Installation and configuration guide

DH-TPC-BF5421-T
IVSS7008-1I
Blackbody

Ver.1.0

Aim and Purpose

The purpose of this guide is to give you a clear understanding of how to install and configure the Human Body Temperature measurement system, from Dahua technology Co., Ltd

Table of Content

General Description

- Become familiar with the application of Dahua Thermal Body Temp. Measurement Solution
- Get the necessary knowledge of equipment, installation and wiring, etc.
- Understand how to use the system
- Understand how to debug the system
- Get the knowledge of the solution FAQ;

Dahua Technology Co., Ltd is presenting a thermal camera solution that is capable of highly accurate body temperature measurement ±0.3℃ (with blackbody). Built-in AI algorithm for multi-person measuring up to 3m distance, which enables fast and non-contact. This solution is working with an IVSS server which can provide an overview during monitoring with temperature measurement as the main focus and trigger multiple alarms generated from this, furthermore, we can generate statistics and search for specific groups with high temperature.

Installation preparation

Make sure to check if all these devices/materials are present

Thermal Network Value Hybrid Bullet Camera
DH-TPC-BF5421

Blackbody

IVSS7008-1I Server

10M Ethernet Cable

Poe Switch
5 Port

Monitor
DHL32-F600

2X Tripod incl Brackets

HDMI Cable

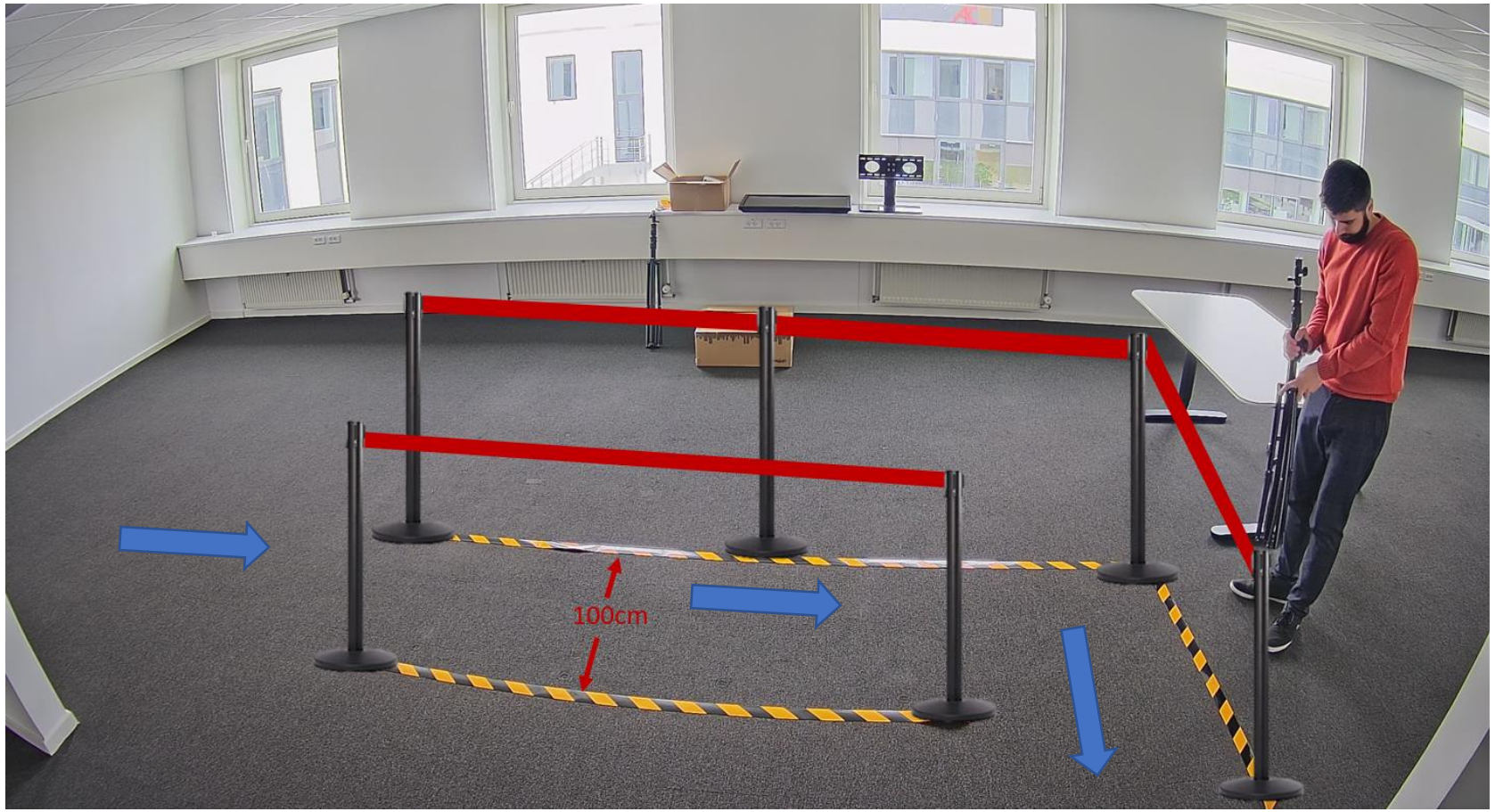
Environment

- It is required that the visible light channel has enough illumination and avoid the influence of backlight, reflection, change of strong light and occlusion, etc.
- It is forbidden to have high-temperature heat source or sunlight in the thermal imaging picture, to avoid the interference of heat source such as a heater, hot water point, microwave oven, high-power lamp, radiator, etc., so as to avoid the damage of detector.
- The installation area shall be relatively isolated from the outside environment without wind and stability, to avoid the outdoor or the scene connected with the outside, which is not suitable for the environment with airflow or strong electromagnetic interference or vibration.

Installation

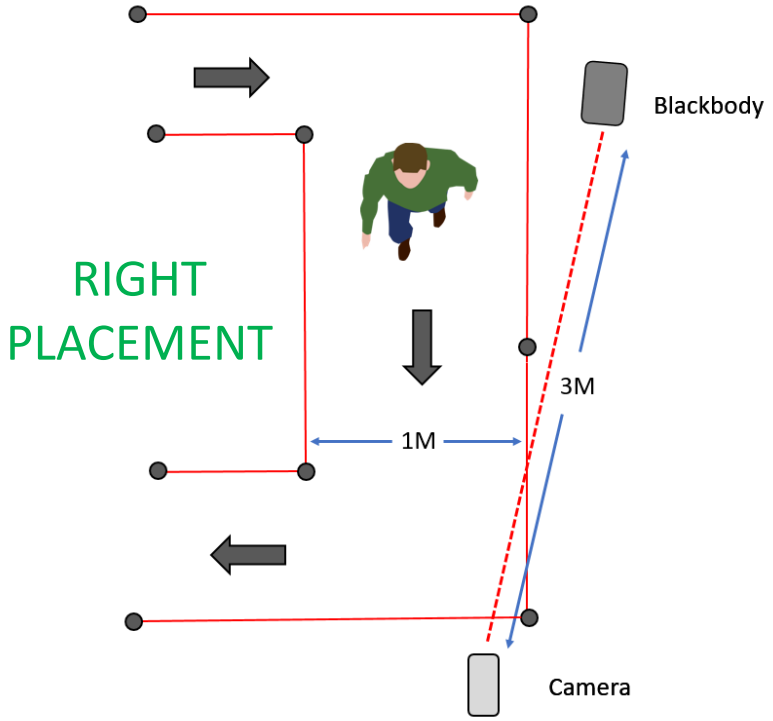
Installation Diagram 1

- The area needs to be defined and marked clearly with pullout safety barriers or similar.
- The flow of People should, in this case, begin from the left and exit in the bottom right side, it could be opposite as long as diagram 2 is followed.

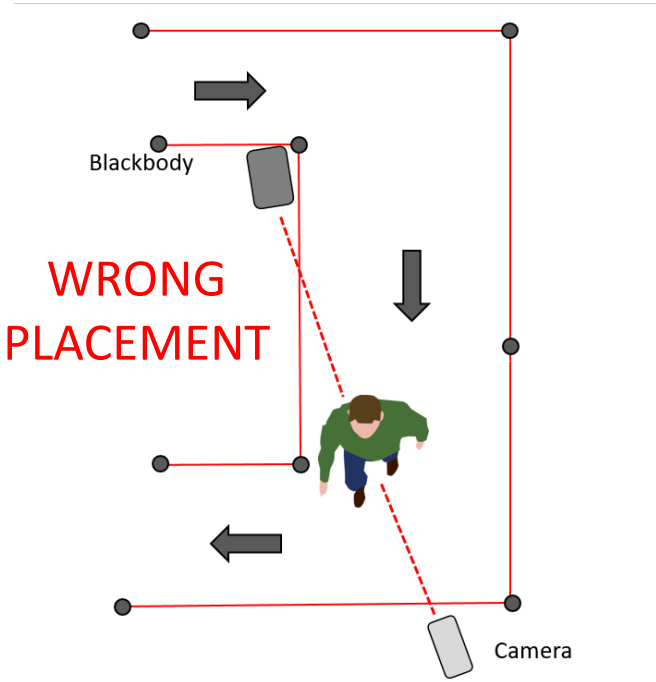


Installation Diagram 2

Here the person in not blocking the line of sight between camera and Blackbody.

