

# FLATSUN

BY RAFAEL LOZANO-HEMMER



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## **GENERAL IMPORTANT INFORMATION**

This short section must be read for proper operation.

# FLASTUN (2011)

BY RAFAEL LOZANO-HEMMER

## Technique

Custom built LED screen, computerized surveillance tracking system, fluid dynamic algorithms (Navier Stokes, fractal flames, reaction diffusion and Perlin noise).

## Description

A circular display that simulates the turbulence at the surface of the Sun using mathematical equations. The piece reacts to the presence of the public by varying the speed and type of animation displayed. If no one is in front of the piece the turbulence slows down and eventually turns off. As the built-in camera detects people more solar flares are generated and the fake Sun shows more perturbation and activity. At 140 cm diameter, Flatsun is exactly a billion times smaller than the real Sun.

## Operation

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

1. Connect the computer, the video controller and the display to electrical power. Use the supplied power cables.
2. There are 3 different ways to control this artwork: with an electrical timer, 24/7 or with a sequencing system on the computer.
  - a. Using an electrical timer: an electrical timer controls the display, the video controller and the USB extender (optional). The computer is set to run 24/7, with a reboot (controlled thru Windows task scheduler) right after the electrical timer turns ON. **Allows different turn ON turn OFF times** depending on the day of week: weekend could mean the piece is OFF, etc.
  - b. The computer controls the timing: a custom made USB relay controlled by computer feeds power to the video controller, the display and optionally the USB extender. Windows is set to shut down at some point during the day (Windows task scheduler). The computer, thru BIOS, is set to turn ON at specific time in the day. This feature doesn't allow leeway for the turn ON / turn OFF times: **365 days a year it would be from X:XX to Z:ZZ**
  - c. Running 24/7. While this option is feasible, we suggest to avoid it in order to extend the life expectancy of display as manufacturer sells the display stating that LEDs should be good to go 24/7 at least for 8 years. In such setup, the computer would be

set to automatically restart daily somewhere in a downtime moment. 3 to 4 devices to be plugged to AC: computer, display, video controller, USB extender (optional).

3. In all cases, except if you're using the timer setup: if the computer is turned OFF and you want to turn it ON, a simple push on the computer power button (0,5 second) would start the computer and after booting into Windows, the software running the being launched with a 15-30 seconds delay. If using an electrical timer, adjustments on the timer might be required.
4. To turn the piece OFF, press the power button on the computer (one second): computer would turn OFF after few seconds. If you use the 24/7 or the electrical timer solution, ensure that no power is sent to the display, the video controller and the USB extender to extend life expectancy.
5. In all cases, 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. 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 surfaces with Windex or soap. Use a lint-free cloth and LCD screen liquid cleaner, such as Kensington Screen Guardian found in most computer stores. While cleaning the camera, avoid applying too much pressure onto its surface, otherwise the camera could move on its mounting base and get misaligned or the lens can be rotated and go unfocused.

