

# FIELD ATMOSPHONIA

BY RAFAEL LOZANO-HEMMER



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## **GENERAL IMPORTANT INFORMATION**

# FIELD ATMOSPHONIA (2020)

BY RAFAEL LOZANO-HEMMER

## Technique

Custom-made speakers and electronics, LED lights, computer, microSD cards.

## Description

“Field Atmosphonia” is a sound and light environment featuring 3,000 audio channels playing on custom-made speakers with LED lights. The project is a soundscape that comes in waves of complex polyphonies that emerge from the array of field recordings. The piece is presented in a large room, with the recordings changing typology gradually along the field of speakers: samples include wind, water, fire, ice, over 200 types of insects, over 300 types of birds, bells, metronomes, bombs and so on.

This installation is part of the series of pieces investigating the perception of thousands of simultaneous sounds each playing in a different dedicated loudspeaker, —what Lozano-Hemmer calls “speaker as pixel”. A pixel is a point of light varying in intensity and spectral frequency: coordinated with its neighbors the perception of pixels gives rise to images. The question is if we have thousands of sound sources in an array, can we see the emergence of a new perceptible complexity beyond the expected cacophony? (short answer: yes).

## Operation

Please refer to [Appendix I - Installation](#) for detailed system information and wiring diagram.

1. Ensure all elements are connected to their AC power source.
2. If the computer is set to a power ON/OFF schedule then the artwork will turn ON/OFF automatically at the set times.
3. It is also possible to manually turn the computer ON/OFF via the computer’s power button.



4. If the piece doesn't start within two minutes, try turning on the computer again. If it still doesn't turn on, then hold the power button all the way down for 10 seconds. Then, wait at least three seconds, then press the power button all the way down for one second, and you should be up and running again.
5. The software will start automatically after that. Alternatively a "start of day" OSC network command can be sent.

## **Maintenance**

During the running of the piece, as often as possible, walk around and check:

- that all LED strips light up correctly and do not exhibit any extreme flickering;
- that none of the speakers produces any harsh distorted sounds due to corrupted SD-Cards;
- check interactive tracking is still functional and well aligned.

For shows of a longer duration or permanent installation, you will want to dust the speakers from time to time. Please use compressed air to dust them off. Alternatively, an antistatic duster could be used, however, it should be done with care around the ethernet cable connectors to prevent disconnecting the speaker. Also be careful around the led strips as these are glued onto the speakers, a duster catching onto a LED strip could pull it off from the speaker.

## **Placement Instructions**

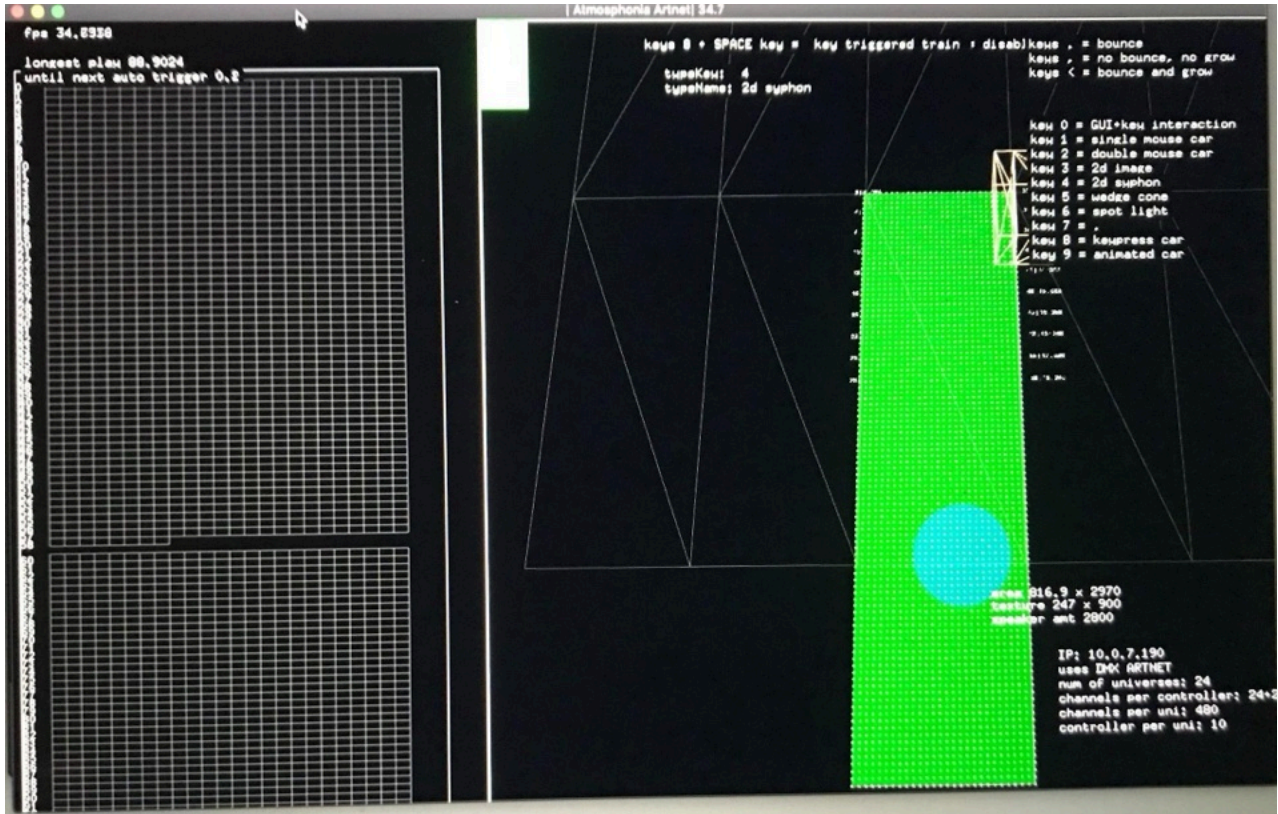
The ceiling height of the exhibition space should be at least 6m (20'). The floor is preferably waxed concrete or another reflective material. The preferred speakers' hanging height is 3-4m (10-13') away from the ground.

The positioning and distribution of speakers should be discussed with the studio, to establish the best layout for the exhibition space.

# DETAILED TECHNICAL INFORMATION

## Normal Software Operation

The computer controls the whole show from three apps. You need all three apps running for the piece to work perfectly. The apps will open when the computer is restarted / turned ON.



This is the Main Controller App - atmosphonia.app.

use these keyboard key to manually trigger stages

```

OSC to syphonServer, localPort:6667, remotePort:6666
OSC to Atmosphonia, localPort:6665, remotePort:6664
key [0] = start day
key [1] = go to beginning
key [2] = go to perlin noise
key [3] = go to performance
key [4] = go to day end

```

listening for on port 5001

osc

- enableOSC
- debug
- show history
- oscInPort: 5001

scene: drops scene  
active: 0  
start: 00:00:00:000  
end: 00:00:00:000

scene: perlin scene  
active: 0  
start: 00:12:06:000  
end: 00:12:06:000

scene: performance scene  
active: 0  
start: 00:14:06:000  
end: 00:14:06:000

scene: end day  
active: 0  
start: 00:20:00:000  
end: 00:20:00:000

gui\_admin

- showGui
- startShow
- endShow
- adminKeys
- showMode: 0
- relaxed minBri: 50
- relaxed maxBri: 140
- normal minBri: 0
- normal maxBri: 200

Timeline

00:00:00:000 00:03:00:000 00:06:00:000 00:09:00:000 00:12:00:000 00:15:00:000 00:18:00:000

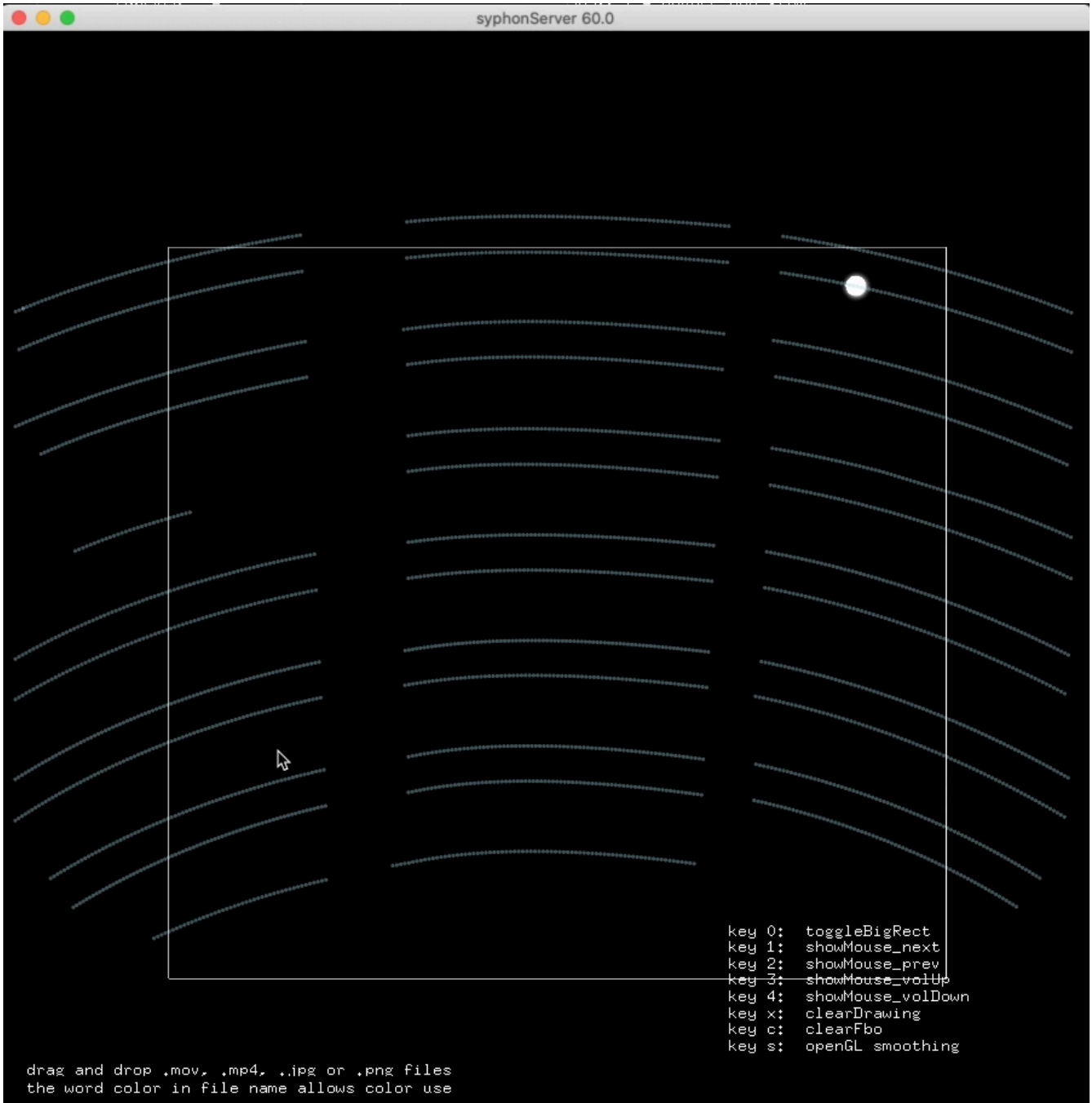
vehides

- showVehicles
- rainDrop\_0
- bShowDrop
- rainDrop\_1
- bShowDrop
- rainDrop\_2
- bShowDrop
- perlinCloud
- usePerlin
- Atmosphonia
- objectType: 0
- blackThresh: 21
- allSpeaker
- pauseAll
- playPauseAll
- bResetAll
- bResetPauseAll
- bNextAll
- bVolUpAll
- bVolDownAll
- bVolFadeUpAll
- bVolFadseDownAll
- bResetAllAndVOLUP
- minBrightness: 0
- maxBrightness: 0
- enableAudio

here you can change speaker brightness

This is the timeline App - oscGUITimeline.app.

