

Here is a summary of the steps to follow to set the FreeD parameters.

Easily adaptable to the calibration of a fixed focal length camera tracked by Antilatency.

Print the target image, you will find it in at the end of this document or in >> **C:\Program Files\Vset3D\Vset3DStudio 2\STUDIO_Data\Library\Pictures\FREED TARGET.png**

- Place it on a tripod and make sure it is perfectly aligned horizontally and vertically.
- Place your FreeD camera on tripod and make sure it is perfectly aligned horizontally and vertically
- Place the target tripod in the center of your studio
- Place the camera tripod in front of the target at its final position

Make sure the center of the camera lens and the center of the target are at the same height from the ground.



Now you can import the Template project and go to the **FreeD Settings** paragraph.

Use the File manager from Vset3D to import the Template.

You will find the template project in:

C:\Vset3DStudio 2\STUDIO_Data\ProjectTemplates\FREED CRN300

Otherwise follow the bellow instructions to build the FreeD project from scratch.

In VSet3D create a camera and import FBX model of the target object.

You will find it in:

C:\Program Files\Vset3D\Vset3DStudio 2\STUDIO_Data\Library\FBX\FreeD_Target.fbx

(Distances unites in Vset3D are metric, 1.00 = one meter, 0.50 = fifty centimeters)

- Place the target in the center of the scene
- $X = 0.00$
- Y = the same distance as between the center of the real target and the ground,
- $Z = 0.00$
- Rotation $X = -90.00$

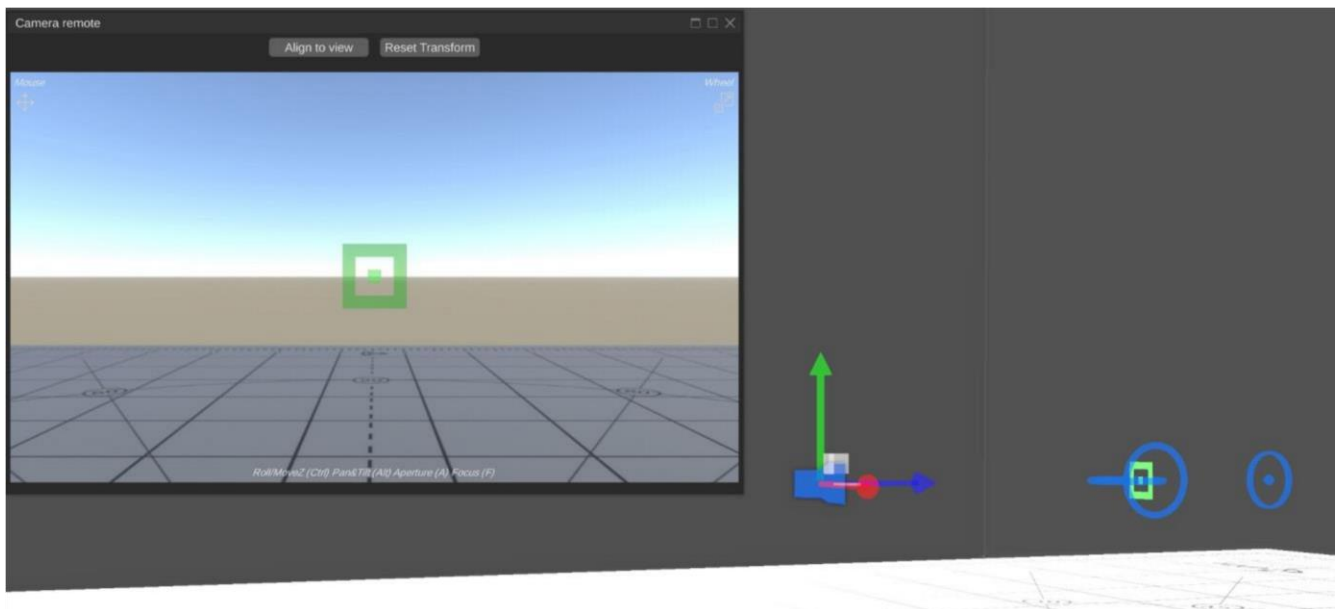
Place the camera at

$X = 0.00$,

Y = same distance as between the real camera and the ground,

Z = same distance as between the real target and the real camera (this value can be negative)

