

DESCENDING A PARAMETRIC STAIRCASE

BY RAFAEL LOZANO-HEMMER



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GENERAL IMPORTANT INFORMATION

This short section must be read for proper operation.

DESCENDING A PARAMETRIC STAIRCASE (2018)

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Technique

Computer, Custom software, LED circular display*.

* 50cm version also contains: Acrylic diffuser, Rosco gel, Powder-coated steel frame

Description

This piece is a generative animation showing a descent into a never-ending spiral staircase. From time to time, uncanny virtual naked people can be seen walking down the staircase. The work never repeats the same sequence of characters. "Descending a Parametric Staircase" is a homage to Duchamp's futurist composite "Nude Descending a Staircase" from 1912, taking its color palette, and his "Rotoreliefs" from 1935.

Operation

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

1. To turn the piece ON, press the power button on the computer for one second, then release it. Though the computer might be integrated under the display, its power button is accessible. ****Important note: please do not push the button again as this will shut down the piece. Wait at least two minutes before pressing it again, as the computer might need this long to reboot. After two minutes (or less), you should see the piece.****
2. To turn the piece OFF, press the power button on the computer. ****Make sure to wait until the display and computer have finished their shutdown routine before turning the piece on again.****
3. If the piece doesn't start within two minutes, try turning on the piece again. If it still doesn't turn on, then hold the power button all the way down for 10 seconds to force computer shutdown. 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.

Maintenance

Please do not clean the display surface with Windex or soap. Use a lint-free cloth or compressed air to remove as much dust and debris as possible. Then slightly dampen the cloth with LCD screen liquid cleaner, such as Kensington Screen Guardian found in most computer stores to remove any traces and marks that could remain.

The metal outer casing can be cleaned with a regular all-purpose cleaner. Do not use harsh cleaners or rough sponges. Remove dust using a feather duster, such as those produced by Swiffer.

We recommend cleaning the piece at least every two months.

Placement Instructions

The artwork should be placed on the floor and is meant to be viewed in the round, as shown in the photo below, no matter the screen diameter. The back side of the display should be slightly elevated from the floor, either by having the artwork structure to do so or by using the supplied risers. Access to a nearby power outlet is necessary. Be mindful of overhead lighting to reduce light reflections on the piece.



DETAILED TECHNICAL INFORMATION

Normal Software Operation

This artwork, programmed with Unreal Engine 4, is set to automatically start when the computer is powered on - with a slight delay - and is set to reboot daily, at night. We do recommend turning off the artwork when you don't plan to look at it for a longer period, to extend the lifetime of the components. At startup of the software, the staircase within the display, well centered.

The staircase always rotates and we gradually move down the staircase. Every 20 to 40 seconds, the field of view changes to a value between 5 and 50.

Manual Software Calibration

While the system has been tweaked for your setup, adjustments might eventually be needed. The software has 3 parts:

- the generated content - displayed in background;
- the playback window - a view of the generated content, scaled down to fit the provided display;
- the menu - allowing you to adjust a few settings.

The software and said menu is controllable with the following keyboard shortcuts:

Shortcut	Description
Key 1	Pressing this key will bring up two sliders to adjust the playback window scale and blurriness, next to the mouse pointer: if the sliders are not visible, use the mouse and go towards the top left of the display and left click while doing so, every left click will update sliders location according to the new mouse position. Pressing the same key again will then hide the slider.
Spacebar	Will automatically align the playback window to the mouse pointer, centering the staircase to the tip of the pointer. Now you could use the mouse to hold a left-click or right-right to drag the playback window.
Key S	Pressing this key will save all settings. You will see a "SAVED" message pop up after this.
Up arrow key	Pressing this key will set the current Field of View of the software to 45 so that the shadows of people can be seen: this will take a few seconds to happen.



Setting	Description
Scale	This will modify the size of the playback window, allowing it to fit the resolution of the provided display.
Blur	Allows to blur the playback window. While this is available, the setting should be kept at the minimum value, making the image as sharp as possible.