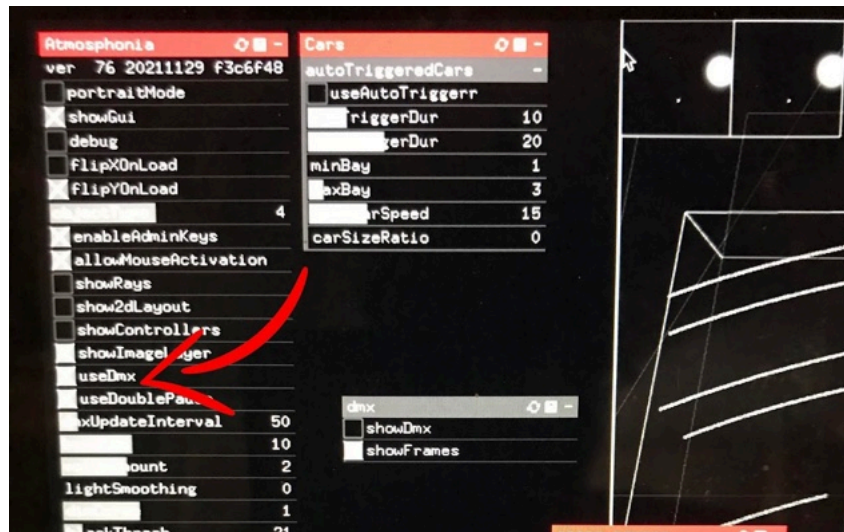




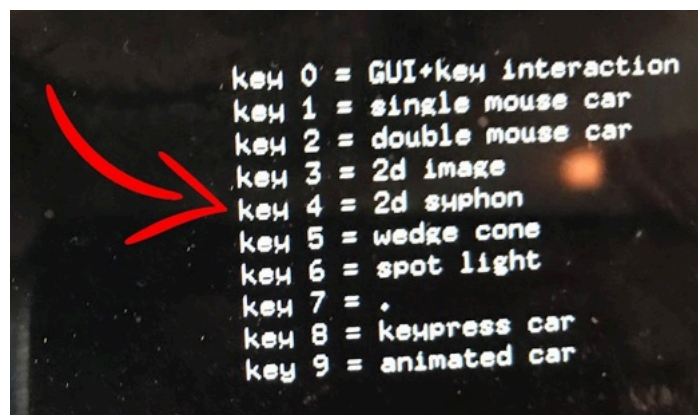
This is the syphon APP - atmosponia\_syphonServer.app.

## Manual Software Calibration

Each program has a GUI function that can be accessed by pressing in the G key on the keyboard. Be very careful when opening this option, it controls everything and if the GUI is shut it will save the changes made to it.



The function you only ever need to use is the box "Use DMX", which will enable DMX output from software to the speaker's controllers.



Keyboard key "4" will start to enable the app to receive animation data from the Syphon animation app.

## **Preliminary Troubleshooting Steps**

### **The lights and or the sound aspect of the artwork is out of sync.**

The softwares' launch order is important for this artwork: delayOpen.app software manages this for you. A computer reboot is always a good way to ensure a clean launch prior to further investigation. The different softwares just be launched in the following order: atmosponia.app, atmosponia\_syphonServer.app and, finally, oscGUITimeline.app.

### **If a speaker has lights on and no sound, the problem might be the SD card.**

Check if there is no SD card in the speaker. If there is a SD card, remove the SD card (Might need tweezers) and put the card back into the speaker.

If the SD card works, the sound will play. If there is no SD card, check the label on the speaker and refer to the list of sound profiles to find the sound you need to replace.

If a speaker is replaced, take the SD card out of the speaker being replaced and put it in the new speaker. If there is a SD card in the replacement speaker already, please remove it and put it in a safe, non-static bag or container.

### **If a LED is off or dim**

Check if the 2 power pins are crossed. If they are not, try switching the cable in the speaker with the one next to it. If the LED stays off, the issue is in the driver and not the speaker itself.

If the LED strip stays dim but not off, the issue is in the driver and not the speaker itself.

If the issue is the speaker and not the cable, replace the speaker.

Make sure the cable of the speaker is plugged into its controller firmly. Tug on it, it should hold firm, if you slip out, reset the clip to hold the cable more firmly or if the clip is broken then you should apply a clip replacement to it.

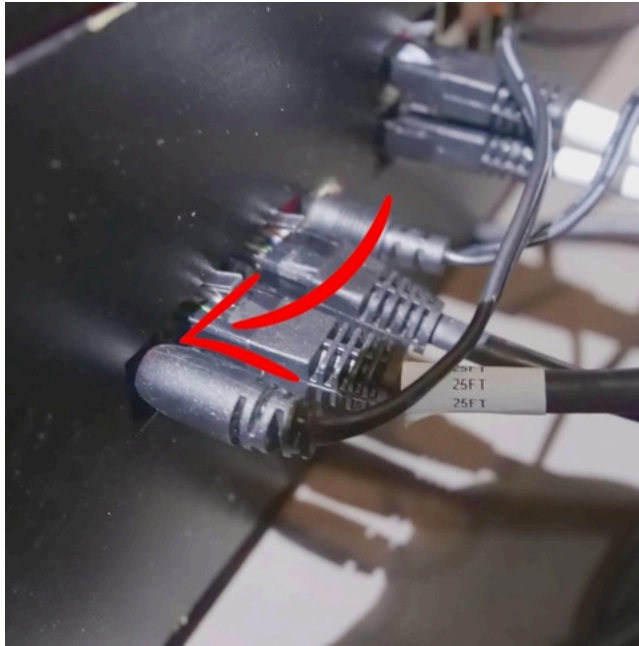
### **A section or single speaker lights are dim**

If a light is out or dim and it is NOT the speaker itself causing the issue, the DMX light control board is the issue and needs to be replaced. Turn off the power to do this and ensure all pins are properly in place before returning the power to the unit.

### **A whole section is off**

If there is a whole section of the piece off (LED or Sound), in the number of 12, then a control box is not receiving power or data. The power of the boxes are received by cables that run on the outside of the control boxes then plugs into it from there.

The data is also received from ethernet connections made between control boxes from outside plugging ethernet connections, confirming the proper function and plugging of these cables and if they need to be replaced.



### **A section is playing sounds with no lights**

The controller needs to be power-cycled to ensure that old commands can be cleared and allow for the controller to newly receive commands. This can be achieved by either pressing the central switch of the plug or physically unplugging the cable that runs from the top of the box. In either case, let the unit be without power for 3 - 5 seconds before returning power.

### **A section of lights are mirrored or out of line**

The controller might share a dip switch with another in the Universe, please check all dip switches are set properly.

## Troubleshooting Assistance

Prior to contacting the Antimodular Studio with a problem about your artwork, please ensure that you went through the preliminary troubleshooting steps outlined in the previous section.

**The troubleshooting process will vary depending on the problem. In order to make the process easier, it is recommended that you collect and send the following information to the studio:**

- Date and time when the problem first happened;
- Description of the problem;
- Actions taken so far and conclusions;
- Detailed photographs (or videos) displaying the problem;
- Detailed photographs (or videos) of the suspected faulty component;
- Detailed photographs (or videos) of the whole artwork and its surroundings;
- Personnel involved.

## **Support (Contact Us)**

If you would like support for the piece, please feel free to call Lozano-Hemmer's studio in Canada:

Antimodular Research  
4462 rue Saint-Denis  
Montréal, Québec, Canada  
H2J 2L1  
Tel 1-514-597-0917  
info@antimodular.com  
www.antimodular.com

## **APPENDIX I - INSTALLATION**

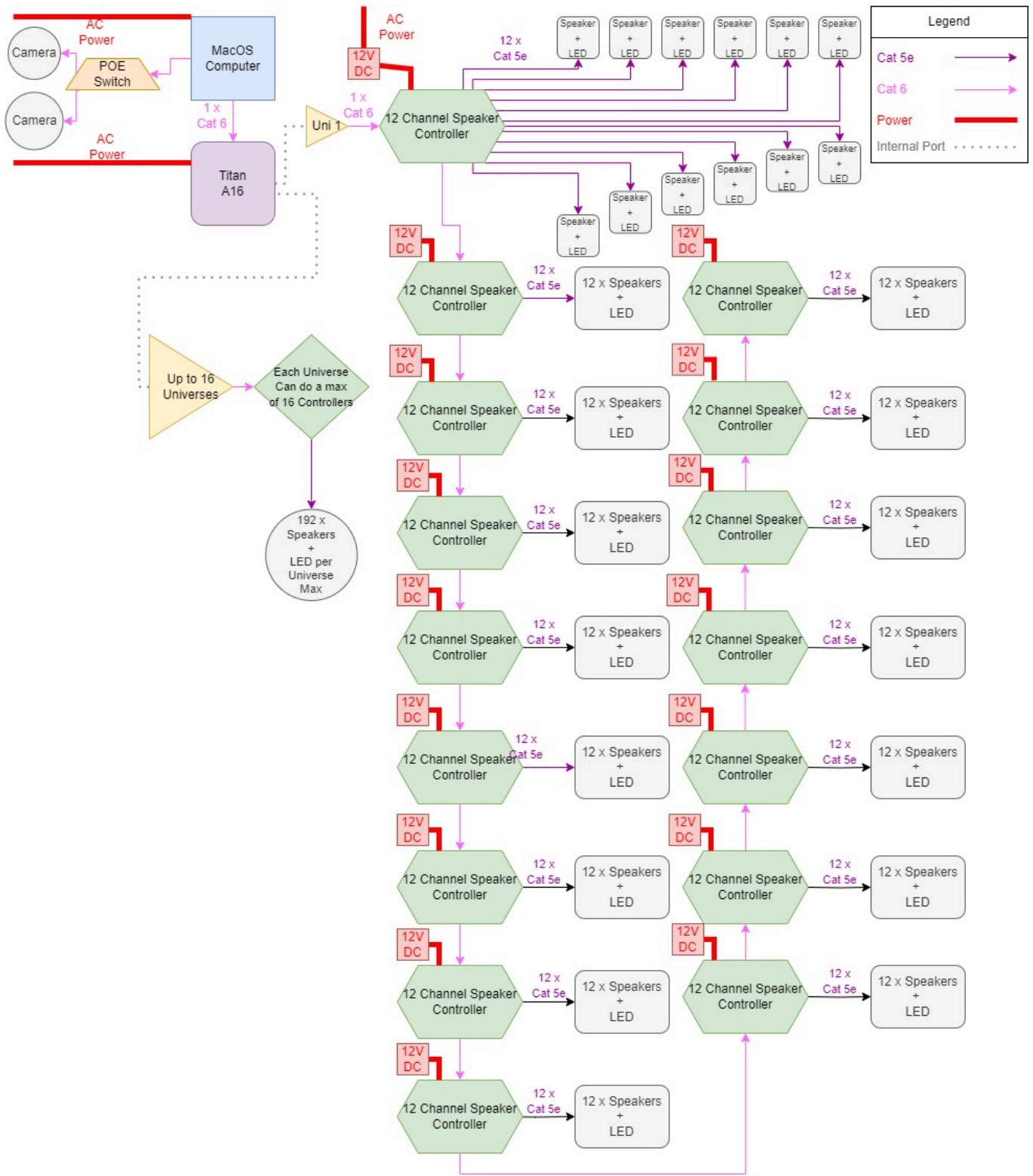
## Description of Components

This artwork requires the following components:

Component	Description
<b>Speaker with onboard LED strip</b>	Custom-made speaker that plays back a few compositions. Track selection and play state depends on the software commands.
<b>microSD card</b>	Storing the different compositions specifically picked for a specific speaker.
<b>Ethernet cable</b>	Carries signal from computer to controllers, then power and signal from speaker controller to speaker.
<b>Speaker controller</b>	Sends over the power and playback signals to the speakers.
<b>DMX controller</b>	Carries over the playback commands from the computer to the controllers.
<b>Computer</b>	Apple MacMini that runs the software that controls the whole artwork rendition and sends signals to the Artnet to DMX controller.
<b>Network Switch</b>	Allows transmission of the camera feed to the computer. Since the cameras provided are powered over ethernet, such a feature would be necessary for this device.
<b>Ethernet cable</b>	Carries signal from camera(s) to computer.
<b>Camera(s)</b>	Used to detect movement in the exhibition space.
<b>USB to ethernet adapter</b>	Allows the computer to connect to an internet-enabled network but also interface with the Storm 24 in tandem.
<b>16-port Ethernet to DMX converter (Titan16)</b>	Carrier the ARTNET signal to the DMX512 that controls the dimmers. Each port is numbered and that number corresponds to the universe number.
<b>Monitor</b>	Used to control and display the software. Monitor can be shown or hidden.
<b>Video cable</b>	Connects the computer to the display.



