

The Year's Midnight

By Rafael Lozano-Hemmer



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This short section must be read for proper operation

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General important information

The Year's Midnight (2011), webcam, computer, high definition screen.

By Rafael Lozano-Hemmer

Description

"The Year's Midnight" is an interactive installation that shows the viewers' image on screen, unprocessed, except for plumes of white or black smoke that emanate from their eye sockets until the whole display is filled with a dense smog. Live and recorded eyeballs extracted from the video accumulate on the bottom of the display, similar to traditional representations of St. Lucy. The project's name is the beginning of John Donne's "A Nocturnal Upon St. Lucy's Day, Being the Shortest Day", a mournful poem which inspires this work.

Display

We suggest using a large, 52" or larger HD 1080 display with a resolution of 1920 x 1080 pixels. We often connect the computer through a VGA input as this gives a "softer", less digital look, and also VGA cable can be quite long so that the computer can be placed further from the display.

We like the Samsung UN55D7000 55" LED 3D HDTV and our instructions in this manual are for working with this model. In combination with this monitor we also suggest using Samsung's Ultra Slim Wall-Mount WMN2000B for hanging the screen. In general the mount should put the screen as close to the wall as possible.

NOTE: Please ensure that the electrical specifications of the monitor match your local current. Often monitors are not universal 110-220V power. If the monitor requirements don't match your electrical system, **please use a step-up or step-down transformer to regulate the electricity to avoid any damage to the monitor.** This applies to the monitor only, as the Apple computer supplied with the piece adapts itself to the electricity supplied.

Operation

1. Connect the computer to power using the supplied power adapter. The computer can be right beside or behind the monitor, or far from it in a well-ventilated area.
2. Connect the computer to the display using a VGA cable and the supplied Mini-Display Port to VGA adapter, or any other combination (DVI, HDMI, DisplayPort, etc.) that would suit your monitor connector.
3. Connect the Logitech HD Pro Webcam C910 camera directly to one of the computer's USB ports. You may use an active USB extender (not included) if your computer is far from the display. If you use a different camera, like the Prosilica GC650, connect the camera to its power supply and connect the camera to the computer's network port using a CAT6 or CAT5e cable.
4. Plug in the supplied Face API (green HASP) USB dongle to the computer in one of the USB ports available, or using a USB hub connected to that USB port. This will allow you to additionally plug in a USB mouse or USB keyboard, if necessary.
5. To turn the piece ON, press the power button of the computer. *Important note: Please do not*

push the button again as this will shut down the piece. Also, ensure that the monitor is turned on (preferably use the remote).

6. To turn the piece OFF, press the power button once, the computer will shut down in a few seconds. Some collectors only turn off the screen and leave the mac mini on all the time, this is fine but we recommend also powering down the computer to help in preservation of the piece.

Cleaning

Please do not clean the display surface with Windex or soap. Use a lint-free cloth and LCD screen liquid cleaner, such as Kensington Screen Guardian found in computer stores.

Placement Instructions

The middle of the screen should be hung at about 165 cm (65 inches) from the ground. This is higher than normal for an artwork, but this piece requires that so that there is more screen space for the smoke to accumulate on the top of the display. If your monitor diagonal is bigger than 65" of diagonal, you may want to lower the height of the monitor's center, however please confirm, with artist's team, where the center should be. Instructions for the Samsung Ultra Slim Wall-Mount WMN2000B mounting system are in Appendix 1.

The camera should be mounted on one side or the other of the screen using the provided metal bracket or another clean method that allows the camera to be directly on the edge of the screen. This is important for maintaining a field of view for the camera that allows the piece to come close to mimicking a mirror of the viewers. In most cases, the camera should be mounted with the center of its lens at 150cm from the ground.

The camera should be as close as possible to the edge of the monitor and preferably cover any screen branding.