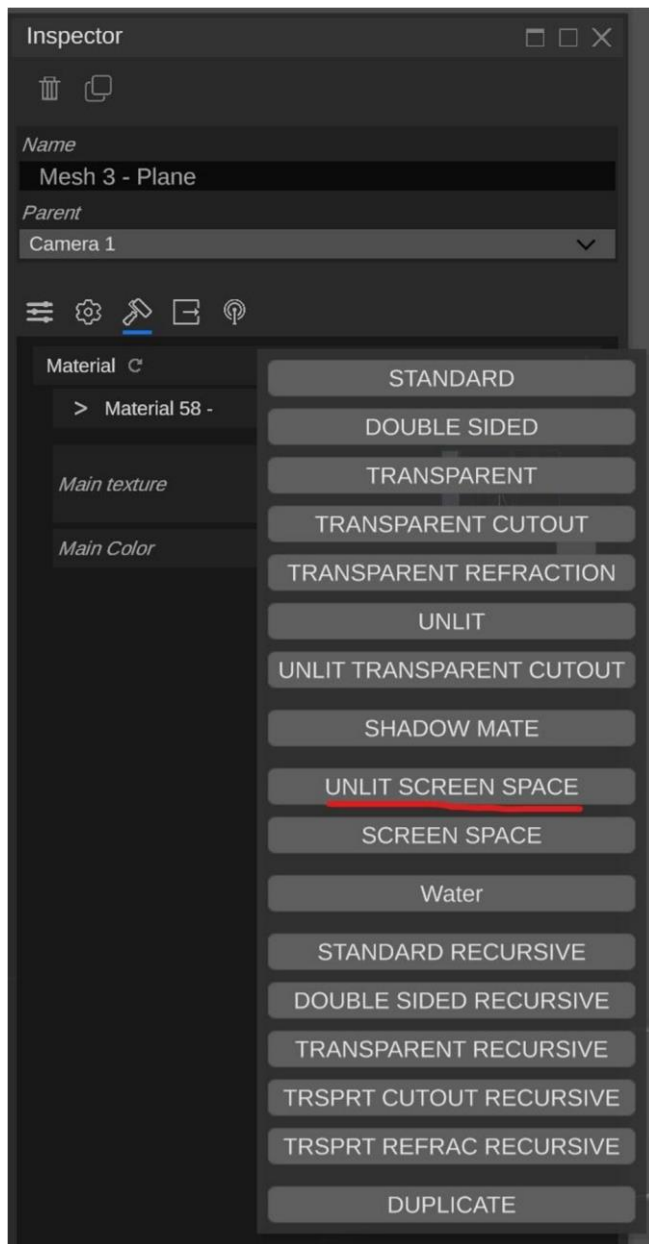
You should get something like this, target in the center of the image:



Now you can add your video input with the Sources tool.

