HIKVISION

How to set the Thermal Smart Linkage Tracking System

Purpose

Thermal Smart Linkage Tracking System is formed by one fixed bullet camera and one PTZ camera (speed dome). The PTZ camera smartly tracks multiple moving targets, and the fixed camera offers the panoramic view. When thermal camera detects the Intrusion or Line Crossing, it will trigger the PTZ camera to track.

Preparation(IMPORTANT! MUST READ!)

1. Install the Ivms-4200 client software and keep it running.
2. Restore all the units before doing anything.
3. The tilt angle of PTZ need to be changed (from 0-90° to -20°-90°) in the OSD PRESET 95 menu. (IN THE OSD MENU!!! NOT WEB)
4. Keep the thermal bullet camera and PTZ camera online.
5. Set the VCA rules (Intrusion or/and Line Crossing) for thermal bullet camera.

Note:

- *The latest baseline 4200 client is suitable for the calibration, don't need to choose customized client.*
- *The calibration could not be completed on the web edge.*
- *The device installation height should be 4~6 meters.*

Calibration Steps:

1. Add the thermal bullet camera and PTZ camera into the client, and ensure the Main View works properly.
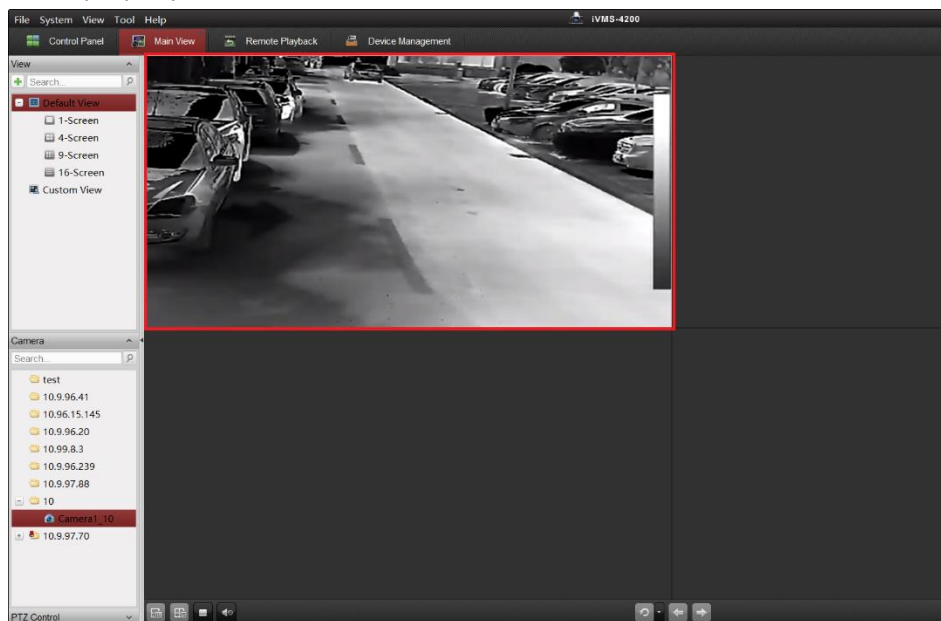

Figure 1

2. Then we have two methods to enter master-slave interface:
    (1) Enter the **Remote Configuration** of thermal bullet camera. In the **Remote Configuration** interface, select **Advance Configuration->Master-Slave Tracking** to display the login
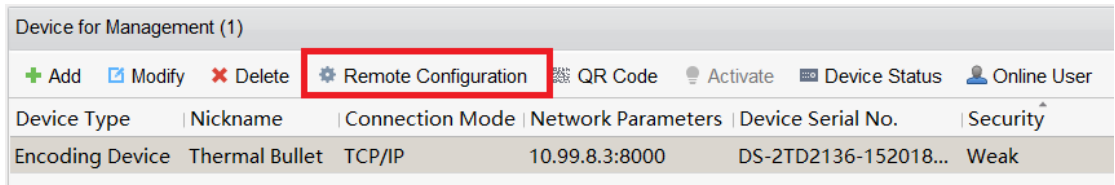
interface.