In special cases where the framing or lighting poses a challenge to a 150 cm hang, the height and angle at which the camera is hung is variable and should be determined by looking at the framing of the live video feed before being attached to the monitor. There are a few factors to consider while determining this:

1: Ideally we would like to see a consistent background in the frame. For example, if you have black walls, a black ceiling, and a white floor; try to find a height and angle in which you don't see the white of the floor at all but instead only see the black of the walls and ceiling. In this case usually a lower mounting with very little tilt works best.

2: There should always be quite a bit of open space on the top of the video frame for the smoke to plume up into. Ideally, when an average adult is standing 1 to 2 m from the piece their heads should be near the middle of the frame, leaving the top half of the frame empty for smoke to billow up into. When that same person steps to within 50 cm of the piece, they should not have their head cut off in the video frame.

3: Smaller children should be in view of the camera as well. It's okay if only their head is in the

frame and their torso is cut off, but it is very important that children are able to have their face tracked and interact with the piece.

Lighting

The public must be lit in a way that prevents any glare on the plasma screen, sharp contrast against the screen, or shadows in the background. The light should also be a flattering portrait style lighting so that the viewers look good in the video image. This is best achieved by using focused lighting with a bit of diffusion hung high up on the wall directly above the plasma screen. This high angle allows for shadows to be small and cast upon the floor instead of the wall behind.

The color temperature of the camera can be changed in software to suit any color temperature of lighting, as long as the lighting is full spectrum.

Background

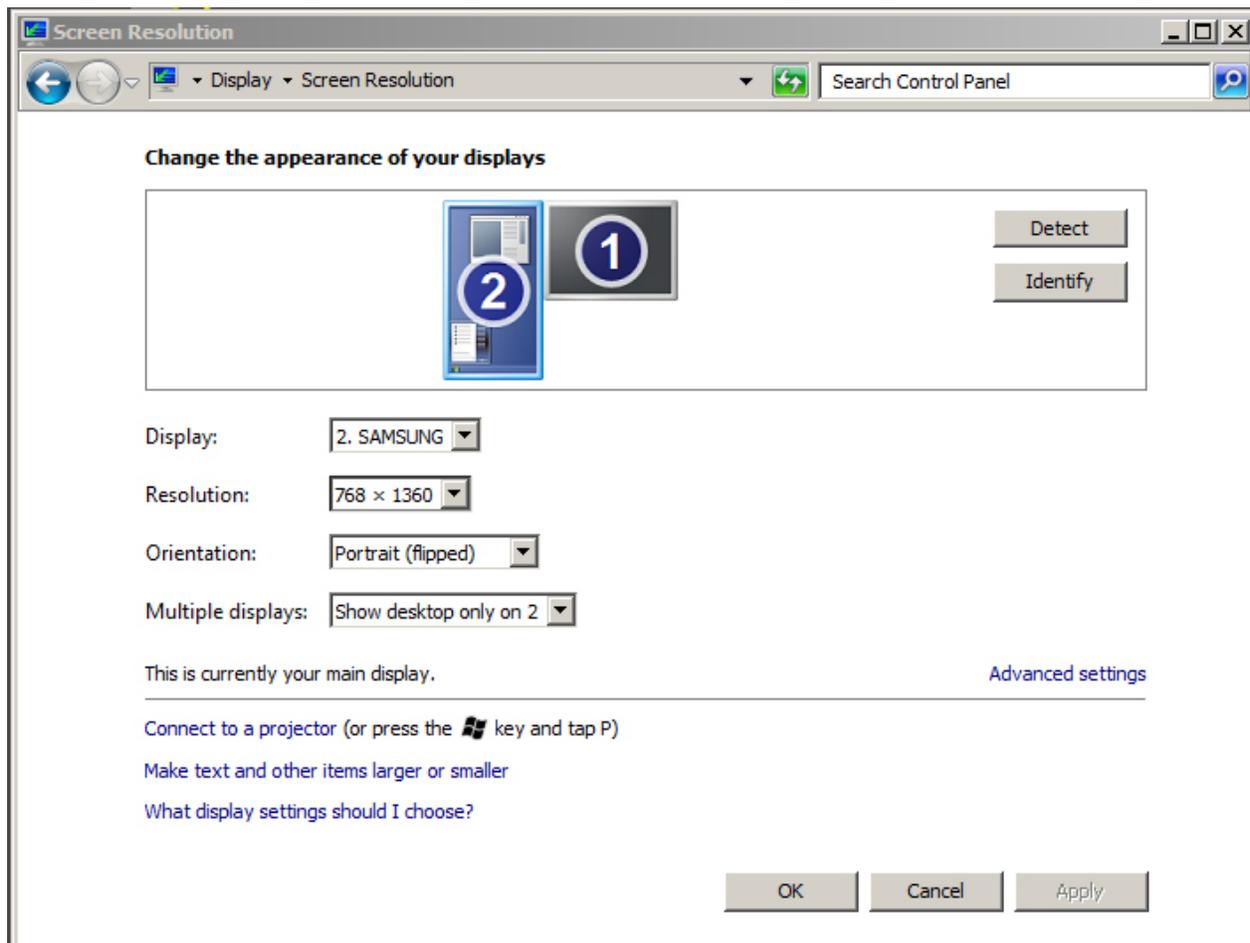
The piece will constantly show the wall in front of it and possibly the floor and ceiling too. If that wall has dark colors then the white smoke will be more easily noticed. If on the other hand the wall is white then black smoke should be used.