Add a Plane object from the Standard library

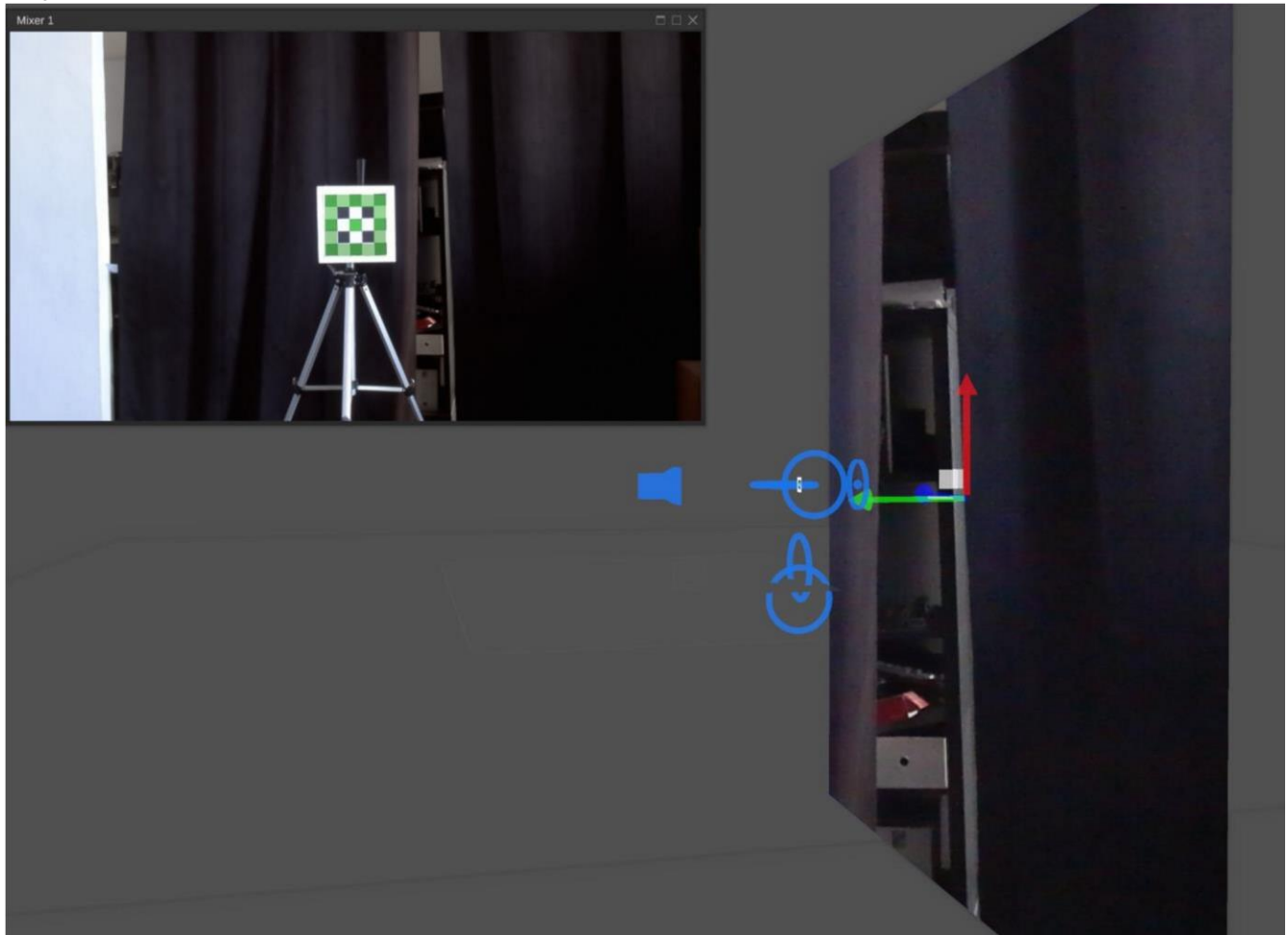
Assign UNLIT SCREEN SPACE material to the plane



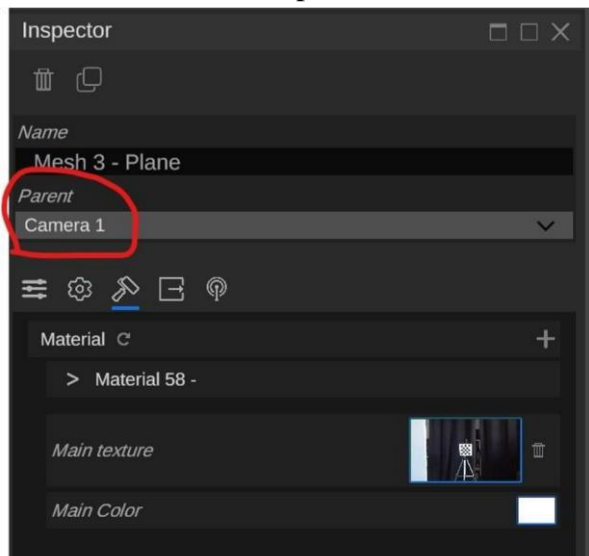
Assign the video input to the Plane Main texture

Orient the plan so that it faces the camera and place it behind the target

Adjust its scale to cover the camera's entire field of view



Set the Camera as the plane's Parent



FreeD Settings:

Before starting (Make sure the FreeD Camera it is at Home position, looks ahead and in wide angle)
Make sure the FreeD camera Broadcast FreeD data to the computer running Vset3D