Figure 2

(2) Right click in the Main View and select **Remote Configuration,** then also select **Advance Configuration->Master-Slave Tracking** to display the login interface.
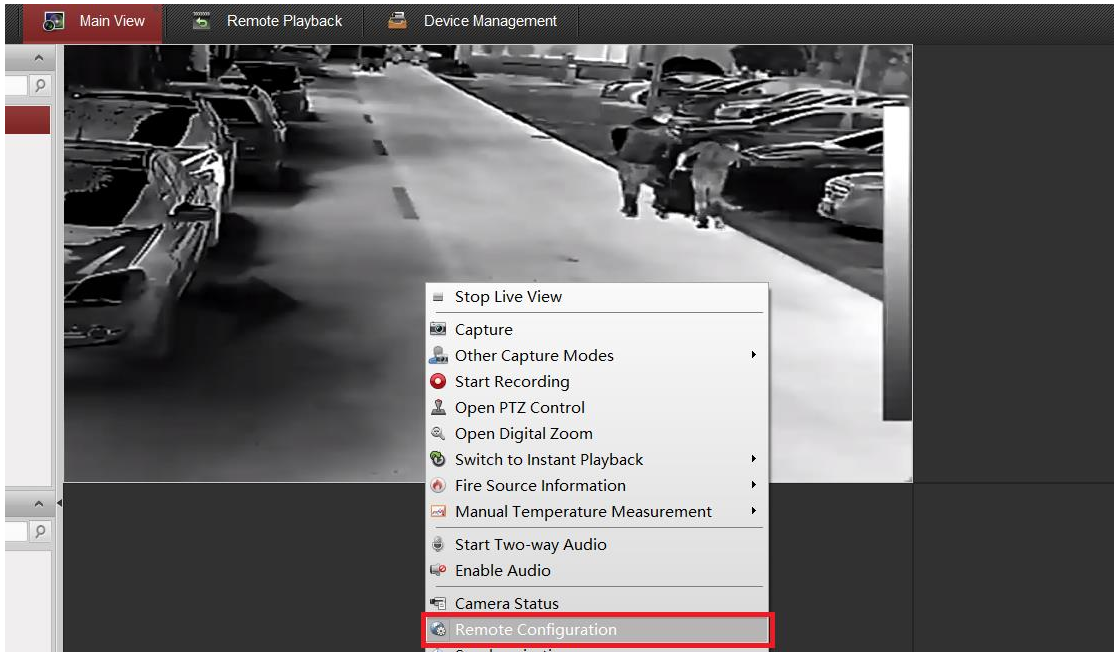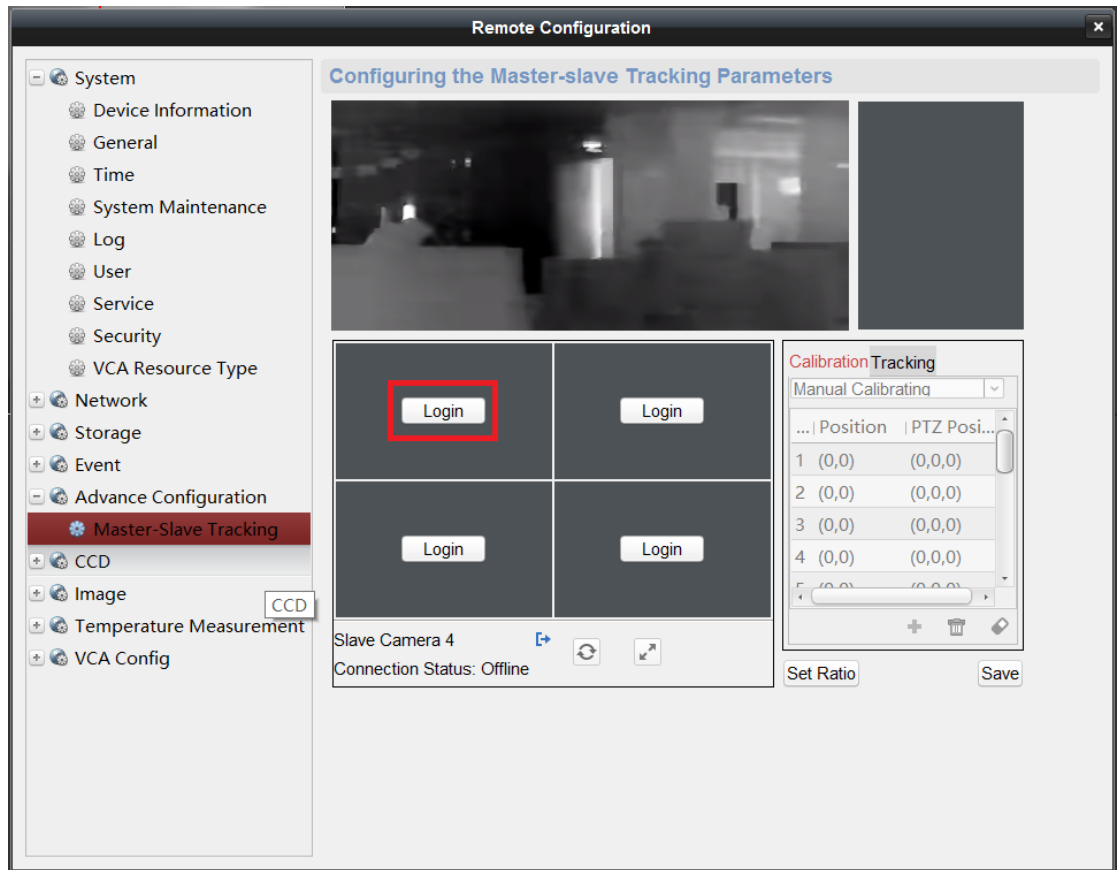