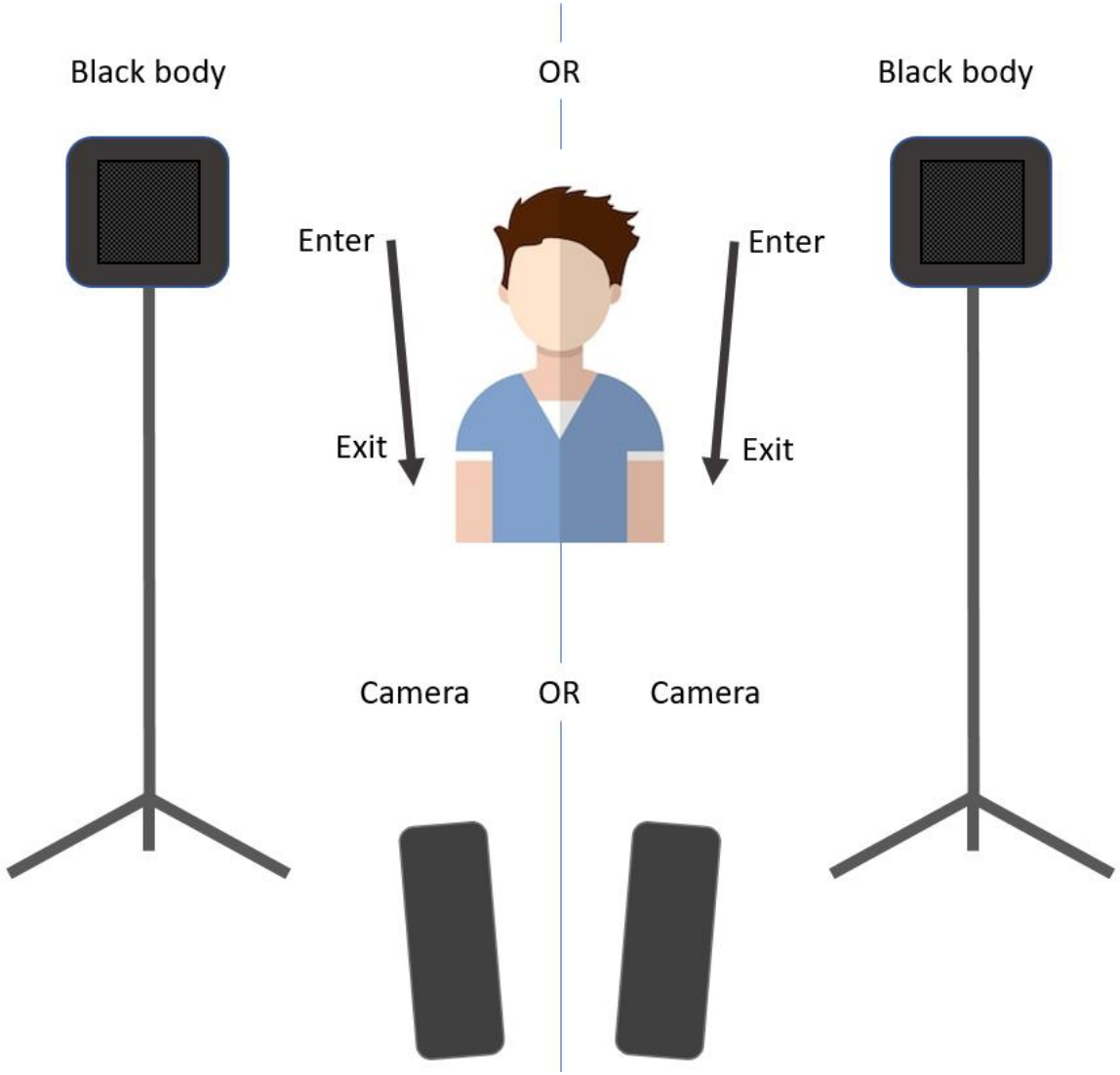


Here the person is blocking the line of sight between camera and Blackbody, which will affect the accuracy.



Installation Diagram 3

- Here it is shown how the placement of Blackbody and camera should be if we need the flow to start from left-to-right or from right-to-left.
- It is just important that we make sure a person is not able t block the line of sight between Blackbody and camera during the temperature measurement.



Installation of Blackbody

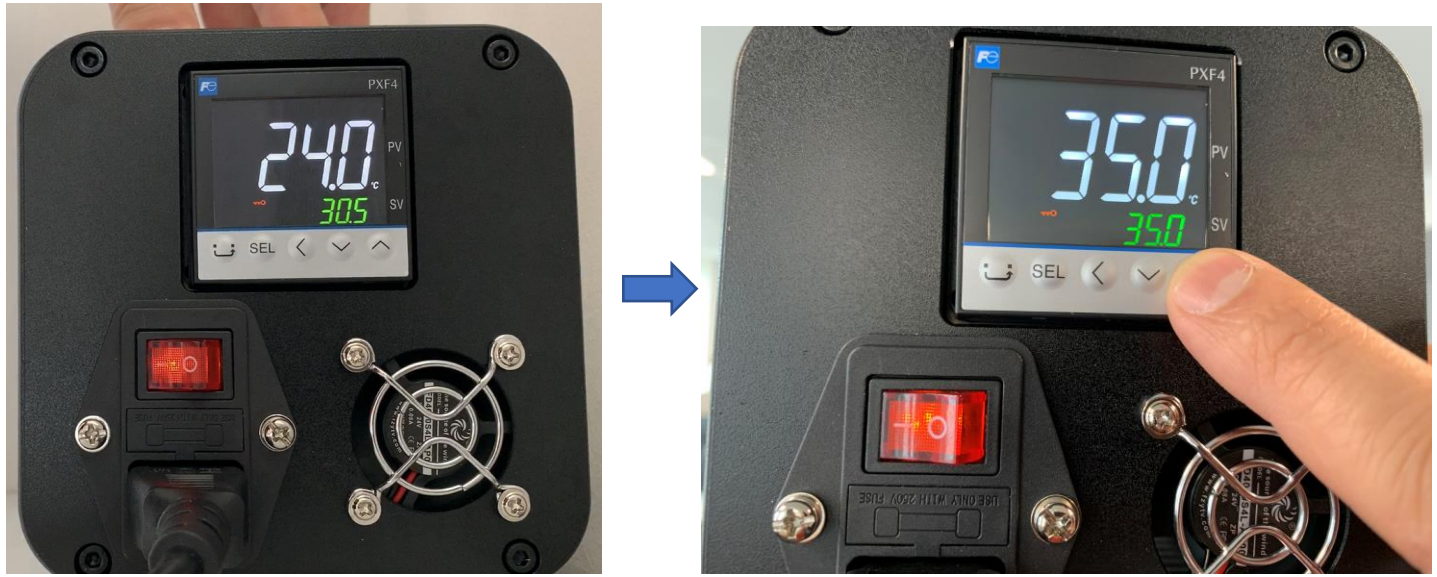
1. The Bracket is mounted to the tripod without tools.
2. The Blackbody is now mounted to the bracket with the provided Hex screw.
3. The picture to the right illustrates it.

Settings of Blackbody

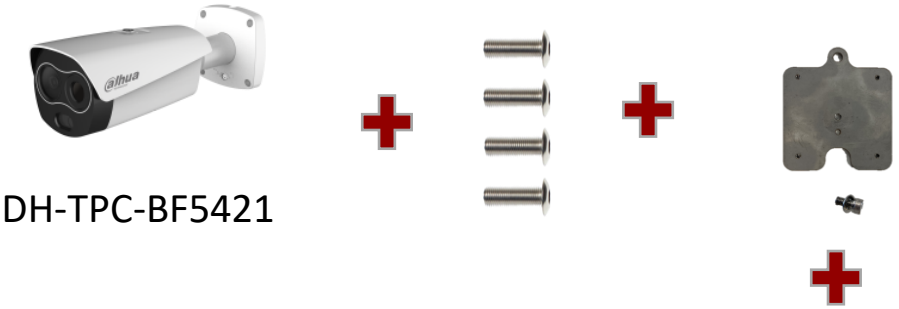
1. Power up the Blackbody by connecting the 230V socket provided and turn it on.

2. Turn up the temperature to 35° by clicking the upwards arrow until the temperature is set.

3. Wait 30 minutes until the Blackbody is ready but continue the installation while the Blackbody gets ready. Confirm by checking the temperature afterward.



Installation of Camera



DH-TPC-BF5421

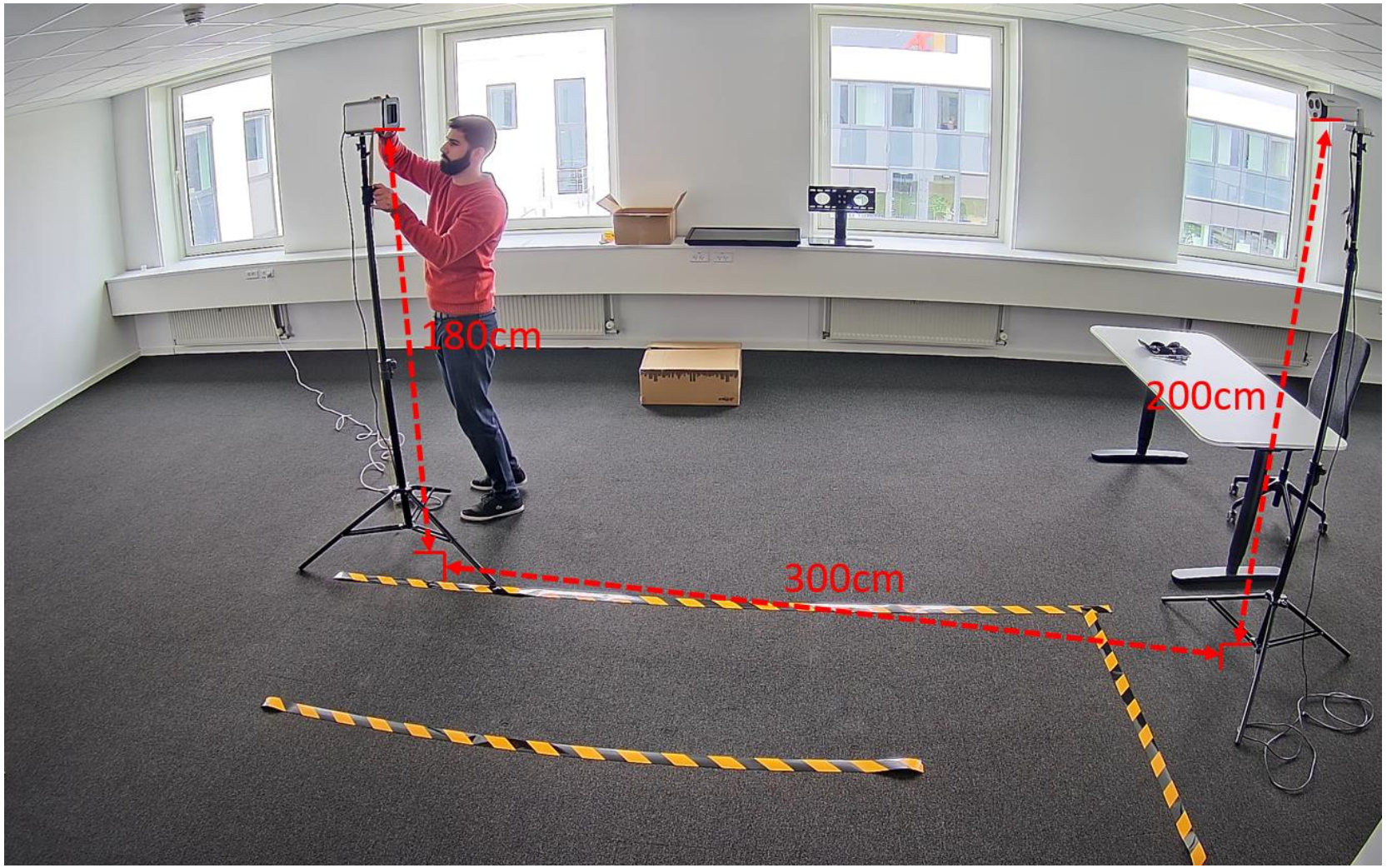
1. The bracket is mounted to the camera with the 4 screws provided.