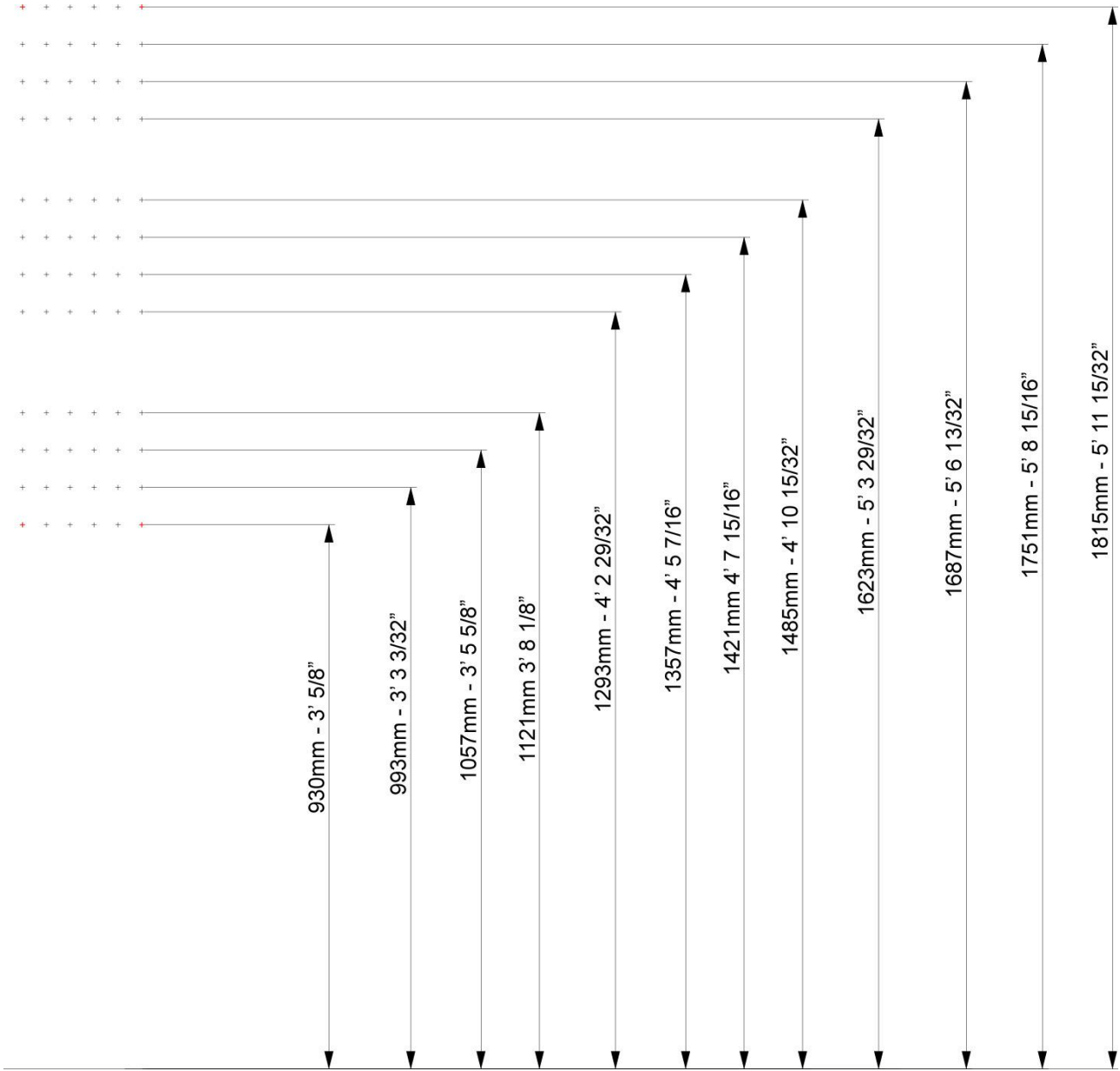
The camera lens shouldn't be cleaned with same product: please air an air puffer to remove the dust from the lens, if needs be.

The metal frame can be cleaned with regular all-purpose cleaner or even with a simple damp cloth. Do not use harsh cleaners or rough sponges.

We recommend cleaning the piece at least every two months.

