



BC-5010-IVS

Vehicle Counting Guide

Version 1.0

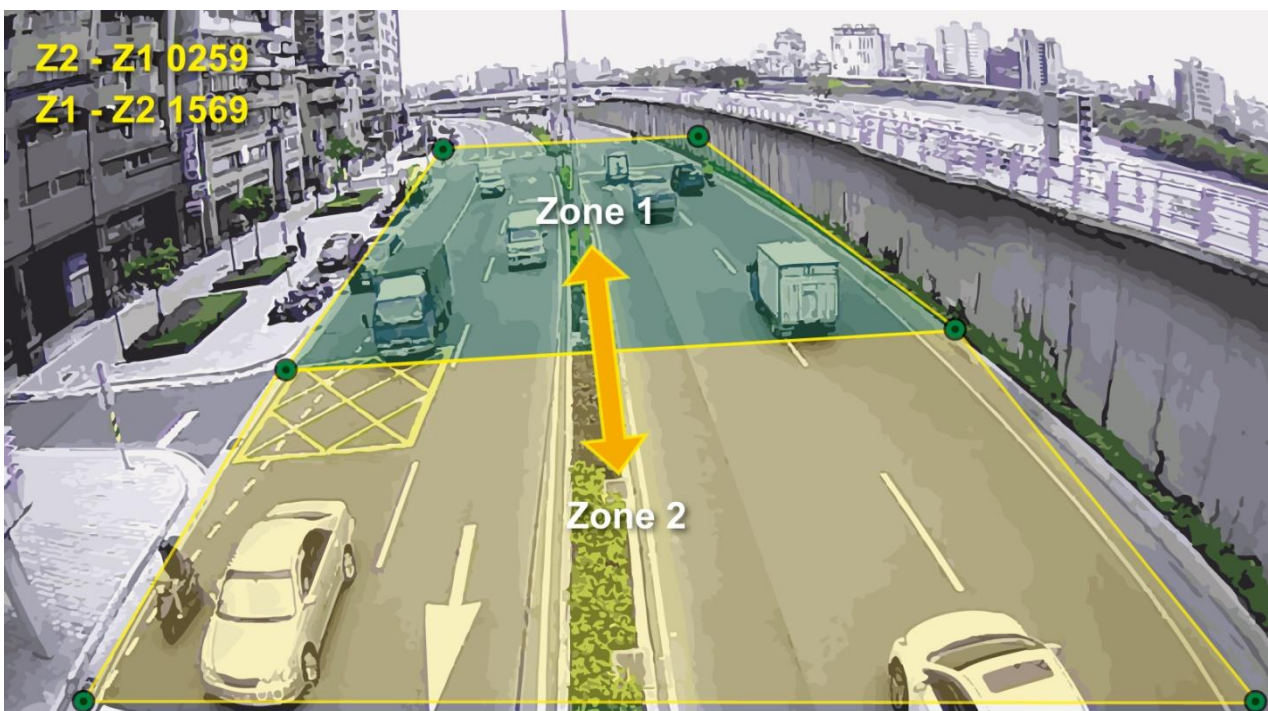


BC-5010-IVS Vehicle Counting Guide

1. Overview

The BC-5010-IVS has built-in video analytic function for object counting. It is a standalone function built into the camera's firmware without the need for external software or device. The object counting function can be used to count people or cars. This guide will focus on using BC-5010-IVS's "Object Counting" function to do vehicle counting in places like intersections, arteries, parking space and highways.

The Object Counting works by defining 2 zones on the video image. When a vehicle crosses the center border between 2 zones, the camera will register a count. The camera can count vehicles from "Zone1 to Zone2", "Zone2 to Zone1", or both directions.



The important factors for successful vehicle counting installations are:

- Choose the appropriate viewing angle and height.
- Choose the appropriate resolution and frame rate.
- Choose the appropriate installation location; avoid any obstacle like shadow of tree or building showing in the detecting area.
- Calibrate the maximum and minimum object size.
- *Make sure "counting result overlay" option is enabled and please remember to click on "Apply" button to save settings.*

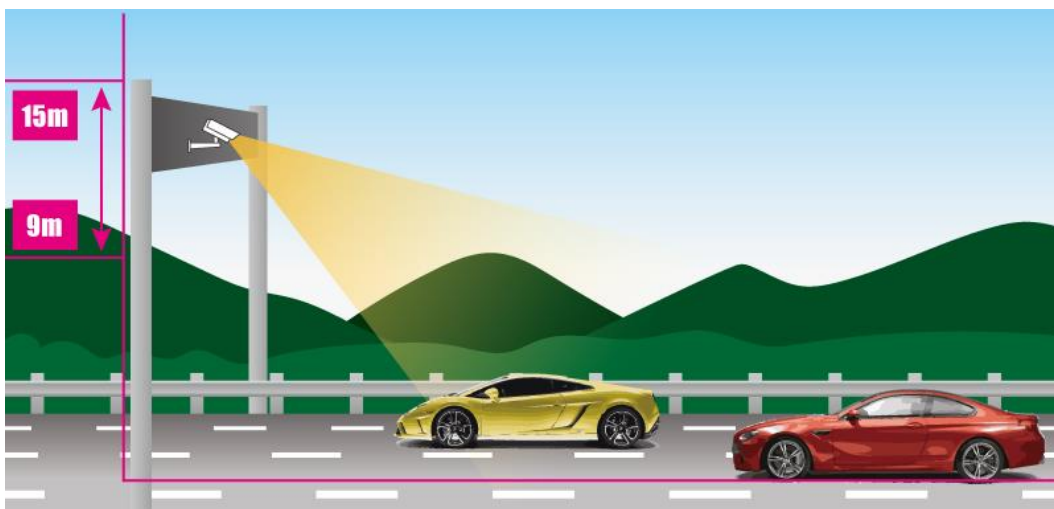
We will guide you through the procedure in the following articles.