2. The camera with bracket is now connected to tripod.

3. The picture to the right illustrates it.

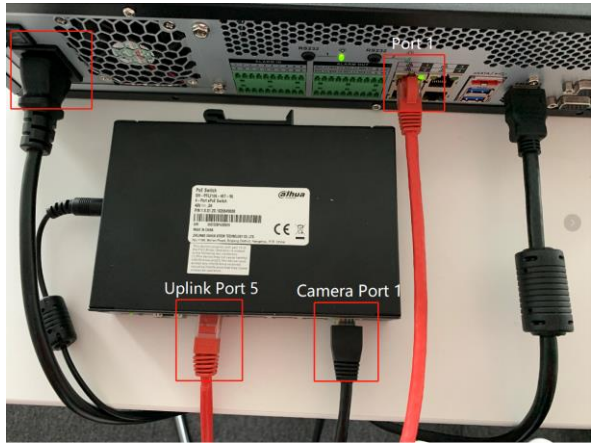
Installation Diagram 4

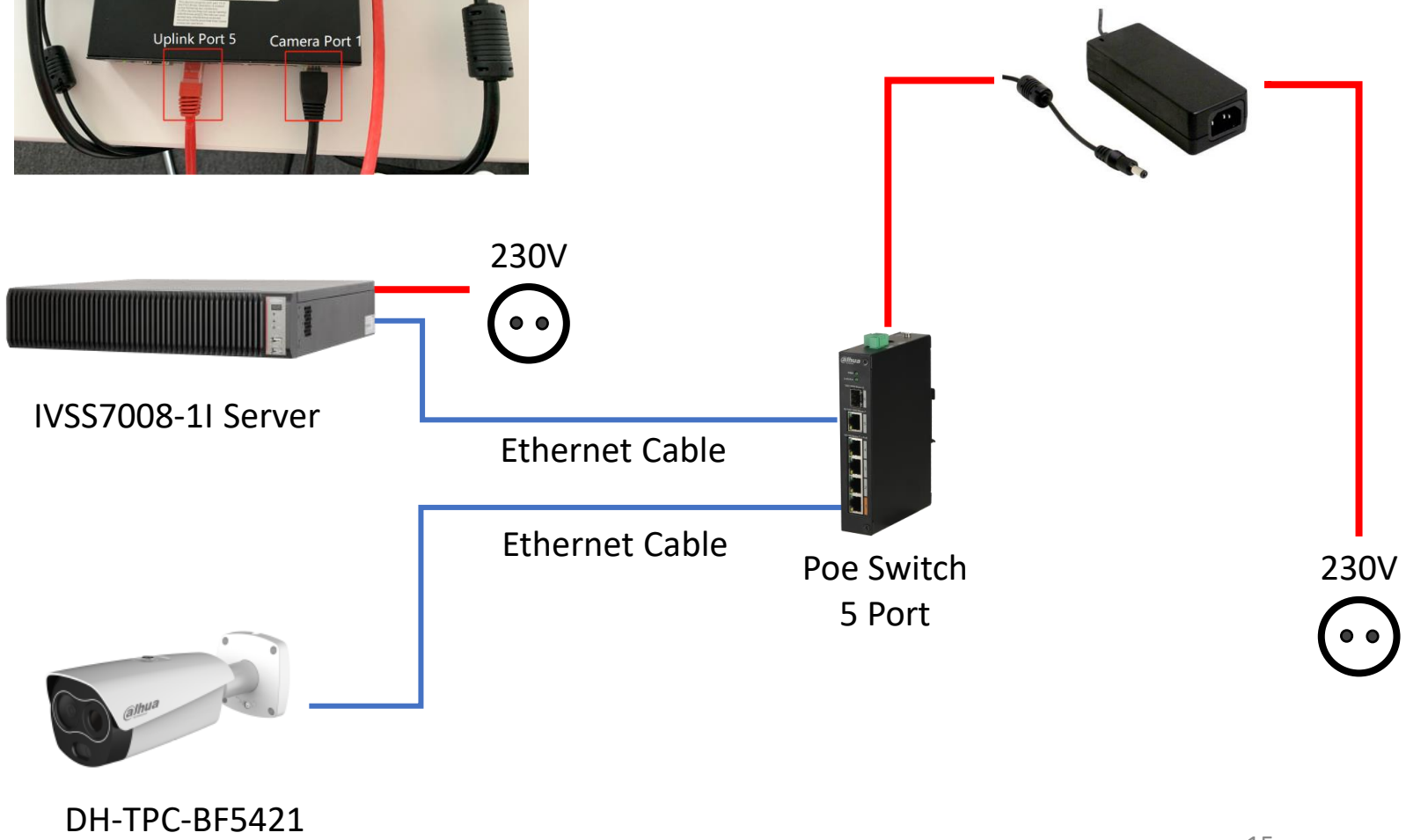
- As shown, the distance between the camera and Blackbody would be 3M.
- Height of Blackbody should be 1.8M measured from underneath the device.
- The Heigh of the camera should be 2M measured from underneath the device.



Wiring the devices

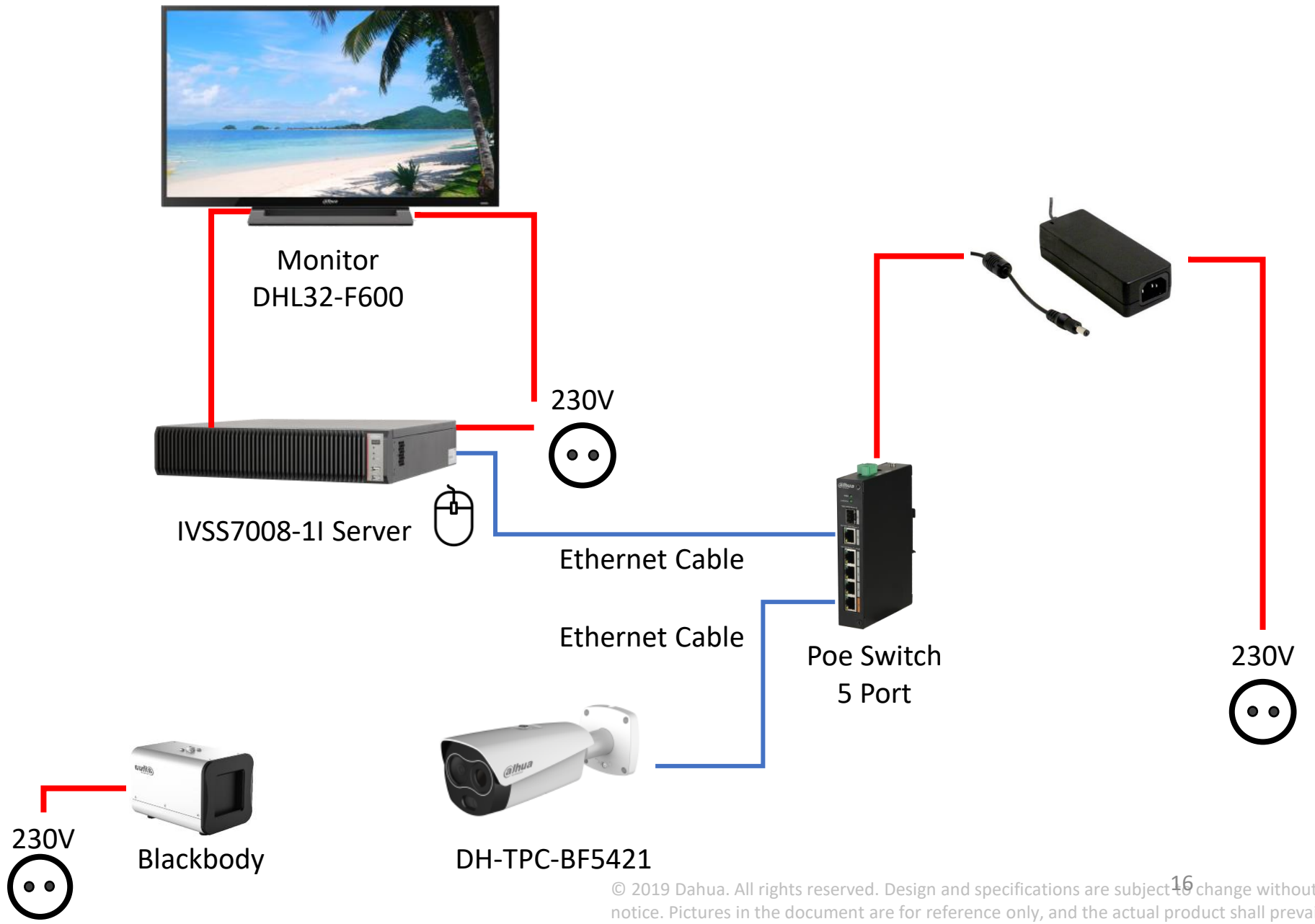
- Connect the Camera to port 1 in the PoE switch with the ethernet cable provided.
- Connect the IVSS Server with the Ethernet cable provided to port 1 and the PoE switch to port 5.
- All the connections should look like the picture to the right.





Connecting monitor

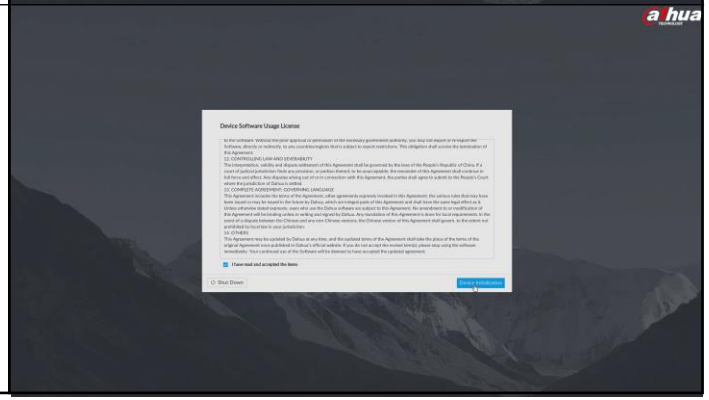
- Install the monitor and connect it to 230V, connect the HDMI cable provided between Monitor and IVSS.
- Connect the mouse provided to control the IVSS.
- This is how the complete setup should look like.
- Installation is done but might need slight adjustment during configuration.



Configuration

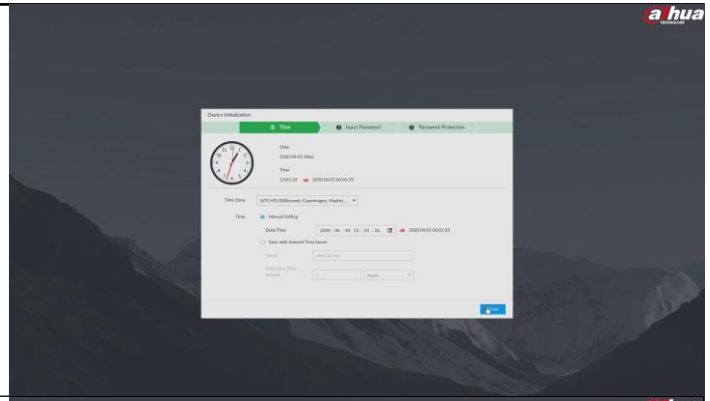
IVSS Startup Wizard

- The IVSS server wizzard will take you through to the most nessesary settings from start up.

1. Startup page.	
2. Choose your region and language. Click ”Next”	
3. Agree to terms and conditions. Click ”Device Initialize”	

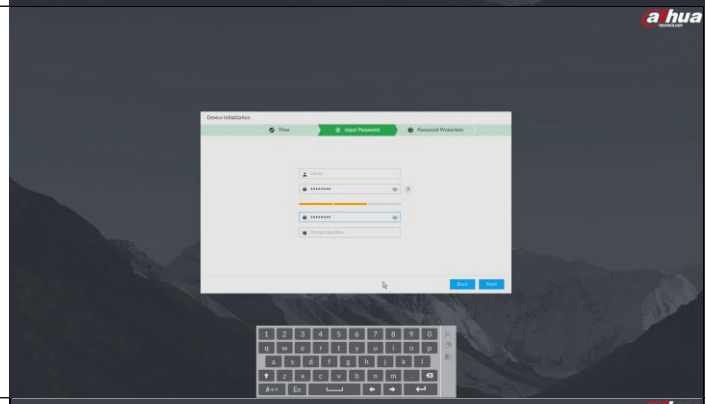
4. Confirm timezone, set time and date.