Figure 3

Figure 4

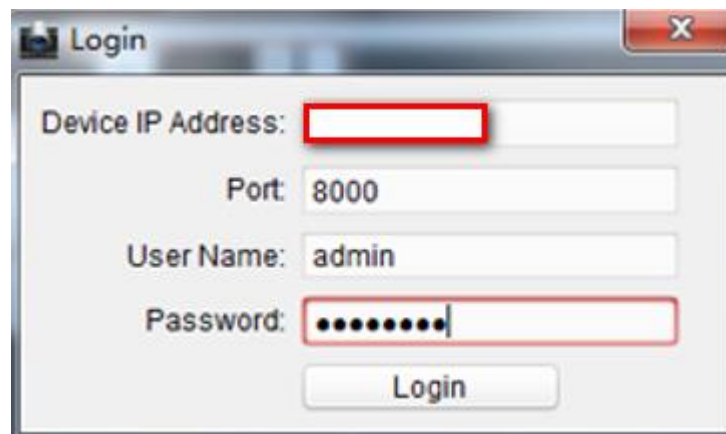3. Click Login button to pop up the PTZ camera login dialog box. Input the required information.

Figure 5

4. In order to see the live view better and optimize the accuracy of calibration, we advise that click [icon] to display full screen window size.

Figure 6

5. We need calibration between thermal bullet camera and PTZ camera for Smart Linkage. Click to select the calibration tab page. Select **Manual Calibrating** from the calibration list. Select No.1 (change the picture)from the list and click ✛, a green cross appears in the center of the live view page. As the figure 7 shown, we recommend to set at least 6 points which evenly distributed in the thermal bullet camera's live view.
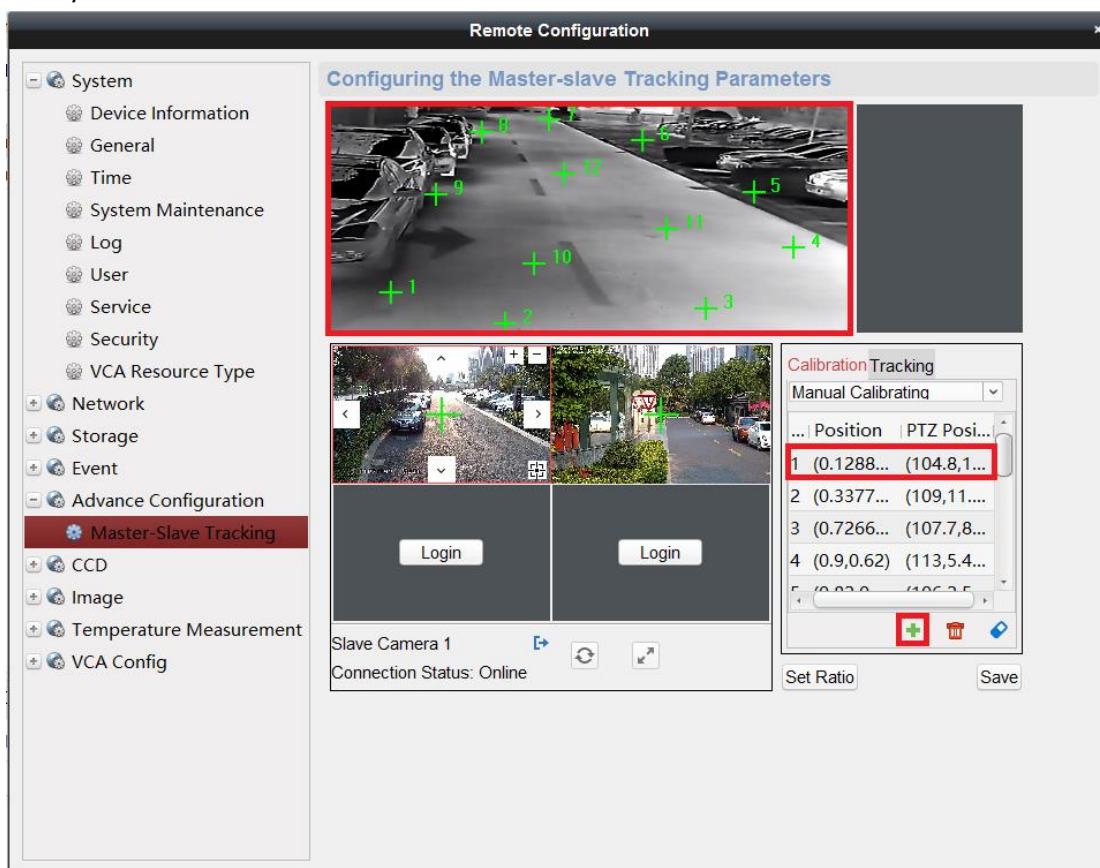

Figure 7

Note:

- *6 to 12 calibration points can be configured. The smart linkage tracking will get more accurate when you set more calibration points.*
- *You can calibrate it with 6 persons standing in the view or with only one person standing in 6*

