The following instructions are for MWP Z2 units purchased between March 2021 and February 2026

It is recommended that you read through ALL of the set up and operation manuals BEFORE using the Zantiks system to avoid damaging the equipment.

Zantiks MWP Z2 kit

- MWP chassis and standard top box. Integrated with:
    - Zanscript (Zantiks proprietary scripting software)
    - Built-in features / stimuli
        - overhead 'house lights'
        - vibration motor plate
        - camera; 4mm lens
        - computer
- A 12V power cable (110-240V ~ 50/60Hz input); local mains plug
- Zantiks router, power cable, and Ethernet cable
    - A router is supplied with the first unit, this is typically a TP Link router with 4 LAN ports. The single WAN port is not used in the typical configuration and is taped over to stop it being used by mistake. Subsequent units can be networked to this router, using a network switch if necessary.
- Light stimulation plate with diffuser to hold a multi-well plate or Petri dish and your choice of LED wavelength.
- A standard temperature control system

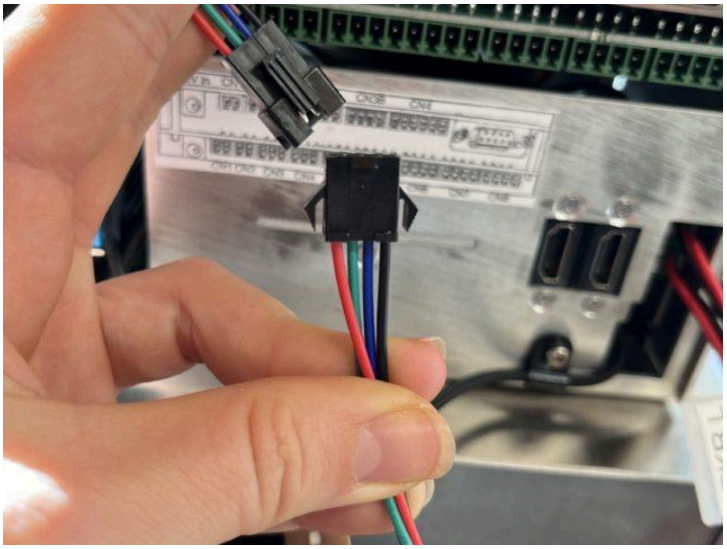
Assembling the motor plate

When assembling the MWP unit, the motor plate needs to be inserted before plugging in the mains power. The motor plate is delivered detached in order to prevent breakage during transit.

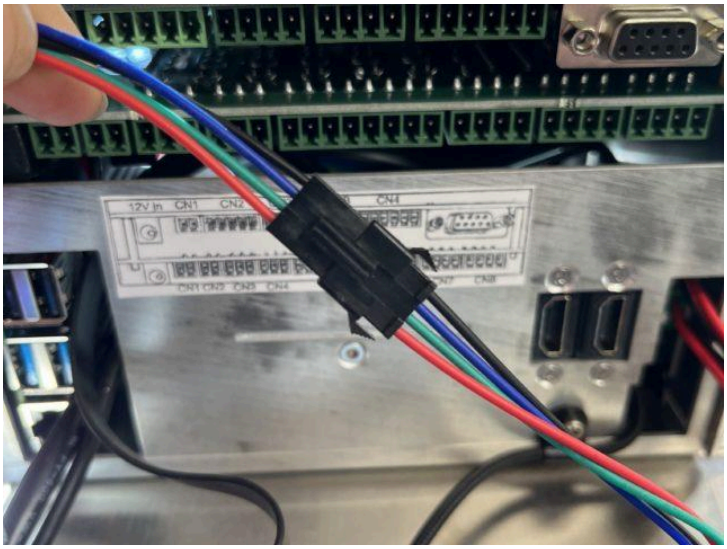
The video below shows how to open the front section of the MWP unit so that the motor plate can be inserted and attached. To do this, a T10 Torx driver, or similar, is necessary (not an allen key). This tool should be included with the unit.

🌐 ***How to assemble the motor plate to the MWP unit***

Connect the motor plate via the push plugs shown in the images below. There is only one way around that the push plugs fit and should connect without any force. It is important that the motor plate is connected before supplying power to the MWP system. Additionally, if you need to disconnect the motor plate for any reason ensure that the system has first been shut down from the home console page, wait 10seconds , and then unplug from the mains power before doing so.



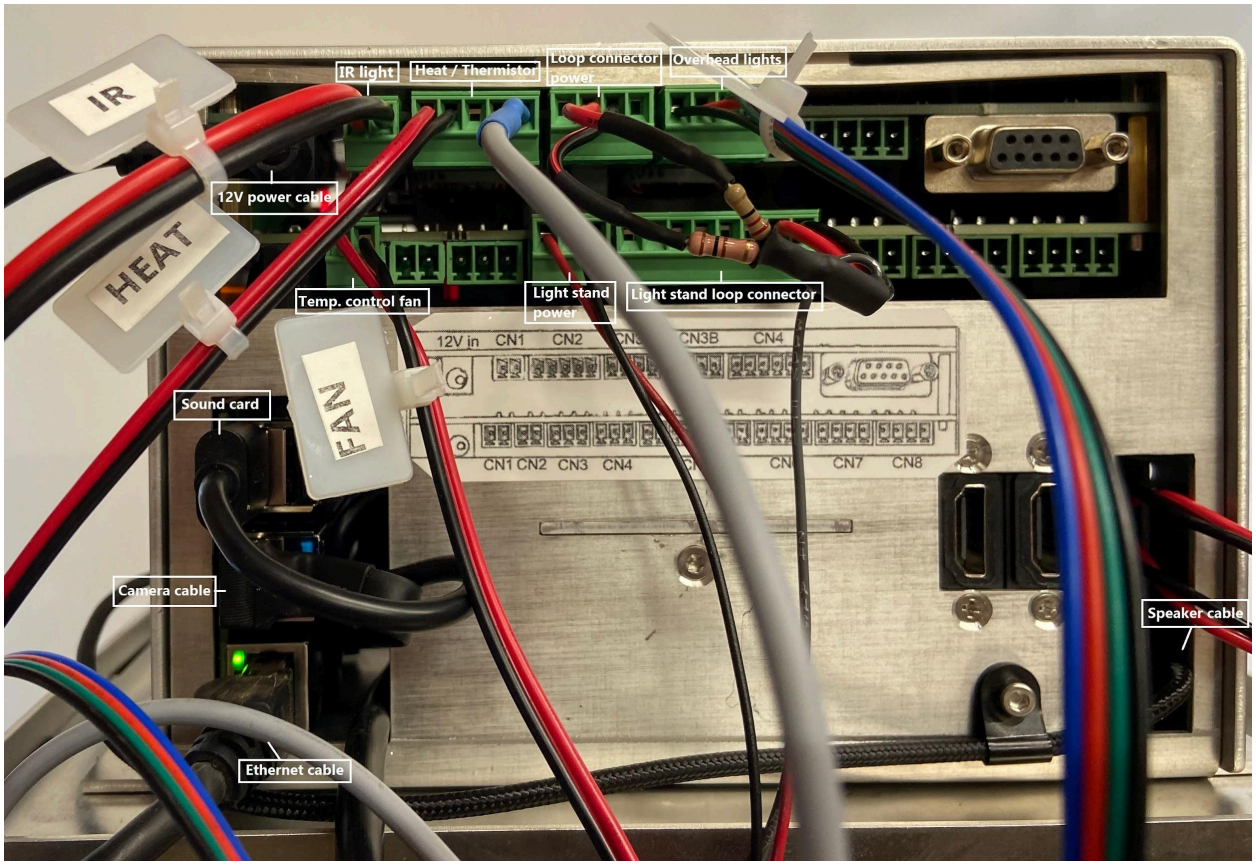
Cables for the motor plate to the top box before connecting