Click ”Next”



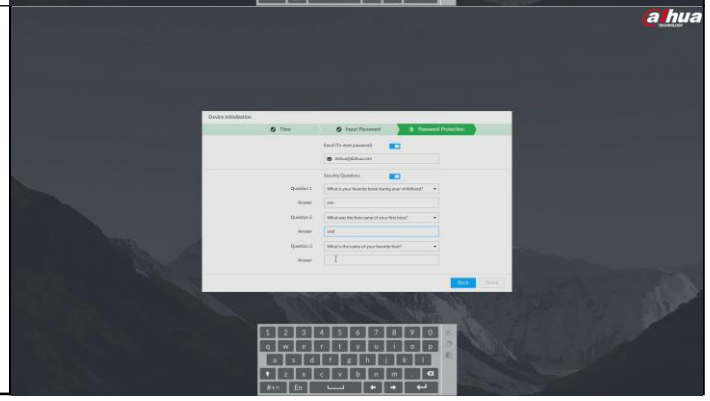
5. Choose a password that contains a between 8-32 Digits consisting of letter(s) and number(s), symbol(s) at least two types.

Click ”Next”



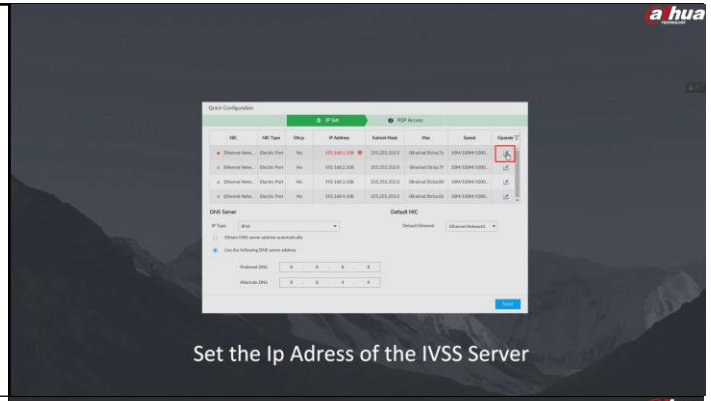
6. Enter an Email (not the shown in the picture) to be able to recover the admin password.

It is also possible to choose security questions, and answer accordingly to reset password.



7. Here we should set an IP address for the IVSS server network card 1.

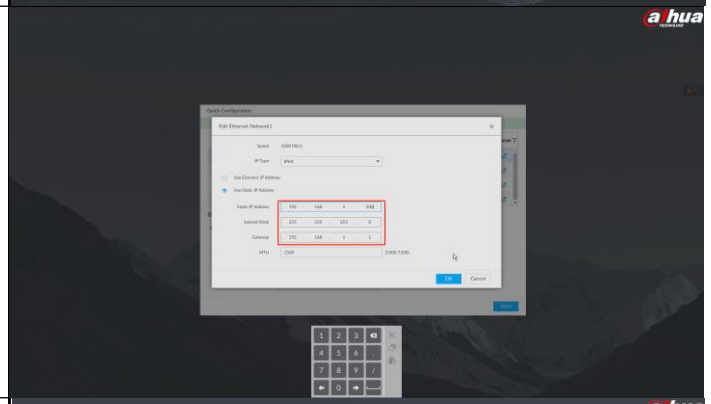
Click the icon as shown to set



8. We are setting the IVSS to be 192.168.1.100 as an example.

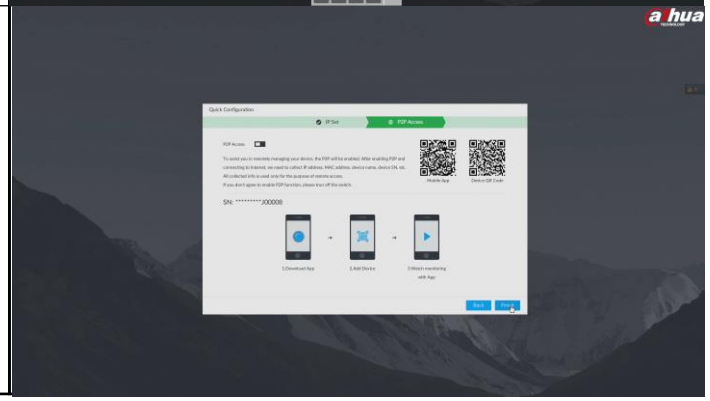
We just need to make sure camera is in the same range 192.168.1.xxx

Click ”Next”



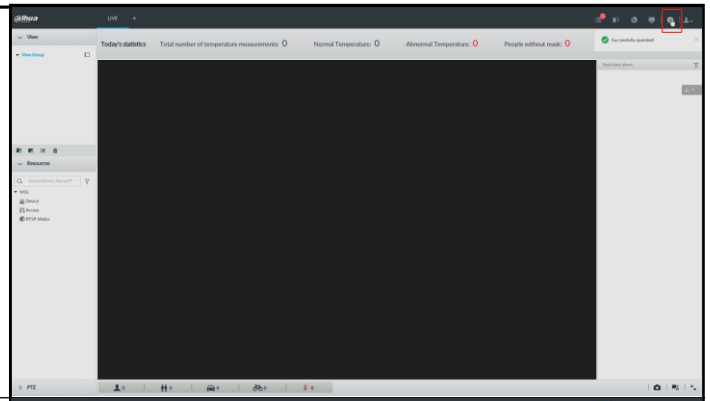
9. P2P function is not nessesary to set, it is for push functionallity, and internet connection is required for it to work.

Click ”Next”

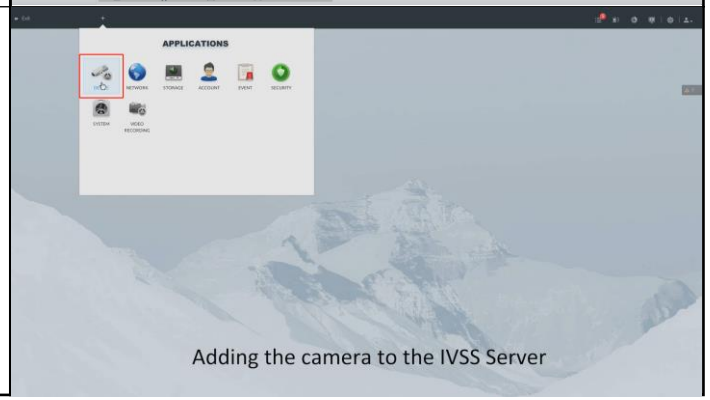


Add camera and configure perimeters

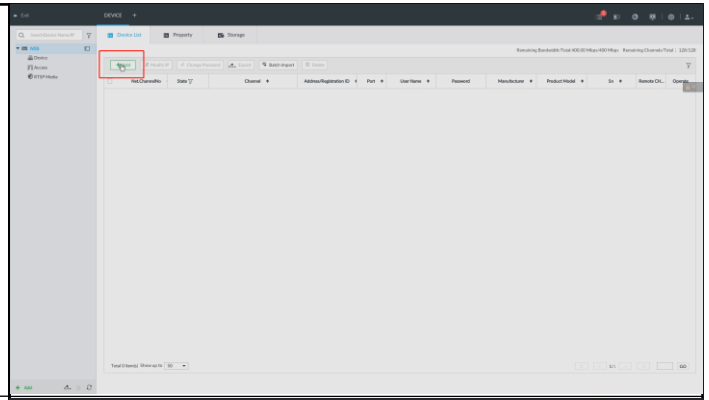
10. Next part is to add the camera to the IVSS, Click the “gear” in the top right as shown.



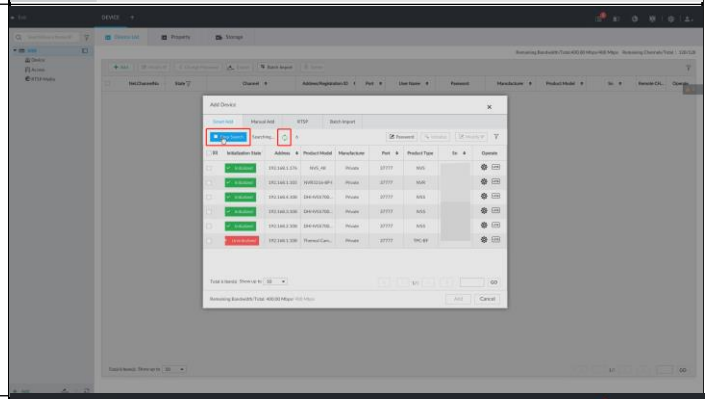
11. Click the ”Device” menu.



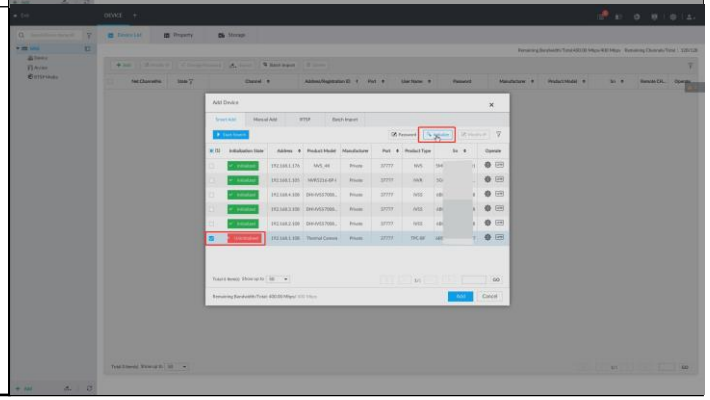
12. Click the ”+Add” Button to add a camera.



13. Click ”Search” to find the camera connected, it might take a couple of second, wait till the search is finnished before trying to initializing the camera.

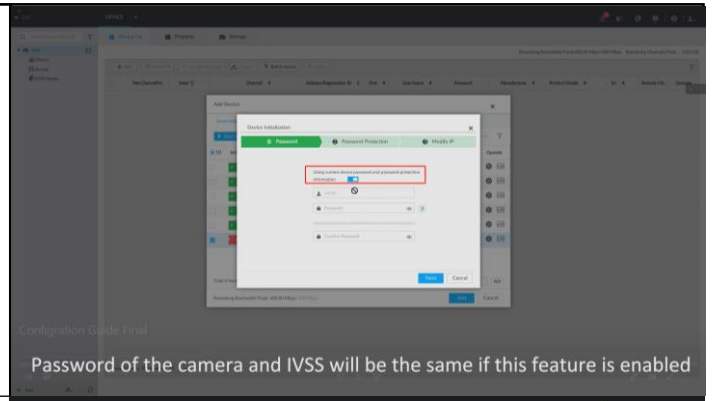


14. Now ”Click” the tag button on the camera and click the Initialize button.



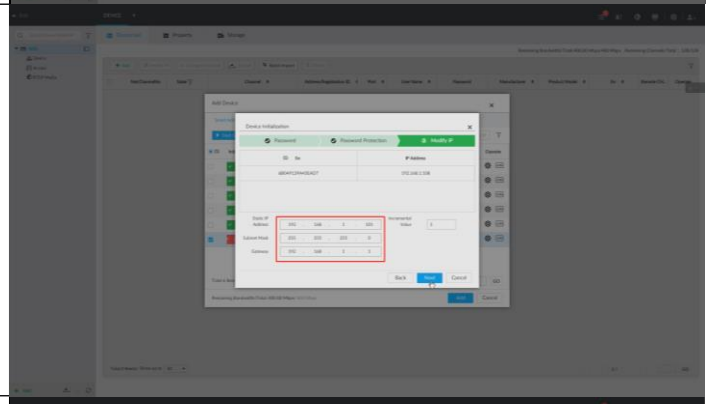
15. Confirm to use the same password for camera as we use for IVSS.