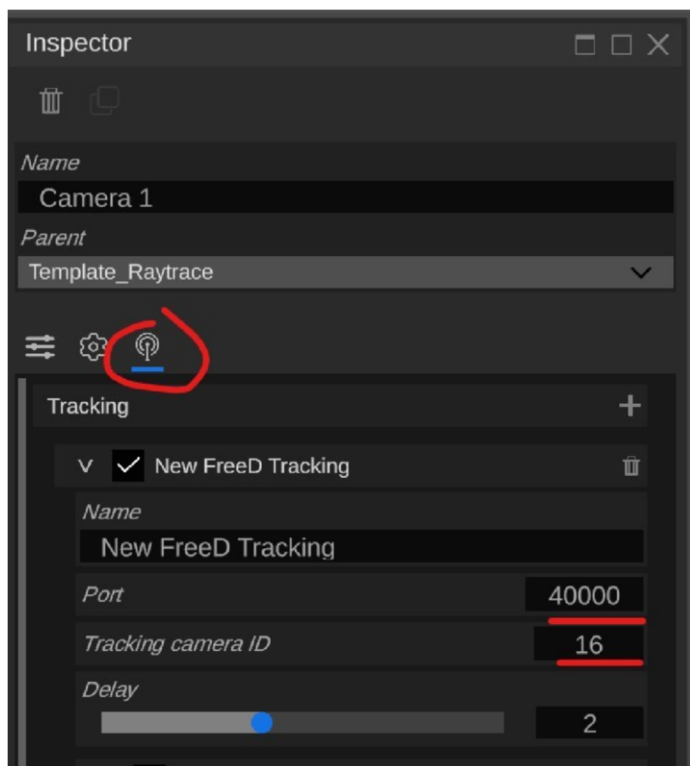
From the FreeD camera UI, set the IP, the Port and the camera ID.

The IP must be the IP of the computer running Vset3D.

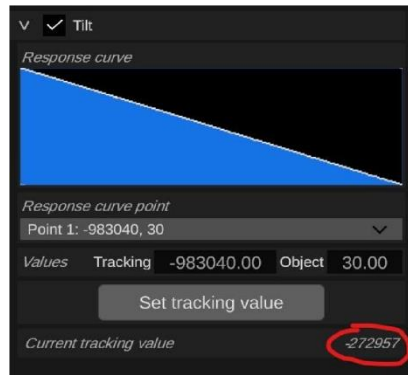
The Port, by default we use 40000 but you can change it.

The Camera ID must be different on each FreeD camera.

In Vset3D open the Inspector and assign the same port and ID number as those entered in the FreeD camera interface.



Now if everything is ok you should see value coming from the camera in the Current tracking value field.



Activate the Tilt Toggle to see Tilt tracking data, this value should change when you manipulate the Tilt of the FreeD camera

Calibration:

Now you must set the Min and Max limit of each Camera movements.

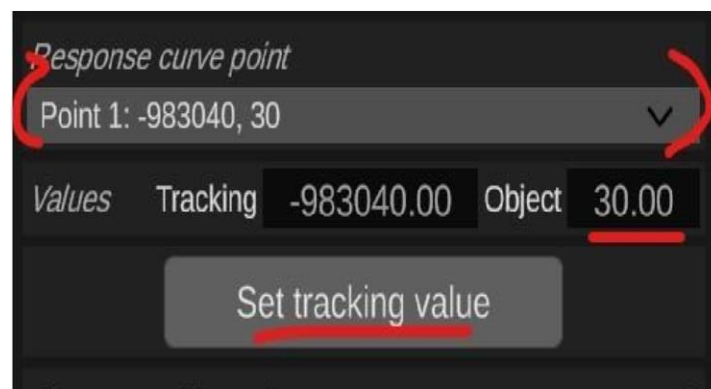
Find in the manual of the FreeD camera the min and max value for the Pan, Tilt and Zoom

To set the lower limit of the Tilt:

- In Vset3D FreeD tool Select the **Point 1** in the Curve Point
- Tilt the FreeD camera to lower position (Look down)
- Enter the Min tilt value of the FreeD camera in the Object field then Press **Set Tracking Value**