Cables for the motor plate to the top pox after connecting

Setting up the MWP

- Place the MWP unit on a stable surface close to a power socket and away from disturbances.
- Insert the 12V power supply cable into the top left side socket of the MWP and plug into the mains.
- Connect the ethernet cable at the side of the MWP unit, just below the 12V power cable, and plug this into any of the 4 slots available in the LAN section of the router. Note that the blue WAN socket has been covered. This socket should not be used and has been covered to discourage users from trying to connect using the WAN rather than the 4 LAN sockets.
- Connect the rest of the MWP top box cables as shown in the diagram below.
    - Ensure all wires are connected to the green connection plugs securely. Please see the tutorial video on how to do this.



Zantiks Z2S top box: the unit's 12V power supply is in the top left; below this is the sound card (round cable) and camera cables (flat USB cable with the blue connector); directly below these is the ethernet cable. On the lower right is the speaker's cable. CN1 on the upper board houses the IR light's wire, CN2 on the upper board is the heater and thermistor's cables. CN3A is the light stand loop connector's power cable & CN3B houses the overhead lights cable; CN1 on the lower board houses the power supply for the

temperature control unit's fan. CN4 and CN5 on the lower board are the light stand's power supply and the loop connector for the LEDs, respectively.

- Turn on the router and the mains power to the Zantiks unit. Wait a few minutes for the MWP unit to power on.
- If you have only one Zantiks unit, the address will be 192.168.1.101. The IP address is used to identify the unit on the Zantiks Control Console. The top box should be labelled with the IP address and the licence number. (The IP address is also included on your delivery note).
- Using any browser-enabled device:
    - Go to your device's network settings and connect to the wifi network "Zantiks_XXX" (XXX being specific to your lab and written on the delivery note).
    - Type in the network password, which is initially provided as: behaviour, simply (this is also included on the delivery note).
    - Your computer will likely come back with "connected without internet". This is correct since it is just a local network, it does not provide internet access.
    - Open a web browser of your choice, go to the address bar and type in the IP address for the Zantiks unit.
    - The web browser should now display the Zantiks Control Console page.

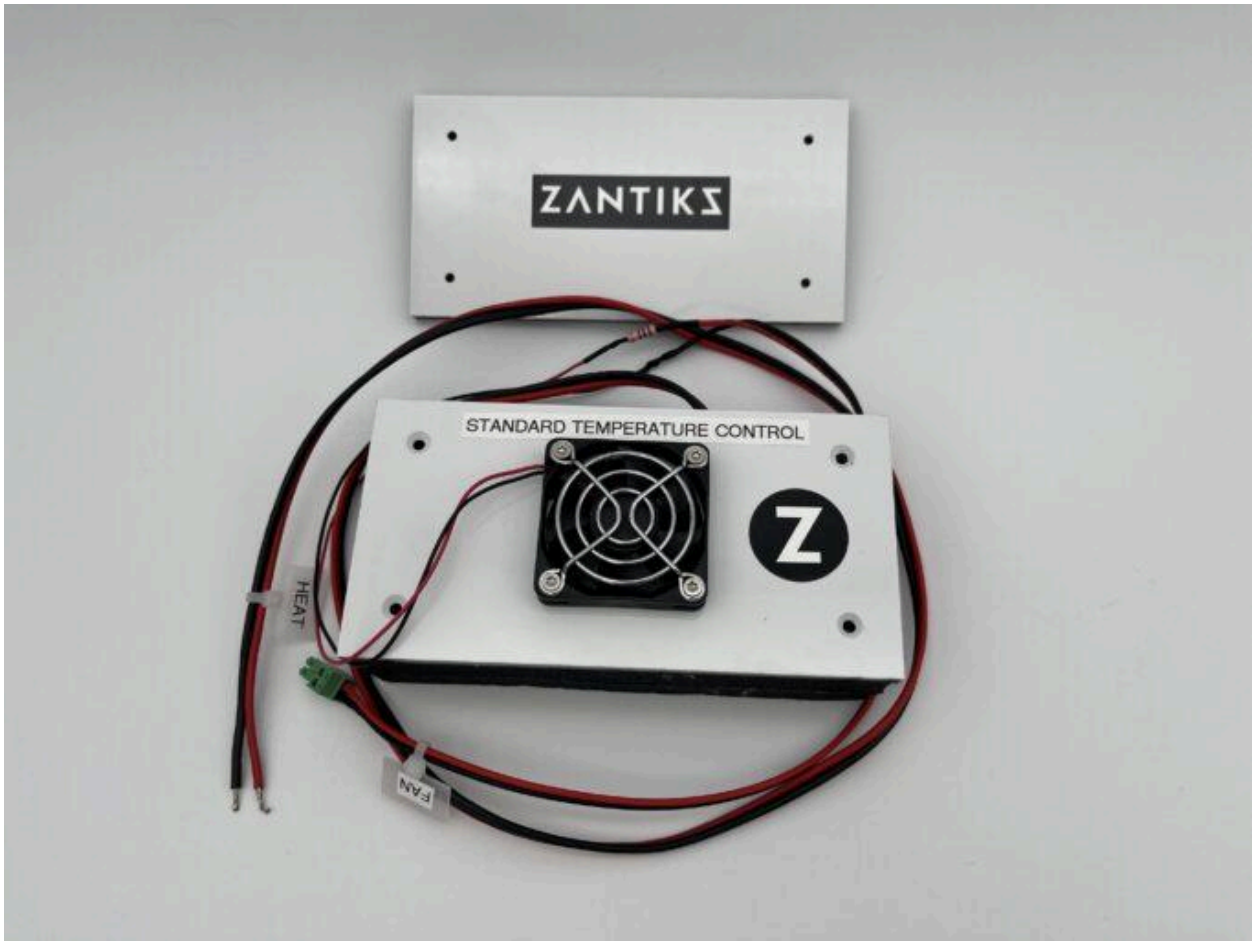
***NOTE**: Once you have finished working with the Zantiks system, you will need to shut it down from the Control Console page and wait 10seconds before removing power.*

Standard Temperature Control - Assembly Instructions

This system consists of two components which move ambient air through the unit. If/when required, the air can be heated to achieve a temperature above ambient room temperature by up to 10°C.