Click ”Next”



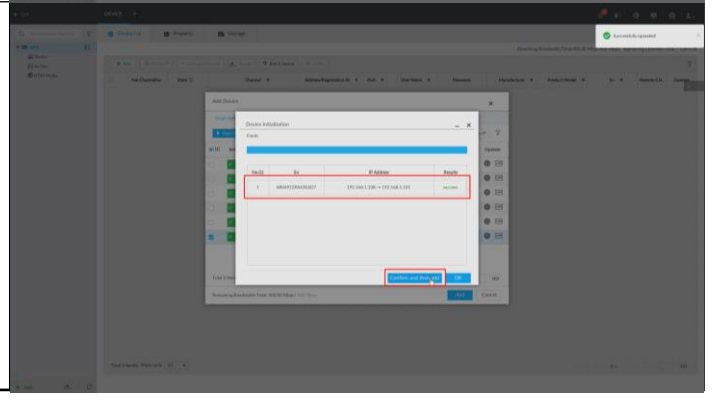
16. Assign the Ip address of the camera, so if the IVSS is 192.168.1.100
The camera should be within the same range, here we choose 192.168.1.101

Click ”Next”



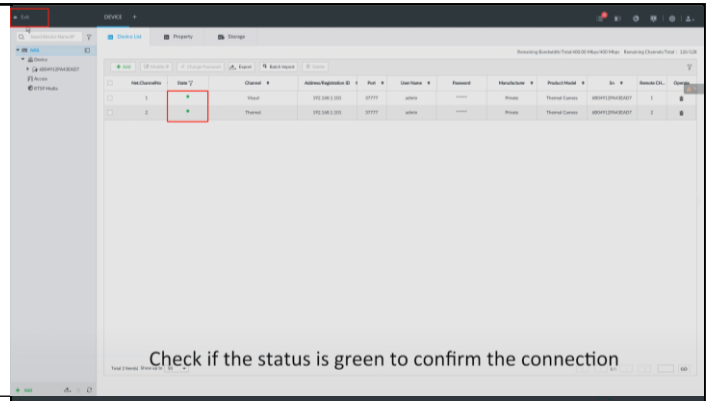
17. The camera is now added and since the result is ” Success”.

Now click ”Confirm and add”

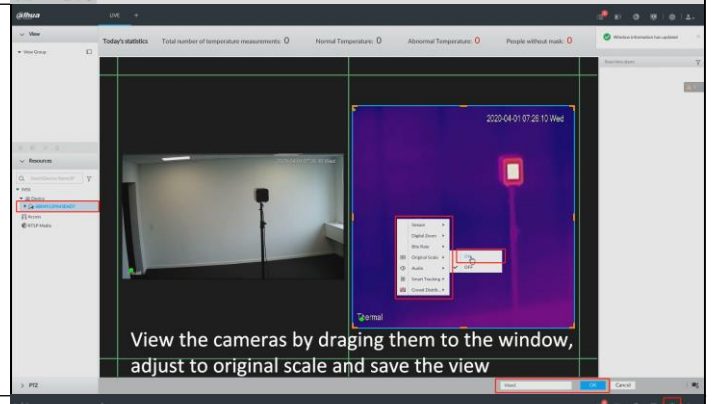


18. We can confirm that the camera is connected from the green ”status” symbols.
There are 2 channels connected since this is a dual sensor thermal camera.

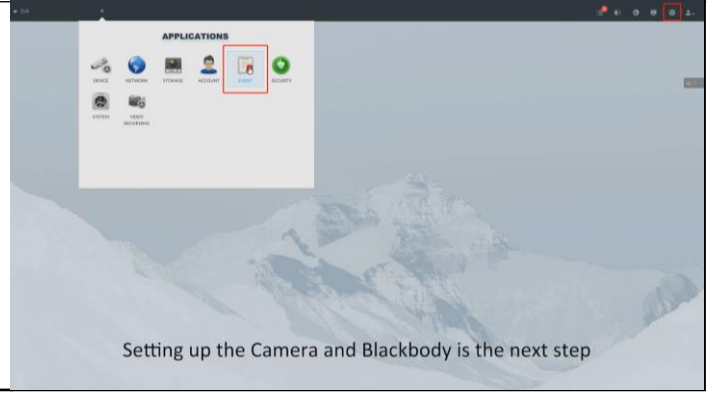
Click ”Exit in the top left corner.



19. Now drag the camera in the left by holding left click and draging the camera out to the windows. Right click and open the menu on both cameras in the window and set the original scale and click ”Okey” in the view in the bottom.



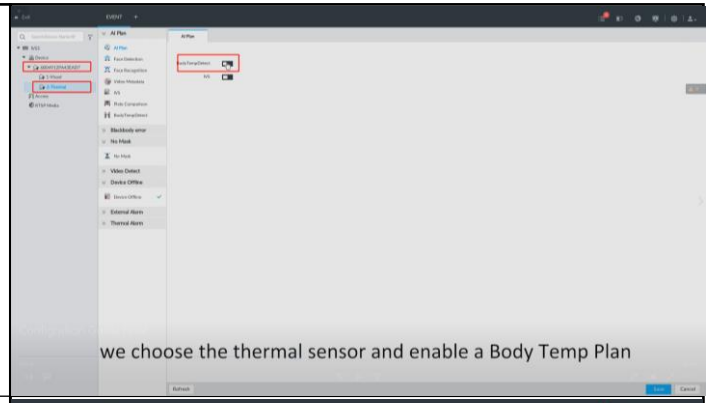
20. Click the ”gear” in the top right again and click the ”Event” menu to set the rules for measurement.



21. Click the camera on your left side and click the ”Thermal channel”.

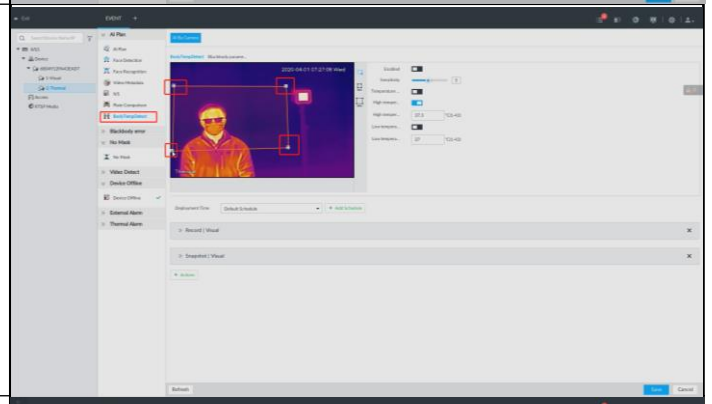
Enable the ”BodyTempDetect”.

Click ”Save”



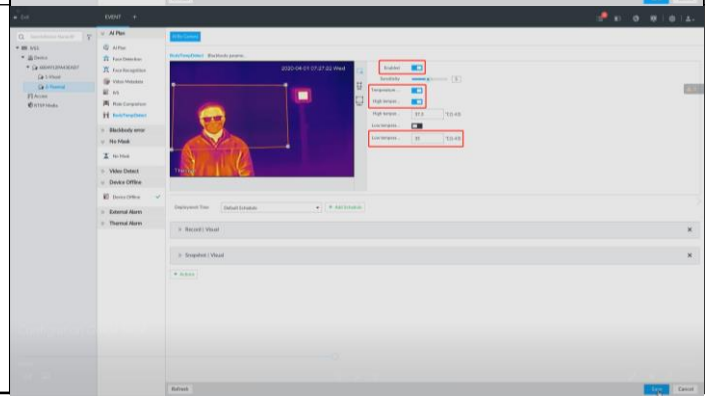
22. Choose ”BodyTempDetect”

Now the detection area needs to be defined, it should be at the aproximated height of the blackbody, use left click and drag the corners as shown



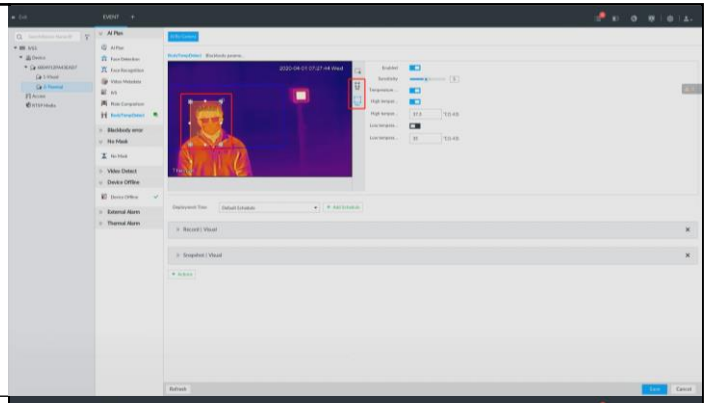
23. Enable all the shown settings,

Get a person to stand there as a reference, and make sure your blackbody and camera is in the correct position or adjust slightly. Click ”Save”

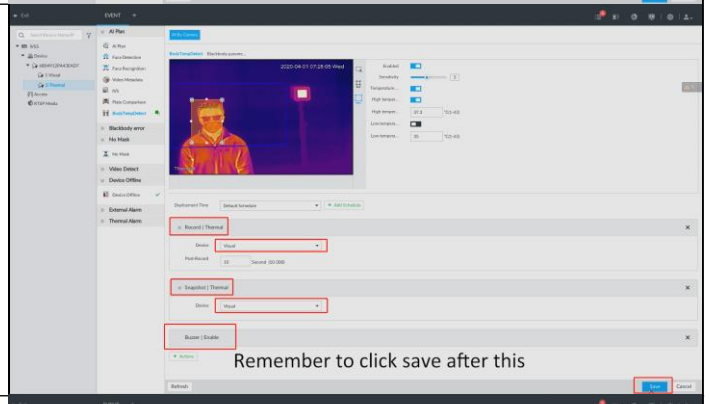


24. Capture filter needs to be setup.

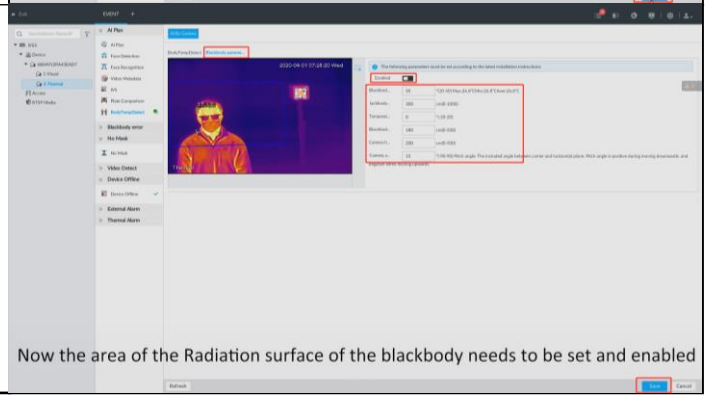
Set min. Filter size to be a little smaller then the persons face and max. Filter to be a little bigger, this will make sure to capture average faces.