different positions within the view.

● *All the calibration sites should be set on the ground. If not, the PTZ camera will track inaccurately. Please set the points on the feet of who stand in the image to confirm that all the points are on one same plane. If the plane is not smooth enough, it will have some impact on the final tracking effect.*
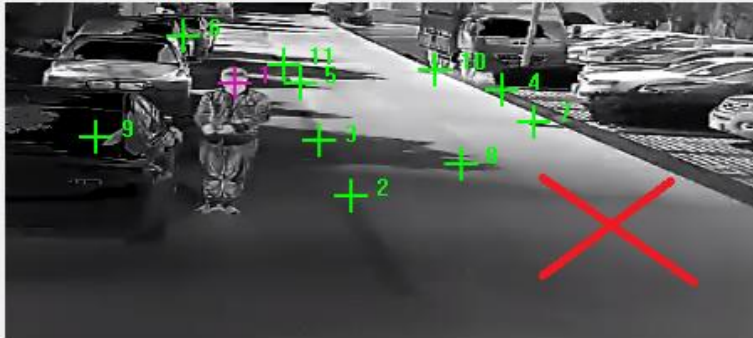

Figure 8

Figure 9

● *Don't make the chosen sites be too crowd or too divergent. And also don't make the sites to near or far in the image.*

Figure 10   Figure 11

- *It will be better to prevent 3 points on the same line, if so, one point of them will not be useful for the calibration.*

Figure 12

6. *Select the No.1 site, you can calibrate it in different zoom rate of PTZ camera. To ensure tracking accuracy, it's better to near the tracking ratio.*
   (As the figure 13 and figure 14 shown, when PTZ camera was Zoom 4, it's close to the tracking ratio).