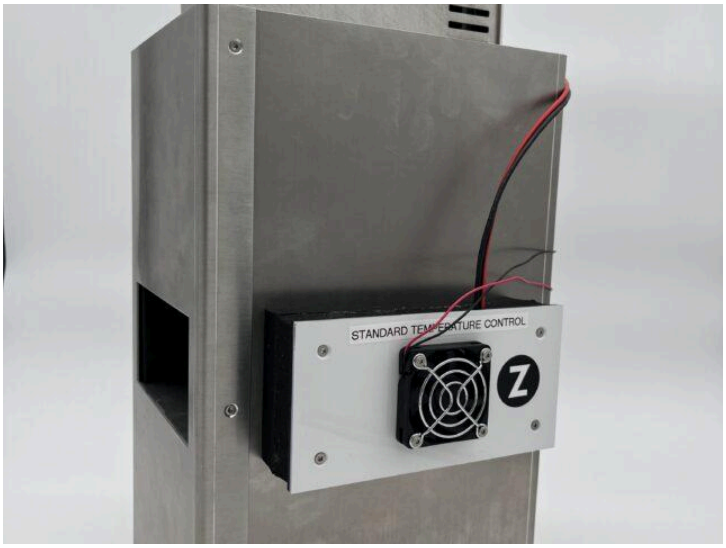
Components include:

- 1 x Temperature control heater
- 1 x Cover plate

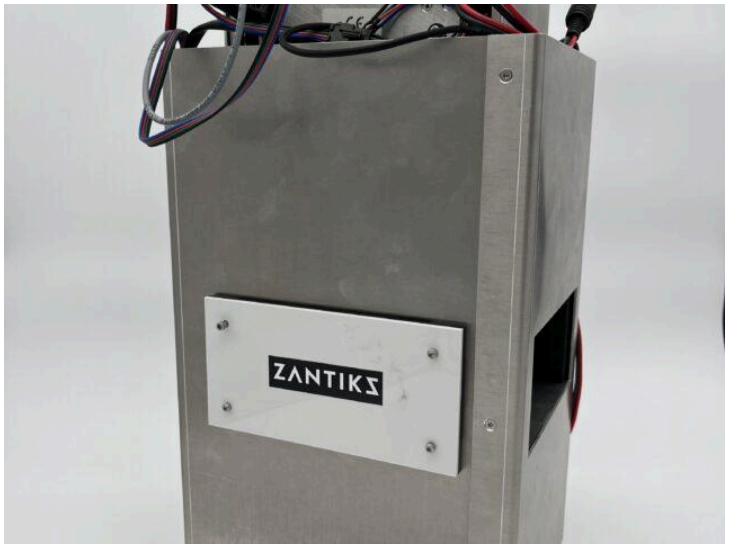


The two components of the standard temperature control system

The 2 components are screwed to the sides of the MWP unit, the temperature control heater is attached to the right hand side of the unit using the four 55mm M3 screws provided. The white cover plate is attached to the left hand side using the 18mm M3 screws provided.



Temperature control heater is attached to the right side of the MWP unit

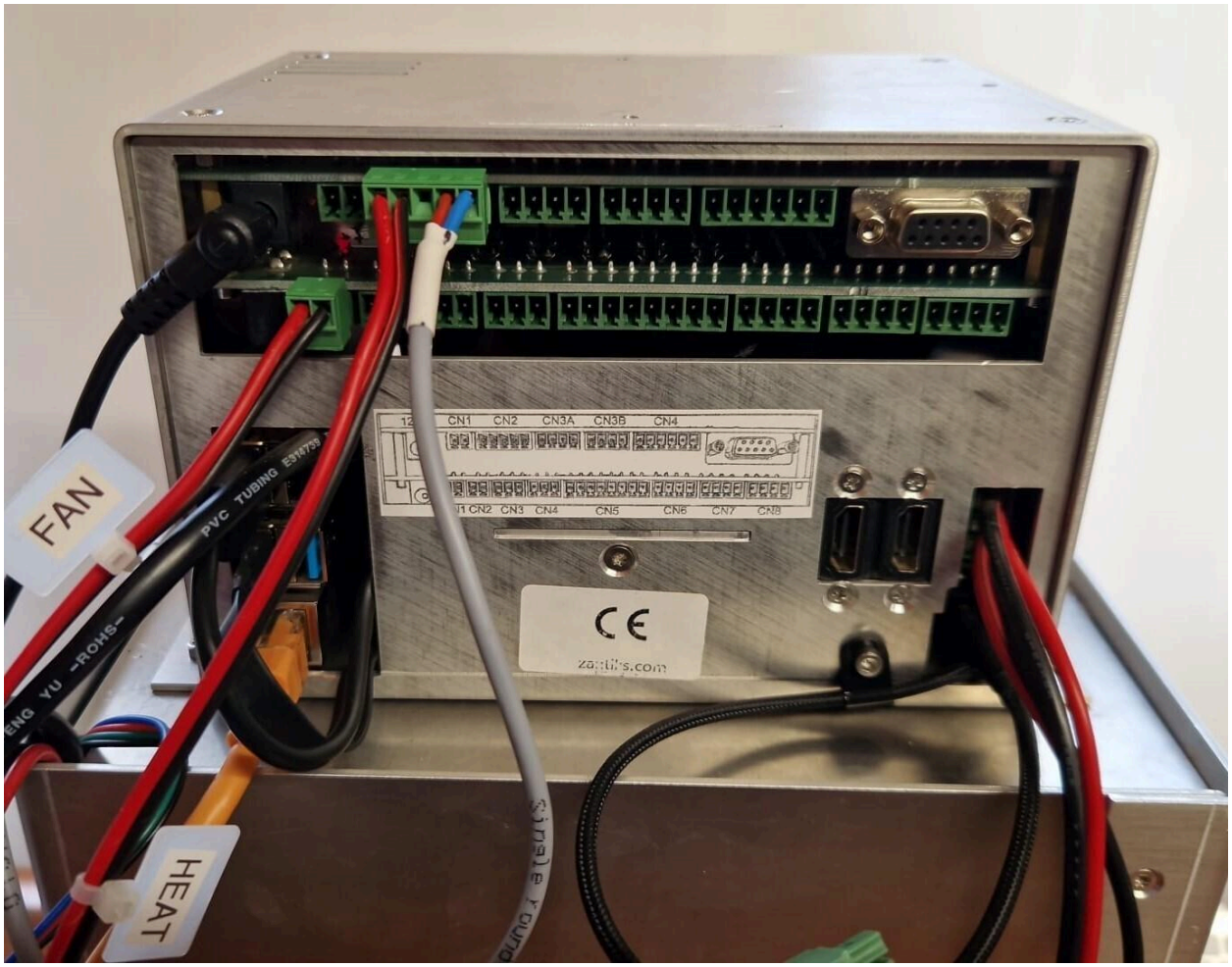


Cover plate is attached to the left hand side of the MWP unit

There are 2 pairs of wires that come out of the standard temperature control heater. These are labelled FAN (with a 2 way green connector attached) and HEAT (with bare wires).