25. The cameras visual sensor needs to be recording and this is set by clicking ”Record” and choosing visual and the same for ”snapshot”.
We also added a buzzer for high temperture which is optional Click ”Save”



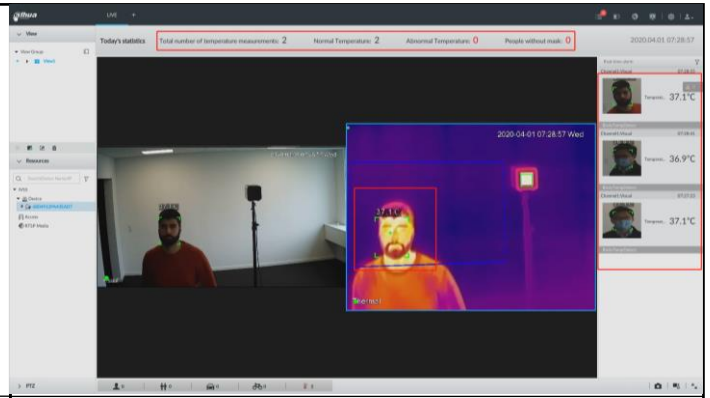
26. Next step is to enable use of Blackbody by clicking ”Blackbody para…” in the top and enabling it, here we also need to specify the area of where our Blackbody surface is. Since all other parameter fits our installation we just ”save”



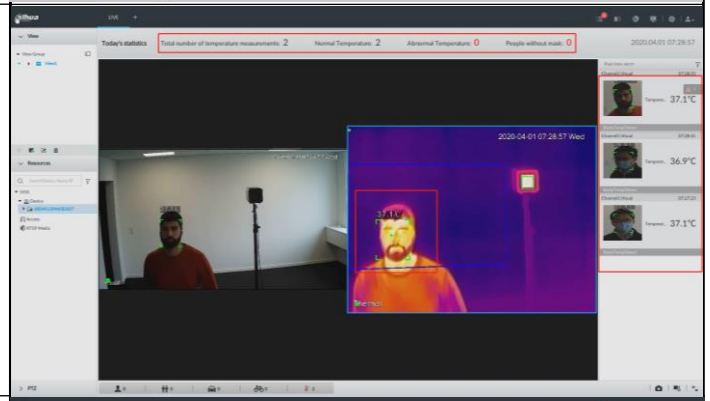
27. Click ”exit” in the top left corner

and it is time to test the solution now.

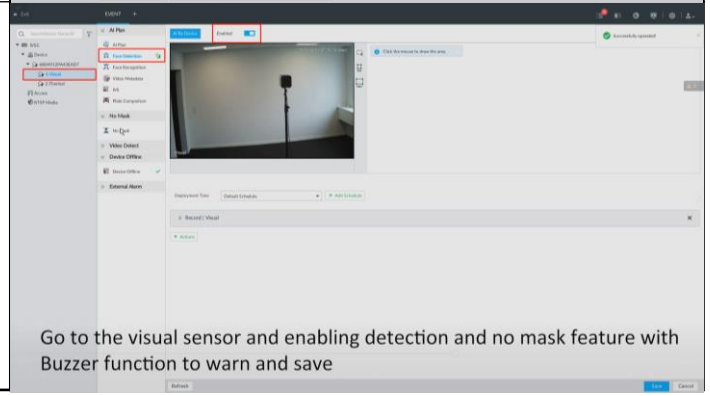
Walk through the measurement zone and verify.



28. From the test we can see that it measures and detects well, in the main window top we see the overview of measurements and right side the live results.

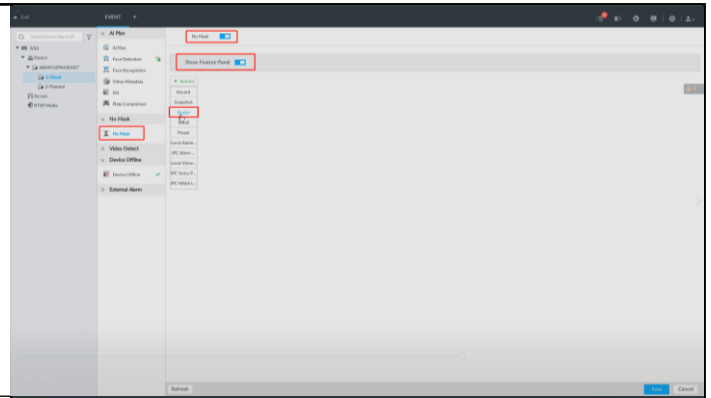


29. We can also setup a No mask alarm by going in to the same menu clicking the ”Gear” right top. And choosing ”Event” Now we will choose our ”visual channel” and enabling face detection.
Click ”Save

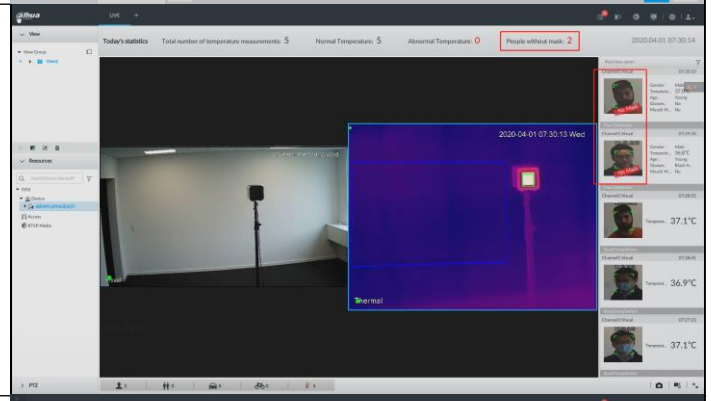


30. Then we choose the ”No mask feature and enable the settings, and we can choose to set a ”buzzer” to trigger when there is an alarm for person with no mask detected.

Click ”Save

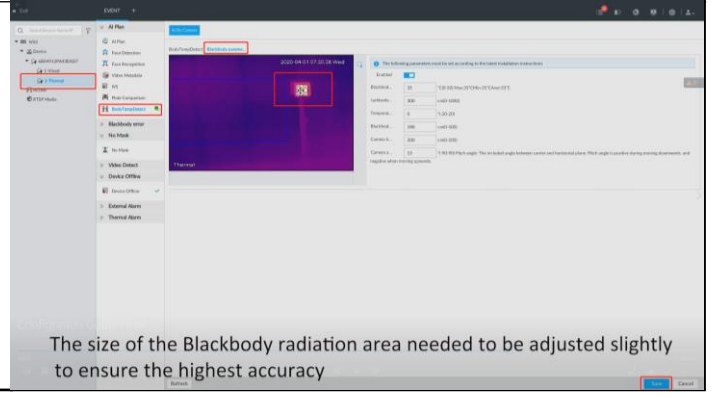


31. Testing the function by walking through without a mask ensures that the function works as shown in the right side and top of the main window.



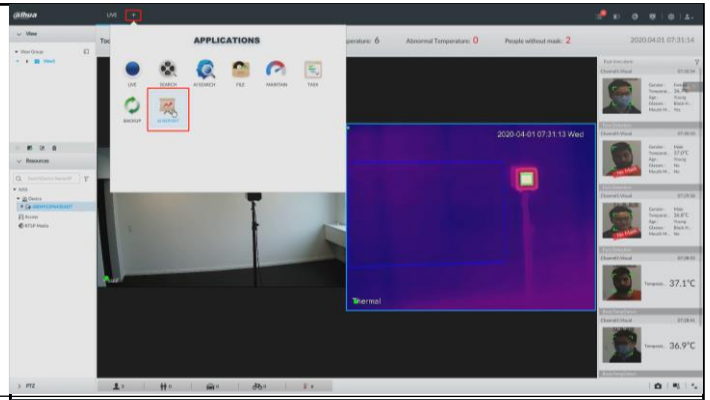
32. The Blackbody is a little off so it should be adjusted slightly in the. Event/ Thermal sensor / BodyTempDetect/ Blackbody

Click ”Save”

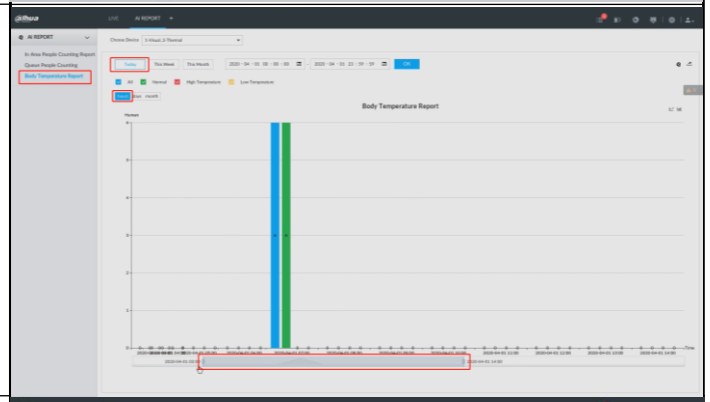


33. It is also possible to get statistics from the IVSS.

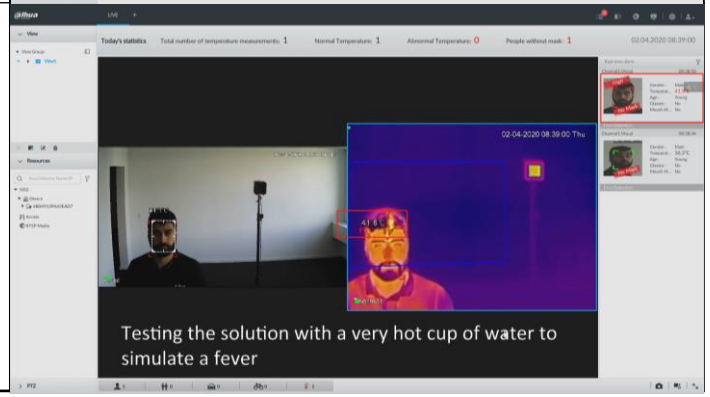
Click ”+” in the top next to ”Live” and choose ”AI reports” from the menu.



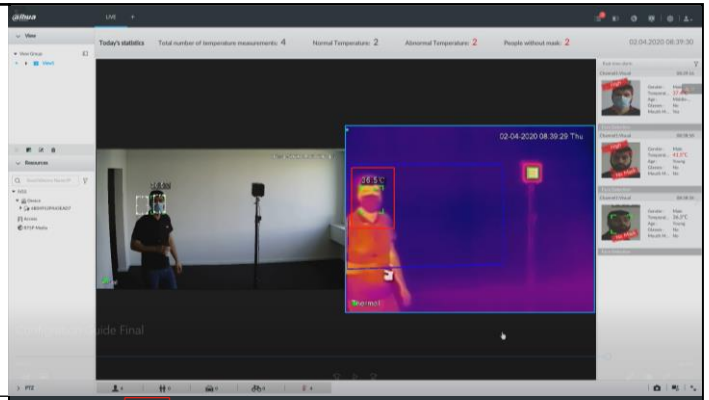
34. We are going to search for measurements of today by choosing ” Body Temperature Report” and ”Today” and by ”hours” in the bottom we can then slide the bare to move the time frame, and export. Here we se the results.