Figure 13   Figure 14

7. *Click* ⊞ *(3D Positioning) to make the site of PTZ camera which in the center of live view is the same as NO.1 site for thermal bullet camera.*
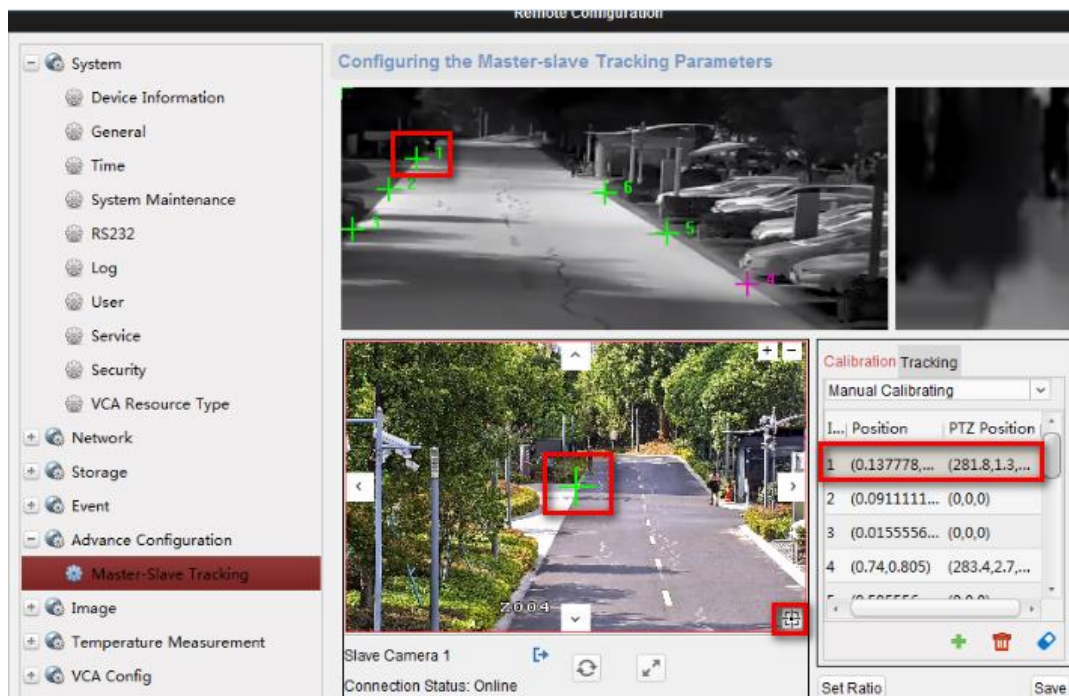
Figure 15

8. Click 🔡 again to save the current site position information.

9. Then click another point like No.2, the speed dome will turn to another position, and click back to the No.1 point to check if the green cross is still on the feet the people.

10. If not, repeat the step 7 to step 9 or let the Human walk a little distance until his feet is in the center of the green cross.

11. Select Site No.2 to No.12, and repeat the step 6 to step 10.

12. Click **Save** to save the calibration settings.

13. The calibration is completed when note shows up as: Calibration Succeeded.

Check the calibration:

1. Exit the remote configuration interface of the camera to enter the live view interface.

2. Right-click on the live view window of camera to show the menu and click **Master-Slave Linkage**.
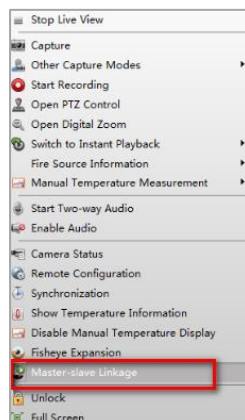

Figure 16

3. Drag a rectangular frame in the camera live view window, and the speed dome tracks.

4. If the center of speed dome view is the same as the mouse of camera view, and the view of the frame is at the center of the speed dome view, the calibration is succeeded. If not, restore the thermal camera and repeat calibration steps once again.

If the auto-tracking is not accurate, the possible reasons are as below(IMPORTANT! MUST READ!)

- *The pole of the bullet camera and speed dome is not stable, the shake make your calibration point is not on a fixed point*
- *Solution: Stablize the pole, decline the height of the pole or install the camera in a stable wall.*
- *The points were not put on people's feet during calibrating.*
  Solution: Put the points on people's feet to make sure all points are on the same ground plane.
- *You didn't check the points after calibrating each one, sometimes it seems the green cross are on people's feet, but it might have a gap with what we can see actually.*
  Solution: what we need to do is to click to another point first then click the former point back to confirm if it is accurate enough.