- The FAN lead should be plugged into the upper or lower CN1.
- The wires labelled HEAT should be attached to the 5-way plug which already has the grey thermometer wire attached. The HEAT wires are screwed into the outer 2 holes of the connector, opposite the thermometer. The red cable attaches to the outside hole and the black cable goes in the inside hole. This is then connected to CN2 on the upper board.

NOTE*: Please compare your set up with the image below to ensure you have wired your temperature control system correctly.*



Wiring of the standard temperature control system to the MWP unit

Standard Temperature Control - script command

`SET(THERMOSTAT,28)`

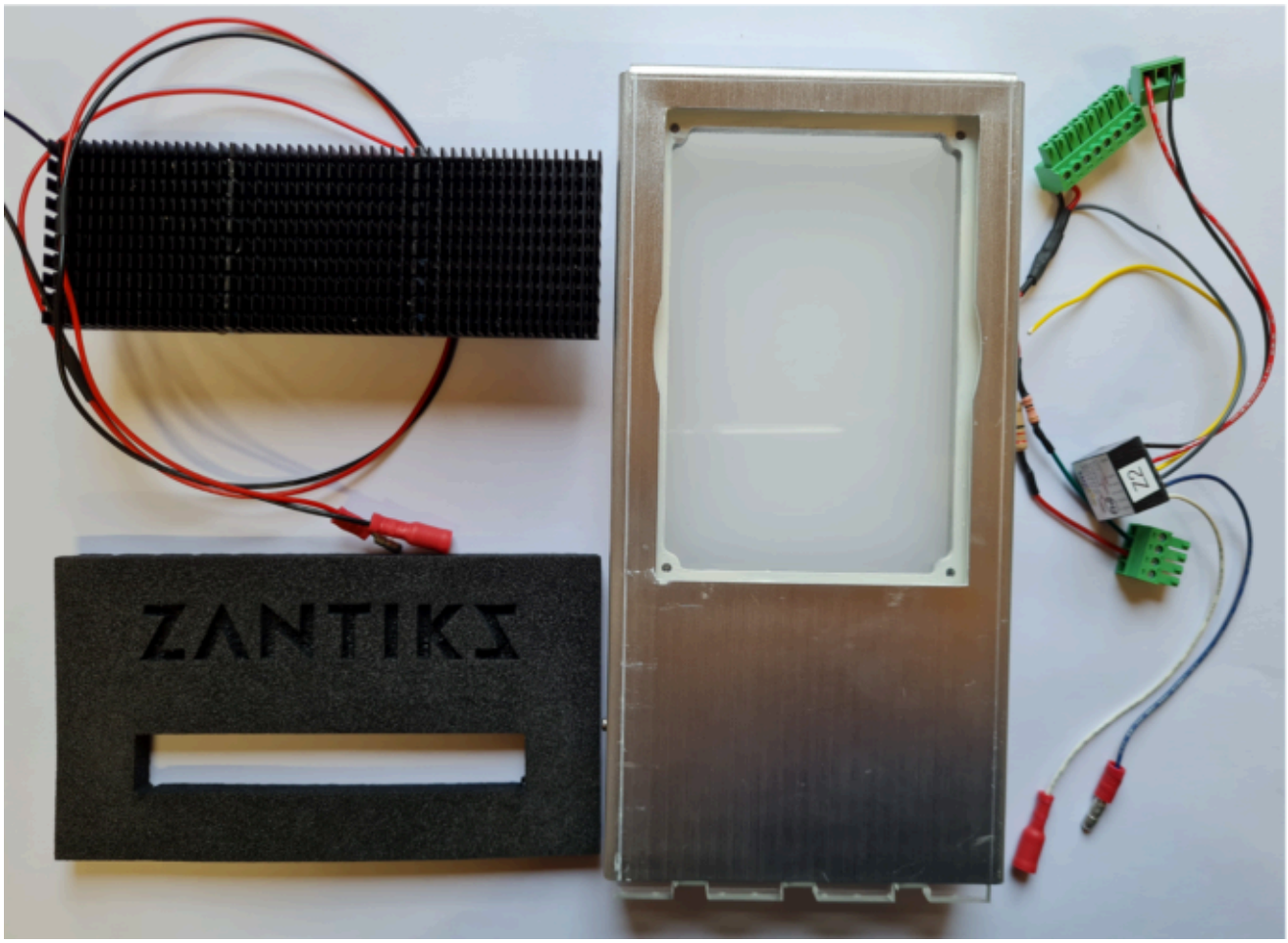
SET(THERMOSTAT,#) can be used in a Zanscript to set the temperature (in Celsius) of the experimental environment.

Please refer to the Temperature control demo MWP page in the support section of the website for more detailed information on how to operate the temperature control unit.

Assembling the Light Stimulation plate

The main components of the Z2 light stimulation plate include:

- Light stimulation plate with incorporated diffuser
- LED holder (with choice of wavelength lights)
- Control circuit (Z2 loop) to plug directly into the MWP unit
- Foam door (with hole for light plate)

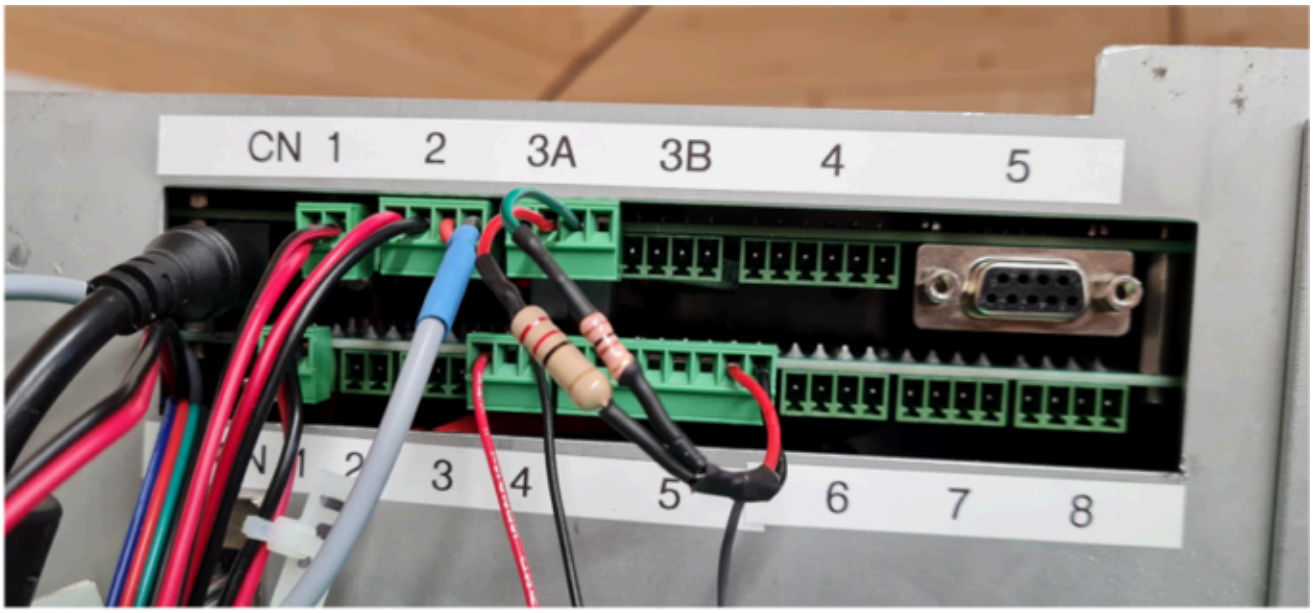


The main components of the Z2 light stand.