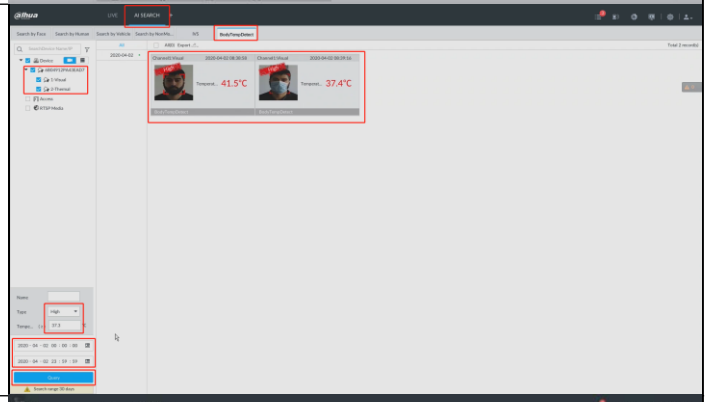
35. Im now going to simulate a fever with a very hot cup of water, to see the result, depending on the read distance the snapshot distance difers from the very close measurement.



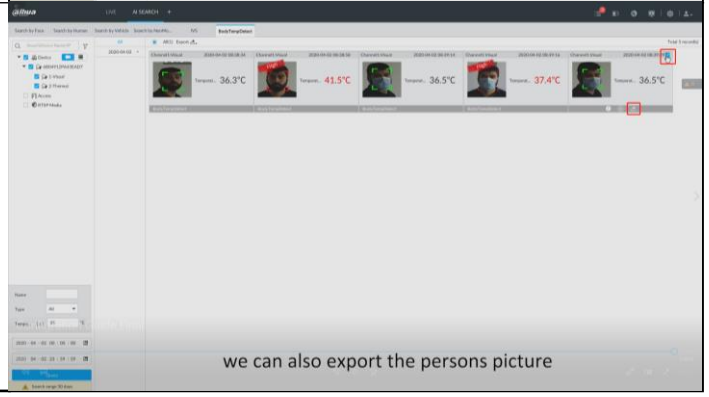
36. As you see from a simulation the temperature drops rapidly back to normal.



37. We are also able to do a High temperature search by doing an ”AI SEARCH” choosing the camera specifying ” High” temperature and defining period and then ” Search Query and see the result.

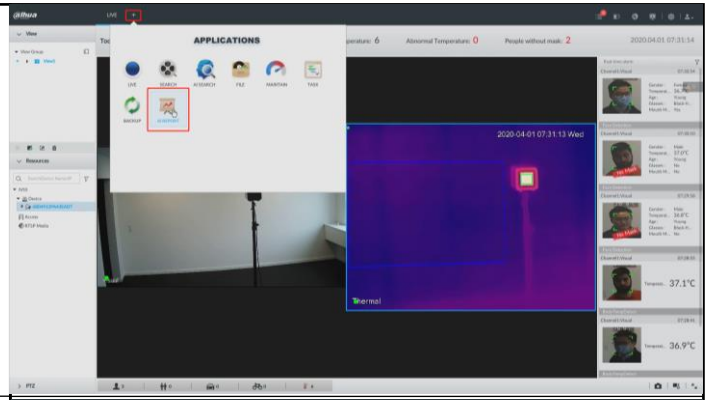


38. We can also export these results to give us a better overview of the situation.

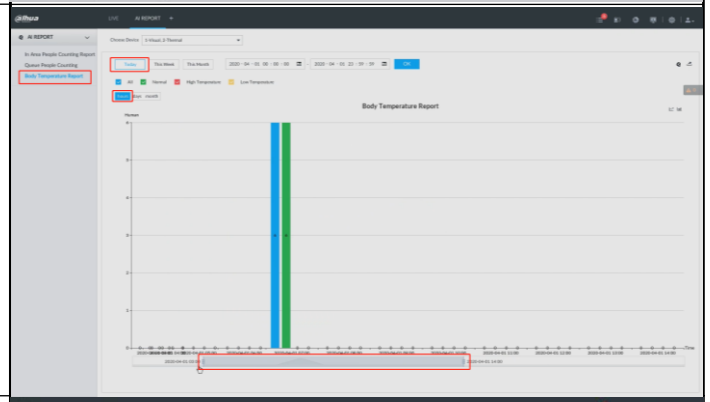


33. It is also possible to get statistics from the IVSS.

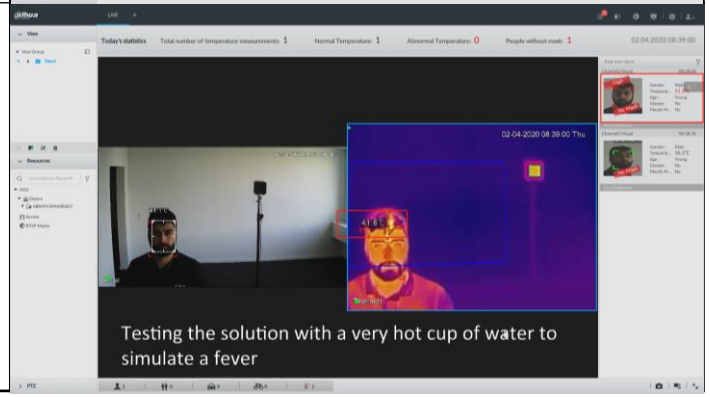
Click ”+” in the top next to ”Live” and choose ”AI reports” from the menu.



34. We are going to search for measurements of today by choosing ” Body Temperature Report” and ”Today” and by ”hours” in the bottom we can then slide the bare to move the time frame, and export. Here we se the results.



35. Im now going to simulate a fever with a very hot cup of water, to see the result, depending on the read distance the snapshot distance difers from the very close measurement.



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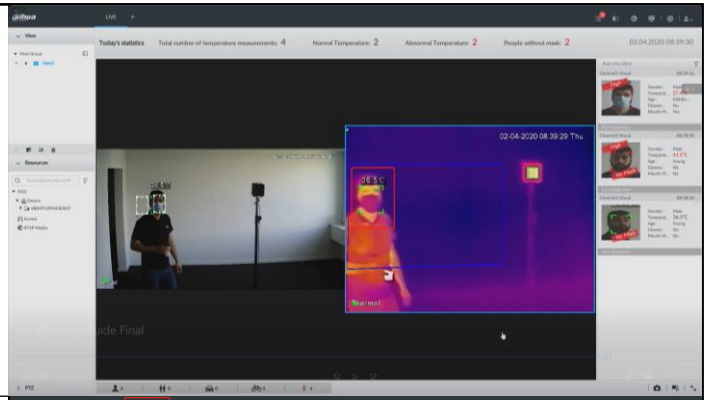

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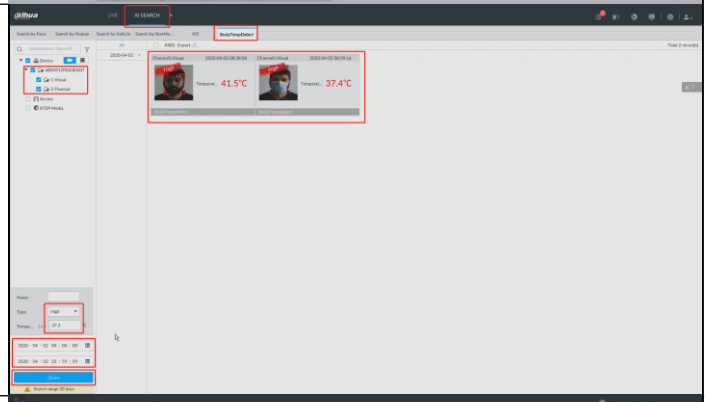
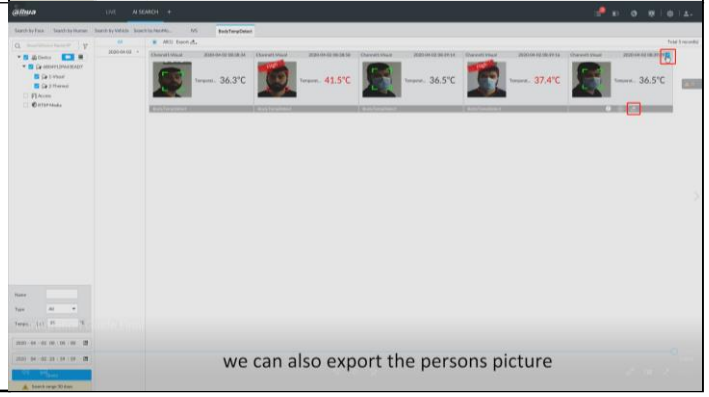
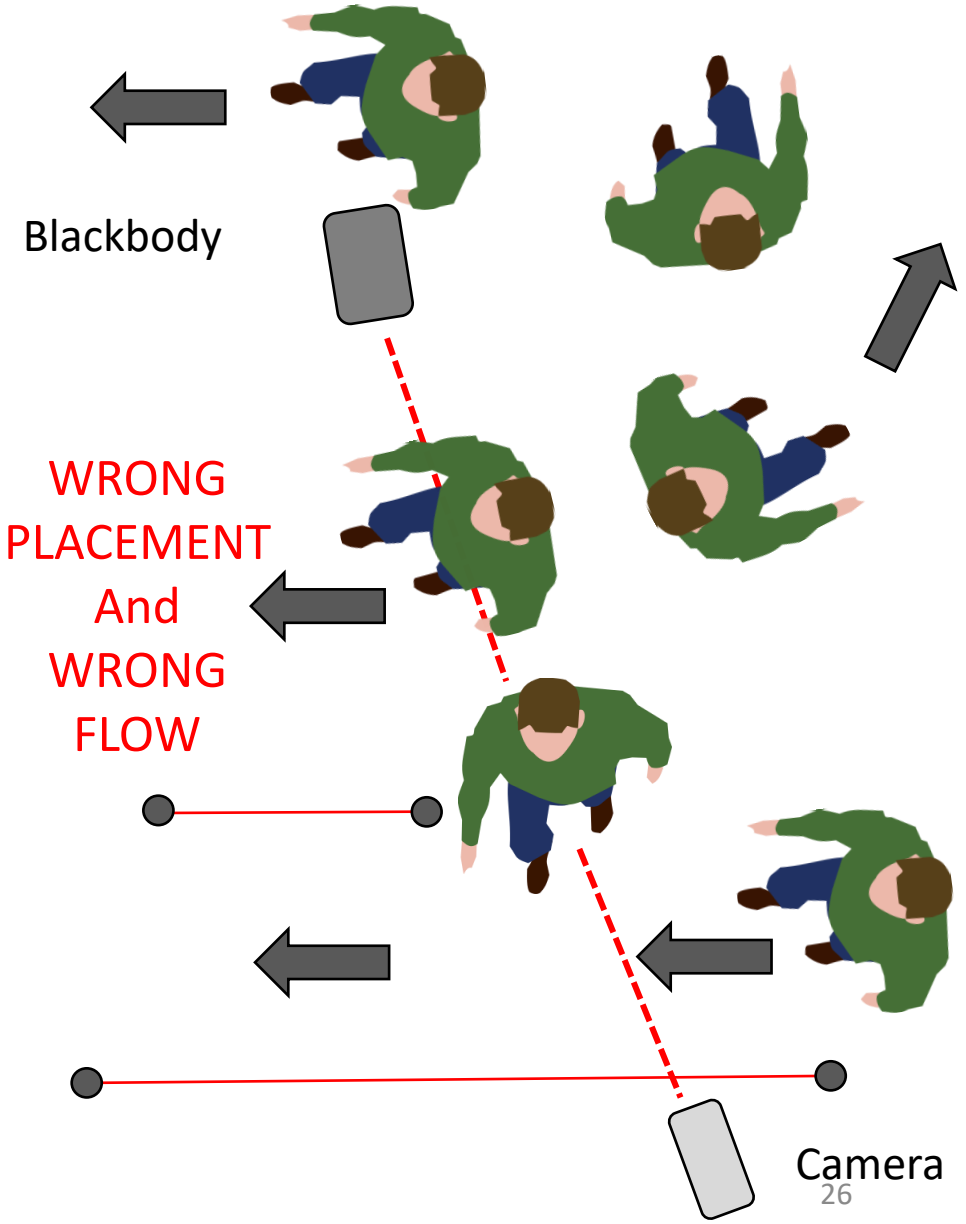


38. We can also export these results to give us a better overview of the situation.



Precautions during installation and Configuration

- The direction of flow is not correct, it is important that people are moving towards the camera in a straight line.
- Make sure the are of installation is well illuminated to avoid backlight and reflections and light changes.