Tracking Configuration:

1. Adjust the zoom ratio of PTZ camera until the live views of PTZ camera and thermal bullet camera is mostly the same, then click **Set Ratio**. When configured VCA rule is triggered by target, the PTZ camera will track the target by this ratio.
2. Select Tracking tab page, and then check the checkbox of **Enable Tracking**.
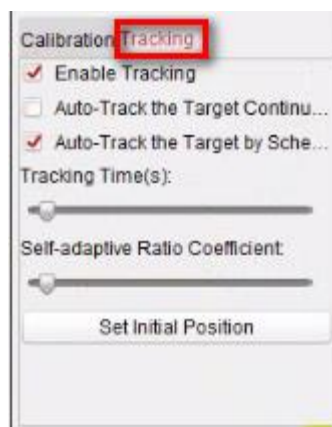

Figure 17

3. Check the checkbox of **Auto-Track the Target Continuously** or **Auto-Track the Target by Schedule**.
   Note:
   Continuous means PTZ camera will track until the target leaves the detection area.
   Schedule means PTZ camera will track during the tracking time.

4. Set the self-adaptive ratio coefficient by dragging the bar, and the recommended coefficient value is 7.

   Note:
   - *Set the self-adaptive ratio coefficient according to the target size.*
   - *When the self-adaptive ratio coefficient value is 0, the speed dome tracks the target by the zoom ratio in step 2.*
   - *When the self-adaptive ratio coefficient value is not 0, the ratio of the speed dome changes with the target size.*
   - *Set the self-adaptive ratio coefficient value larger if you want to view less details of the target.*
   - *Set the self-adaptive ratio coefficient value smaller if you want to view more details.*

5. Move and Zoom the PTZ camera to a scene, and then click the Set Initial Position to set the initial position. The PTZ camera turns to the initial position after tracking the target.
6. Click **Save** to save the settings.
7. Enter the live view interface of thermal bullet camera and PTZ camera.
8. Right-click on the live view window of thermal bullet camera to show the menu and click **Enable Smart-Linkage tracking**.
9. When configured VCA rule is triggered by target, the PTZ camera performs the automatic master-slave tracking and the target can be seen more clearly.

Figure 18

Figure 19

How to set the bullet thermal camera auto calibration and trigger the VCA by target's actual size for V5.5.8

Purpose

When enabling the camera calibration, the device can calculate the size of every target, so the VCA detection will be more accurate.

Preparation

1. Make sure that we have known the real length of the objects in the scene.
2. Choose the thermal camera which does not support PTZ function (Calibration only for this type).
3. Before using the VCA rules of the camera, you should select the VCA resource type first.
4. If the device has been upgraded, the previous calibration file will expire and need to be recalibrated. (This is only for versions that have been upgraded since V5.4.2)

Steps:

1. Enter the IP, User and Password, click the button of Login via web page.
2. Enter the Camera Calibration setting interface:
   Configuration > VCA Configuration > Camera Calibration
3. Check the checkbox of **Camera Calibration** to enable this function. It includes auto calibration and manual calibration.
4. Auto Calibration setting.

● **Auto Calibration:**

Make sure only one person appears in the live view, input the real height of target, then click the start button. Once auto calibration has run, this person should start to walk follow S route from device's minimum range which can see the whole person. Make sure this person's walking route covers the left, middle, right of image. The longest distance for person will need to walk is 4 times of focal lens. Take 2TD2136-7 for example, the recommended endpoint is 28m (lens*4). Finally click the stop button to finish this operation.
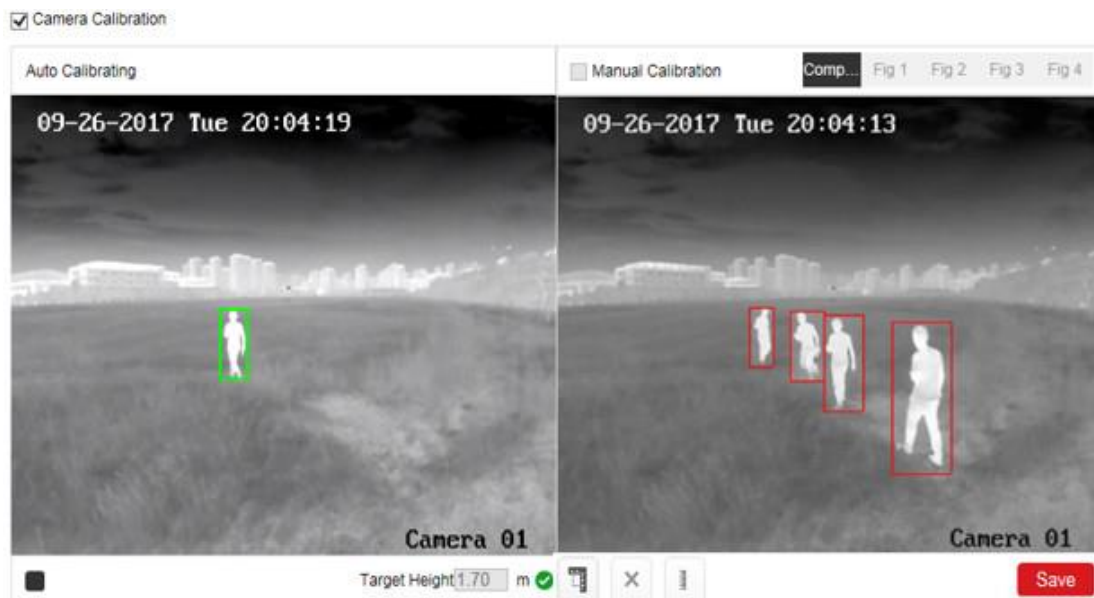