Remote Access to Artwork's Computer

There is a software installed on the computer running this artwork that allows the studio to connect remotely to the artwork. This feature is helpful when you require assistance from the studio, as we can remotely connect to it, do a quick inspection, and do a debugging session of your components, if needed. In order to enable this feature, the computer has to be connected to the internet at all times. Depending on the computer's operating system (Windows 7/8/10, OSX), the procedure to set the computer online will vary. Please look online for tutorials, if necessary.

Preliminary Troubleshooting Steps

After pressing the button, nothing seems to happen.

Do you hear any sound coming from the computer? If so, the computer is running and the circular display should show the piece shortly. If not, inspect the video cable(s) connection(s) and ensure the monitor is powered on: a computer restart (turn Off / turn On) might be needed. If your edition has a video controller, ensure it is also powered on.

The artwork doesn't react and the image is frozen.

Ensure that the computer is connected to the display. If the image is frozen, it might be because the connection has been disrupted: inspect all video connections and if your edition has a video controller, ensure it is powered on. If the image is still frozen, try restarting the piece.

The rendered image is compressed or stretched on: the shape is more of an oval than a circle.

This might be a communication issue between the computer and the display: try the above solutions.

The computer is on but the screen is black.

After trying the above solutions, it may imply the image be offscreen for whatever reason. Bringing the cursor to the center of the display and pressing **spacebar key** to jumpstart the playback window, or dragging with the mouse should reposition the playback window.

The mouse pointer is visible on top of the staircase.

Simply use the mouse and bring the pointer outside of the display area (dragging the pointer toward the bottom right should do it).

The staircase isn't well centered in the display or isn't occupying the whole screen.

Let's verify the scaling and position of the staircase in the display. Left-click with the mouse, mouse the mouse pointer within the display area (towards top left), once you see the mouse pointer, move it to the physical center of the display and press the **spacebar** to realign the staircase's center to display's center. If need be, press **key 1** to show the menu up and adjust the scale of the rendered staircase to fill the display, always ensuring the staircase is centered in display.

An independent LED is strangely pixelated, or is not displaying the image.

In the unlikely chance that an area of the display is no longer responding or has become pixelated, independent from the rest of the display, this might indicate that an LED panel has become damaged and needs replacing. Contact the Studio with evidence of the issue. It is helpful to provide the Studio with any extra information gathered, when they are assessing the issue.

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
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Montréal, Québec, Canada
H2J 2L1
Tel 1-514-597-0917
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APPENDIX I - INSTALLATION