# Wiring Diagrams and Connections



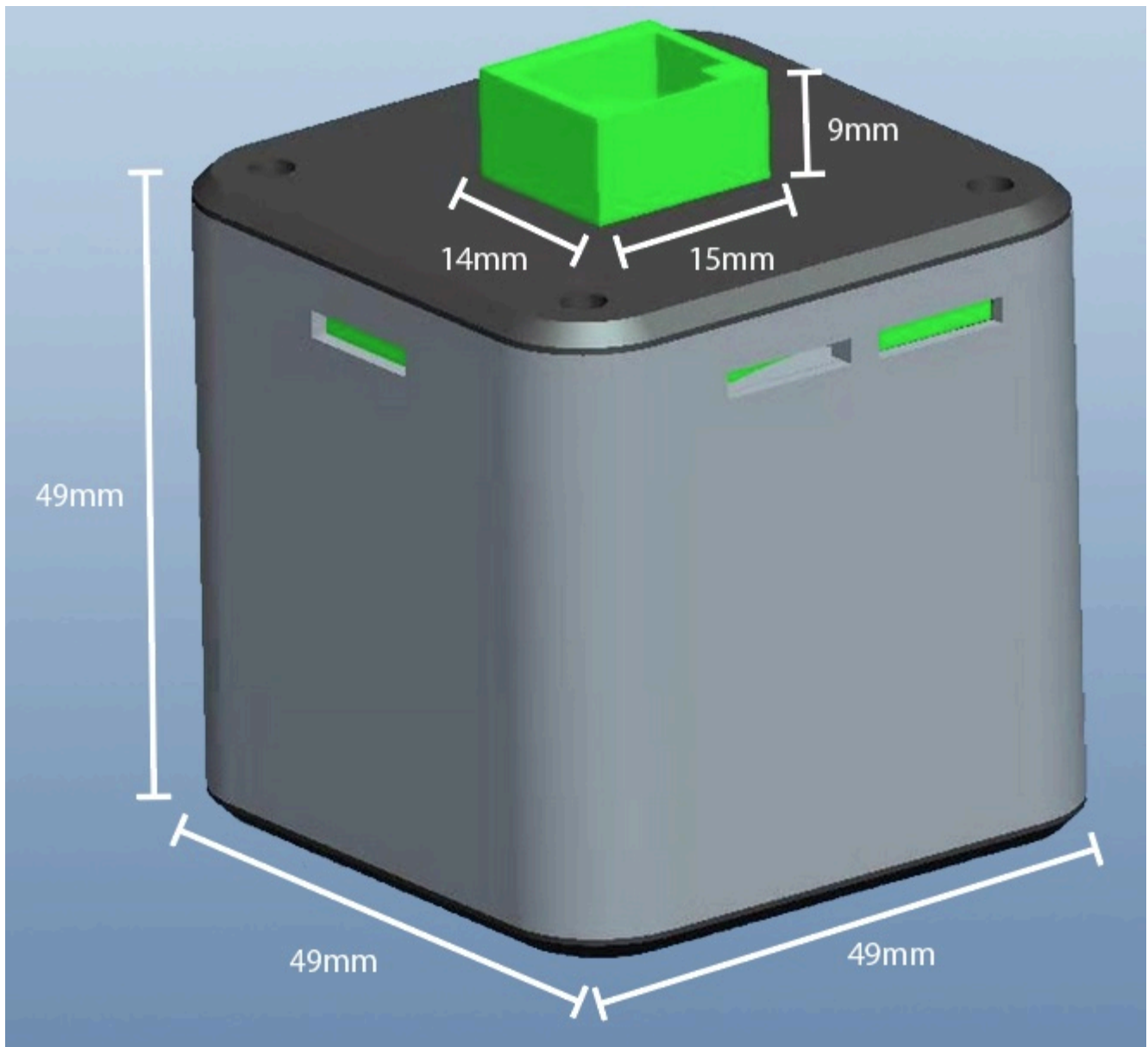
General connections of the whole artwork.

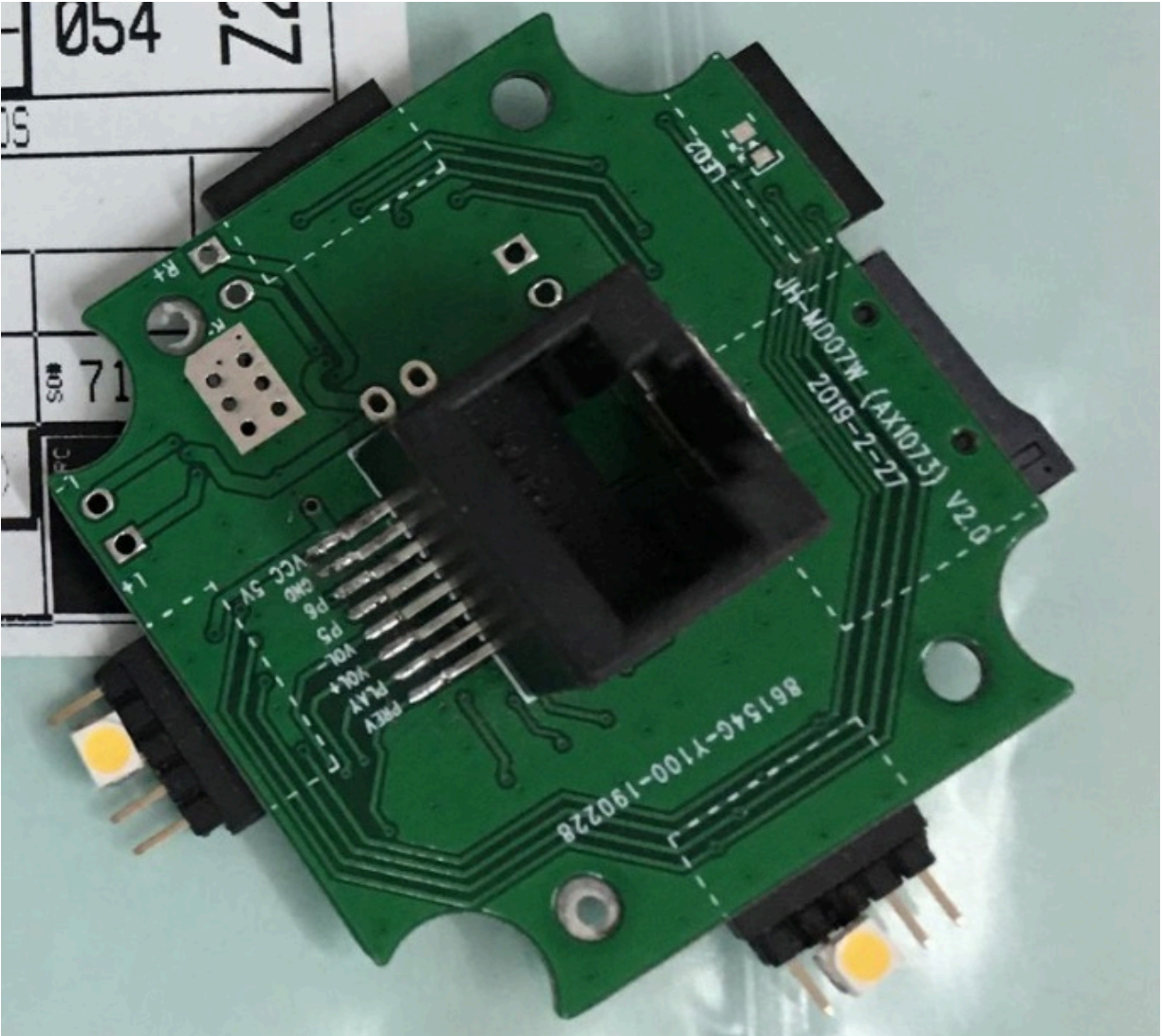
## **APPENDIX II - TECHNICAL DATA SHEETS**

## Speaker

The speaker is the most forward facing aspect of the artwork. The speakers have been custom built for the studio by Junjiahao Company Limited. The units used in this installation are Speakers version 2.

They receive 12V and DMX signals from the RJ45 connection and divert 5V (+ and - leads) on the side to control the LED strip. They read a microSD card to play audio files and can control volume up, volume down, play, pause, next, back, and reset.





The 5V (+ and -) leads of the LED strip should never cross or touch. If the pins are crossed or jumped, remove the speaker from its cable immediately. **The positive and negative polarities are very important to respect.**



The LED strip gains power from the speaker but is controlled by a driver in the speaker controller.

The speakers are hung and gain power from 8 pin RJ45 cables. These 8 pins are each used for a different function on the speaker itself. These functions are:

- 1 - Button Prev : short press previous track, long press = next song
- 2 - Button Play/Pause : short press toggle PP, long press = force pause
- 3 - Button Vol+ : short press = vol up
- 4 - Button Vol- : short press = vol down, long press = reset to default
- 5 - LED strip + (12V current)
- 6 - LED strip - (12V current)
- 7 - GND (5V current, negative lead)
- 8 - internal LED (5V current)

If the cable is tested and certain cores are broken, you may see a malfunction in one of the speaker's abilities to retrieve commands. The functions linked to pins 1, 2, 5, 6 are necessary for the good functionality of the artwork and would require an immediate cabling replacement. The functions linked to pins 3, 4, 7 and 8 are less critical, but you will eventually want to replace such cable.

## Speaker's LED Strip

The LED strip on the speaker has been added by the studio staff. The strips have been cut at a specific length of 20cm to fit the speaker size and the product in use has been selected for the following properties:

Specification	Details
LED Strip PCB	Black colored
LED Color	White light, with a 4000K color temperature
Voltage	12V
Number of LED	There is 120 leds per meter
Average Life	50,000 hours
LED Standard	LM-80
CRI level	80








The product used in this version is from Cinelite, model 2835. While

On the strip, two 18mm black AWG24 cables have been soldered to the positive and negative leads and to a single row 5 pins 90 degrees connector header, with a pitch of 2mm. The model used is 2PH1R-05-UA from Adam Tech.



## microSD Card

Each speaker contains a microSD card. The cards used are industrial grade SLC microSD cards: they better protect the files from getting corrupted. Each microSD card contains a specific and unique sound track (filename starting with a letter pattern and number like A1-...) and 16 files that are common to each microSD card. So each microSD card has a total of 17 tracks.

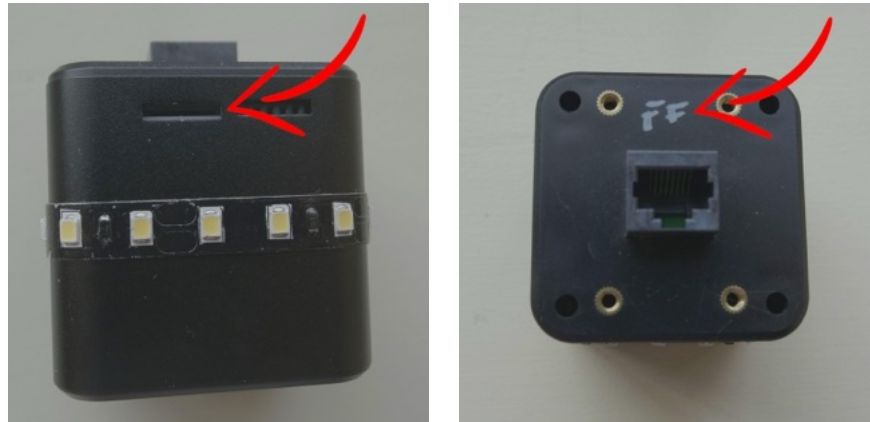
-  01\_AtmosCountryside.BBC.EC1B6a copy.mp3
-  02\_BoatsRowing.BBC.EC139Ca copy.mp3
-  03\_BristolFighter.BBC.EC104Db copy.mp3
-  04\_BroadLeavedWoodl44067 copy.mp3
-  05\_CathedralsLondon.BBC.EC10\_3 copy.mp3
-  06\_CRJ Turbulence [12.22.08 KJFK].mp3
-  07\_CrowdsInterior.BBC.EC1C28 copy.mp3
-  08\_FireCufirewith2101 copy.mp3
-  09\_GreaterPrairieCh55113 copy.mp3
-  10\_LavaFlowMolten67112 copy.mp3
-  11\_Metronomes.BBC.EC48Zf copy.mp3
-  12\_MountainsDayMi35038 copy.mp3
-  13\_Rivers.BBC.ECD76d copy.mp3
-  14\_TelegraphMorseCo.BBC.EC45Md copy.mp3
-  15\_ThunderRainfall4009 copy.mp3
-  16\_WeatherRain.BBC.ECD21e copy.mp3
-  A1-A1-A1ArcticW\_BBC-Historical\_C\_f2.mp3

These microSD cards (512 MB to 1GB, SLC flash memory) need to be formatted in FAT16. While formatting with an OSX computer, ensure to keep the card's partition map schemes as Master Boot Record, not GUID or Apple Partition Map.