Figure 1

Note:
1. Keep only one people walk in the live view, no other moving objects (animals or persons).
2. Auto calibration time should between 10 seconds to 10 minutes. Walking with two groups of S route is enough theoretically.
3. If there is the leaves or trees interference appears in the live view, we suggest to use shield region settings to solve this issue.

● **Verification for Auto Calibration**

There will be automatically generate one composite figure after auto calibration succeeded. We can verify the calibration accuracy by testing person has walked in four different positions one by one in this picture or form Fig1 to Fig4.

*Click the **Enable Verification of Camera Calibration** button* 🔲 *to enter the verification interface. Click the **Vertical Verify** button* 🔲 *to draw a vertical line on the live video, and then click the **Calibration** button* 🔲 *to calculate the line length. Compare the calculated line length to the actual length to verify the calibration you set. With the drawn reference lines and their real length, the camera can conclude other objects appear in the live view.*

Note:

1. Not only verify person, but also verify any target appears in picture. Such as car, lamp pole.

2. Only support Vertical verification not include horizontal verification.

5. *Manual Calibration setting.*

   ● ***Manual Calibration:***

   If the auto calibration result is not correct, we can select manual calibration to recalibrate. It needs 4 lines in total and draw each one vertical line from Fig1 to Fig4. Take Fig1 for example, click Draw Verification Line (Vertical) to draw a vertical line to one person in Fig1, and input the actual length in Real length field. If there is no persons appears in Fig1 or has not marked the target with frame completely, we can select other vertical objects to calibrate, like as the lamp pole.

   Finally click save button until you have drawn one calibration line in each figures.

   ● ***Verification for Manual Calibration***

   *Please verify the calibration result after complete the manual calibration. The verification method can refer to **Verification for Auto Calibration**.*

   Note:

   1. *It would be better to separate 4 **vertical lines** at the left, middle and right of the image respectively. From the vertical, lines need to be separated from front to back evenly.*

   2. *If manual calibration's result is not correct, please reselect target to recalibrate. Make sure input the height value of target accurately.*

6. *Rule Configuration*

   If auto calibration's verification result or manual calibration's verification result is similar as the real height of target, go to rule configuration for next settings.

   Steps:

   1. *Click **Rule** tab to enter the rule configuration interface and add a new rule. Check the checkbox of the desired rule to enable the rule for behavior analysis.*

      *Take **Line Crossing** for an example.*

   *Select the rule type of **Line Crossing**, set the filter type to **Actual Size** when the camera calibration is configured. Then input the width and height of the Max. Size and Min. Size. Only the target whose size is between the Max. Size and Min. Size value will trigger the alarm. We can also set the **Detection Target** like as Human, Vehicle, Human & Vehicle. The device will output the alarm information according to the target you have selected.*

   Note

   If you want to detect human whose size is 0.5 meters wide, 1.8 meters high probably, the recommend settings can refer to the following example.

Min. Size: 0.4*0.8(m)

Max. Size: 1.5*2.5(m)

Detection Target: Human

2. *Draw the line on the live video and select the crossing direction, click **Save** to save the settings.*

When the alarm happened, you can find only human not other moving objects and their size are all in this range triggered the alarms. This ensure VCA detection more precisely.

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