Description of Components

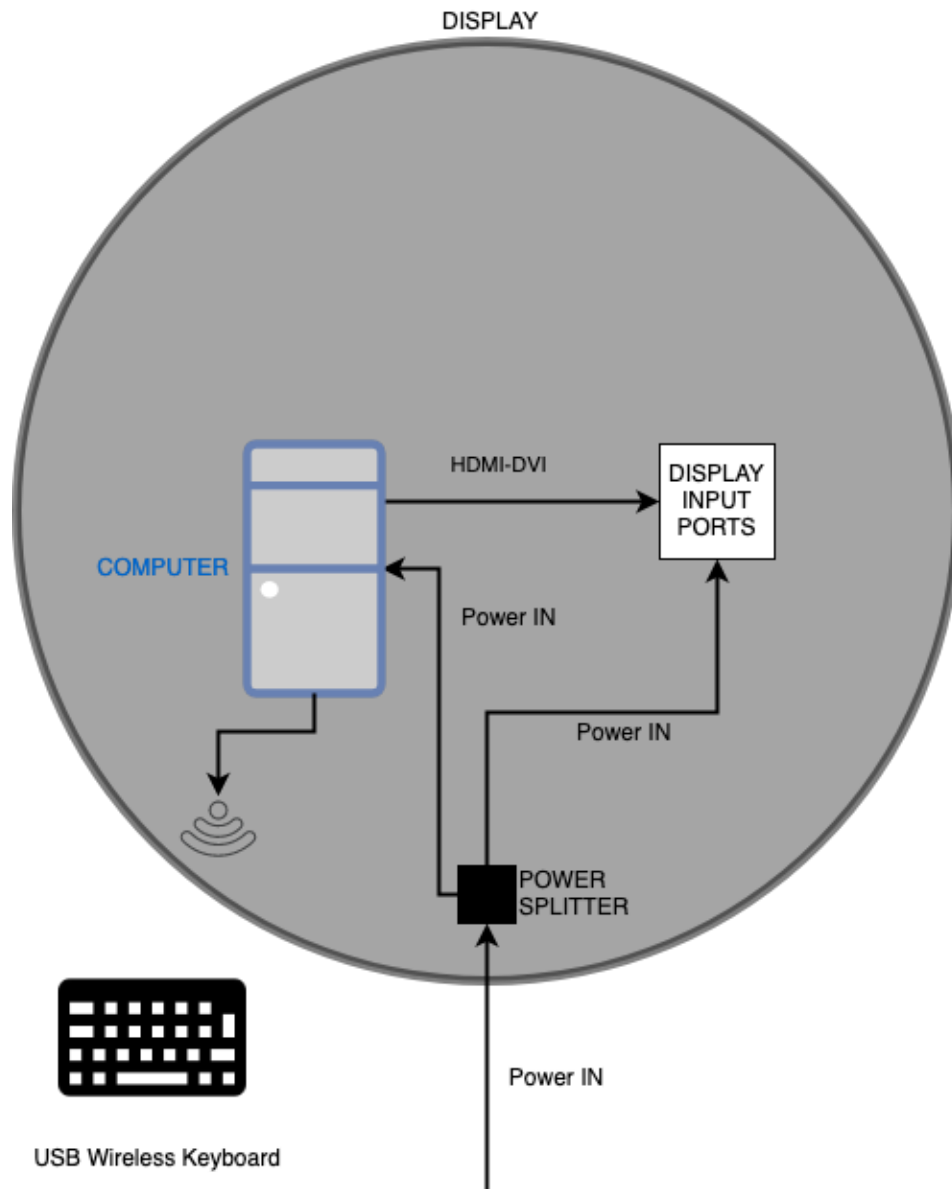
This artwork requires the following components:

Component	Description
Computer	A Windows computer with an NVidia GTX 1070 graphics card or better.
Circular Display	A custom made circular display
Video controller*	Acts as a display for the computer and sends video signals to a circular display.
Keyboard	While not required for normal use of the artwork, it allows you to troubleshoot the artwork.

* Only in the 140cm version.

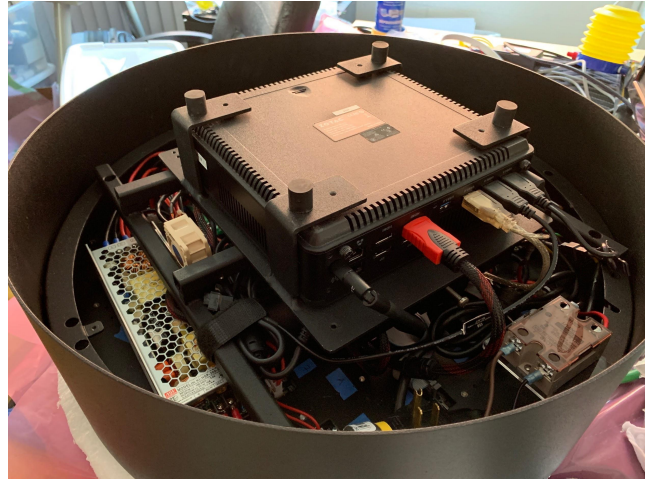
Wiring Diagram - 50cm version

All components, including wiring, is integrated underneath the display, but the computer connects to a PCB with an HDMI-DVI cable and USB. The PCB connects to the display using an ethernet cable which provides data and power. Ultimately, only the power cable should exit the display, and everything else is integrated into the display.