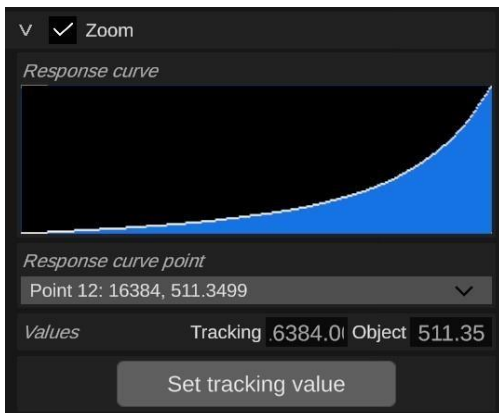
To set the upper limit of the Tilt:

- In Vset3D FreeD tool Select the **Point 2** in the Tilt Curve
- Tilt the FreeD camera to higher position (Look Up)
- Enter the Max tilt value of the FreeD camera in the Object field then Press **Set Tracking Value**



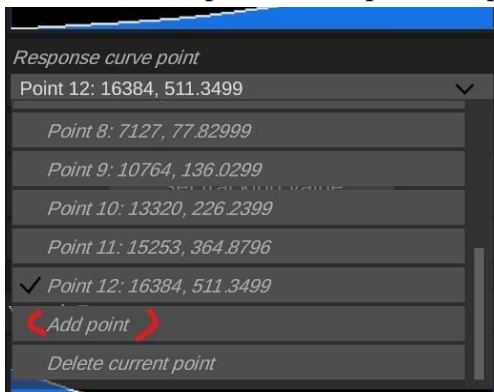
Do the same thing for the Pan and the Zoom

The values sent by the FreeD camera are not linear, which means that you have to add intermediate points to each curve to obtain a perfect calibration. The images below show a curve where 12 points were added.



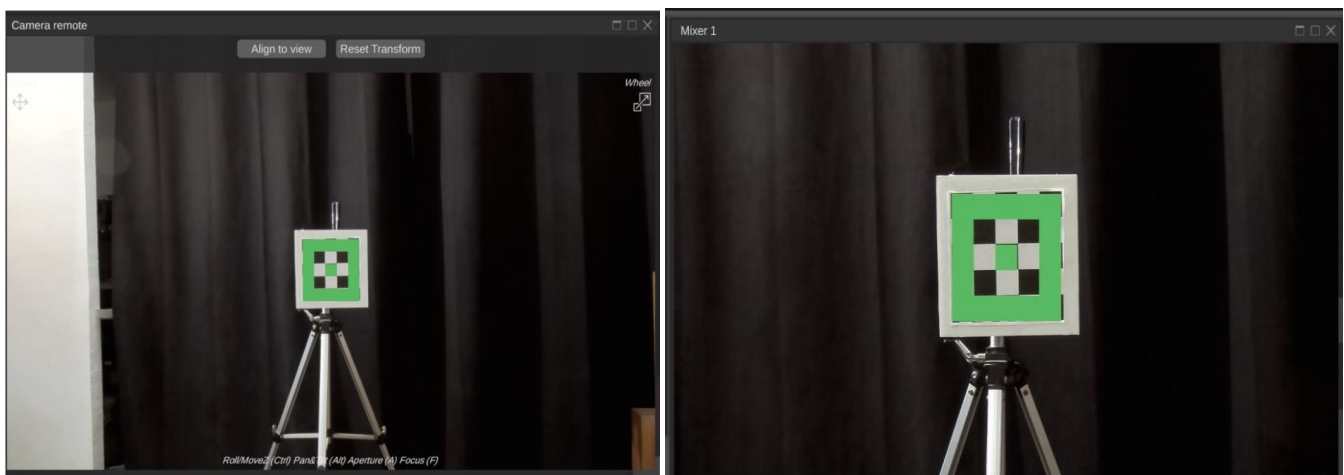
To add points:

1 - Select Add point in the point drop-down



2 - Change the Zoom value of the FreeD camera and adjust the value of Object field so that the size of the virtual target matches the size of the real target.

Repeat steps 1 and 2 until you get a good overlap of the two targets from min zoom to max zoom.



The add point method should also be applied to pan and Tilt.