Installation Precautions

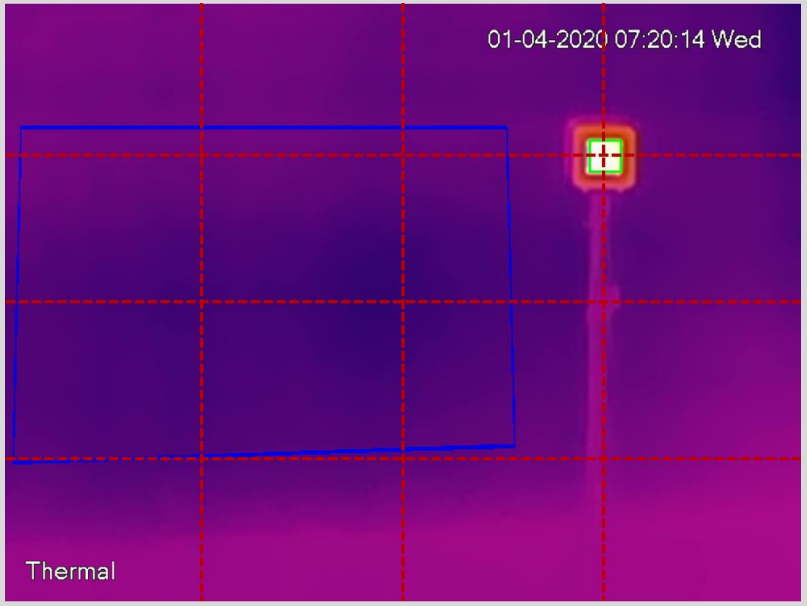
- Blackbody radiation surface must not be touched. It is highly sensitive equipment,

- Should only be cleaned carefully with these type of devices

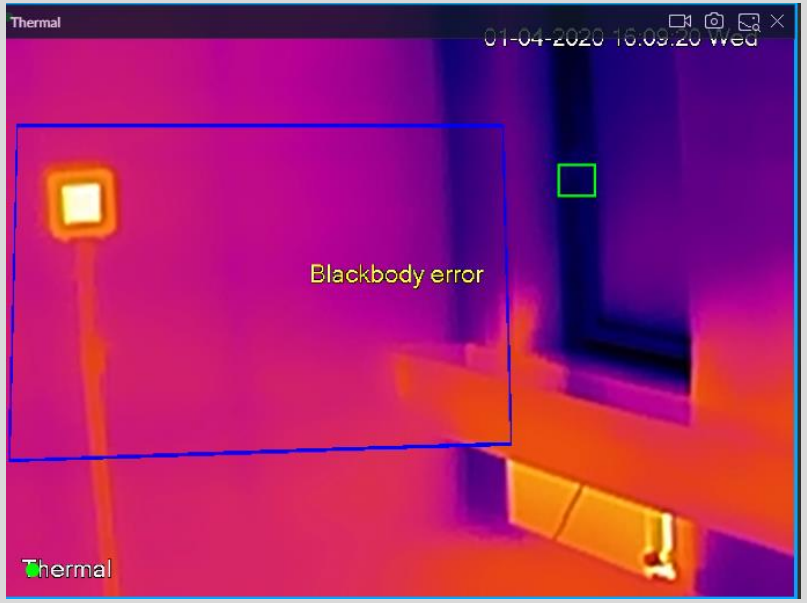
Installation Precautions

- Blackbody or camera must NOT be moved after the configuration is successful, make sure it is protected with fence around both.
- If any of the devices are moved, they need to be returned to their original location, and the blackbody radiation zone and detection area should be reconfigured

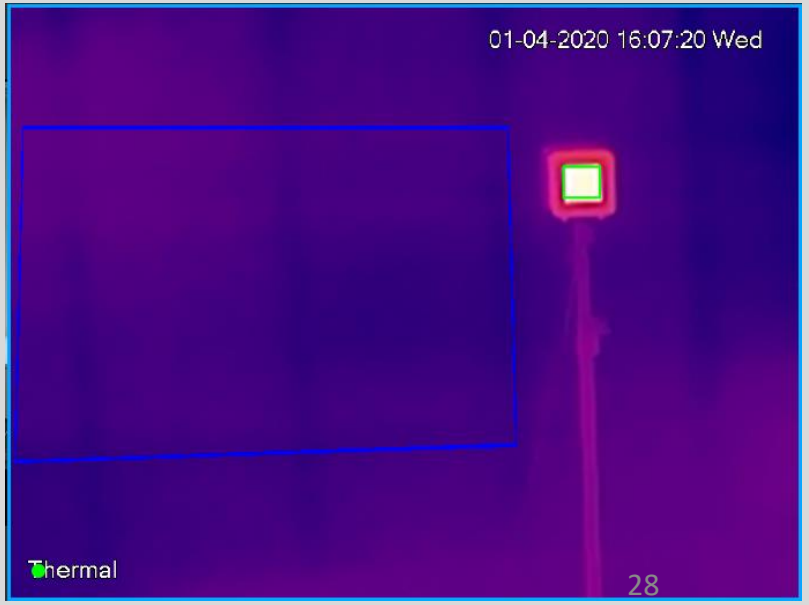
Correct location



Wrong location

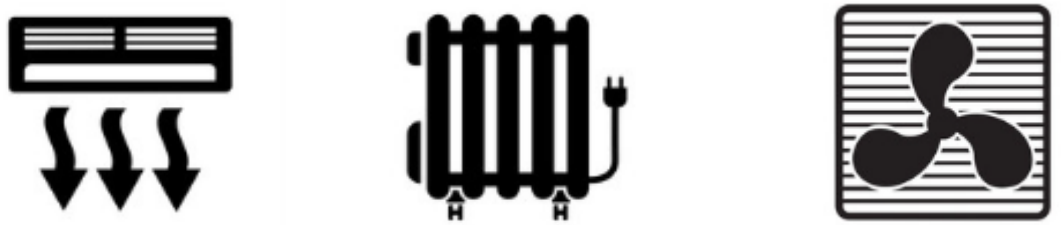


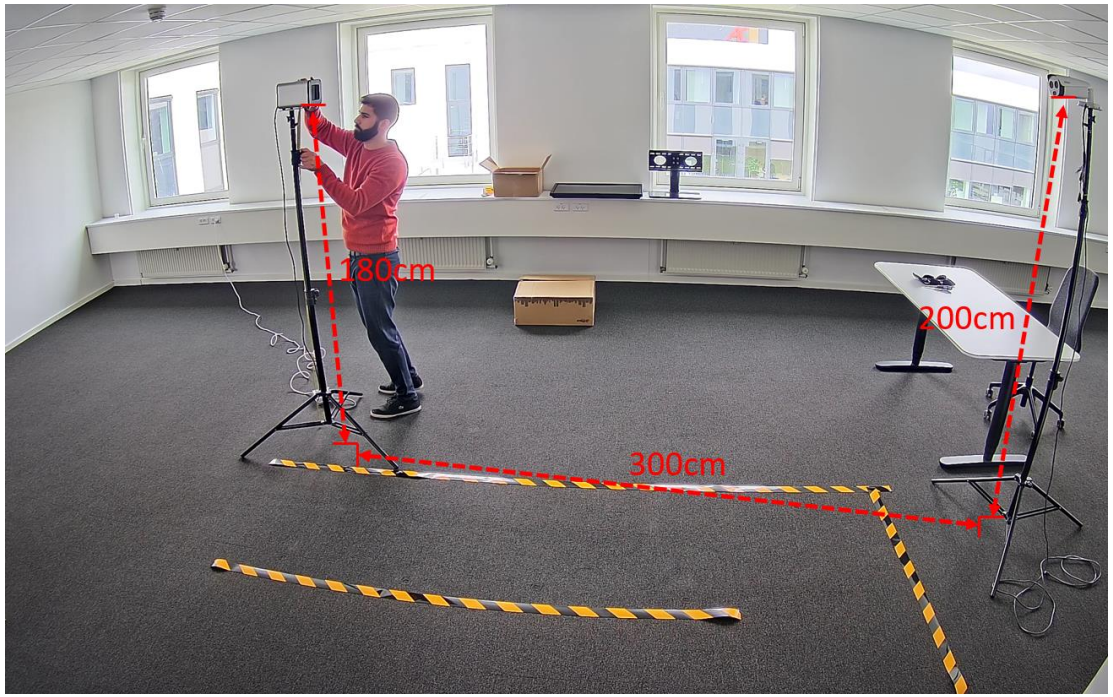
Correct location again



Installation Precautions

- Ensure no high-temperature heat source (heater, hot water, microwave, radiator) or sunlight is in the thermal image.
- The installation area shall be relatively isolated from outside environment to avoid strong wind and big humidity changes or airflow. Temperature can differ quite rapidly at entrances since it is the skin that is measured.
- Make sure that all distances are measured again corresponding to the given instructions. If anything is moved during installation and configuration





Stickers

- Make sure to setup stickers to ensure proper wayfinding/ People Flow

FAQ

1、What is blackbody? What is its function?

Blackbody can be simply understood as a constant temperature reference source. When testing human body temperature, blackbody is generally set to 35 ℃ by default, which is used for temperature correction of thermal imaging acquisition, so as to meet the accuracy requirements of ± 0.3 ℃.

2、Can it be installed in outdoor or semi outdoor environment?

Because the outdoor temperature, wind, humidity and other environmental factors have a great impact on the temperature measurement of the thermal imaging surface, it is not recommended to be installed outdoors or in the area directly connected to the outdoor, but in a closed and relatively stable environment without wind.

The best distance for temperature measurement?

The best temperature measurement distance is the same as the distance between blackbody and equipment. 7mm detection distance is 3m, and the transverse width of 3m is about 1.3m; the temperature measurement value far from the optimal distance will be reduced, and the temperature measurement value close to the optimal distance will be increase

5、How many heads can be tested?

In normal use, many people (1.3-1.5m in width) can't be placed side by side at the best distance of temperature measurement. There is no limit to the number of heads in the detection area, but it is too far or there is overlap, which may result in missing or inaccurate temperature measurement. It is recommended to test one by one.

6、Why does the image of thermal imaging channel get stuck after a period of time? Is it normal?

Normal. In order to ensure the image uniformity and temperature measurement accuracy, thermal imaging needs a period of time to set the blank to zero for correction. During the process of setting the blank, the image will get stuck, which is a normal situation

7、Why thermal camera does not measure temperature after the first configuration

System time is not synchronized, refer to time synchronization setting in system debugging