Underside of display with computer



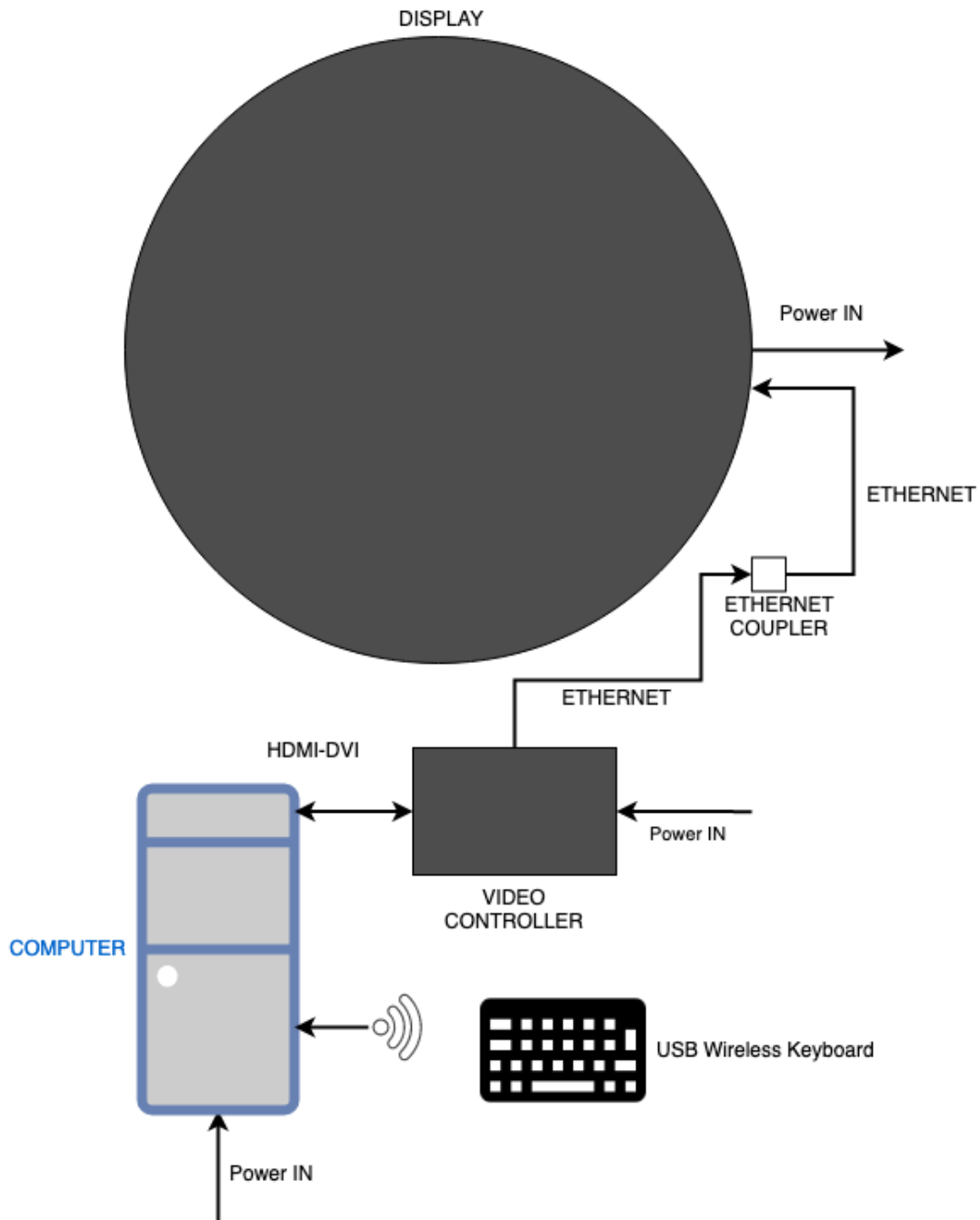
Underside of display without computer



Underside of display without bracket and computer
(the PCB referenced above is on the right with the purple HDMI-DVI cable)

Wiring Diagram - 140cm version

In this version of the artwork, the display and the other components are set apart. The display should be set alone, while the other components are set further away in order to not distract the view. In some cases, a USB controlled AC relay might be provided to control the power to the display and the video controller. Look at the [USB controlled relay](#) section for more details.