Software

Computer Display Preferences

Because the screen for this piece hangs sideways, it is necessary to change some display settings in order to rotate the image and scale it for the LED monitor. Since the “The Year’s Midnight” software autoruns, you will need to quit the software in order to navigate to the “Displays” control panel. Please use the following steps:

1. Right-Click in the software to reveal the “Settings” pop-up menu.
2. Click on the button named “Stop Piece.” This will quit the software and take you to the Windows desktop.
3. In the lower left-hand corner click on the “Start” button and then navigate to “Control Panels” in the pop-up menu.
4. In “Control Panels” find and click on “Display”, within this control panel, click on “Change resolution”.
5. Input the following settings:



Note: The resolution of 720 x 1280 has been set to match the performance of what the computer can handle without a delay in video responsiveness. In the future, as more powerful computers are available, this setting could be increased to 1920 x 1080, but only if the resulting smoke animation is fluid. You might want to flip or not the portrait mode depending on the way you placed the monitor on the wall.

The Year's Midnight Software (1.47 and over)

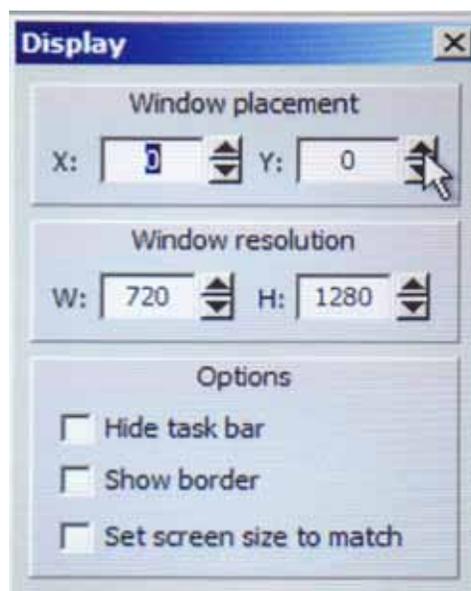
Most of the settings in the software self-calibrate automatically when the piece starts up. However, there are some software tools that may be useful if you would like to optimize the performance of the system. To change settings in the software, plug the included mouse into one of the computer's USB ports. Once the mouse is connected you may right click to reveal a pop-up menu. It may take a couple of seconds for the pop-up to appear.

In the pop-up menu there are ten choices:

1. Display
2. Obstacles
3. Camera
4. Collected eyes
5. Eye tracking
6. Smoke
7. White smoke
8. Black smoke
9. Adjust camera
10. Stop Piece

1. Display

This is where you can enter the monitor dimensions to be used. You can also displace the position of the "window" (where the mirrored image and the smoke are shown). This last option would be useful if you set up a multiple displays setup.