If reconstructing a microSD card is required, the specific sound file needs to be imported first, then the common files after. Otherwise, the speaker playing back the files won't be synced with the other speakers.

For more information, see the [APPENDIX III - LIST AND LABELS OF SOUND CATEGORIES](#) for Label to Sound mapping.

The speaker is marked near its ethernet port, in a white marker scribing or a label. This refers to the category of the specific sound file this speaker should contain. The inscription denotes the sound contained in the file hosted on the microSD card populated in that speaker.





## Ethernet Cables

For the assembly of the artwork, straight-thru CAT5E ethernet cables have been used. The cables have a matte black jacket without any printing on them and they have black connectors. They are also flexible and not stiff for straight hanging, with the sole weight of the speaker.

The cable length will vary, depending on the exhibition's space dimension and artwork's final layout.

### Labeling of cabling

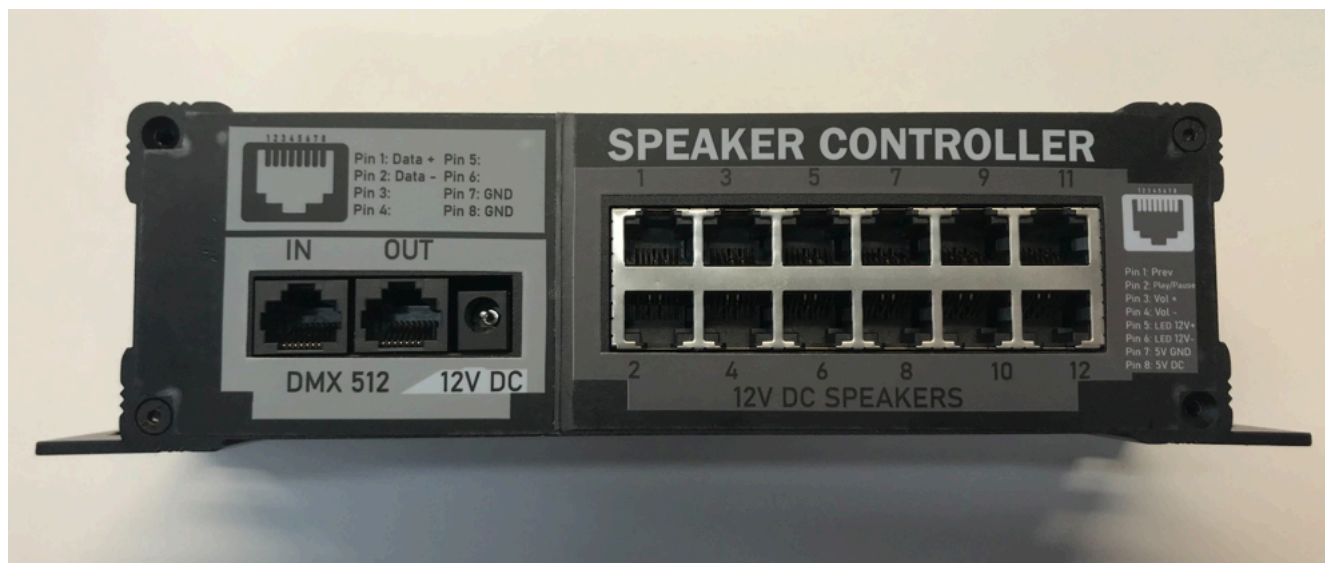
The speaker ethernet cables will all have a unique label on two parts of the installation: one label will be placed just past the attachment point of the speaker on the aircraft cable, while a second will be placed near the plugging point of the speaker controllers.

The labels read as such:

Speaker row - Speaker column | Speaker's controller ID - Port #  
Eg: 01 - 01 | 001 - 01

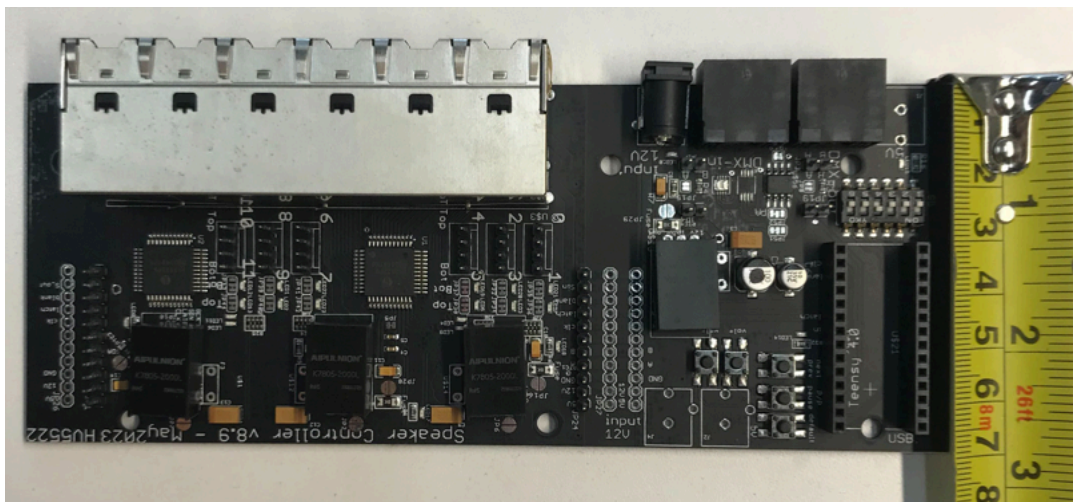
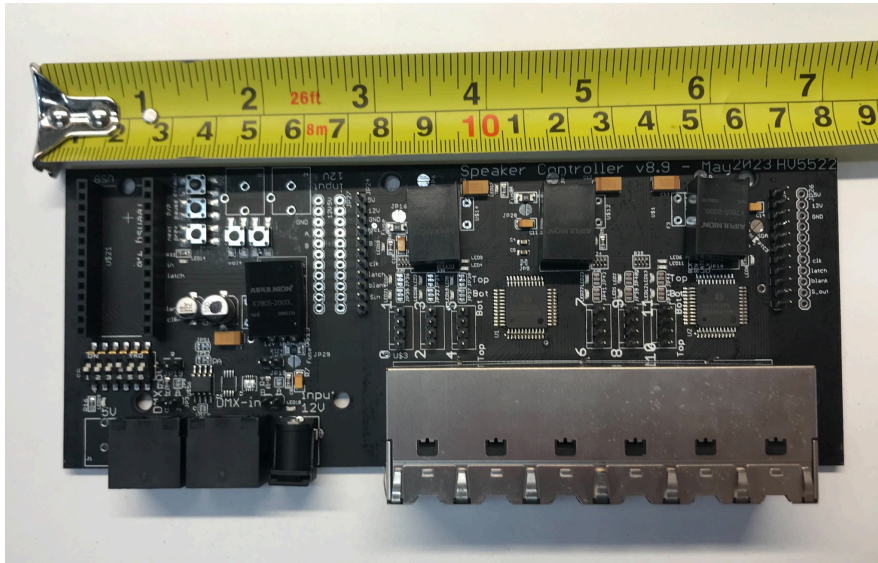
Component	Description
<b>Speaker row</b>	Exhibition's space Row Id on which the speaker is installed. Values will range from 01 to 99.
<b>Speaker column</b>	Exhibition's space Column Id on which the speaker is installed. Values will range from 01 to 99.
<b>Speaker's controller id</b>	Refers to which Speaker controller ID the cable (speaker) should be connected. Values will range from 001 to 999.
<b>Port #</b>	Refers to which RJ45 port of the Speaker controller ID the cable (speaker) should be connected. Values will range from 01 to 12.

## Speaker Controllers



This component controls the connected speakers by sending them power and data over CAT5e cabling. These are connectable in a daisy chain to send data to extend DMX signals to other controllers on the same universe.

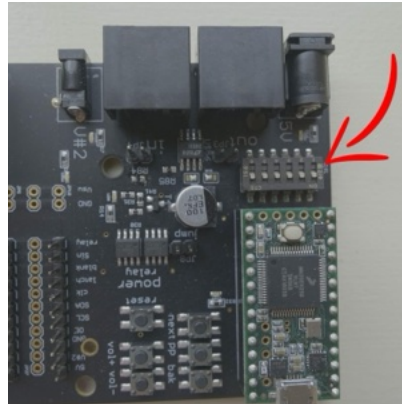
Component	Description
<b>1x RJ45 DMX512 input and 1x RJ45 DMX512 output</b>	Receives and daisy chain the DMX signal to the next Speaker controller on the same universe.
<b>12VDC power input</b>	Power inlet for speaker controller.
<b>12x RJ45 output to speaker</b>	Connect to speakers and carry over data and 12V signals.
<b>Main PCB</b>	Hosting all components: the whole being referred to as speaker controller.
<b>Dip Switch</b>	The Controller's main board has a Dip Switch with 6 switches that sets the unique ID for the controller. The position 1 is the first of the IDs in the universe and will have all switches.
<b>DMX light control board, also referred to as "Daughter board"</b>	A custom LED dimmer chip installed on top of the sound board.
<b>Teensy 4.0 microcontroller</b>	Controls the different 5V and 12V signals controlling the speakers' reactions (sound - 5V - and light - 12V).



















Main PCB

The controller's main board has a Dip Switch with 6 switches that sets the unique ID for the controller. This ID establishes the position of the controller within the DMX universe to which it is connected to: ultimately, the controller will only react to a subset of DMX signals based on that ID selection. The first controller will be set to ID 0, the second to ID1, up to ID 15.

In this design, if the switch lever is oriented towards the Teensy, it is ON (open), while if it is oriented away from the Teensy, it will be OFF (closed).