# Placement Instructions

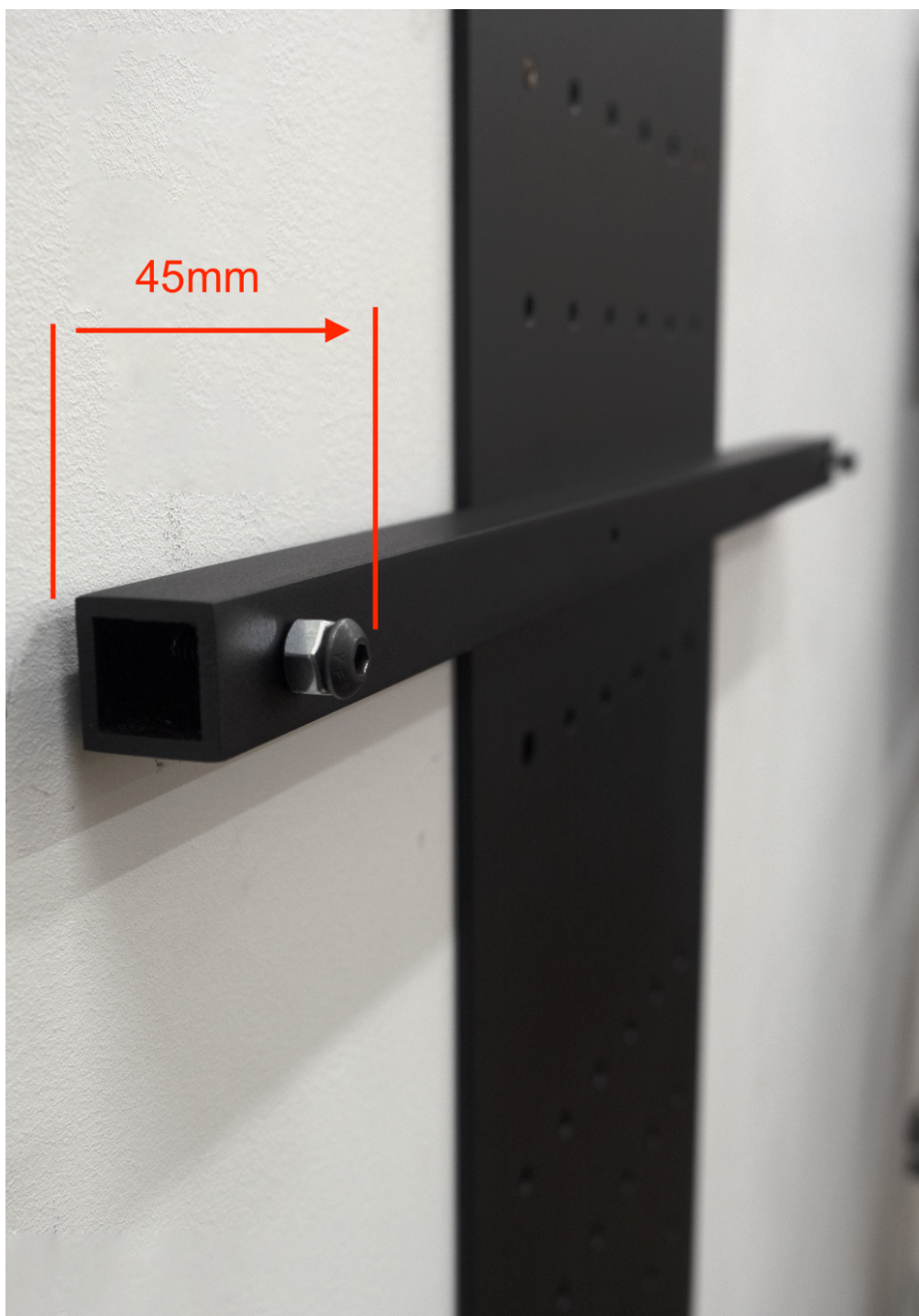
The artwork display should have its vertical centre aligned at 135 cm (53' 1/8") from the floor. The monitor weighs about 150lbs and we recommend using at least 4 anchor points: the outer corners of the bracket. Depending on the hosting wall structure and composition, you might decide to use more anchor points: this explains why the mounting bracket has plenty of holes to allow different anchor points locations. Here you see the different heights for the different anchor rows.



While installing the bracket on the wall, ensure it is levelled: to do so, place a bubble level on the horizontal bar and rotate the bracket.



Once the bracket is attached to the wall, adjust the screws of the horizontal bar so the top of their head comes 45 mm (1 25/32") away from the wall and tighten the nuts onto the metal bar to lock screws in place.

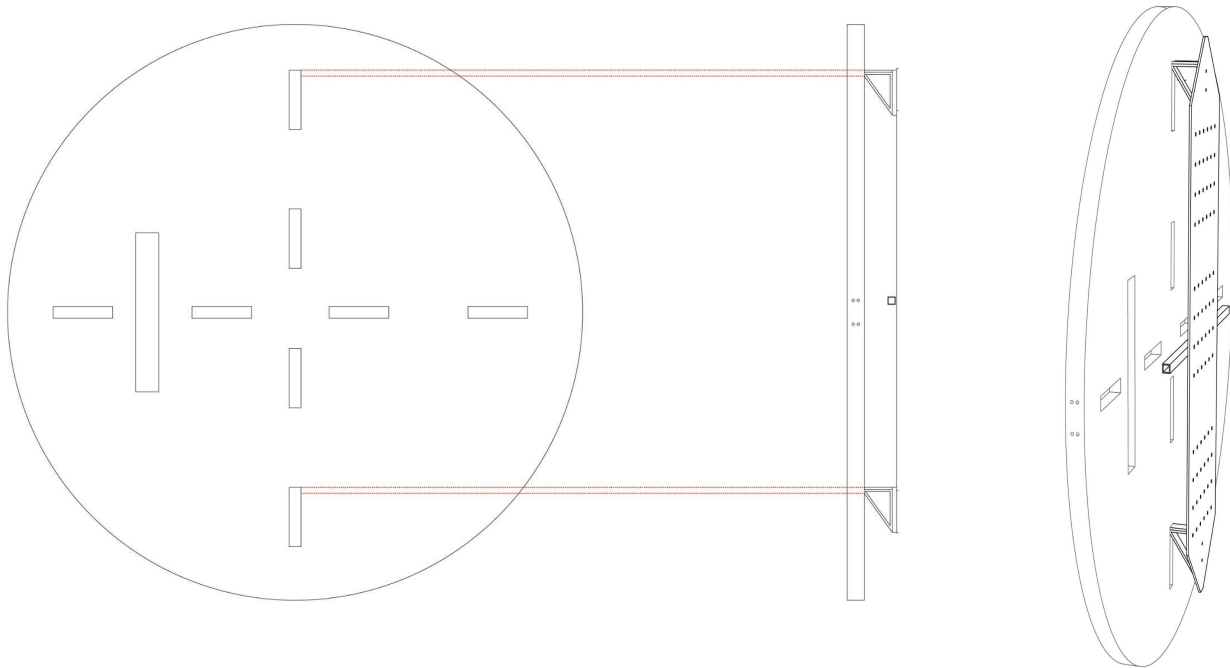




To install the display onto the bracket, we recommend being three people: two on each side doing the heavy lifting and one in the centre (looking at it from above or under), guiding the first two.

The bracket has 2 hooks and the display has 4 slots vertically aligned on its centre, at the back. The hooks need to be inserted into the top and bottom slots. This is where the third person comes handy. Ensure to insert both hooks at the same time and don't apply any pressure to the frame to avoid any tension into the electronics.

In the process, pay attention to avoid pinching any cabling (from the camera or the display). Once the display is on the bracket, ensure it is stable and the hooks are well inserted in the proper slots.



## DETAILED TECHNICAL INFORMATION

## **Software**

The artwork is set to load from computer startup. No settings or options are currently available. To quit the software, press the Escape key and close the Touch Player software. Please note that since the display is circle, you don't see the actual full display from Windows. If you need to work on the computer, a secondary monitor cloning the circle display might come handy in this situation.

## **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 power button, nothing seems to happen.**

Do you hear any sound coming from the computer? If so, the computer is running and the display should display the piece shortly.

If not, check that the display and the video controller are powered and the video controller switched On: depending on the setup used (24/7, electrical timer, computer timer) you'll have few to several outlets and devices to check.

### **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: ensure the computer is connected to the display. Inspect all video connections and if your edition has a video controller, ensure it is powered on. After trying these steps, if the image is still deformed, try restarting the artwork.

### **Looks like there is never any camera interaction.**

First of all, not all the seasons are reacting to the camera's input and the reaction is quite subtle. But if you're sure that all seasons aren't reacting, ensure the following: camera's cable is well connected in camera body, the USB connection is well connected either into the USB port of computer or USB extension. Also ensure the extension (classic USB or over network cable) is well connected to the computer. If using a USB over network cable, ensure the extender is powered, if needs be.

If after that you still have the impression the camera doesn't feed anything to artwork software, you can ensure the camera works well by looking at the feed from a software that can display a USB camera video feed or a website doing the same, avoiding the hassle of installing a third party software. If you have a proper video feed there: you should have one in the software, so depending on the displayed season, you should notice some interaction.

## 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  
4060 St-Laurent, studio 107  
Montréal Québec H2W 1Y9 Canada  
Tel 1-514-597-0917  
Fax 1-514-597-2092  
info@antimodular.com  
www.antimodular.com

# APPENDIX I - INSTALLATION

## Description of Components

This artwork requires the following components:

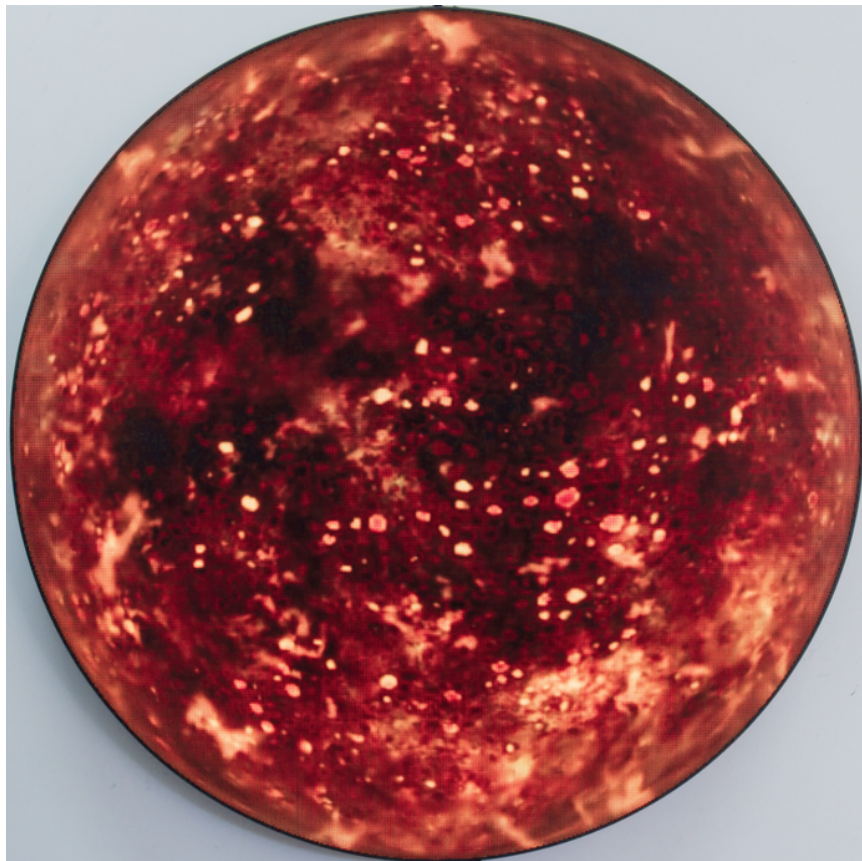
Component	Description
<b>Computer</b>	Computer running on Windows 10 LTSC OS at least, with a NVidia graphics card (at least RTX 3060).
<b>Camera</b>	A USB camera with a micro lense having a viewing angle of 82.5 degrees, installed at a certain angle on top of display, allowing people 2m away from display to be in the field of view but at the same time avoiding being distrubed by action happening further at the back.
<b>Data cable</b>	Typically is a USB cable that interconnects the computer and camera.
<b>Video signal cables</b>	Connects the computer to the video controller (usually it is a DVI-HDMI cable) and the video controller to the display (network cable).
<b>Video controller</b>	Device receiving the video feed from the computer and outputting it to the display.
<b>Display</b>	A LED round display.
<b>Keyboard</b>	While not required for normal use of the artwork, it allows you to calibrate the system prior to exhibition.
<b>AC relay or electrical timer</b>	Device allowing giving or not electrical power to display and video controller depending on time or state of computer.
<b>USB 2.0 over Cat5 extender</b>	Optional: useful if USB cable length needs to be extended.



Images of components, for consultation:



Computer, Windows OS



Display



USB Camera



USB 2.0 over Cat5 extender - Black Box IC280A-R2



Logitech wireless RF keyboard

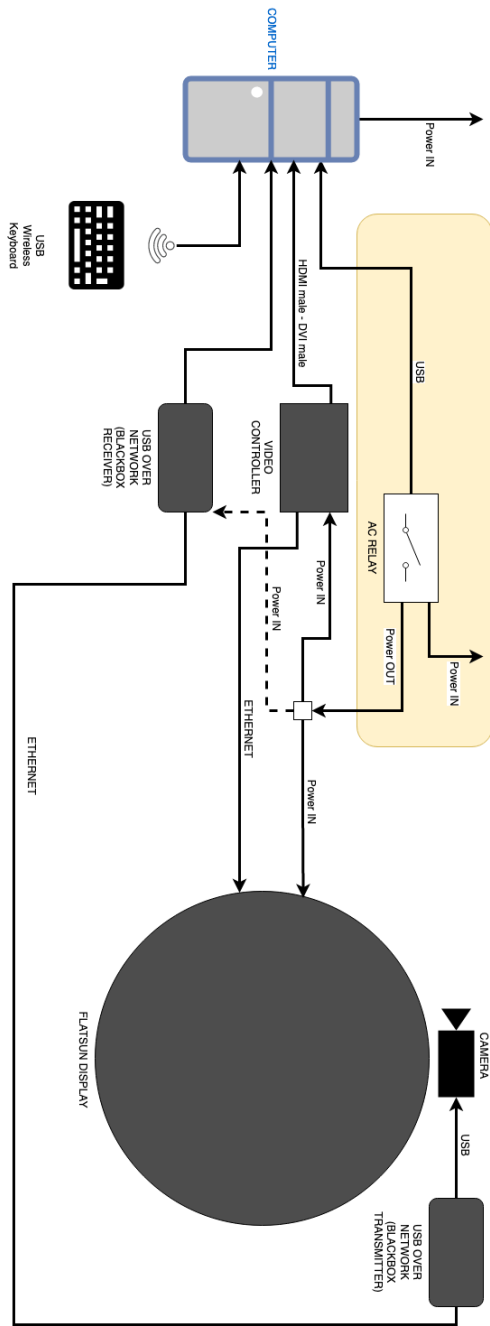


Video controller

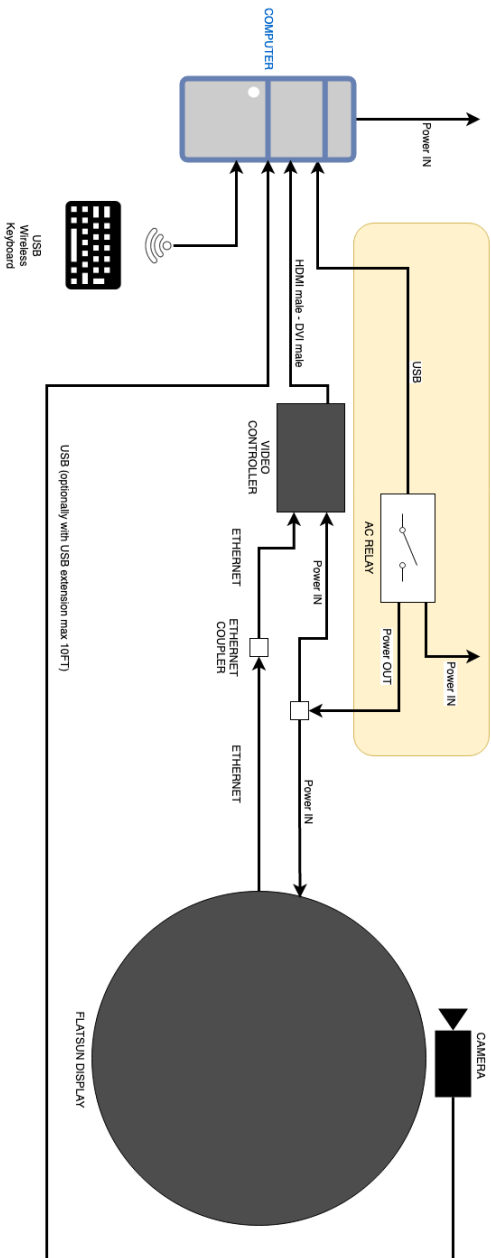
# Wiring Diagrams and Connections

Here are the two possible connection diagrams based on the need to extend or not the distance between the display/camera set from the computer..

**WIRING DIAGRAM IF COMPUTER, AC RELAY AND VIDEO CONTROLLER ARE FARTHER THAN 15FT FROM DISPLAY**



**WIRING DIAGRAM IF COMPUTER, AC RELAY AND VIDEO CONTROLLER ARE WITHIN 15FT DISTANCE FROM DISPLAY**

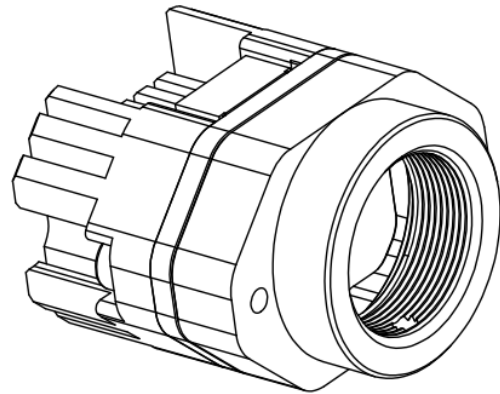
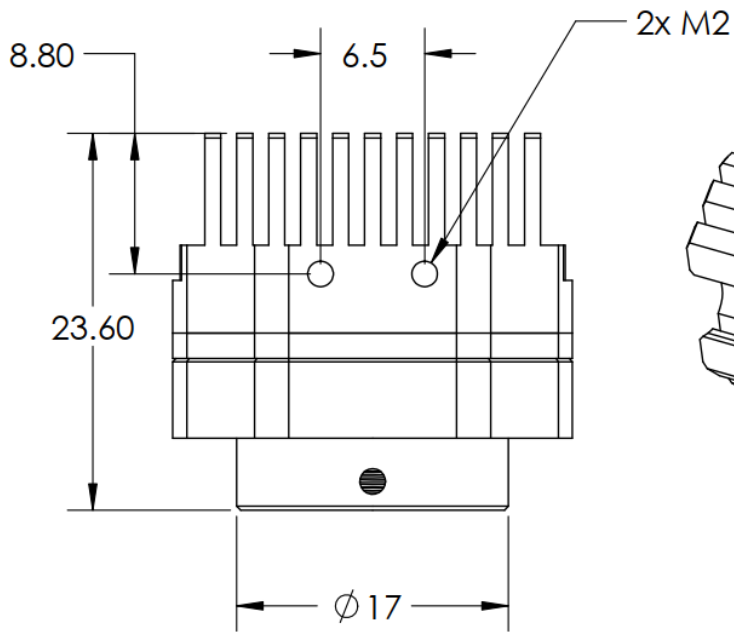
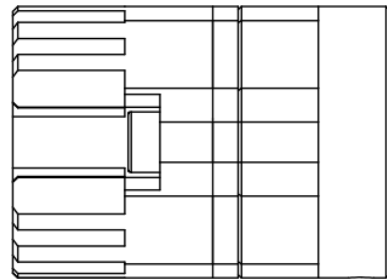
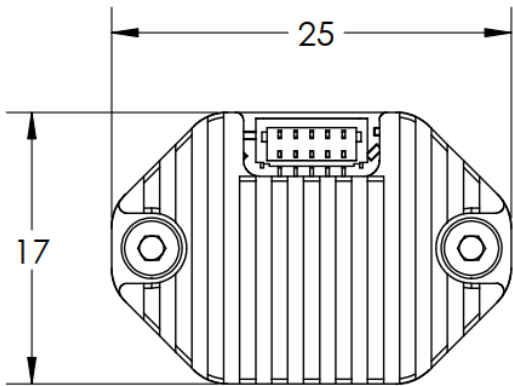


## APPENDIX II - TECHNICAL DATA SHEETS

### Kurokesu C1 Micro M12

<b>Pixels</b>	2304H x 1536V
<b>Sensor size</b>	5.07mm x 3.38mm
<b>Shutter</b>	Electronic Rolling Shutter
<b>Sensor pixel size</b>	2.2 $\mu$ m x 2.2 $\mu$ m
<b>Frame rates</b>	<ul style="list-style-type: none"> <li>● H.264 &amp; MJPG – 30fps in all modes</li> <li>● YUV 4:2:2 (YUYV) – 1920x1080 @ 5fps, 1280x720 @ 10fps, 640x480 @ 30fps</li> </ul>
<b>Output frame sizes</b>	1920x1080, 1280x720, 640x480, 640x360, 320x240, 320x180. All progressive.
<b>Manual control</b>	Exposure, White balance (2800°K – 9300°K), Gain, Gamma, Backlight compensation, Sharpness, Contrast, Saturation, Hue, Brightness, Anti-flicker frequency
<b>Rated power</b>	2W max: 350mA @ 5V – h.264, 290mA @ 5V – MJPEG / YUYV
<b>Supported OS</b>	Windows, OSX, Linux, Android
<b>Sensor</b>	Onsemi AR0330
<b>Weight</b>	12g
<b>Dimensions</b>	25x17x28.8mm

<b>Ingress protection</b>	IP40
<b>Lens mount</b>	M12-mount
<b>Operational temperature</b>	-50 ... +65°C



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

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