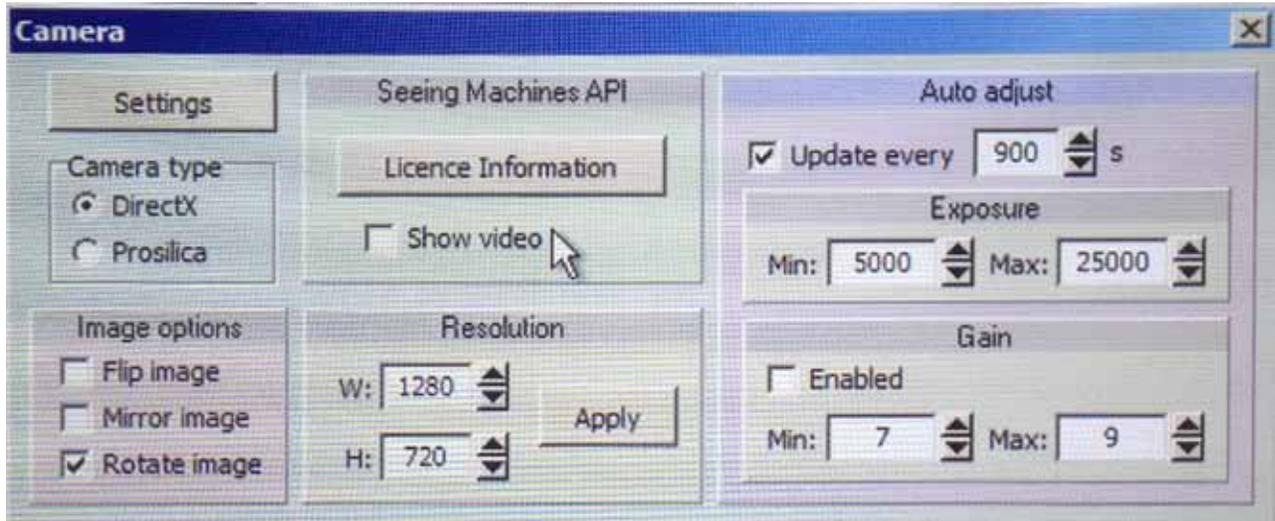


2. Obstacles

If obstacles need to be declared, this is where it will be done. For example, if the display isn't rectangular, we'll want to add obstacles to fit the shape of it: the smoke will flow within the edges and will have a better impact. This area should be used with the consent of the artist.

3. Camera

Shows a settings window where you can modify parameters related to the camera image. Except for the following, it is recommended that you leave these at their default settings.



a) Camera type — In there you can select the camera you have, either DirectX (webcams like the Logitech camera) or Prosilica for the GC650.

b) Image options — These allow you to set the appropriate orientation for your image, based on how and where you attached the webcam. You can rotate and flip the image to make it vertical like the monitor and you can mirror it (left edge will now be the right edge and vice versa). This last option is useful (either on or off) to ensure you're showing the viewers in the monitor like if they were looking at themselves in a real mirror.