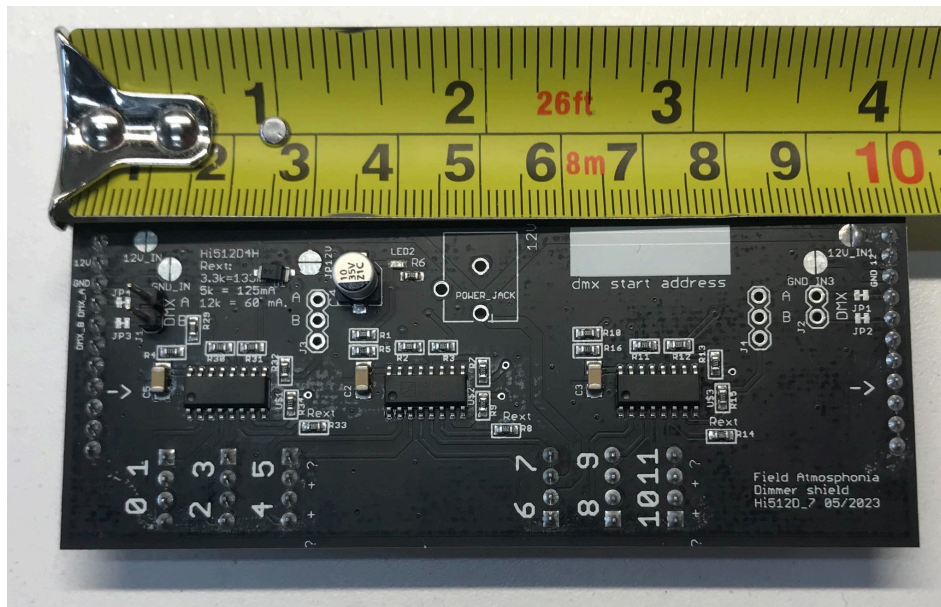
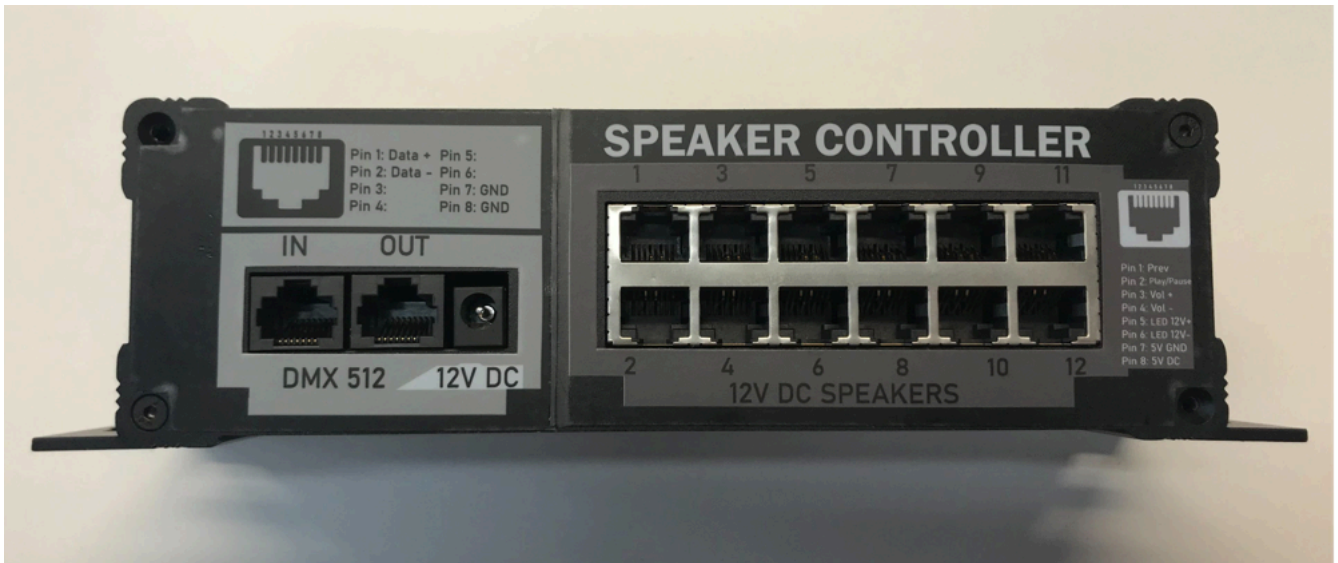
DIP switch setting	Description	DIP switch setting	Description
 <p>ID 0</p>	All switches closed.	 <p>ID 1</p>	All switches closed, except the number 1 switch.
 <p>ID 2</p>	All switches closed, except the number 2 switch.	 <p>ID 3</p>	All switches closed, except the number 1 and 2 switches.
 <p>ID 4</p>	All switches closed, except the number 3 switch.	 <p>ID 5</p>	All switches closed, except the number 1 and 3 switches.
 <p>ID 6</p>	All switches closed, except the number 2 and 3 switches.	 <p>ID 7</p>	All switches closed, except the number 1, 2 and 3 switches.

 <p style="text-align: center;">ID 8</p>	<p>All switches closed, except the number 4 switch.</p>	 <p style="text-align: center;">ID 9</p>	<p>All switches closed, except the number 1 and 4 switches.</p>
 <p style="text-align: center;">ID 10</p>	<p>All switches closed, except the number 2 and 4 switches.</p>	 <p style="text-align: center;">ID 11</p>	<p>All switches closed, except the number 1, 2 and 4 switches.</p>
 <p style="text-align: center;">ID 12</p>	<p>All switches closed, except the number 3 and 4 switches.</p>	 <p style="text-align: center;">ID 13</p>	<p>All switches closed, except the number 1, 3 and 4 switches.</p>
 <p style="text-align: center;">ID 14</p>	<p>All switches closed, except the number 2, 3 and 4 switches.</p>	 <p style="text-align: center;">ID 15</p>	<p>All switches closed, except the number 1, 2, 3 and 4 switches.</p>

Each controller is controlling 12 speakers each with 2 addresses per speaker. A single controller gives out 24 addresses. The maximal number of controllers linked to a universe should be 16 (0 to 15), for a maximal number of 384 addresses (192 speakers), even if an universe could contain a maximum of 512 addresses. That limitation has been decided for safety reasons. Even if you are not using every port of a controller it will react as if using a total of 24 addresses.

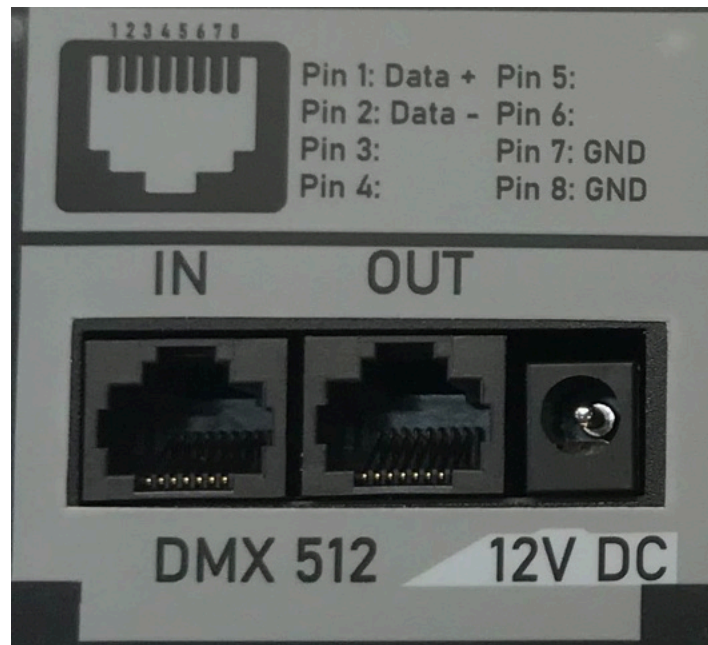
If you change the dip switch address you will need to unplug and replug the power for the change to take effect.

The sequence of the ports of the controller is important and are as shown on the faceplate. The correct port # for a specific cable/speaker is denoted on the ethernet cable label.



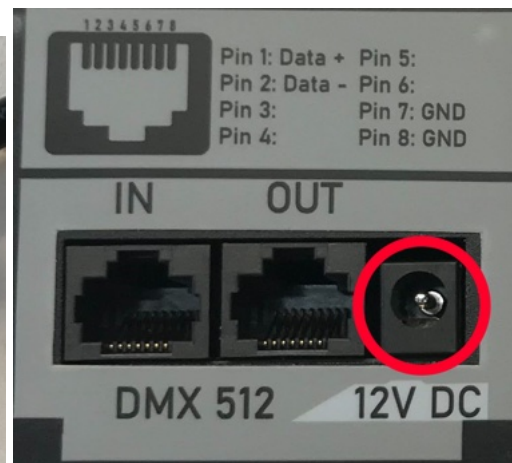
The controller contains a DMX light control board

If a light is out or dim and it is NOT the speaker itself causing the issue, the DMX light control board is the issue and needs to be replaced. Turn off all power to the controller to do this and ensure all pins are properly in place before returning the power to the unit.

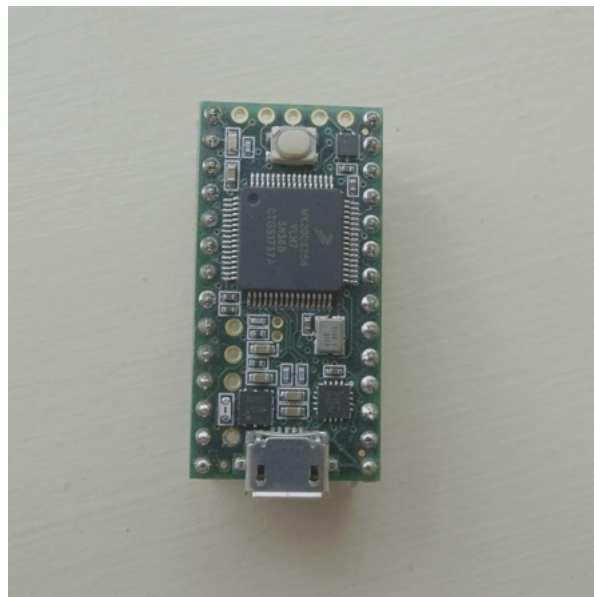


The data for the controllers will be received by the DMX512 IN port. The IN port is located away from the 12v power input, while the OUT port is next to the 12v. The first controller of a universe will always receive the data first, connected via the DMX controller's OUT port and speaker controller's IN port. Then, we daisy chain from the first speaker controller to the second one, connected via the first controller's OUT port and second controller's IN port. Then will then feed to the next controller in the order from its output.

The power then is plugged in by way of a barrel jack connector.



**NEVER COVER UP THE VENT AT THE BACK OF THE METAL BOX**



The teensy will boot up when given power. An indicator LED beside it will flash when receiving a signal from the computer. If that LED is static or off, the teensy currently isn't getting DMX information from the computer. If this happens, check if the data connection in the IN position is coming from the computer directly or from the nearest working controller's OUT position.

If the Teensy is failing to function it will show as a section of the artwork's rendering going dark and the Teensy will feel hot to the touch. If this happens, please replace it with a spare unit.



## Labeling of speaker controllers

The speaker ethernet cables will all have a unique label on two parts of the installation: one label will be placed just past the attachment point of the speaker on the aircraft cable, while a second will be placed near the plugging point of the speaker controllers.

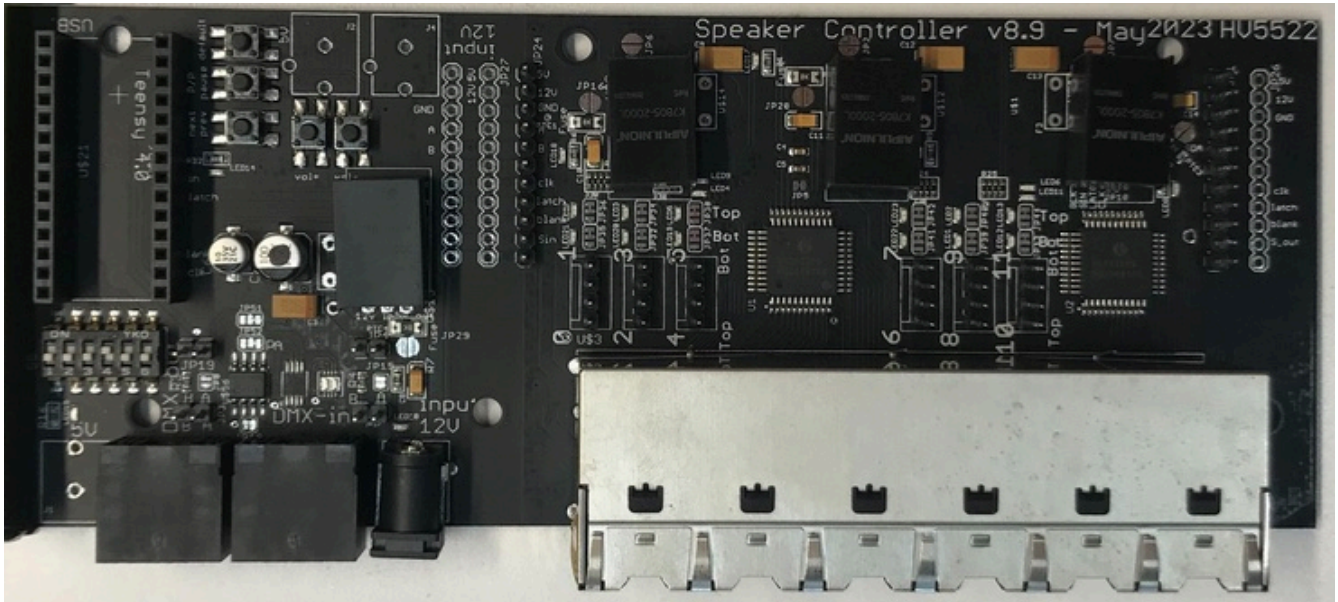
The labels read as such:

Controller ID# | Universe# - DIP Switch ID - DMX start address  
Eg: 001 | 01 - 001 - 001

