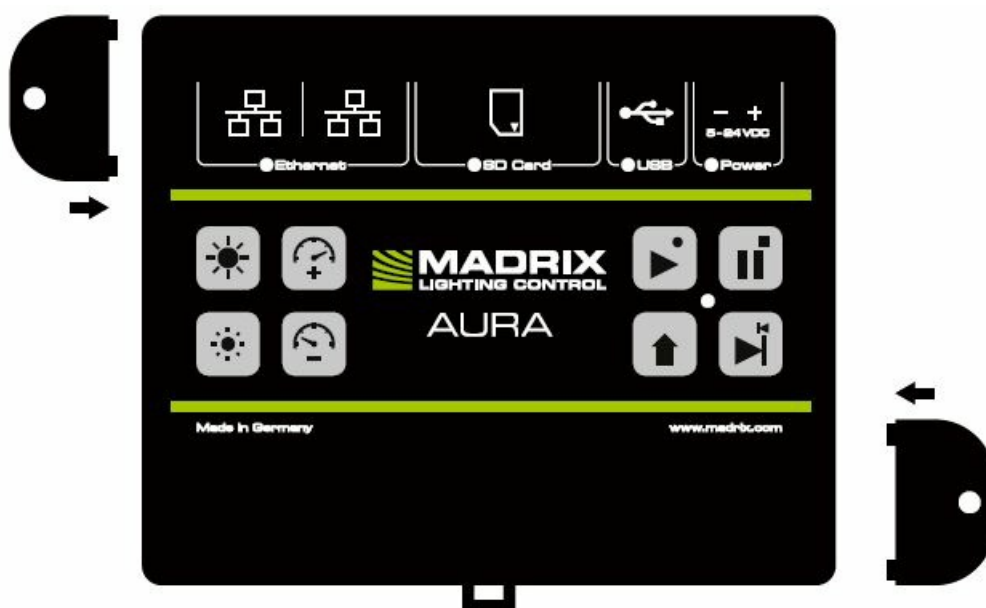
Connectivity



1. Left Ethernet port, incl. 2 status LEDs
2. Right Ethernet port, incl. 2 status LEDs

3. SD-card slot
4. USB port
5. Power
6. Status LED for Ethernet
7. Status LED for SD card
8. Status LED for USB
9. Status LED for Power
10. Status LED for Operation
11. DIN-rail unlocking clip



Please note: Power supply, power cables, signal converters, or lighting fixtures are not included.


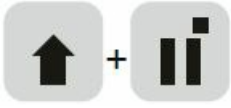



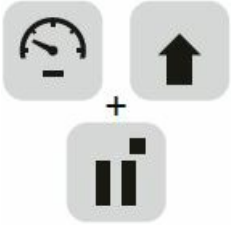


2x Mounting Brackets

- Put each bracket in the pre-drilled holes on the device's left and right side.
- Safely secure the assembled unit only on solid surfaces using screws with $\varnothing = 3.5$ mm.






On-Device Buttons – Part 1


Buttons	Press	Description	
	Short	Plays Current Cue	When Paused
		Plays Current (Last Played) Cue	When Stopped
	Short	Pauses Playback	(The last frame will still be sent.)

	Short	Starts Recording	When Stopped
	Short	Stops Playback Or Recording	
	Short	Skips To Next Cue	
	Short	Returns To Previous Cue	
	Short	Sends Art-Net PollReply	
	During Startup	<p>Resets To</p> <p>Manufacturer Default Settings (Incl. Default I P Address)</p> <p>Make sure to disconnect and re- connect 'Power' and/or 'USB' first.</p>	MADRIX logo blinks for confirmation.