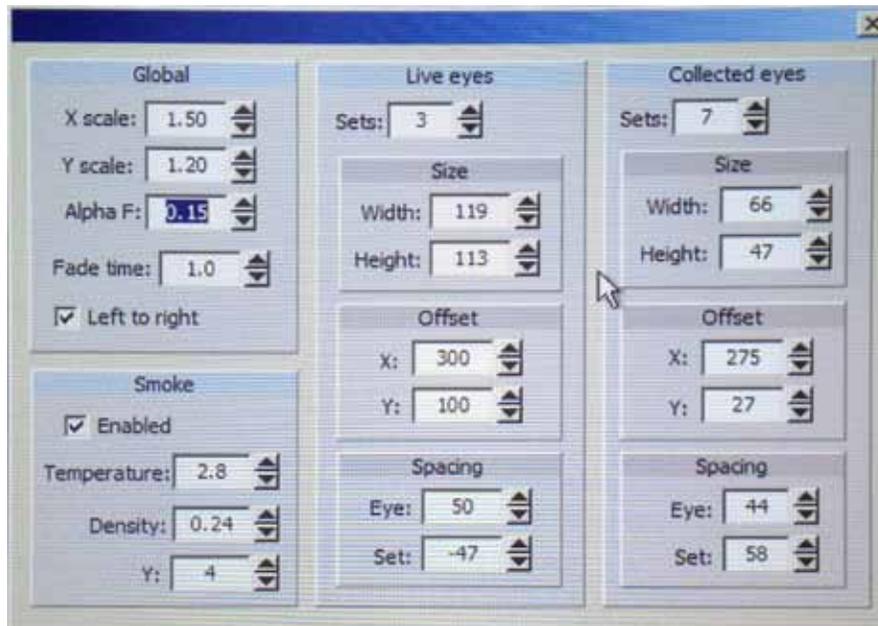
c) Resolution – Depending on the camera, you'll have to modify that section to proper value. With the Logitech or Prosilica, it is, usually, 1280x720. If you change it, you'll have to press Apply to see the modification.

d) Auto adjust — When activated, the system will select and update the exposure to the ideal value located between minimal and maximal values, every X seconds. This ensures the piece is showing a good-looking image, no matter if the lighting condition is changing or not.

e) Auto gain — Similar to the auto adjust, the system will select and update the gain to the ideal value located between minimal and maximal values.

4. Collected eyes

This is where we can adjust the live and collected eyes display pattern. In there, we retrieve 4 zones: Global, Live eyes, Collected Eyes and Smoke.



a) Global — These settings are applied to Live and Collected Eyes. X Scale and Y Scale will let you zoom in/out on the eyes to ensure showing mostly the eyes within the collection at the bottom: these settings are applied to the Live eyes and eventually get stored to the collected eyes, so changing these settings won't impact the collected eyes right away. AlphaF, will modify the transparency of the eyes. We usually like the value to be around 0.15. Left to Right is the way we are moving in the eyes: either from left to right or from right to left.

b) Live eyes — Sets will control the maximum number of eyes layered on top of each other as lives eyes: it is actually controlling the number of simultaneous people grabbed and analyzed by the system. Size will adjust the area size of the displayed eyes: the bigger the area is, the bigger the live eyes will be. Offset will position the center of the first displayed eye (left or right, depending of your setting in "Global"). The other eyes automatically be placed according to the first set of eyes. Within Spacing you can adjust the Eye value, which will adjust the spacing between the eyes or adjust the Set value which will adjust the spacing between each set of eyes.

c) Collected eyes — Same as in "Live eyes", but will be applied to the collected eyes.

d) Smoke — These settings are related to the smoke issued from the collected eyes, they will impact how the smoke billow within the frame. These settings are mainly generic so no change should be applied in there.

5. Eye tracking

This is where we can control the system eye tracking values. By modifying these, we adjust how the system is detecting people in front of the camera and how it is “handling” them. These settings shouldn’t be touched.

6. Smoke

These settings are controlling how the smoke will flow within the monitor. As we have 2 Generic modes (Black or White smoke in the main menu), these settings should be remained untouched and only be modified when we press on the white/black smoke buttons from the main menu.

7. White Smoke

Sets the smoke color to white and fast speed.

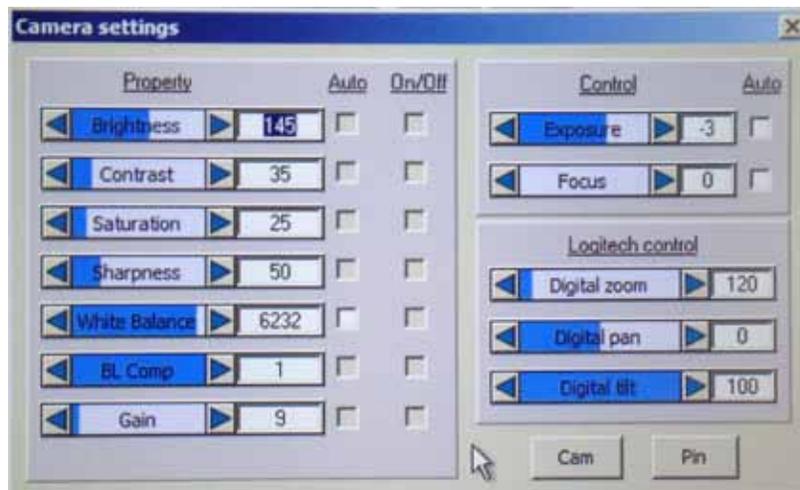
8. Black Smoke

Sets the smoke color to black and slow, speed.

9. Adjust camera

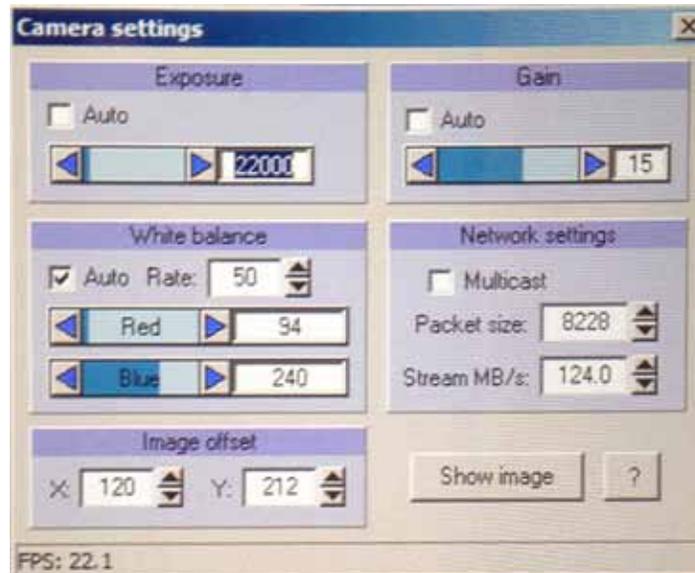
Depending on the camera that is being used, you will have 2 different “Camera settings” window.

a) DirectX camera



- **Brightness, Contrast, Gain, Exposure** — Will adjust the brightness of the image. Gain and Exposure might vary as the auto gain and auto exposure could be activated.
- **Saturation** — Will adjust the vivacity of colors within image. Lozano-Hemmer prefers to have a desaturated image, with colors visible but muted.
- **Sharpness** — Will adjust how precise the image pixels are.
- **White balance** — Will adjust the color balance of the image. It should be auto for environment where light condition is changing.
- **Focus** — Will adjust the distance of the focus point.

b) Prosilica camera



--- **Exposure** — Will adjust the exposure (brightness) of the image. Exposure might vary by itself as the auto exposure could be activated. The lower the exposure is, the faster the computer is reacting (more fluid for the viewer).

--- **Gain** — Will adjust the gain (brightness) of the image. Gain might vary by itself as the auto gain could be activated.

--- **White balance** — Will adjust the color balance of the image. It should be auto for environment where light condition is changing. Otherwise, adjust the reds and blues to get the perfect setup.

--- **Image offset** — Will move the image (like pan and tilt). Depending on the camera and monitor resolution, you will have more or less liberty in that section. It is there to help you to slightly adjust the camera's field of view in order to center the viewer's reflection to the monitor's center.

10. Stop Piece

Select this to exit the program entirely, —this will take you to the windows desktop. If you would like to relaunch the program, click on the shortcut icon that is on the desktop. Please note it is not necessary to quit the program to turn the piece off; you can simply press the power button on the computer and that will take care of quitting the program and shutting down.

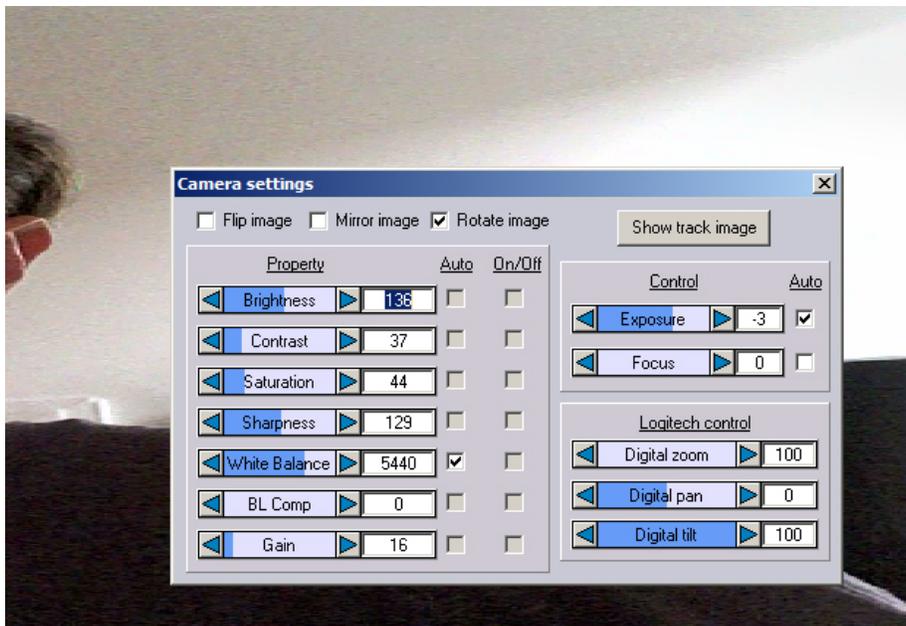
The Year's Midnight Software (before 1.47)

Most of the settings in the software self-calibrate automatically when the piece starts up. However, there are some software tools that may be useful if you would like to optimize the performance of the system. To change settings in the software, plug the included mouse into one of the computer's USB ports. Once the mouse is connected you may right click to reveal a pop-up menu. It may take a couple of seconds for the pop-up to appear.

In the pop-up menu there are four choices:

1. **Camera**
2. **White Smoke**
3. **Black Smoke**
4. **Stop Piece**

1. **Camera** – Shows a settings window where you can modify parameters related to the camera image. Except for the following, it is recommended that you leave these at their default settings.



a) Flip, mirror and rotate checkboxes — These allow you to set the appropriate orientation for your image, based on how and where you attached the webcam.

b) Gain and Exposure – Under conditions where there are variable lighting conditions (such as the piece being in a room lit by window lighting) we recommend that you leave these in “Auto”.

Manually setting these parameters is only recommended when there is consistent lighting. Making manual adjustments is necessary if for instance the video image is too dark or too bright (washed out). Use these two parameters to get an image that looks good for people's skin.

-For Gain, a setting of 50 or less is ideal. Settings above 50 will result in a grainy image.

-For Exposure, a settings of -4 or higher is ideal. Settings below -4 will result in a lag in the smoke tracking.

-If you cannot get a bright enough image within these ranges than you may need to enhance the room lighting so that visitors are brighter lit while viewing the piece, or work with the camera brightness and contrast settings.

c) Saturation — Lozano-Hemmer prefers the image to have low saturation.

2. White Smoke

– Sets the smoke color to white and fast speed. You can also switch smoke colour by pressing the mouse wheel.

3. Black Smoke

– Sets the smoke color to black and slow, dense, speed. You can also switch smoke colour by pressing the mouse wheel.

4. Stop Piece

– Select this to exit the program entirely, —this will take you to the windows desktop. If you would like to relaunch the program, click on the shortcut icon that is on the desktop. Please note it is not necessary to quit the program to turn the piece off; you can simply press the power button on the back of the shadow box and that will take care of quitting the program and shutting down.

Support

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

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