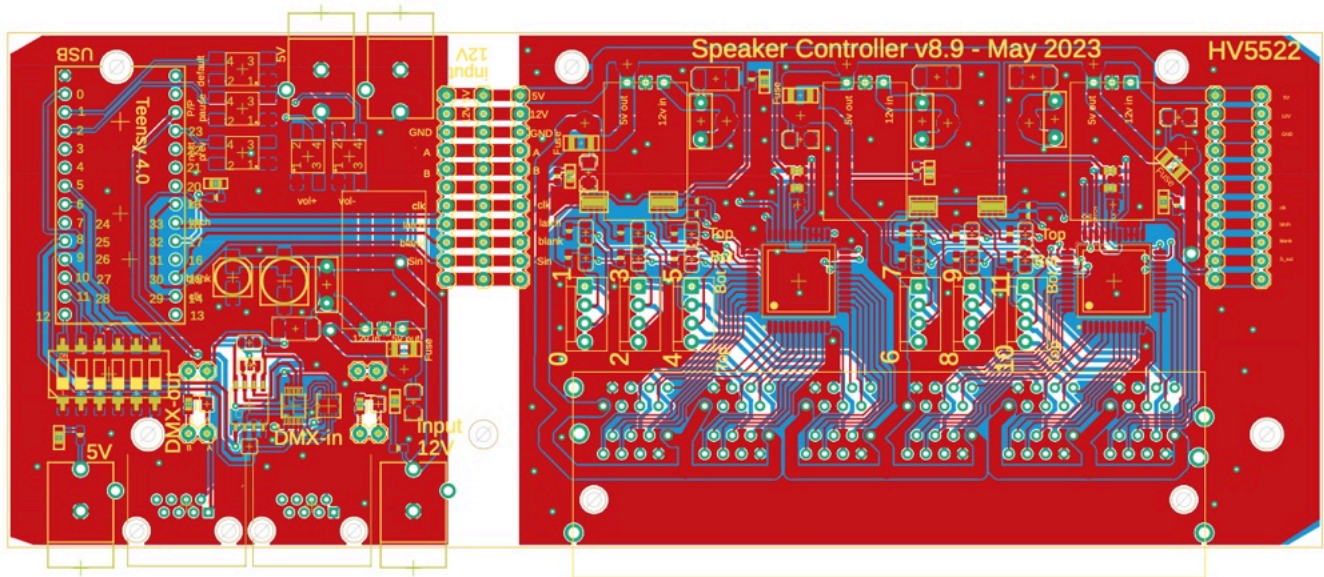
Component	Description
<b>Controller ID#</b>	Current Controller ID#. This is used to simplify the cabling connection between speakers and controllers. Each controller should have an unique ID. Values will range from 001 to 999.
<b>Universe#</b>	Exhibition's space Column Id on which the speaker is installed. Values will range from 01 to 99.
<b>DIP Switch ID</b>	Refers to which Speaker controller ID the cable (speaker) should be connected. Values will range from 01 to 15.
<b>DMX start address</b>	Refers to which RJ45 port of the Speaker controller ID the cable (speaker) should be connected. Values will range from 001 to 512.

## Speaker Controller's Main PCB

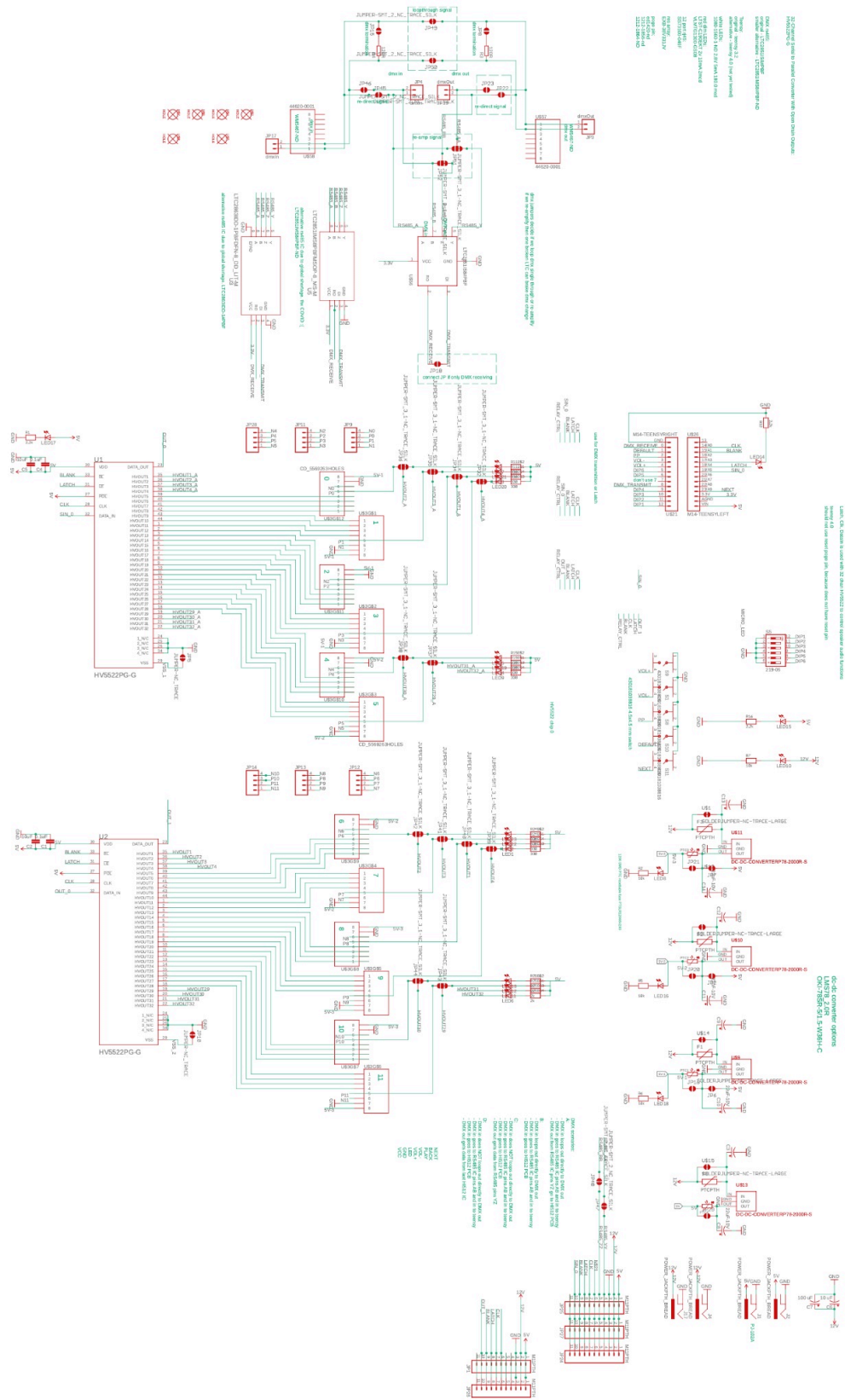
The main PCB has been designed by the studio. The latest version of such PCB is labeled as Speaker Controller v8.9 - May 2023.



Top PCB view



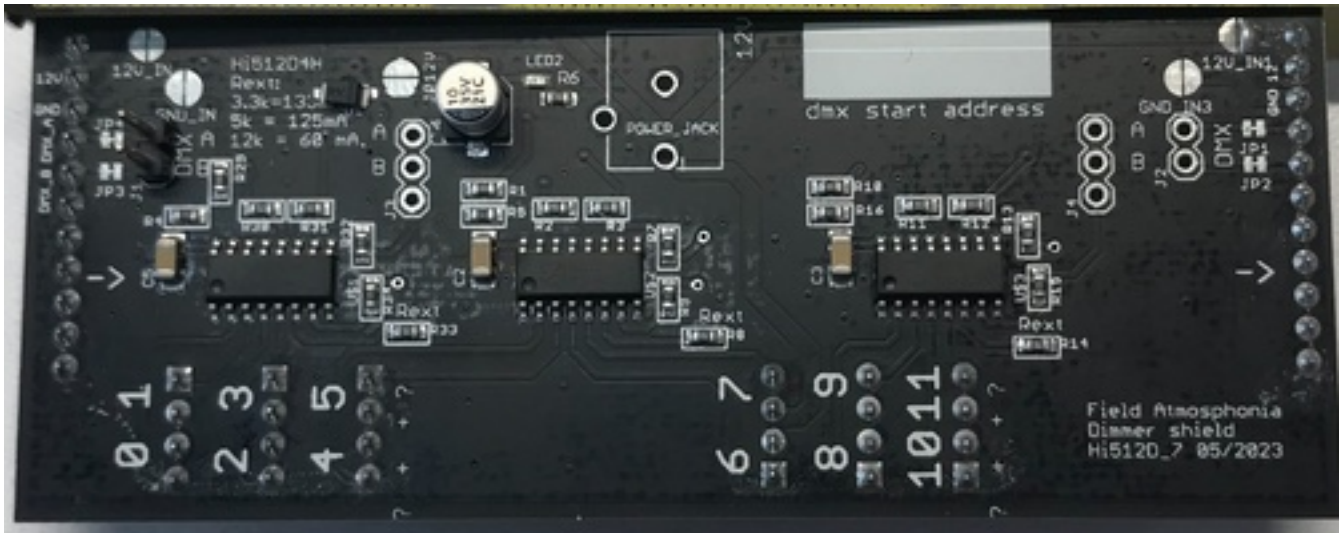
Board circuitry



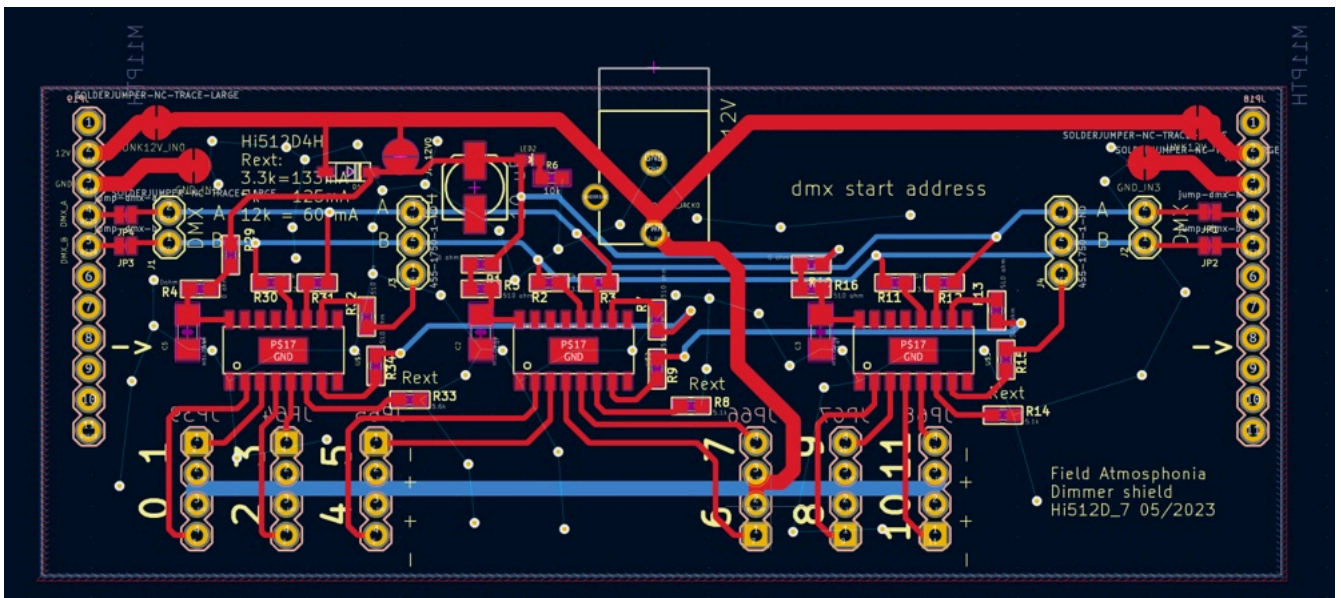
Schematics

## Speaker Controller's DMX light control board

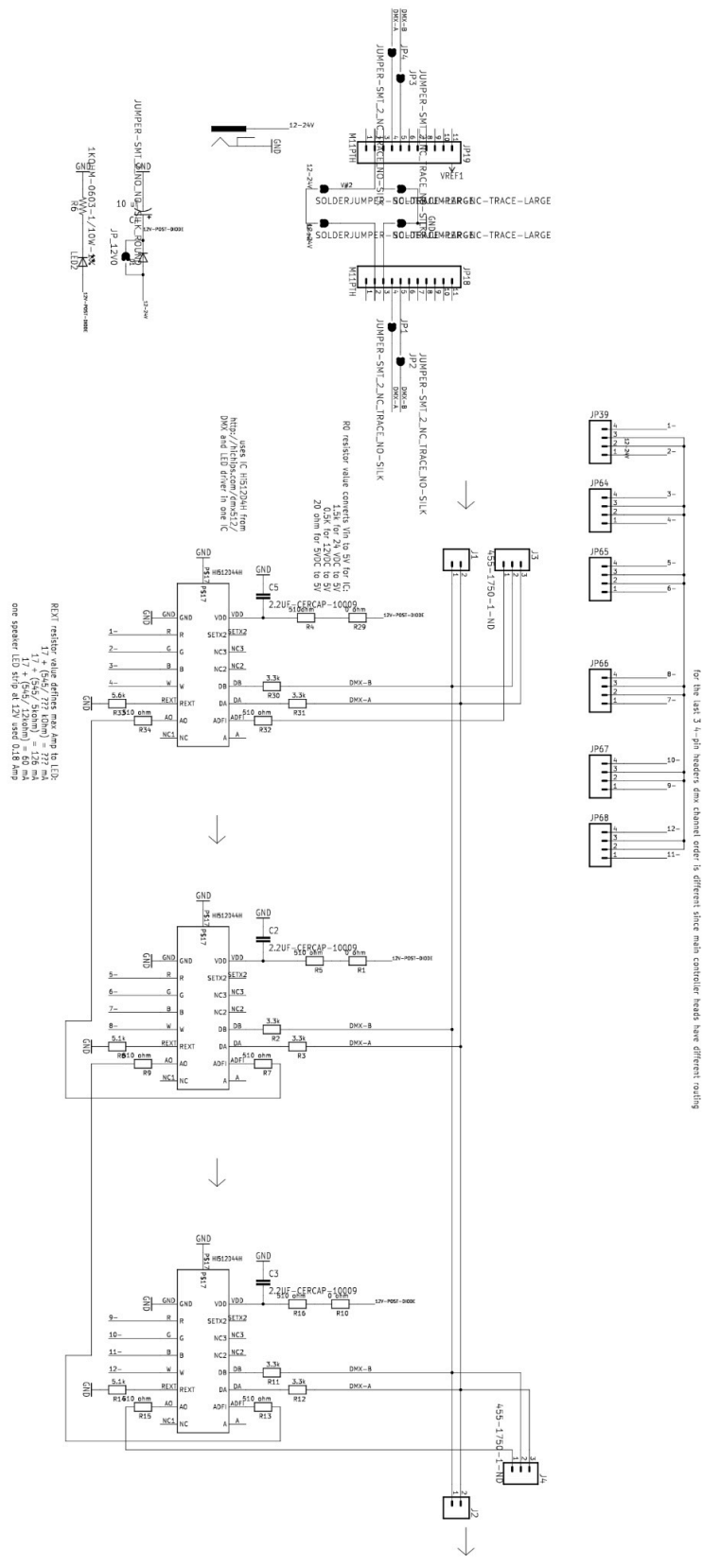
The light control board is controlling the power feed to the speaker's power line and, by extension, their on/off state. The board has 3 onboard chips, each controlling 4 outputs for a total of 12 channels. The latest version of such PCB is labeled as Dimmer Shield Hi 512D\_7 - 05/2023.



Top PCB view



Board circuitry



Schematics

for the last 3 4-pin headers dm channel order is different since main controller heads have different coding

## Speaker Controller's Teensy

A Teensy is in use as the main control interface for the whole speaker controller unit. At the time of writing this manual, a Teensy 4.0 has been used.



### Technical Specifications:

- 5v power draw
- ARM Cortex-M7 at 600 MHz
- 1984K Flash, 1024K RAM (512K tightly coupled), 1K EEPROM (emulated)
- USB device 480 Mbit/sec & USB host 480 Mbit/sec
- 40 digital input/output pins, 31 PWM output pins
- 14 analog input pins
- 7 serial, 3 SPI, 3 I2C ports

## Speaker Controller's Power supply

The power for the unit comes from a class 2 power supply. We can recommend the following unit for this artwork. That said, other units could be used, here are the most important specs for this unit:

Specification	Details
DC Voltage	12V
Rated Current	5A @ 12VDC / 1.2A @ 115VAC / 0.7A @ 230VAC
Rate Power	60W
Output plug	Barrel connector Inner diameter: 2.1mm Outer diameter: 5.5mm Barrel length: 11mm Polarization: Positive center, negative sleeve

Reference unit - Meanwell OWA - 60U - 12

### Datasheet:

<https://www.meanwell.com/webapp/product/search.aspx?prod=OWA-60U&mws=0B4149A9B642EA2F>



## DMX controller

The DMX controller will carry over the playback commands from the computer to the controllers.

In the current version, an Artnet to DMX controller- TitanA16 (16 ports) has been used. Controlled by the computer via ArtNet protocol, the device transfers the commands to the speakers as DMX signals. Each port is numbered and that number corresponds to the universe number.



---

### ARTNET to DMX Controller



#### TITAN A16

2Versions are available: Titan A8 and Titan A16

**Thank you for purchasing the Colordreamer Titan Artnet to DMX Controller!**

Our manual will describe the installation and mounting of the product as well as description of how to use it.

Please read and understand this manual in its entirety before using the product.

#### Package Contents:

**1XTitan**

**1XPower Cord**

**1XRJ 45 Cable**

**1XThis Technical Manual**

[www.colordreamer.com](http://www.colordreamer.com)

[Email:info@colordreamer.com](mailto:info@colordreamer.com)

Version:V1.0 Feb 2022

Products and specifications are subject to change without notice





**Product Warranty is void if product is not installed as per installation instructions and in compliance with all local and provincial codes.**

#### **SAFETY RECOMMENDATIONS AND WARNINGS**

Only use this device in dry environments (indoor use)

Do not make modifications or alter the product

Keep away from flammable material.

Do not use any silicone or other chemicals on outside surface.

Do not use chemicals or abrasives to clean the device as this many voids the warranty.

Ensure installation complies with local electrical rules and regulations.

Ensure mains input power is surge protected

Do not connect or disconnect the device while the power is connected.

Connectors are to be kept clean and dry at all times.

Input Voltage range 100-240VAC

Power off the device during service or when not in use.

Twisted pair cable is recommended for data transmission

Avoid unwanted voltage on the DMX cables at all times.

Do not remove any parts from the unit including the plug ground pin or connect to an ungrounded circuit.

Do no connect the unit to LEDs that are switched on.

To supply this unit with power, first connect the provided power cord to the unit and then to a suitable power outlet.



### Product Overview

Colordreamer Artnet Controller converts Art-Net data from Ethernet network to DMX512. Colordreamer Titan Family Artnet Controller has 8Universes (Titan A8) and 16Universes (Titan A16) available.

Adjust settings and address via the onboard oled screen menu or web browser.

Perfect synchronization between each Universe.

Take full advantage of pixel mapping and voxel mapping, easy to install.

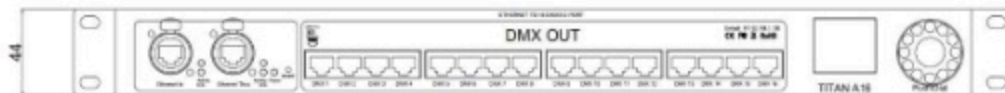
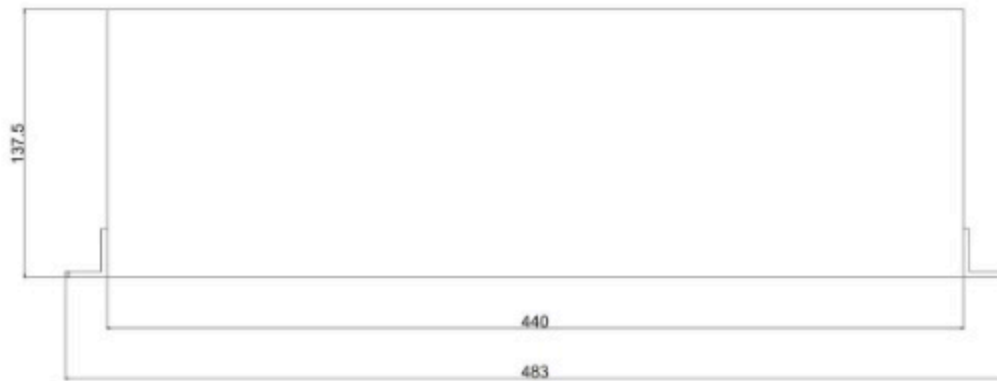
The Artnet controller device is ready within seconds after start-up. An HTP Merge is automatically available for two Art-Net sources. If required, you can access and change specific device settings using the built-in web configuration tool.

### Product Specification

Models	TITAN A8	TITAN A16
<b>Electrical</b>		
Input Voltage	100-240VAC 50/60Hz	100-240VAC 50/60Hz
Power Consumption	5W	5W
<b>Control</b>		
Network Protocols	Art-Net via ethernet	Art-Net via ethernet
DMX Outputs	8X512 DMX Channels	16X512 DMX Channels
Ethernet	RJ45	RJ45
Default IP	192.168.1.100	192.168.1.100
Default Subnet	255.255.255.0	255.255.255.0
<b>Physical</b>		
Housing Material	Metal	Metal
Finish Color	Black	Black
Connector	3pin/5pin xlr female	RJ45
Dimensions(LXWxH) Body	440×136.6x44mm	440×136.6x44mm
Dimensions(LXWxH)Brackets	483×136.6x44mm(1U)	483×136.6x44mm(1U)
Weight		
<b>Environment</b>		
Operating Temperature	-10°C to +50°C	-10°C to +50°C
Storage Temperature	-20°C to +70°C	-20°C to +70°C
Humidity	0-80% non-condensing	0-80% non-condensing
IP Rating	Dry, Indoor IP20	Dry, Indoor IP20
<b>Certification and Safety</b>		
Certification	CE	CE
Warranty	2Years Limited Warranty from the Date of Manufacture Contact us if you need extended warranty	

## Dimension

(Titan A16)



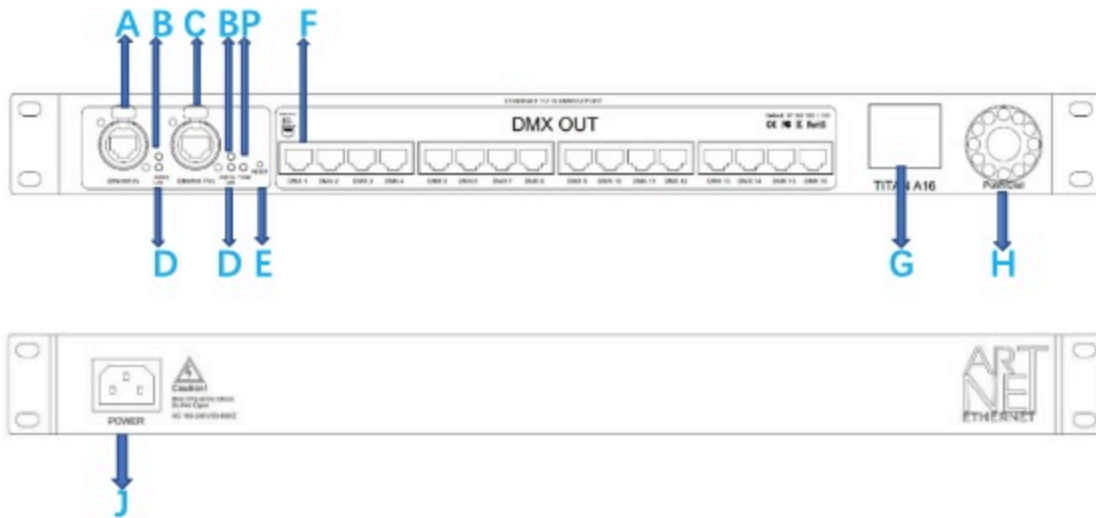
[www.colordreamer.com](http://www.colordreamer.com)  
Products and specifications are subject to change without notice

Email: [info@colordreamer.com](mailto:info@colordreamer.com)

Version: V1.0 Feb 2022

## Connectivity

### (Titan A16)



- |                            |                                     |
|----------------------------|-------------------------------------|
| A: RJ45 Ethernet in Port   | B: Status LED for Ethernet Activity |
| C: RJ45 Ethernet thru port | D: Status LED for Ethernet Link     |
| E: Reset Button            | F: DMX Outputs                      |
| G: Oled Screen             | H: Push/Dial button                 |
| J: Power Socket            | P: Status LED for Power             |

## Description of Status LED:

### E: Status LED for Power

Status	Description
Powered Off	Power cable not connected. The device has no power
Permanently Green:	Connected to Power. Power is on.