The system plugs directly into the MWP and does not require an additional power supply.

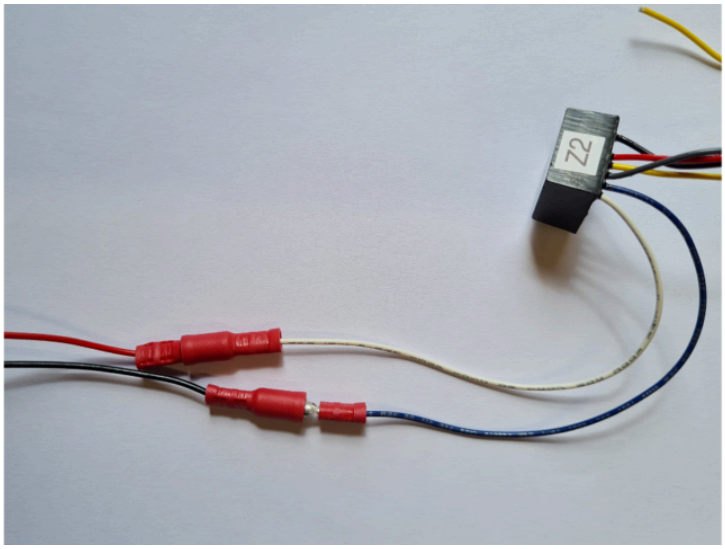
Control of the system is from the included Zanscript programming language and incorporates control of both the brightness of the light and the duration of the stimulus.

The brightness of the light is controlled by the voltage set on Output4. This is the 7th connector on the 8-way output located at CN5 of the lower board. This can be overridden by other controls.

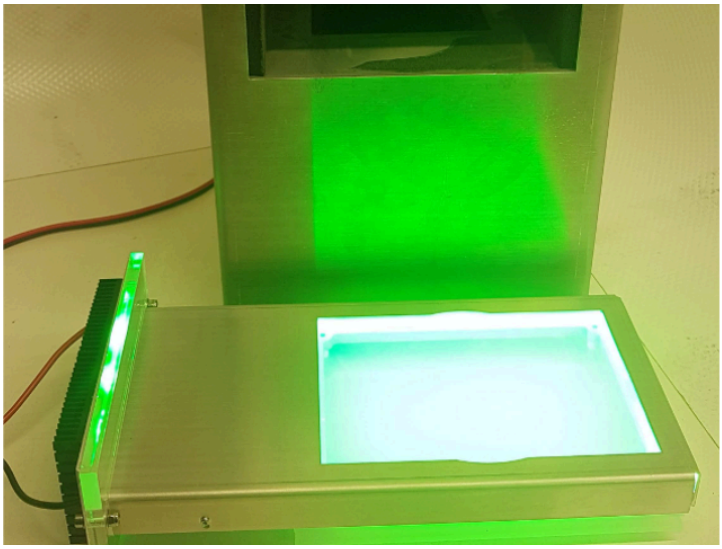


Side socket of MWP unit demonstrating how the wires for the Z2 loop should be connected to the board

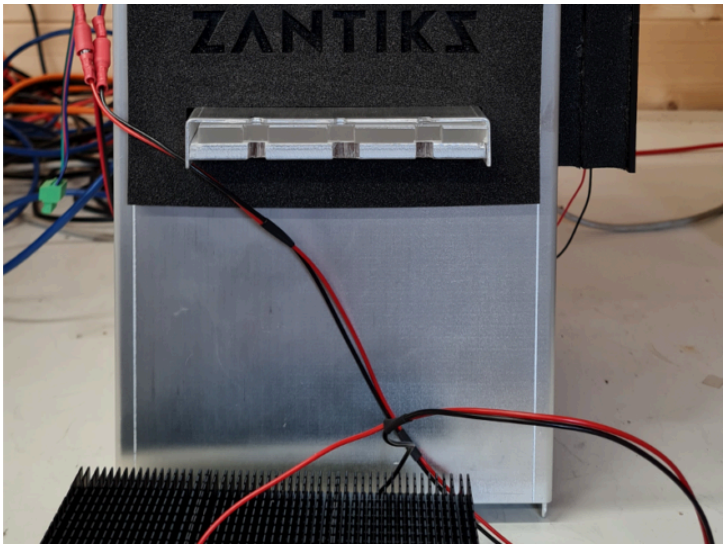
The LED holder is connected to the control circuitry with the push connectors. The LED holder can then be attached to the light plate and inserted into the MWP unit with the foam door to prevent any excess light entering or exiting the unit.



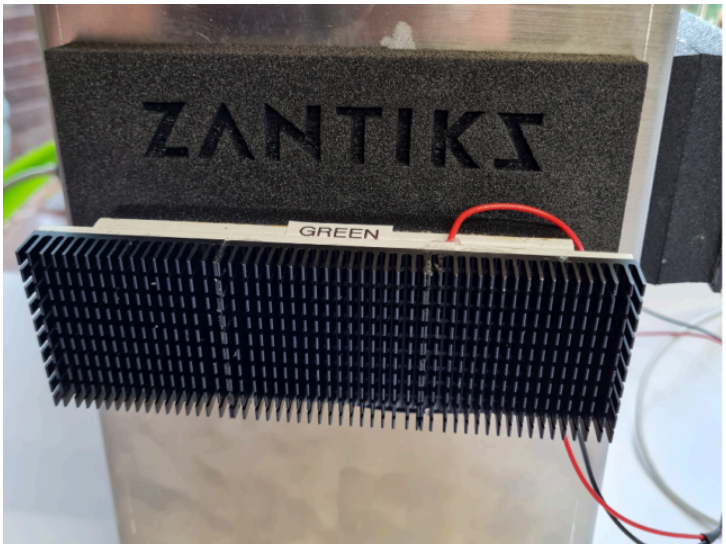
Push plugs connecting LED holder to the control circuit



LED holder attached to light stand with green LEDs



Light stand with LED holder inserted into MWP unit with foam door cover



Light stand loaded into MWP unit with foam door cover

NOTE: *Please refer to the Light Stand Demo MWP page in the support section of the website for more detailed information on how to operate the light stand.*

Assembling the Overhead Light Stimulation plate

The overhead light stimulation plate can be used in a number of ways/situations:

- To provide light of a specific wavelength from above the organism rather than below (as it is in the standard setup)
- To provide more/brighter lighting of a specific wavelength by transmitting both from above and below the organisms
- To alternate between two specific wavelengths within a single experiment using one wavelength above the organism and a second wavelength below.