APPENDIX II - TECHNICAL DATA SHEETS

DesignLED P2.5mm circular LED display - 1440mm diameter

Pixel pitch	2.5mm
LED type/brand	SMD 3 in 1
Brightness(nits)	600
Screen area (sqm)	1.629
Resolution	331,776p
Viewing angle (H/V)	140° / 140°
Controller	NovaStar MCTRL300
Refresh rate	1920-3840Hz
Color depth	16bit
Processing	1920 x 1080
IP rating	IP30, indoor only
Scan	Static
Average power consumptions / sqm	250W
Max power consumptions / sqm	625W
Working temperature	0 - 40°C

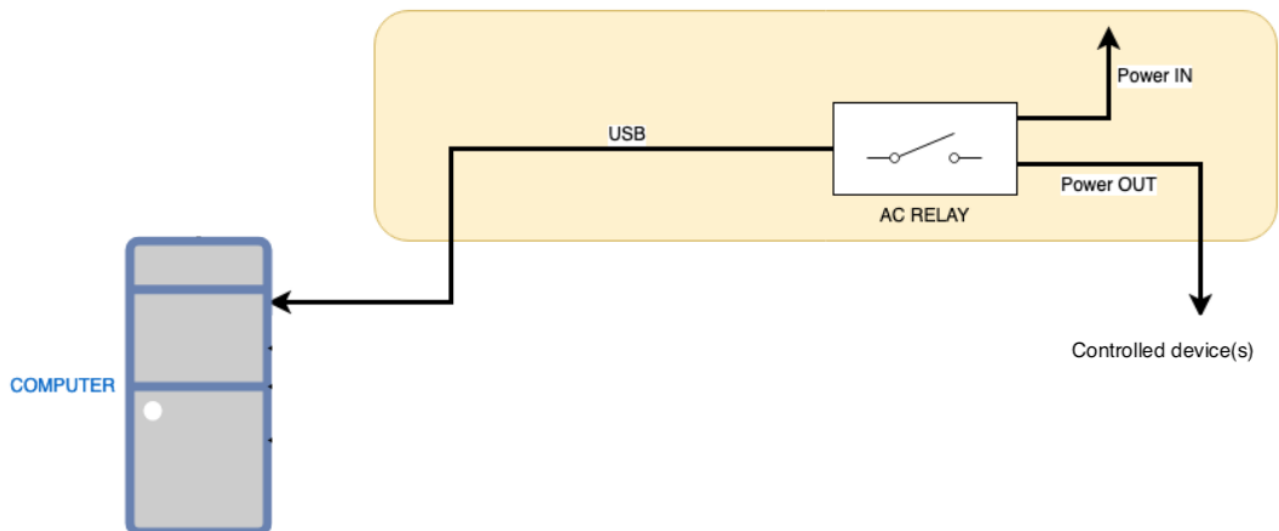
USB controlled Solid-state relay

Here is some information in the case your version is equipped with a USB controlled relay:

- the relay has 4 posts: 5V in, Ground, AC in and AC out;
- when 5V current passes through the 5V and Ground posts, the connection between the AC in and out is made, otherwise, it stays disconnected;
- the computer is set to cut power to the USB ports when it is shut off;
- the relay could be enclosed in a box or exposed;
- the relay model provided might vary based on stock availability, but it should allow enough wattage to go through to power on the video controller and the display. We often use relays allowing 15 Amps current at 250 Volts such as the Panasonic AQA221VL.

In terms of connections, the relay is typically used as following:

- a USB cable connects to a USB port of the computer and the 5V and Ground leads from said cable is connected to the corresponding relay posts;
- an AC power inlet allows to connect a power cord to the relay system;
- this AC inlet connects to a power cable that has its positive lead connecting to the AC in post of the relay;
- the relay's AC out post connects to a cable going to the AC outlet;
- the negative and ground leads from AC inlet are going straight to the AC outlet;
- the devices we want to control power to then connect to AC outlet: typically the video controller and the display.



Here is an example of how such a relay has been embedded in a box to allow multiple connections control:

