Installation guide

People Counting & Heatmap

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Contents

1. Introduction

Security cameras that provides high quality image, varied view angle and advanced image processing are developed and deployed. This brings various applications over legacy video surveillance system. Information gathering and analysis technology is one of them which rapidly improving.

Hanwha Techwin camera provides various type of information such as tampering, defocus, movement and audio detection. In addition, people counting and heatmap feature through video analytics which allows advanced information beyond simple video surveillance.

People counting and heatmap features count the movement of people, then provide information and statics by timeline. It saves user's time, manpower, expenses and also help to create added value.

This document is designed to help users better understand and conveniently use our products and features; people counting and heatmap.

2. Camera Installation Instructions

Hanwha Techwin people counting and heatmap features provide optimized performance when set-up according to instructions below.

The video analytics feature can be affected by surroundings such as lighting, view angle and etc. Therefore, please carefully refer to and follow below instructions for camera installation. Otherwise, performance will not be assured.

2. 1. Direction of Camera

The camera should be mounted overhead and the lens should point 90°, straight down to optimize the performance of people counting and heatmap feature. If the camera is mounted overhead with the lens pointing diagonally, the performance is not guaranteed. The ideal installed height is between 2.5m to 4.5m with no lens obstruction. See Image 1.
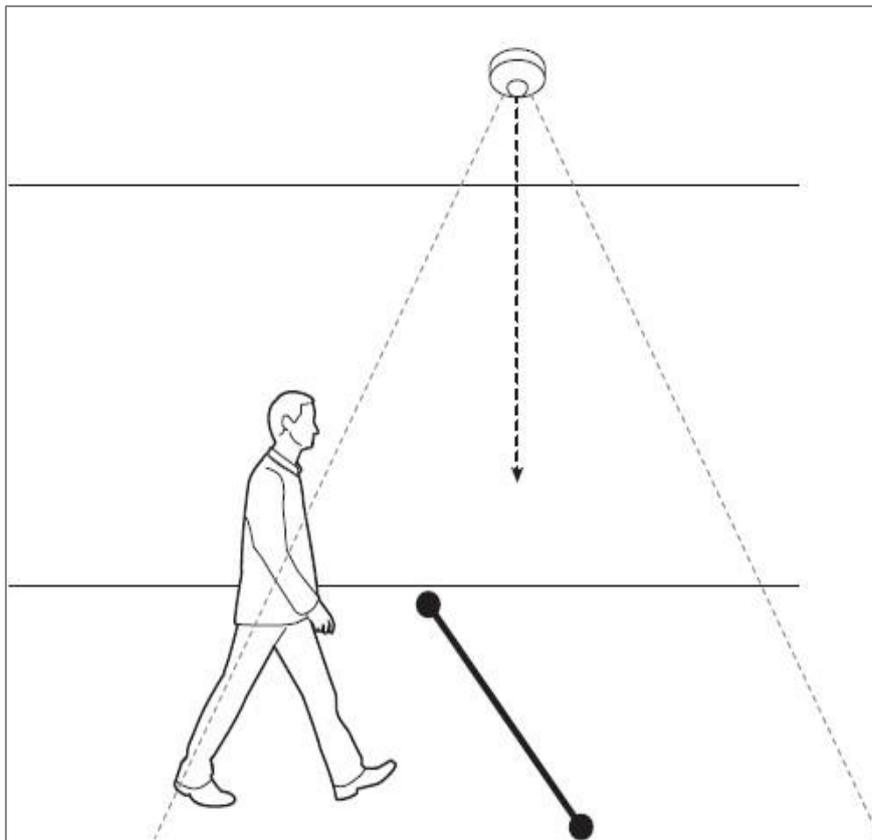

Image 1. Ideal camera installation

2. 2. Lighting around Camera

Environments with stable lighting is optimal for video analytics. Recommended illuminance is 300 to 600 lux, and environments with a strong light source such as direct sunlight, sunrise, sunset or any direct lighting should be avoided.
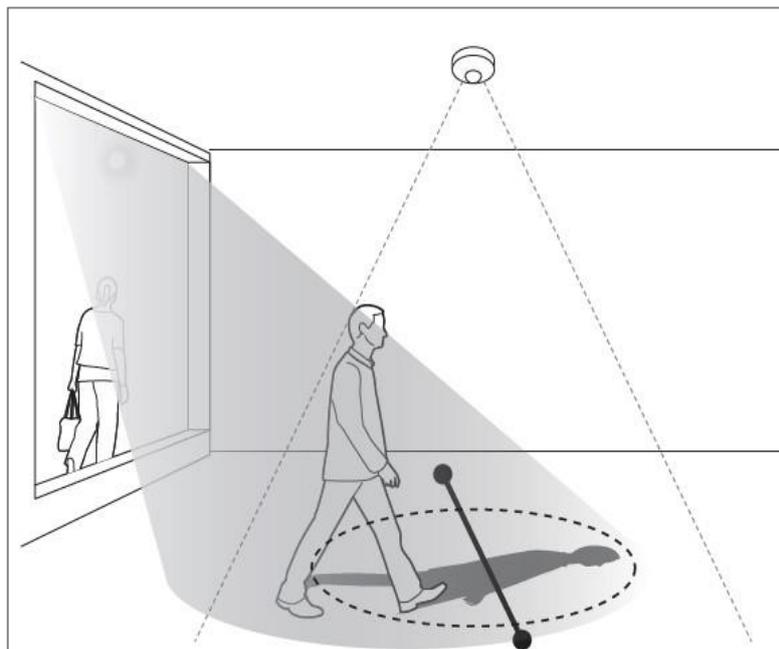

Image 2. Avoid direct lighting on virtual line

2. 3. Object around Camera

People counting is based on recognition of moving object. Therefore, performance can be affected if there is a revolving or automatic door (or any moving object at a fixed location) near counting rule (virtual line) or in camera's view.
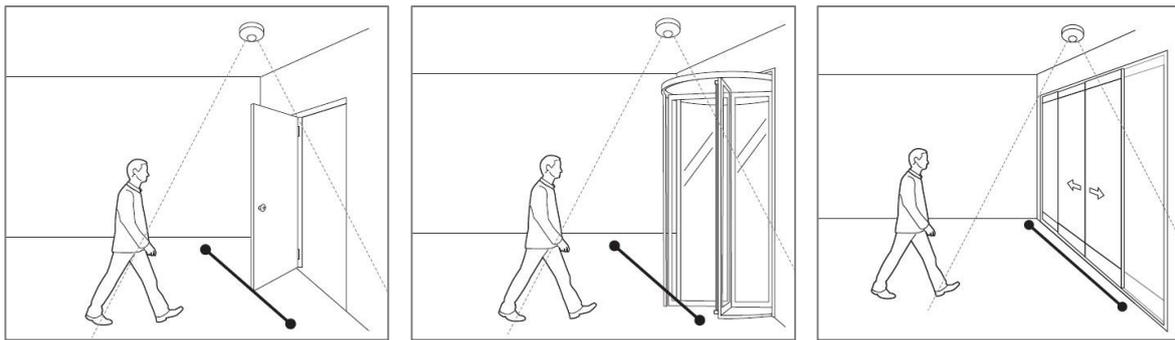
Image 3. Avoid moving objects near virtual line

2. 4. Precautions

The people counting and heatmap features provide statistical data rather than real-time data and any other moving object can be detected and included to the data. Please refer to the below cases may cause measurement error.

- People that move in a group (It can be counted as one person.)
- People or a person staying around virtual line (counting rule)
- Virtual line that set outside of guide line (Image 12, orange line)
- Too much difference in object size between actual and configured size
    Actual size > Configured size: Possibility of higher measurement
    Actual size < Configured size: Possibility of lower measurement
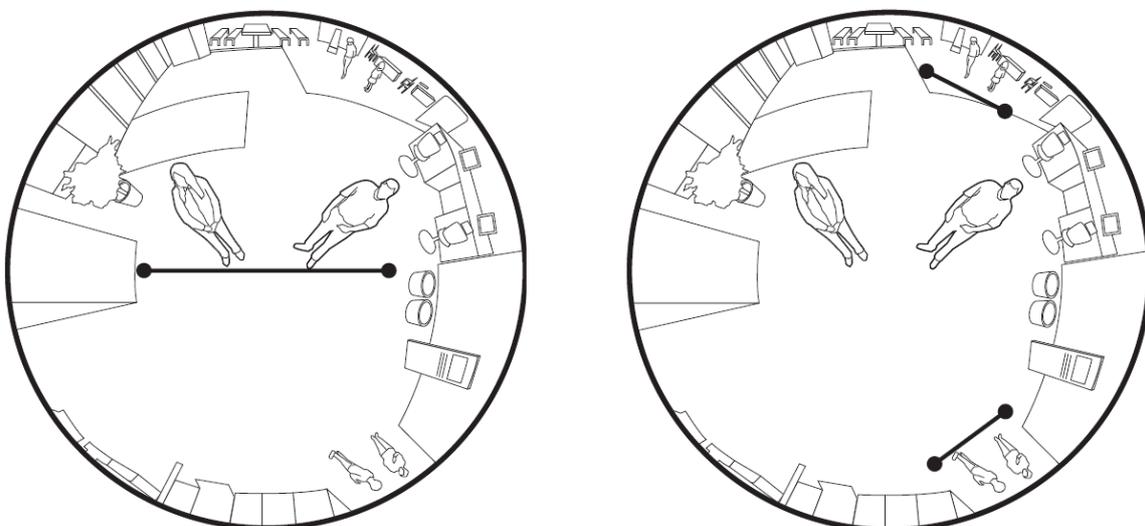- Too much difference in camera height between actual and configured value

Image 4. Ideal (left) and Ineffective (right) setup of fisheye camera counting rule
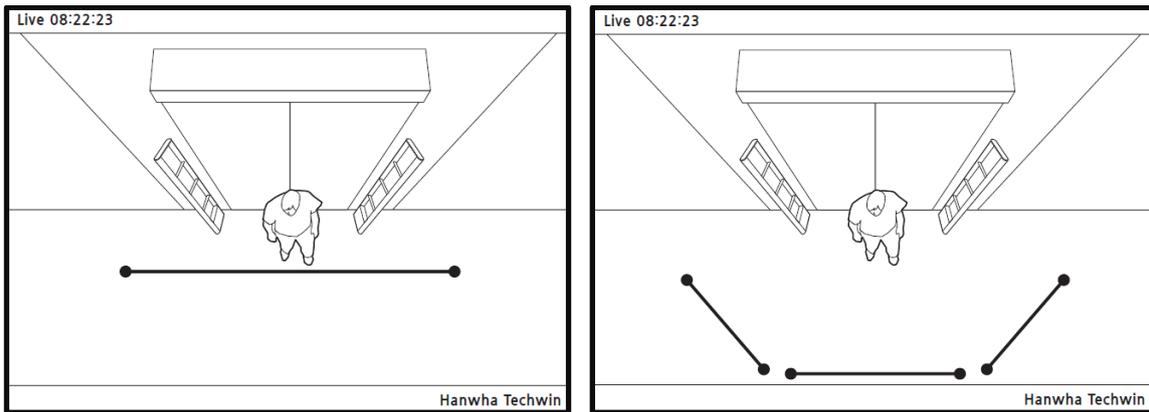
Image 5. Correct (left) and Incorrect (right) setup of normal camera counting rule

3. People Counting

Hanwha Techwin people counting feature checks people that enter/exit a designated area. Moving objects will be counted when it crosses a virtual line (counting rule) at a steady speed of 0.5m to 1.5m/sec and about 50cm intervals. The camera allows up to two virtual lines and they can be crossed.

The instructions below are designed to enhance the user's understanding of proper people counting set up. These instructions are also included in the user manual of Hanwha Techwin cameras that support these analytic functions.
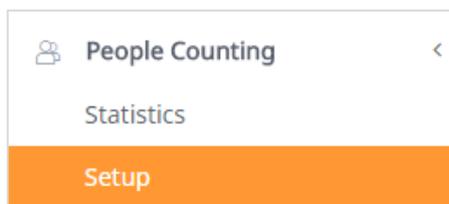
3. 1. People Counting Setup

Image 6. Setup Menu Location

· In web viewer, Setup → People Counting → Setup (Image 6) → Setup (Image 7)
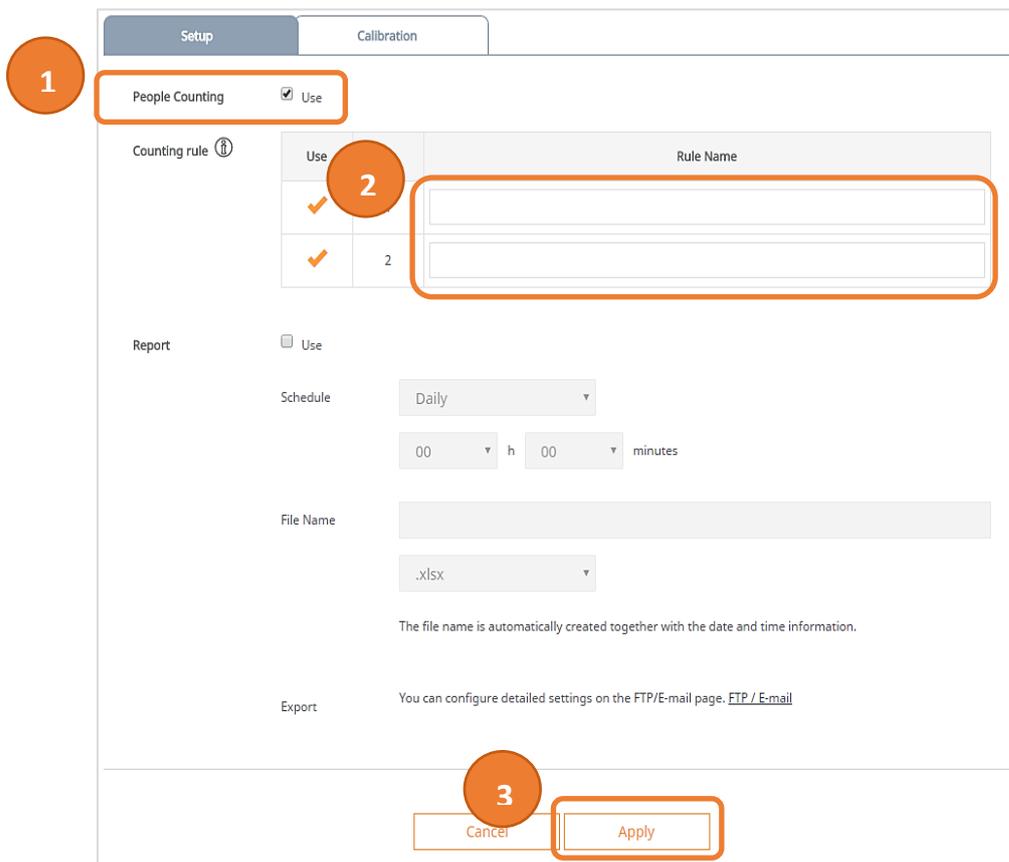

Image 7. People counting setup menu

・ Check 'Use' box (①)

・ Two virtual lines will be shown and you can adjust their location, direction and length include rule name assign. Refer to Image 8, please.
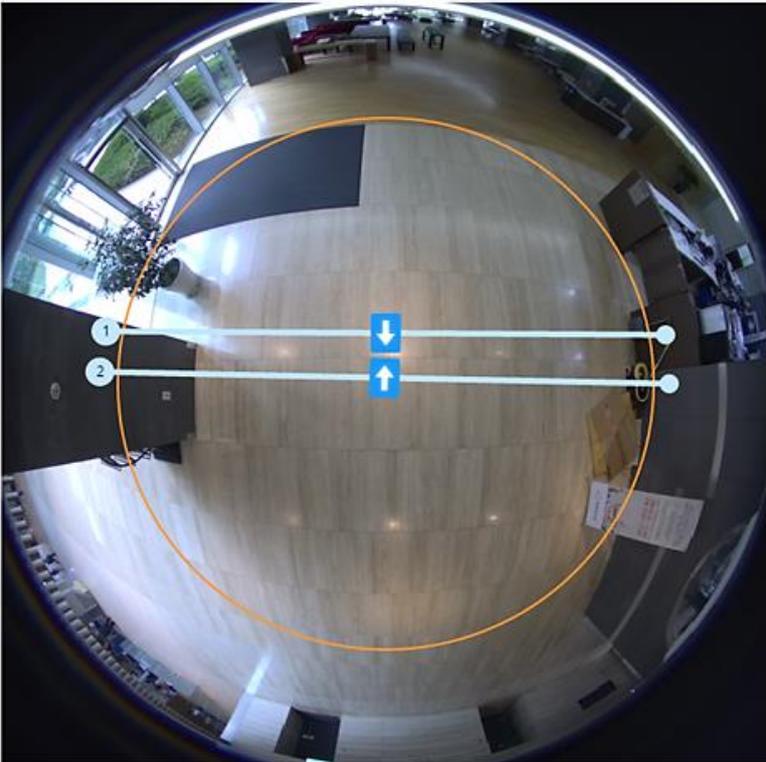

Image 8. Counting rule draw guide

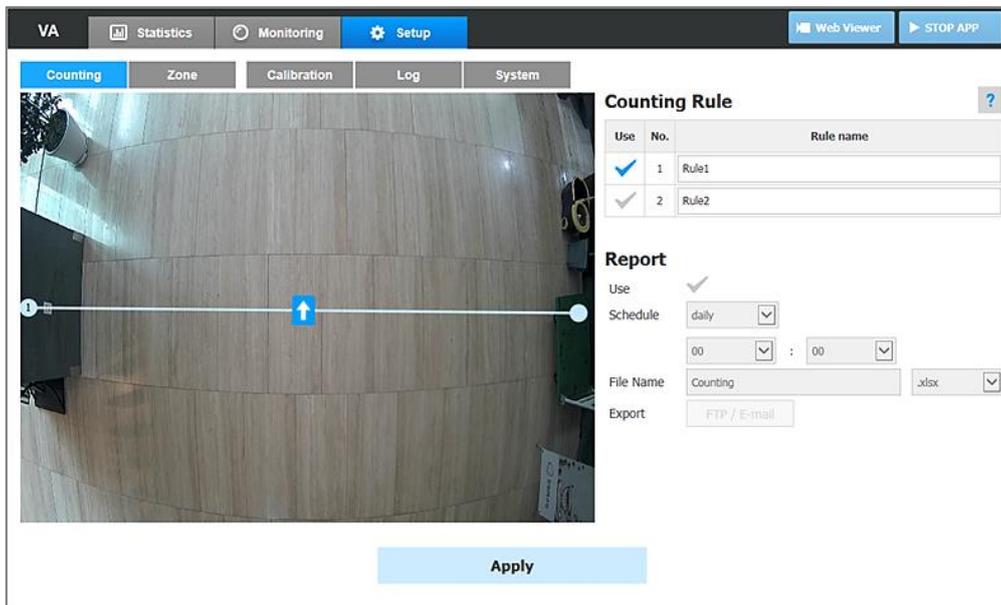Image 9. Virtual lines must be set within orange guide line

Image 10. Normal camera counting rule (virtual line) setup

Setting a virtual line for a traditional, non-fisheye camera can be set within the entire image, see Image 10. However, virtual lines for fisheye cameras must be drawn inside of orange guide line to avoid false counts due to the properties of the lens. See Image 9.

3. 2. People Counting Calibration

Calibration may be required to increase accuracy of people counting, and can be set by camera height or size of person.
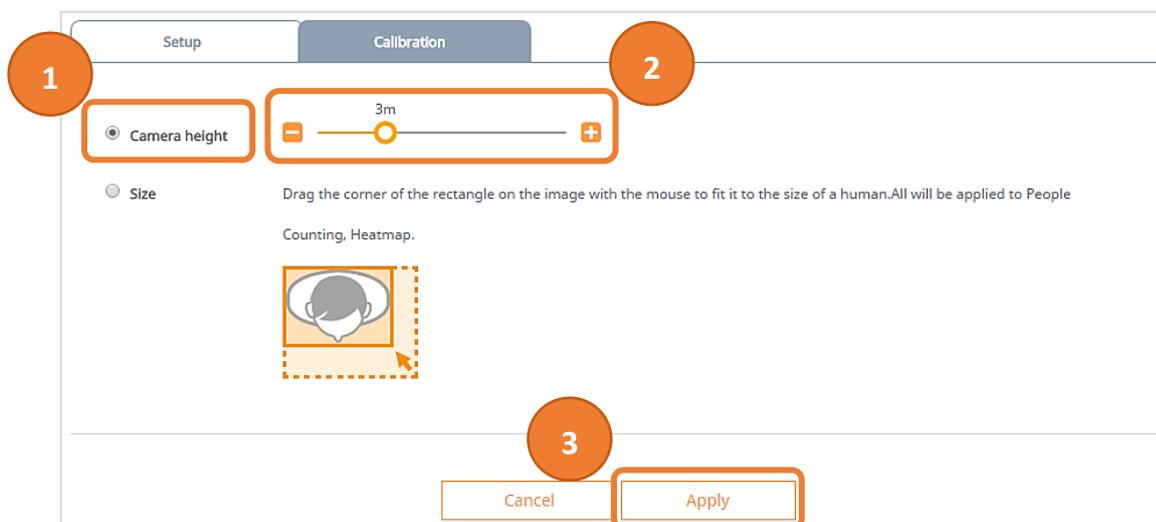

Image 11. Calibration based camera height

- Option 1:

  ・ In web viewer, Setup → People Counting → Setup (Image 6) → Calibration (Image 11)
  ・ Choose the 'Camera height' option.
  ・ Drag the point or click +, - button for camera height setting then apply.

- Option 2:

  ・ Choose the 'Size' option.
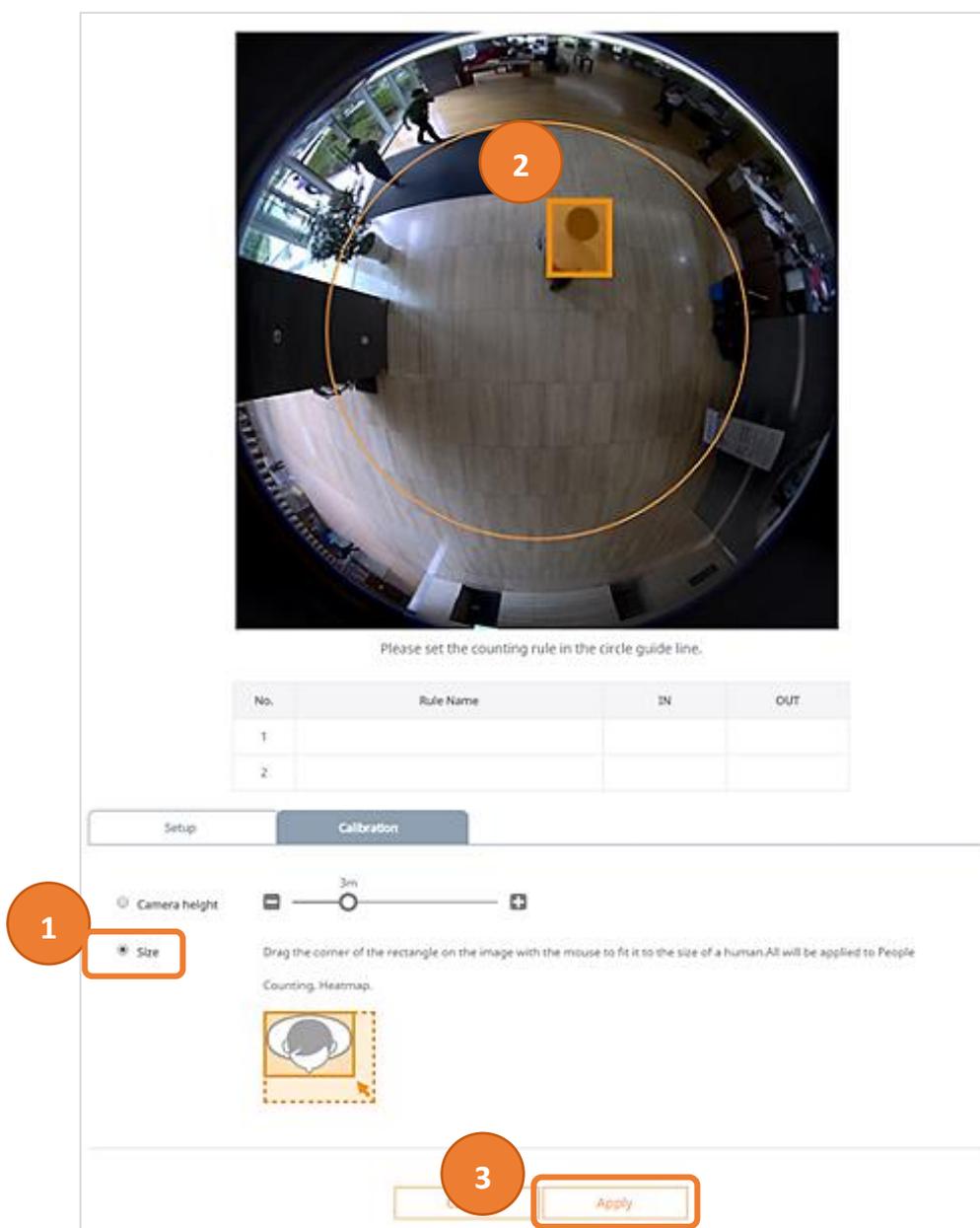 ・ Drag and adjust the size of square on video.

Image 12. Calibration based people size in video

3. 3. People Counting Report

· In web viewer, Setup → People Counting → Setup (Image 6) → Setup (Image 13)
· Check 'Use' box for Report.

An Excel file can be exported by FTP or email, either manually or on a schedule.

Image 13. People counting report setup menu

3. 4. People Counting Statics

· In web viewer, Setup → People Counting → Statistics

The statistics page provides two ways to visually analyze the data as shown in

the Image 14. The table format populates total number of counts analyzed within a day. The graph format depicts the data in two date range types: today and weekly. Both of these graphs are dynamically adjusted to show the user the selected legend's data.

Below graph in the Image 14 ("Today" view), is representing number of people who exited out of entrance as where the right graph ("Weekly" view) is representing number of people who entered the Entrance in the recent week.
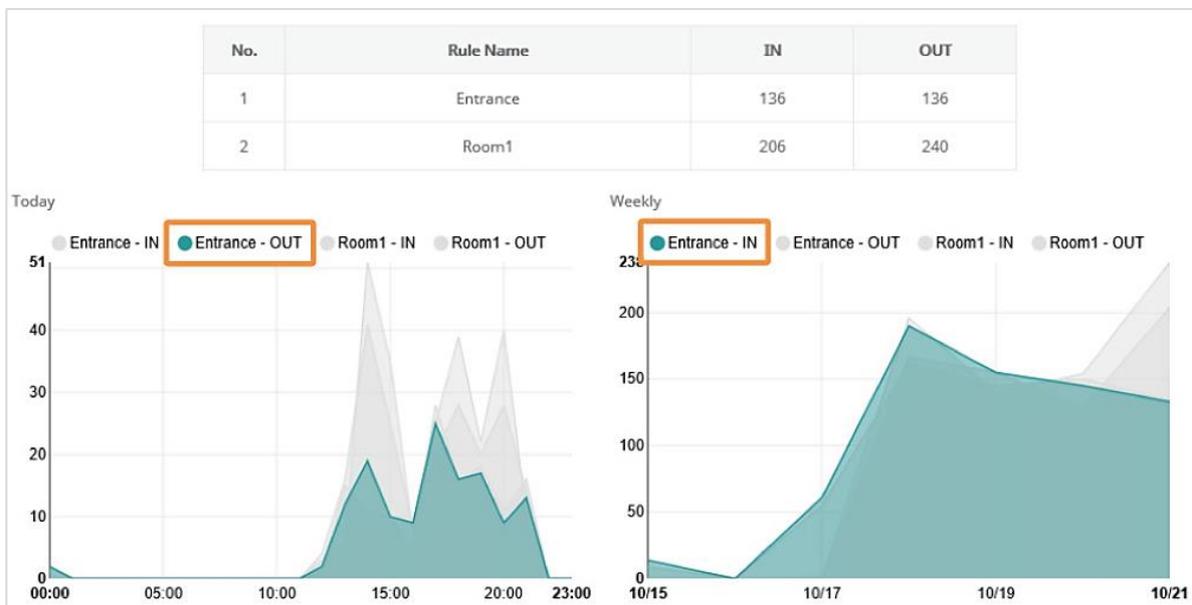

Image 14. People counting statistics

The graph view provides further details into the data by hovering the mouse cursor over the graph as shown in the Image 15.
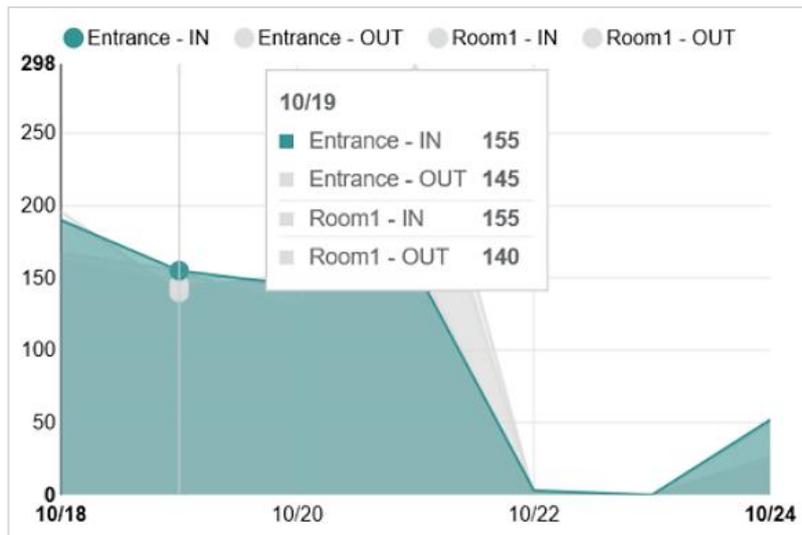
Image 15. People counting graph detail

Date range can be set by the user to search for data of specific dates. Image 16 illustrates a data search from 10/11/2016 to 10/20/2016 for all of the virtual lines.

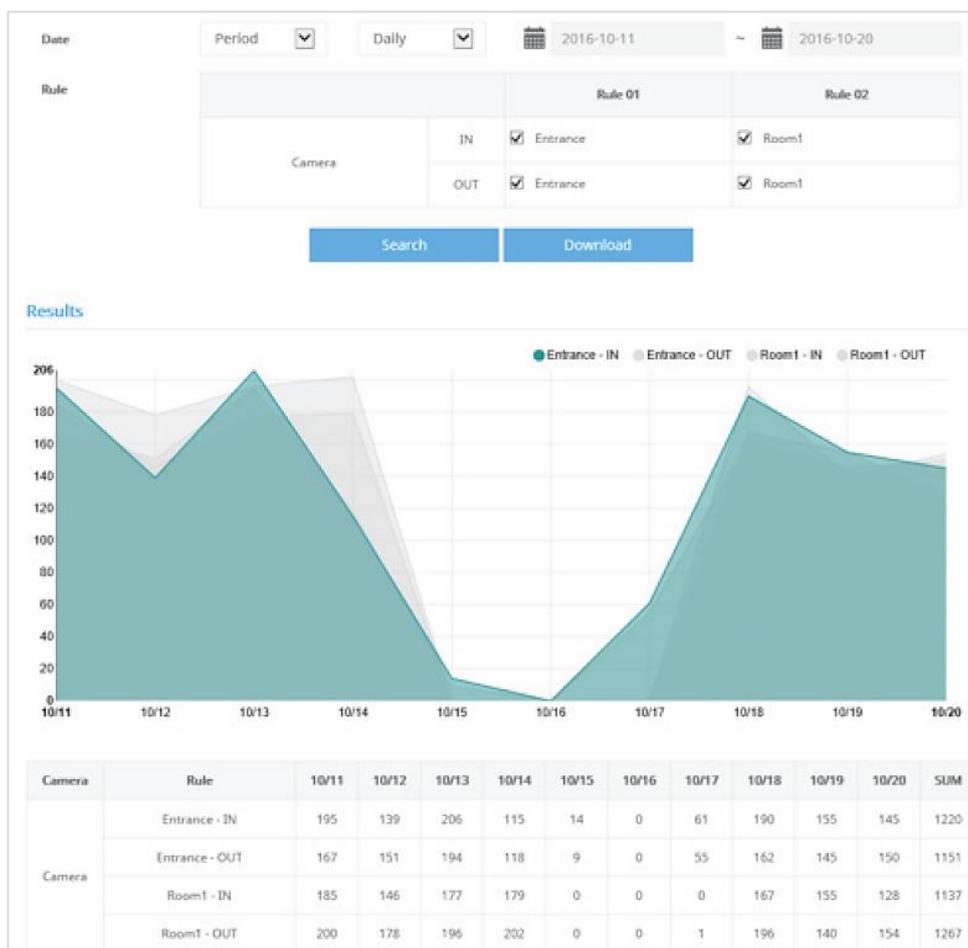| Camera	Rule	10/11	10/12	10/13	10/14	10/15	10/16	10/17	10/18	10/19	10/20	SUM
Camera	Entrance - IN	195	139	206	115	14	0	61	190	155	145	1220
	Entrance - OUT	167	151	194	118	9	0	55	162	145	150	1151
	Room1 - IN	185	146	177	179	0	0	0	167	155	128	1137
	Room1 - OUT	200	178	196	202	0	0	1	196	140	154	1267

Image 16. People counting statistics search

These data can be downloaded in either Excel (.xlsx) or text (.txt) format for further integration with other systems.

People counting accuracy is about 90% for normal camera and 85% for fisheye camera when a camera is properly installed and configured in accordance with instructions. (In "2. Camera Installation Instructions")

4. Heatmap

![WISENET logo]

Hanwha Techwin heatmap feature reflects the index of moving people on video and it helps users to recognize a tendency of moving people intuitively.

4. 1. Heatmap Setup

It is easy to setup heatmap. Please refer to below Image 17.

· In web viewer, Setup → Heatmap → Check 'Use' box for Heatmap (①) → Click 'Apply' (②)
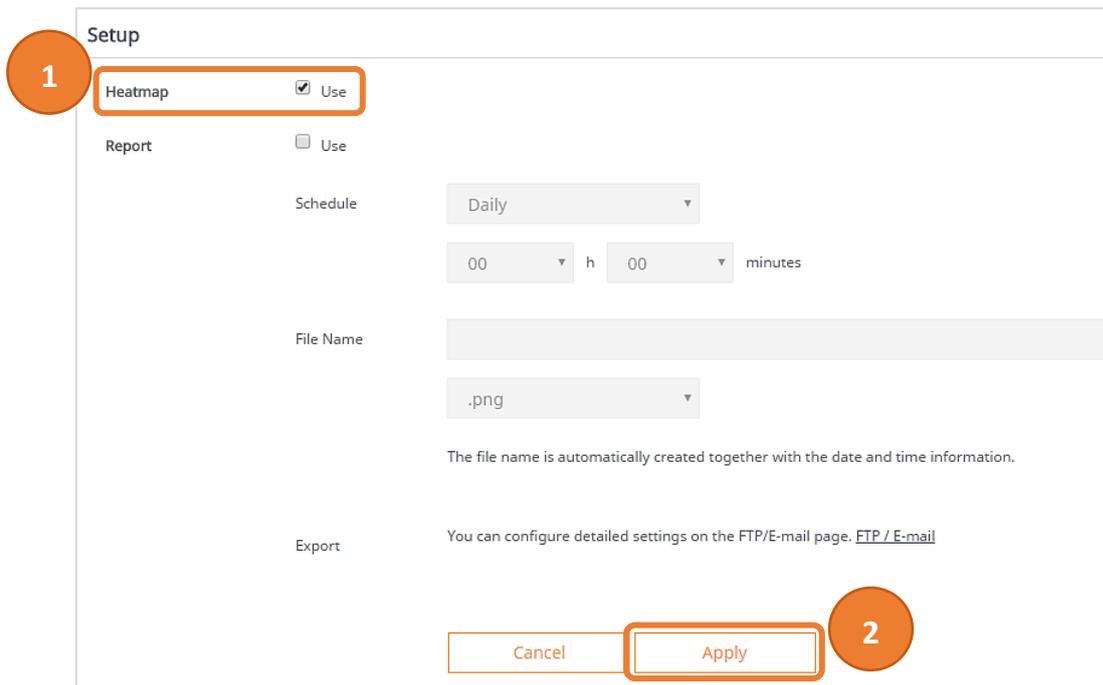

Image 17. Heatmap Setup

In statistics page, users are able to view how heatmap is displayed on video as Image 18.
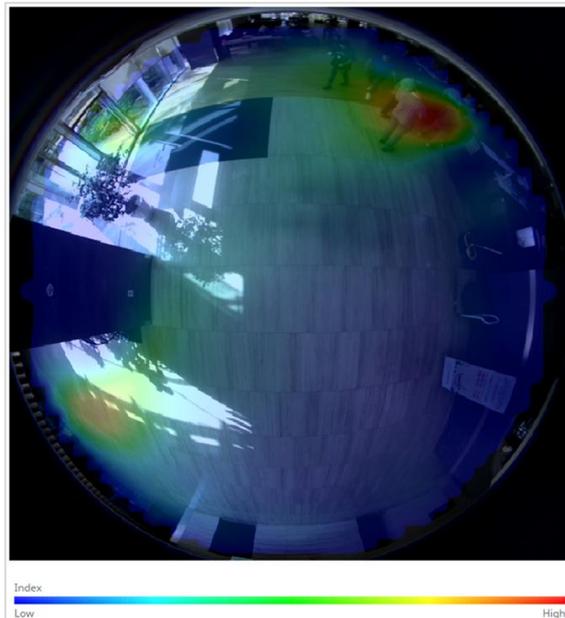

Image 18.
Example of heatmap with fisheye camera

4. 2. Heatmap Report

Heatmap statistics data and search function instruction is contained in user manual. The following are additional instructions to help further your understanding of the set up function.

‧ In web viewer, Setup → Heatmap → Setup
‧ Check 'Use' box for Report (①) → Click 'Apply' (②)

Image 19. Heatmap report setup

Heatmap result image export is available through FTP and E-mail on a schedule. An export schedule is available daily or by days of the week. Please refer to the user manual for more instructions of FTP and E-mail setup.

5. Conclusion

Hanwha Techwin people counting and heatmap features provides added benefit for users seeking to employ an IP camera's intelligent video analytic capability for uses beyond traditional video surveillance, including the reporting of statistical information on density, traffic and counting of people.

Used properly, these intelligent analytic features can help a user manage a business more efficiently by potentially reducing expenses, manpower and time.

WISENET

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