NOTE: *If you are just using a single light source from above, you can use the existing LED lights which come as standard with the MWP for the light stimulation plate. If you will be using the system to provide light from both above and below, you will need to purchase additional LEDs.*

The main components of the overhead light stimulation plate include:

- Overhead light stimulation plate
- LED holder (at the wavelength of your choice)
- Foam door (with two holes for overhead and standard light stimulation plate)
- Connector cable with 4-way green connector and LED push plugs, or Z2 loop

The LEDs for the overhead light stimulation plate plug directly into the MWP and does not require any additional power supply. Control of the lights is from the included Zanscript programming language and incorporates control of both the brightness of the light and the duration of the stimulus.

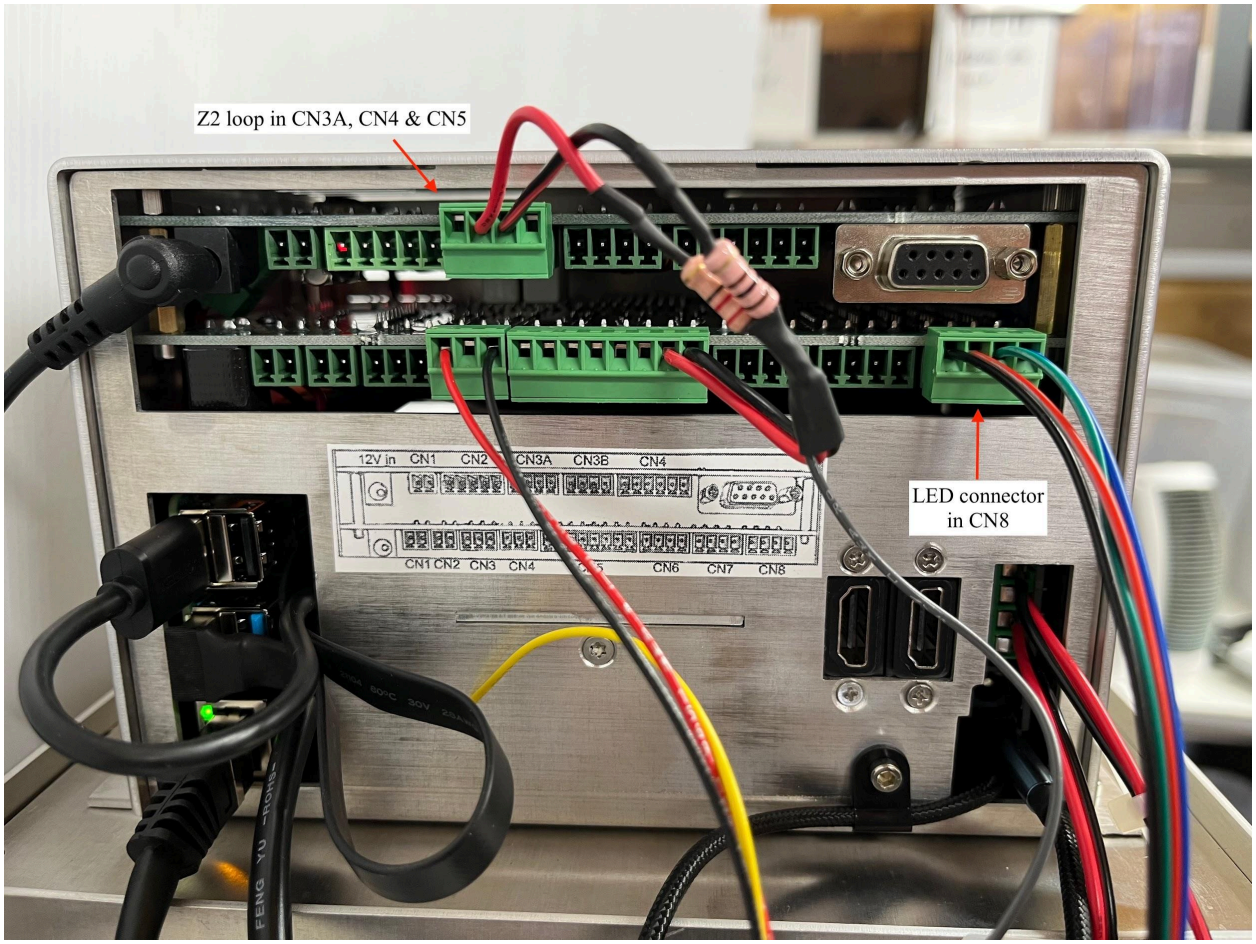
🌐*Assembly tutorial for the overhead light stimulation plate*

There are multiple options for connecting the LEDs to the top box.

1. Connect the overhead LEDs alone with either the Z2 loop or with the 4-way connector cable which can be used in either CN7 or CN8 to provide dimmer light.

2. Connect both the overhead LEDs and a second set of LEDs from below using the Z2 loop for one of the LEDs and a 4-way connector cable in CN7 or CN8 for the other set of LEDs.

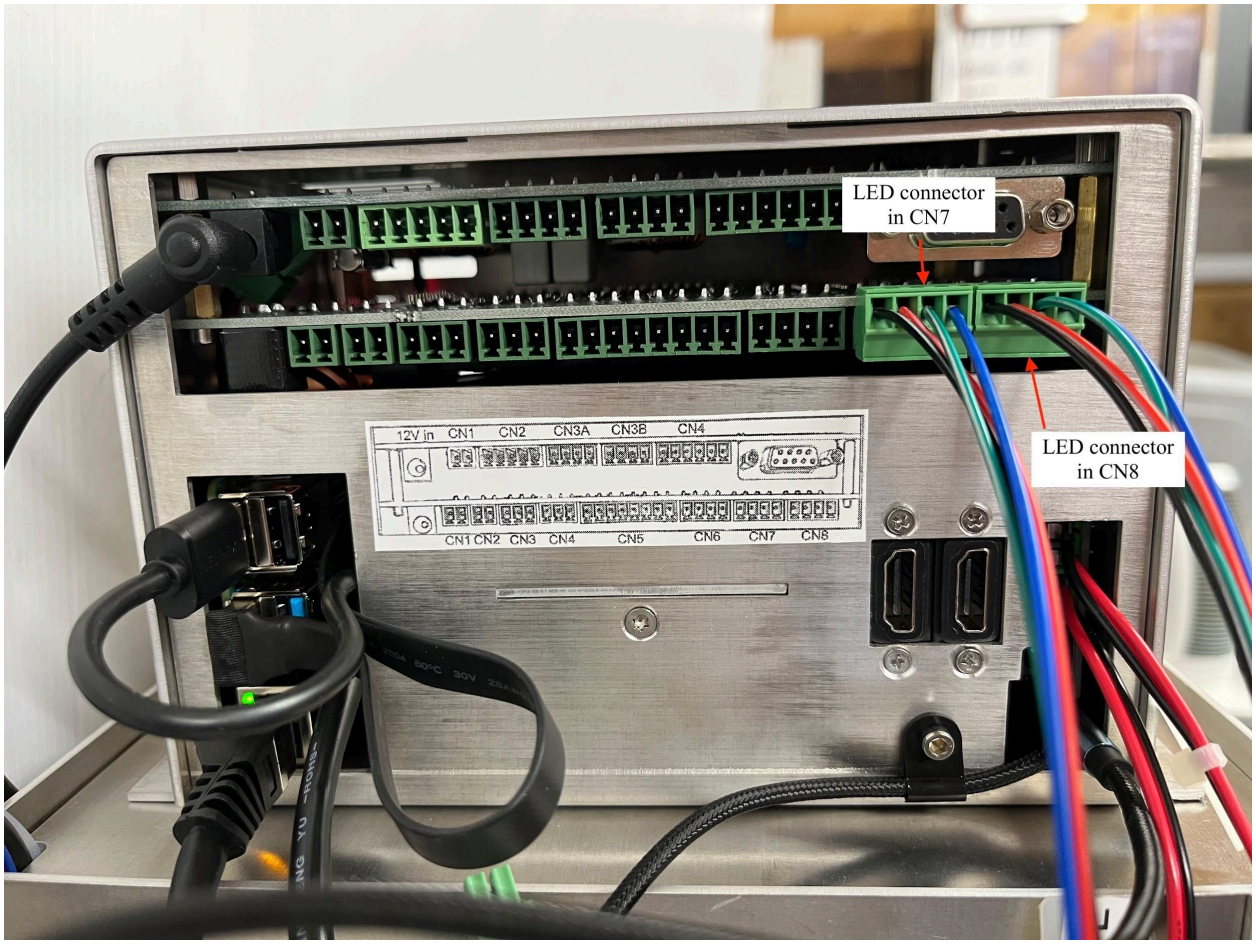
NOTE: *connecting the LEDs to CN7 or CN8 provides a dimmer light than connection with the Z2 loop.*



LEDs connected to the top box with the Z2 loop and the 4-way connector cable in CN8

3. Connect both the overhead LEDs and a second set of LEDs from below using two 4-way connector cables one plugged into CN7 and another into CN8.

NOTE: *This setup will mean that both of the LEDs are dimmer than what can be achieved with the Z2 loop and will require an additional 4-way connector.*



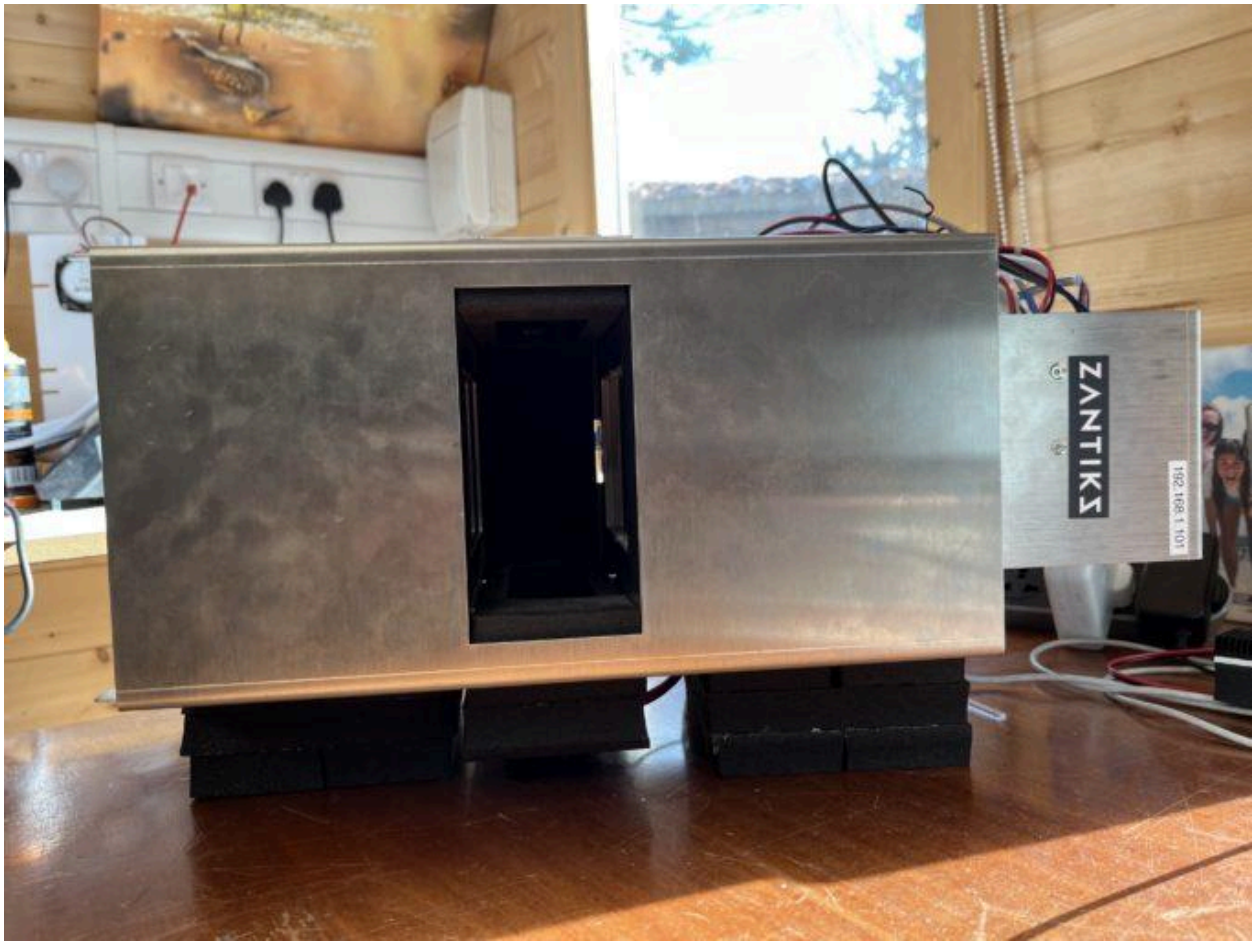
LEDs connected to the top box with a 4-way connector cable in CN7 and CN8

WARNING: if using the 4-way connector cable to power one or both LEDs you must **only plug them into CN7 or CN8**. If plugged incorrectly into another port, you can permanently damage the system's ZCB board.

To operate the LEDs in Zanscript; You can use the same coding for the light stimulation plate when using the Z2 loop which can be found in the light simulation demo MWP. When using the 4-way connector cable in CN7 or CN8 you will require a different code which can also be found within the light stimulation demo page.

Assembling the Side Stand for Cuvettes

All of the Zantiks systems can provide a side view by simply rotating the system onto its side. Here we will describe how to set up the side view stand for cuvettes in the MWP:



MWP system rotated onto its side with two foam supports, one either side of the standard temperature control

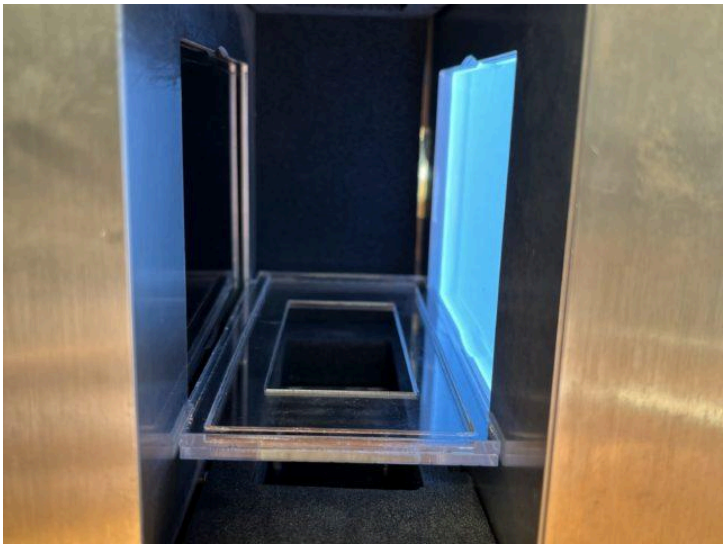
1. Rotate the MWP system onto its side with the standard temp control facing downwards. Two foam supports are supplied to help raise the MWP to allow space for the temperature control.

2. Place the locator plate within the observation chamber of the MWP. It will fit between the left and right side of the chamber (top and bottom when the system is standing upright) and will hold the cuvette stand within the camera view.

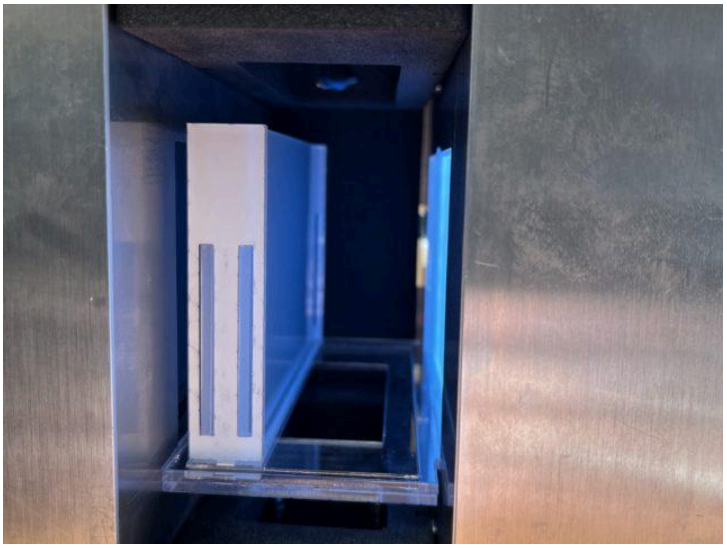
3. Place the diffuser plate on the locator plate and to the left (the bottom when the system is standing upright).

4. Place the loaded cuvette stand on the locator plate to the right of the diffuser.

5. Cover with a foam door



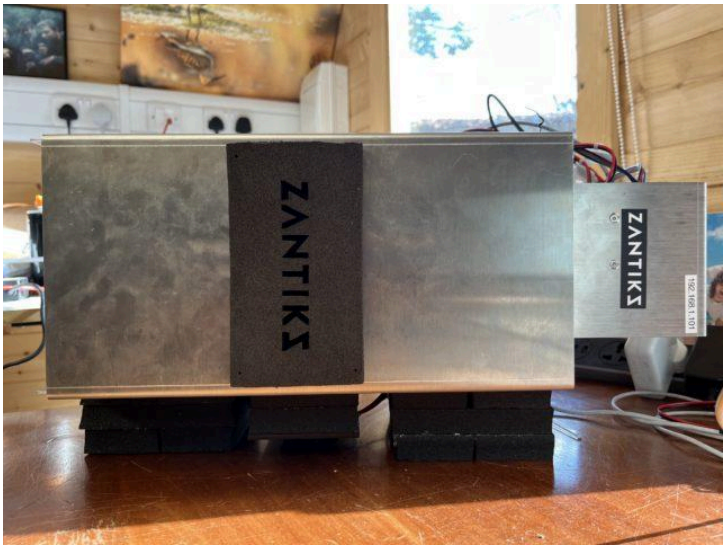
Diffuser plate & locator for the cuvette stand in the MWP system



Locator for the cuvette stand in the MWP system



Cuvette stand, diffuser plate & locator for the cuvette in the MWP system



Door for the cuvette side stand does not have a hole for stand the light stimulation plate

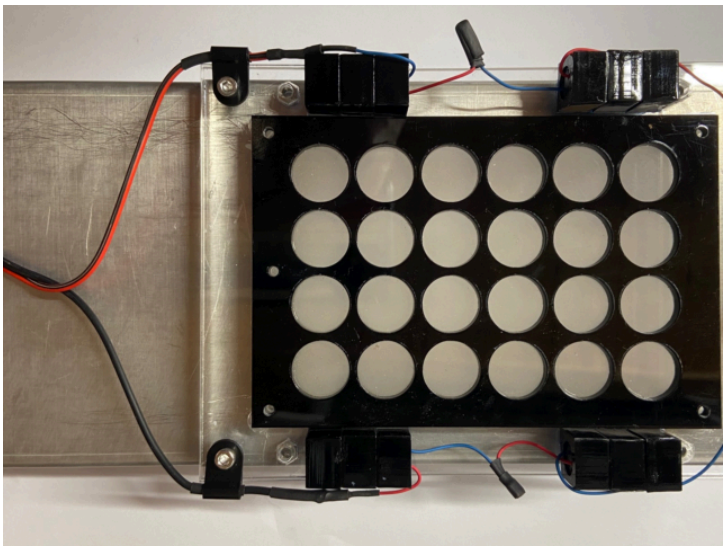
Once the side view stand for cuvettes has been assembled correctly into the MWP system you can build the arenas and zones asset. See the asset building manual for the MWP for instructions on asset building and for the script download.

Assembling the mechanical stimulation stand

The mechanical stimulation stand is used to provide vibrations to either a standard multi-well plate or a Zantiks custom DAM tube holder plate with 32 DAM style tubes.

Place the multi-well plate or DAM tube holder plate on top of the mechanical stimulation stand. This then locates on the standard MWP light stimulation stand. The entire unit then locates inside the Zantiks MWP system. See images below.

The green 4-way cable from the mechanical stimulation stand connects to the Zantiks top box via the CN3A port on the top board.



Mechanical stimulation stand with a multi-well plate



Mechanical stimulation stand inside the MWP system

Changing the camera lens

When higher magnification is required, for example measuring zebrafish embryo activity, the standard 4mm camera lens can be exchanged for the supplied 12mm lens.

🌐 *Activity analysis of 24hpf zebrafish embryos exposed to a sedative and a stimulant under the 12mm lens*

The 12mm lens should arrive already focussed and ready to use. However, if the lens has shifted out of focus during transit, please refer to the refocussing the camera manual.

🌐 *How to change between the standard and high magnification camera lens is explained in detail in this video tutorial.*