On-Device Buttons – Part 2

Buttons	Press	Description	
	Short	Increases Intensity By 10 %	Up To 100 %
	Medium	Increases Intensity Slowly	

	Long	Increases Intensity Quickly	(MADRIX logo blinks if maximum has been reached.)
	Short	Decreases Intensity By 10 %	Down To 0 % (MADRIX logo blinks if minimum has been reached.)
	Medium	Decreases Intensity Slowly	
	Long	Decreases Intensity Quickly	
	For 3 Seconds	Resets Intensity To 100 %	
	Short	Increases Speed By 10 %	Up To 1000 % (MADRIX logo blinks if maximum has been reached.)
	Medium	Increases Speed Slowly	
	Long	Increases Speed Quickly	
	Short	Decreases Speed By 10 %	Down To 1 % (MADRIX logo blinks if minimum has been reached.)
	Medium	Decreases Speed Slowly	
	Long	Decreases Speed Quickly	

	For 3 Seconds	Resets Speed To 100 %	
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Description Of Status LED Codes

STATUS	STATUS LED POWER
<i>Off</i>	Power not connected. → The device has no power.
Green on	Connected to power. → The power is on.
Green blinking	Bootloader activated. → Reset device / upload firmware.

STATUS	STATUS LED USB
<i>Off</i>	USB not connected.
Green on	USB connection established.

STATUS	STATUS LED SD CARD
<i>Off</i>	No SD card inserted.
Green on	SD card inserted.

STATUS	STATUS LED ETHERNET
<i>Off</i>	Ethernet not connected.
Green on	Ethernet connection established.

STATUS	STATUS LEDS ETHERNET PORTS
<i>Off</i>	No network connected.
Green on	1000 MBit/s connected.
Green blinking	Sending or receiving data. → The Ethernet port works.
Orange on	100 MBit/s connected.
Orange blinking	Sending or receiving data. → The Ethernet port works.
Gr. + Or. on	10 MBit/s connected.
Gr. + Or. blinking	Sending or receiving data. → The Ethernet port works.

STATUS	STATUS LED OPERATION
<i>Off</i>	No playback or recording active / playback stopped.
Green on	Playback paused.
Green blinking	Playback from SD card.
Red blinking	Recording currently active.

STATUS	MADRIX LOGO
On	Normal status.
Fading	Changing intensity or speed.
Blinking	Min./max. intensity/speed reached or Highlight Device active.

Device Configuration (Step 1)

The built-in web configuration grants access to all settings of MADRIX® AURA.

Step 1) Put the device into operation by supplying power.

Step 2) Connect MADRIX® AURA and your computer to the same network.

Step 3) Assign correct network settings for your computer in the operating system. (Recommended default settings:

IP address 10.0.0.1 / Subnet mask 255.0.0.0)

Step 4) Open your web browser and enter the IP address of MADRIX® AURA. (You can find the default IP address on the right side of the device.)

Step 5) The built-in web configuration will be launched. You will now have access to all settings.

Step 6) Start by configuring the 'Settings – Device Settings' section.

SD Card (Step 2)

MADRIX® AURA uses a memory card to run automatic light shows without the need for a computer. The integrated SD-card slot is located at the top of the device (see p. 6). It supports SD, SDHC, or SDXC cards (tested up to 64 GB). SD cards need to be formatted with FAT32 File System and 64 kilobytes Allocation Unit Size.

- Recording length AURA 2 – 64 GB: ~526 h (33 FPS) / ~347 h (50 FPS)
- Recording length AURA 12 – 64 GB: ~85 h (33 FPS) / ~57 h (50 FPS)
- Recording length AURA 32 – 64 GB: ~32 h (33 FPS) / ~21 h (50 FPS)

Please note: The package contents include one SD card. The card is already inserted into the device when shipped and pre-loaded with a factory preset.

Inserting The SD Card

Hold the SD card as shown on the device. The canted edge must point towards the device and the Ethernet ports. Now, carefully push the SD card into the SD card slot until it clicks and snaps into its position, at which point you let it go.

Removing The SD Card

Slowly and carefully press the already inserted SD card into the device a little further. Then, release the pressure. The implemented mechanism will automatically release the SD card, which will then stick out from the slot. Use two fingers to pull the card out of the slot.