### D: Status LED for Ethernet Link

Status	Description
Powered Off	Ethernet not connected
Permanently Red:	Connected to ethernet

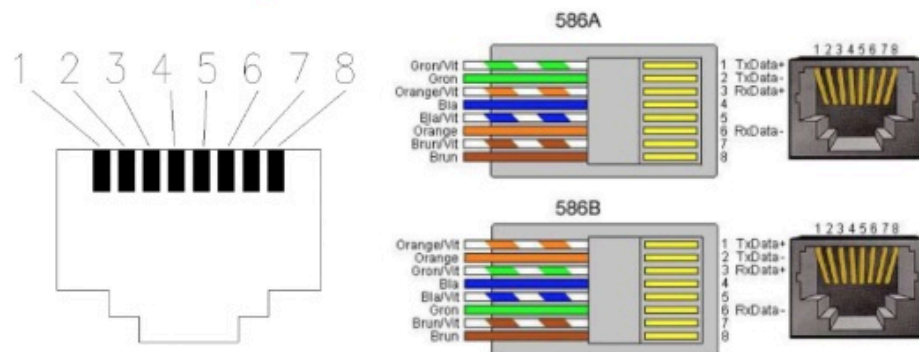
### F: Status LED for Ethernet Activity

Status	Description
Powerer Off	No data received over ethernet
Permanently Green or Blinking Green	Communicating over Ethernet. Receiving data over ethernet

## 3-Pin And 5-Pin XLR Connector Layout



## RJ45 Connector Layout

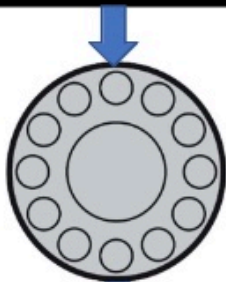


1: DMX+    2: DMX-    7: Ground

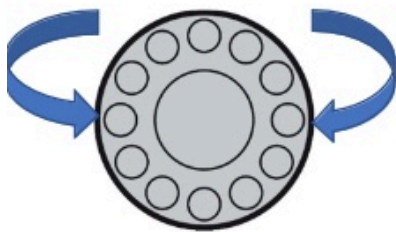
## Device Configuration Through onboard Screen and Push/Dial button

Standby Screen:

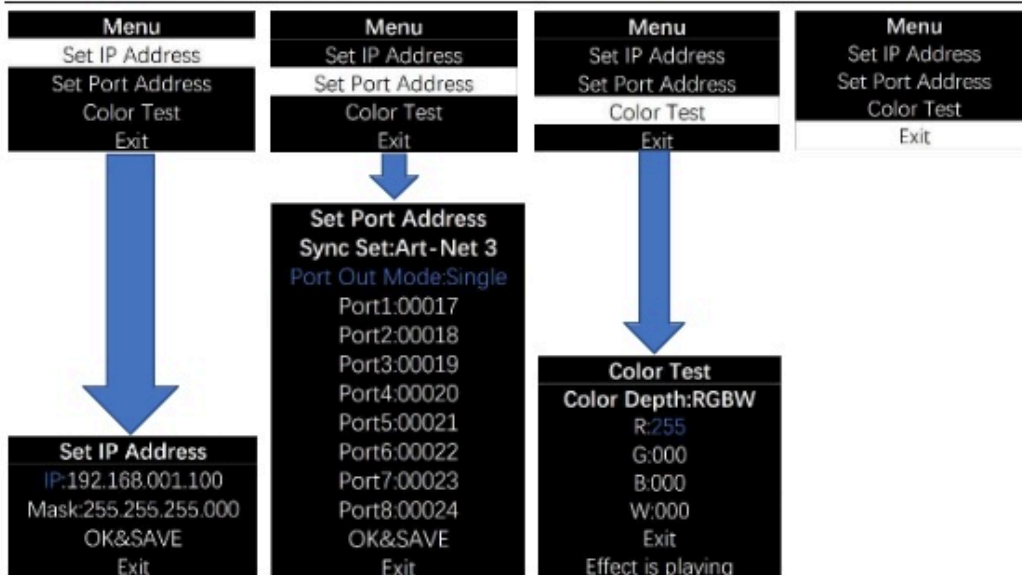
When you are not performing a task within a menu, Titan A8 or Titan A16 will display device information as below.



Press and release the rotary dial to enter the Device Configuration Menu.



Rotate the dial clockwise or counterclockwise to move between the highlights. Press and release the dial to enter the page of highlight



Rotate the dial to move the highlighted cursor between options within the page  
 When the highlighted cursor is over the required option, press and release the dial  
 Rotate the dial to change the value of the option.  
 Press and release the dial to fix the chosen value of the option.  
 Remember to press "OK&SAVE" to confirm your setting.  
 Press "Exit" to come back Main Menu.

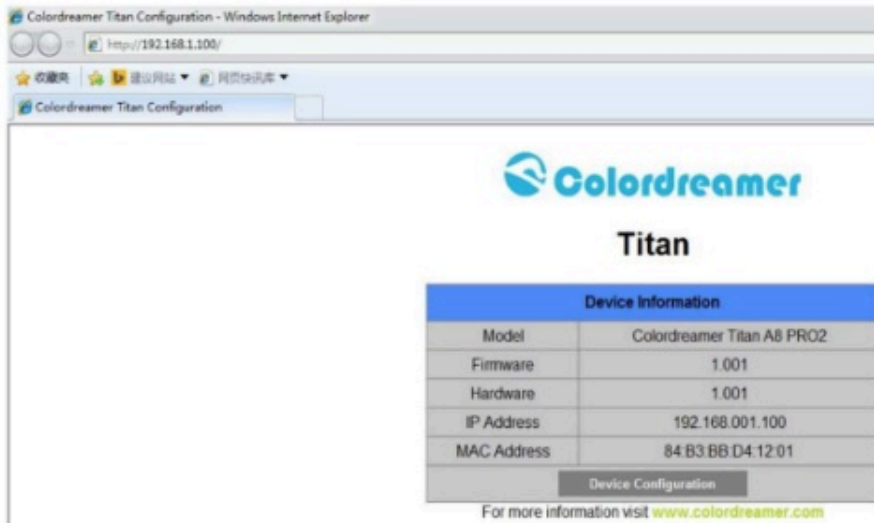
**Notes:**

- 1: In the page "Set Port Address", Sync Set can be Art-Net 3 or Art-Net 4
  - 2: User can use Color Test Page to test your led fitting when software is not ready.
- Color DepthW/RG/RGB/RGBW  
 R: a value between 0-255    G: a value between 0-255  
 B: a value between 0-255    W: a value between 0-255

### Device Configuration Through a Web Browser

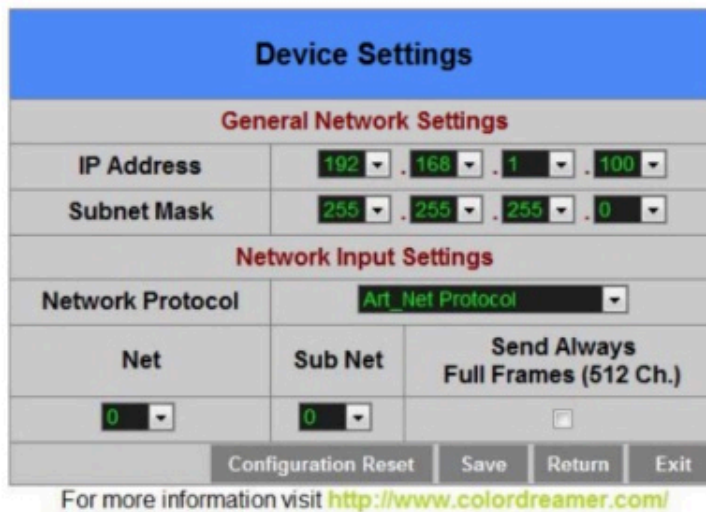
You can access all settings and information of Titan Artnet Controller by using the built-in web configuration tool.

- Step 1) Connect Titan Artnet Controller and your computer to the same network.  
 Artnet Controller Default IP 192.168.1.100
- Step 2) Assign correct network settings for your computer in the operating system. (Recommended default settings:  
 IP address 192.168.1.XXX/ Subnet mask 255.255.255.0)
- Step 3) Open your web browser and enter the IP address of Artnet Controller  
 192.168.1.100
- Step 4) The web configuration tool will be launched.



Step5) You can change IP address and save this configuration

## Titan



Step6) After saving all setting, reboot the system to apply the new setting. after reboot, this window will be closed automatically.



# Titan



For more information visit [www.colordreamer.com](http://www.colordreamer.com)

## Reset to Factory Default Settings

- Step 1) Disconnect the device from power.
- Step 2) Use a suitable tool to press the reset button.
- Step 3) Continue to press the reset button and connect to power again.
- Step 4) Continue to press the reset button and wait until all status LEDs of the device flash repeatedly or wait 5 seconds.

## Computer and software

At the time of writing this manual, the software operating on the computer is coded under openFrameworks' platform. Software version referred to in this manual is #85 20230519 and runs on an Apple computer on OSX 13.5. Such software was initially released and tested on an Apple MacMini with an M2 3.2GHz processor, 8GB of RAM and 256 GB of storage.

The softwares `atmosphonia.app`, `atmosphonia_syphonServer.app` and `OSCGuiTimeline.app` are launched, in such an order, by the custom-made software `delayOpen.app` that, as the name implies, delays the software launch to allow all system resources to be loaded in priority.

## **APPENDIX III - SUSPENSION OF SPEAKERS IN THE EXHIBITION SPACE**

The rigging points for the piece should be placed at the correct height and spacing, rated and able to hold the minimum weight of 50KG per line. The weight of a line increases if force is placed on the line by way of a tightening device such as a turnbuckle.

NOTE: Rigging has inherent dangers associated with it, always use a certified professional when installing things above the heads of others.



Accepted rigging (NOTE: Always use thimbles to avoid damage)

Aircraft cables rated for 50 KG and above, preferable galvanized steel, crimped or saddled by a professional are to be hung from the rigging points by way of a shackle, to a turnbuckle, to a shackle on both sides. (IF using truss, then concurrently to a rated rigging strap)

Pre-measured wires are then attached with black zip ties tightened and cut to the aircraft cables at the correct spacing and sequence denoted by the labels provided.

**NOTE:** All aircraft cables will have a “midpoint” in which the speaker wires run to the left or right of, the middle is requested to be taped or painted to hide the shine of the metal cables.

The controller boards units will sit near the attachment point of the aircraft cable. The labels on the wire will align with labels of the RJ45 ports and Controller number. Plug the RJ45 head into the corresponding port.

The controllers will have a universe denoted on them, from the Titan 16 run an ethernet to the 0 box.

For Rigging, please consult the following image.



NOTE: Adding side force by way of turnbuckle or other device changes the weight calculations and should be done only by a certified professional

## **APPENDIX IV - LIST AND LABELS OF SOUND CATEGORIES**

Besides the common files, the sound files provided with the work are bundled into 32 different categories. These categories are as following:

Category letter(s) | Category # | Type of sound | Amount of available tracks

A	01	Wind	- 72
B	02	Water 0 sea	- 72 + 24
C	03	Lava Rock geo fire	- 23 + 72
D	04	Rivers canals waterfalls	- 72
E	05	ice	- 72
F	06	Forests	- 72
G	07	Desert / savanna	- 72
H	08	Coastal	- 72
I	09	birds 1	- 72
J	10	birds 2	- 72
K	11	birds 3	- 72
L	12	reptiles frogs snakes	- 72
M	13	insects 1	- 72
N	14	insects 2	- 72
O	15	mammals 1 QUIET	- 72
P	16	apes	- 72
Q	17	mammals 2	- -72
R	18	abbeys, monasteries QUIET	- 72
S	19	larger crowds	- 72
T	20	chatter	- 72 + 23
U	21	children	- 72
V	22	musical instruments	- 72
W	23	machinery old 1	- 72
X	24	machinery old 2	- 72
Y	25	machinery new 1	- 72
Z	26	machinery new 2	- 72
AA	27	radio, telegraph, telephones	- 72
BB	28	technology	- 72
CC	29	Air traffic 1	- 72
DD	30	Air traffic 2	- 72
EE	31	War Water	- 72
FF	32	Water streams QUIET	- 72