Live Recording (Step 3)

- Create scenes by recording them via:
- The MADRIX® 5 Software and by using Network Records (see p. 5),
- The web configuration ('Control', 'Timers', or 'Remote') (see p. 10),
- The on-device buttons (see p. 7).
- You may need to configure the 'Recording – Network Recording Settings' section of the web configuration. By default, MADRIX® AURA receives Art-Net on universes 1 – 2/12/32.
- Records that are saved on the currently inserted SD card are listed in the 'Scenes – Scene Files' section of the web configuration.
- Based on the FAT32 file system, files on the SD card can only have a maximum file size of 4 GB. Should a recording process create such large files, MADRIX® AURA will automatically create new files and continue recording, and add a second index number to the file names in addition to the original index.

Please note: Make sure to send control data to the device before you start a recording process (Art-Net or

Streaming ACN)!

Time-Controlled Shows & Cue Lists (Step 4)

- Use the 'Cue List – Cue List Editor' section of the web configuration to organize scenes into a playlist with cues to create a show that can automatically be played back.
- Recorded scenes are automatically added to the cue list via default settings (as long as the MADRIX® AURA remains powered on). Make sure to save the cue list if you want to keep this configuration.
- In addition, use the 'Timers – Timer Settings' section of the web configuration in order to create a fully time-controlled show.
- Make sure to 'Save' the configurations to SD card (Floppy-Disk button).

Central Hub (Step 5)

MADRIX® AURA outputs Art-Net or Streaming ACN.

Simply connect compatible, fully operational MADRIX® hardware interfaces or third-party nodes over Ethernet network to provide the correct output for your lighting fixtures.

- MADRIX® LUNA – Connect to for output to convert to DMX512 over 5-pin XLR.
- MADRIX® STELLA – Connect to for output to convert to DMX512 over 3-pin, pluggable screw terminals.
- MADRIX® NEBULA – Connect to for output to convert to SPI LED ICs.
- MADRIX® ORION – Connect to for input to control MADRIX® AURA remotely.
- You may also need to configure the 'Playback – Network Playback Settings' section of the web configuration.
By default, MADRIX® AURA sends Art-Net in Broadcast Mode on universes 1 – 2/12/32 with optimized frames.

Stand-Alone Playback (Step 6)

Start playback via:

- The 'Control – Live Control' section of the web configuration (see p. 10),
- The on-device buttons (see p. 7),
- A fully time-controlled show via 'Timers – Timer Settings' (see p. 11),
- Automatic playback after startup via the 'Settings – Device Settings' >
- 'Startup' > 'Autoplay' section of the web configuration (see p. 10),
- Remote control and by triggering commands from a distance (see below).

Remote Control

You can trigger MADRIX® AURA remotely via HTTP commands and the built-in web server or use Art-Net or Streaming ACN. Use commands, such as:

- 'Cue', 'Next Cue', 'Previous Cue',
- 'Play', 'Pause', 'Stop', 'Record',
- Intensity', 'Speed', 'Intensity Group 1 – 8'.
- Set up the 'Remote – Remote Control' section of the web configuration.

Master-Slave Synchronization

Manage large projects simply by connecting several devices to the same network. You can also use MADRIX® AURA 2, 12, and 32 together in any combination. In addition, the entire group can automatically be synchronized.

- Set up Master-Slave Synchronization via the 'Settings – Device Settings' > 'Synchronization' section of the web configuration.
- The 'Sync. Group' assigns devices to a specific group in which they operate (you can set up different clusters in the same network). A 'Master' dictates the playback. 'Slaves' can optionally follow intensity, intensity groups, and speed.
- Devices that should communicate with each other should be assigned to the same sync. group and physically connected to the same Ethernet network.
- All synchronized devices need to run the same firmware version.
- Since timers on the Master affect playback, intensity, intensity groups, and speed, Slaves react accordingly based on their synchronization settings.
- Correctly configure and assign all universes in your data sender as well as the recording universes and playback universes of your AURA devices.
- Simply record data (scenes) simultaneously on all devices. The 'Network Record' function of MADRIX® 5 makes this incredibly easy. When using other senders, you can start the recording process on the Master. Slaves will automatically start recording as well.

Special Commands

You can use the 'Settings – Device Settings' > 'Special Commands' section of the web configuration to execute specific, helpful functions. Apply your selection via 'Set'.

- 'Reboot System'
- 'Reset To Factory Default Settings'
- 'Format SD Card'

Daisy-Chain Support

MADRIX® AURA features two separate Ethernet network ports. Either one is fully functionally for IN and OUT. They can also be used for the data connection in daisychain manner without using a separate network switch or router.

We recommend to connect a maximum of

- 160x MADRIX® AURA 2,
- 26x MADRIX® AURA 12, or
- 10x MADRIX® AURA 32 after one another in a row without any additional devices connected to this network line.

Status Indicators (ArtAddress)

MADRIX® AURA supports the ArtAddress feature of Art-Net. The device will operate as desired if the correct commands are sent to it.

Mute Status Indicators

Switches off and disables all built-in status indicators of a device over Art-Net (ArtAddress > AcLedMute).

Operate Status Indicators Normally

Allows the built-in status indicators of a device to operate normally again, after having them switched off (ArtAddress > AcLedNormal).

Highlight Device

Activates the highlight mode (ArtAddress > AcLedLocate). The corresponding status indicators of the selected interfaces will flash for a better identification or tests. This makes it easier to see them on site/stage. It considerably speeds up the procedure of programming or testing the selected interfaces.

Surge Protection

The device is protected in the following way:

- All ports feature surge protection against static discharges.
- The Power port is protected against voltage reversal at 5 V – 11 V for several minutes.
- The Power port is protected against voltage reversal at 12 V – 24 V indefinitely.
- The Power port is protected against short DC overvoltage up to ~60 V.

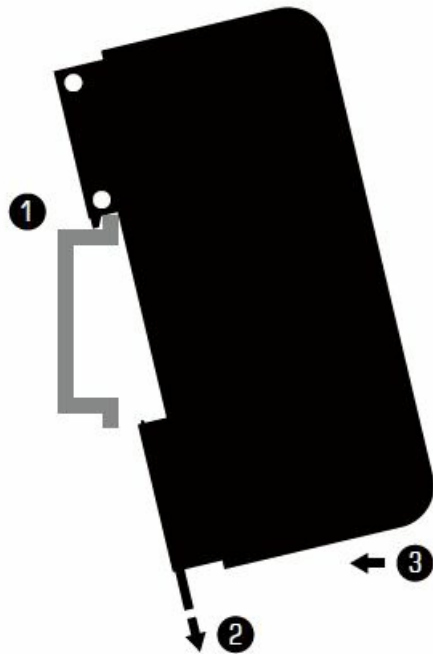
How To Update The Firmware

- It is highly recommended to always update devices to the latest firmware.
- MADRIX® HARDWARE MANAGER is a separate software for basic device configuration and to perform firmware updates. It is available for download from www.madrix.com and requires an active internet connection to download firmware files.
- Step 1) Connect devices to your computer over USB or network, but not both!
- Step 2) Make sure to stop sending control data to the devices!
- Step 3) Start the MADRIX® HARDWARE MANAGER Software and navigate to the tab 'Devices' > column 'Firmware' and select the new firmware from the list for your devices.
- For more information, see the MADRIX® HARDWARE MANAGER User Manual.

Configuration Using The MADRIX® HARDWARE MANAGER Software

- Step 1) Connect devices to your computer over USB or network, but not both!
- Step 2) Make sure to stop sending control data to the devices!
- Step 3) Start the MADRIX® HARDWARE MANAGER Software.
- Step 4) In MADRIX® HARDWARE MANAGER, go to the tab 'Devices' and confirm or change the network settings and any other settings for your devices as required.
- On a selected device, use Right Mouse Click > 'Open Device Configuration Via HTTP...' to open the web configuration through a web browser, as explained on p. 10.
- On a selected device, use Right Mouse Click > 'Restore Factory Default Settings' to perform a reset to factory default settings.
- Go to the tab 'External Storage' to access and manage the SD card and its storage, including upload and download of scene files.
- For more information, see the MADRIX® HARDWARE MANAGER User Manual.
- The software is available for download from www.madrix.com.

How To Install On DIN-Rails

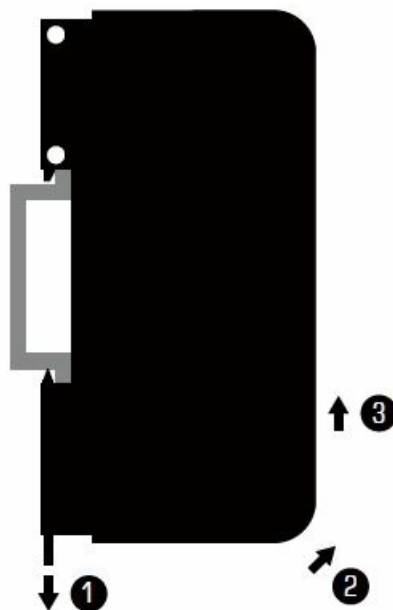


Mounting (Pictured Left)

- Step 1) Hook the device in an angle onto the upper edge of the rail.
- Step 2) Pull the unlocking clip.
- Step 3) Press the lower part of the device against the rail and let the clip snap into position.

Unmounting (Pictured Right)

- Step 1) Pull the unlocking clip.
- Step 2) Lift the lower part of the device from the rail in an angle.
- Step 3) Lift the device from the rail.



Further Information

- Digital documentation files, including this technical manual, the general user manual, as well as the datasheet are available online at help.madrix.com.

- They are also downloaded automatically by the MADRIX® HARDWARE MANAGER
- Software. Go to the tab 'Devices' > Right Mouse Click on a selected device >
- 'Show Documentation Directory...' to access them.

Technical Support

- In case of further questions concerning handling of MADRIX® AURA or technical problems, use the following resources for troubleshooting:
- Read the MADRIX® AURA User Manual
- Contact your dealer
- Have a look at the website and online forum at www.madrix.com.
- You can also directly contact info@madrix.com.

FAQ

What do the blinking LEDs on the device mean?

- Please read the chapter 'Description Of Status LED Codes' (see p. 9).

How can I change the IP address of the device?

- You can use the built-in web configuration tool (see p. 10).

The current IP address cannot be reached. What can I do?

- You could perform a reset to factory default settings (see p. 7).

Does the device support RDM?

- Yes. The device can provide its own status and sensor data via ArtRdm (acting as RDM Responder).

Is it possible to use more than one MADRIX® AURA?

- Yes. You can use MADRIX® AURA 2, 12, and 32 together in any combination. Art-Net or Streaming ACN are recommended for large projects by connecting multiple devices to a switch (1 GBit/s) via suitable components to create a network or use the built-in daisy-chain support. Make sure to set up the Master-Slave Synchronization .

Where can I find the latest firmware update?

- Use the MADRIX® HARDWARE MANAGER Software .

Can I use other controllers to send data apart from MADRIX® 5?

- Yes. MADRIX® AURA is a standard network node for Art-Net and Streaming ACN.

- You can receive data from other compatible software applications, consoles, and controllers.

Do I need a MADRIX® AURA and a MADRIX® 5 License on a MADRIX® KEY?

- If you want to record from MADRIX® 5, yes. The MADRIX® 5 software license is necessary and sold separately. Playback from the SD cards works without one.

Can I repair MADRIX® AURA myself?

- No. Do not attempt any repairs. Any attempt will void your warranty (see p. 2)!

What can I do if my unit does not work anymore?

- Please contact your dealer or supplier if the device seems to be defective.

Thank you for purchasing MADRIX® AURA!

Please read this manual carefully and thoroughly before using MADRIX® AURA. Make sure that you fully understand all information. This MADRIX® AURA Technical Manual is written in English and German. (Dieses Handbuch wurde in englischer und deutscher Sprache verfasst.) Developed and made in Germany.

Imprint

- inoage GmbH
- Wiener Straße 56
- 01219 Dresden
- Germany
- Web www.madrix.com
- E-mail info@madrix.com
- Phone +49 351 862 6869 0

Managing Directors: Christian Hertel, Sebastian Pinzer, Sebastian Wissmann

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E02, 05, AURA, AURA Advanced LED Lighting Controller, Advanced LED Lighting Controller, LED Lighting Controller, Lighting Controller, Controller

References

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