2. Hardware Installation Guidelines

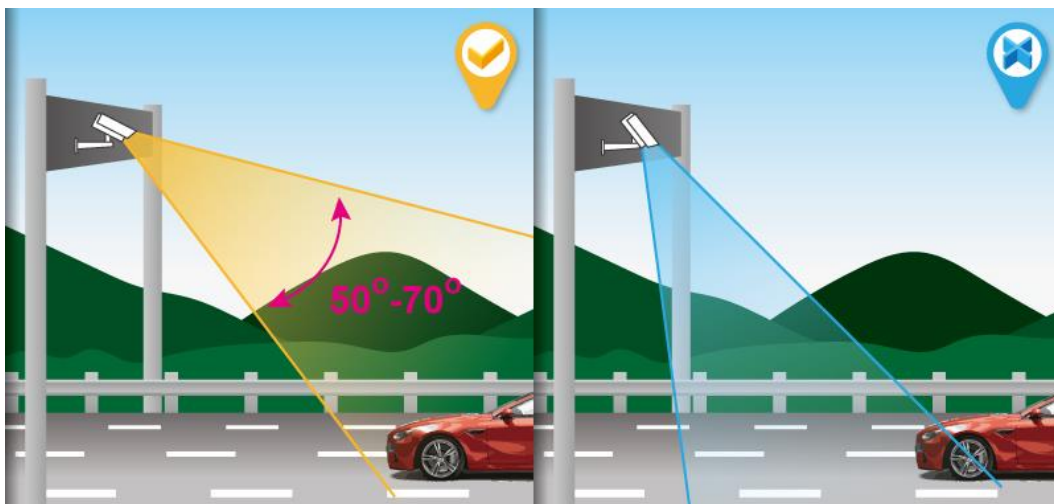
- It is recommended to have at least 9~15 meters of vertical clearance (from surface to camera) for best performance.
- The followings are basic installation guidelines for best vehicle counting results. However, the vehicle counting function can still work in less than ideal conditions.

1. Avoid the camera position is too low or too high, the proper height will be 9~15 meters based on different application environment.

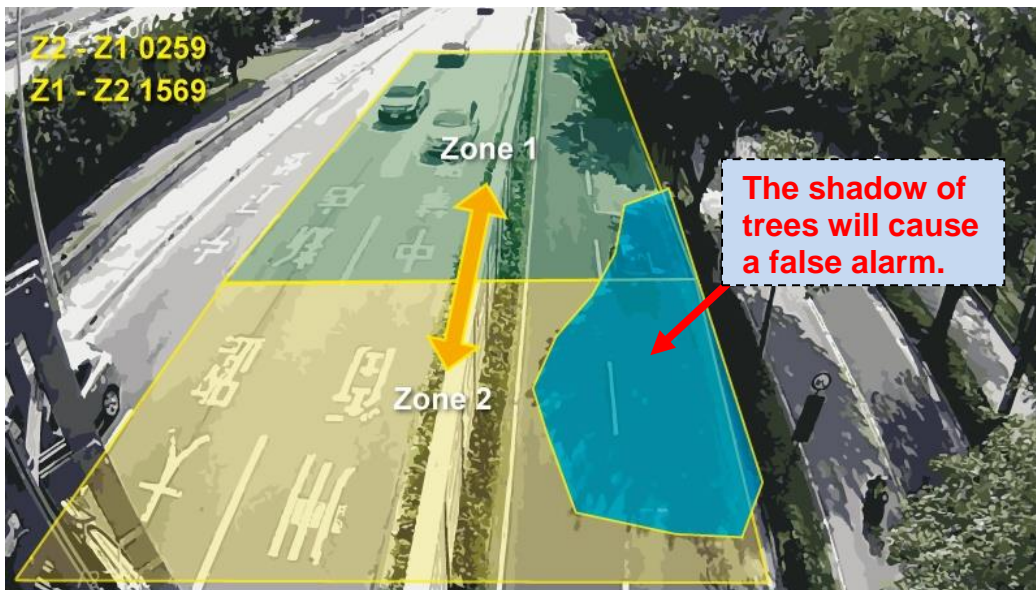
*Both directions detection needs higher camera position.



2. Make sure the appropriate viewing angle to have the best field of view.



3. Avoid any obstacle like shadow of tree, building and traffic light showing in the detecting area. It may cause false detection statistic and false alarm.



4. Make sure the camera position is right above the lane or detecting area.



Note: The minimum distance is for reference only. This number is tested base on ACC-MPL-2812 v2 with 2.8mm Focal Length. Difference Focal Lens may have difference appropriate camera height.

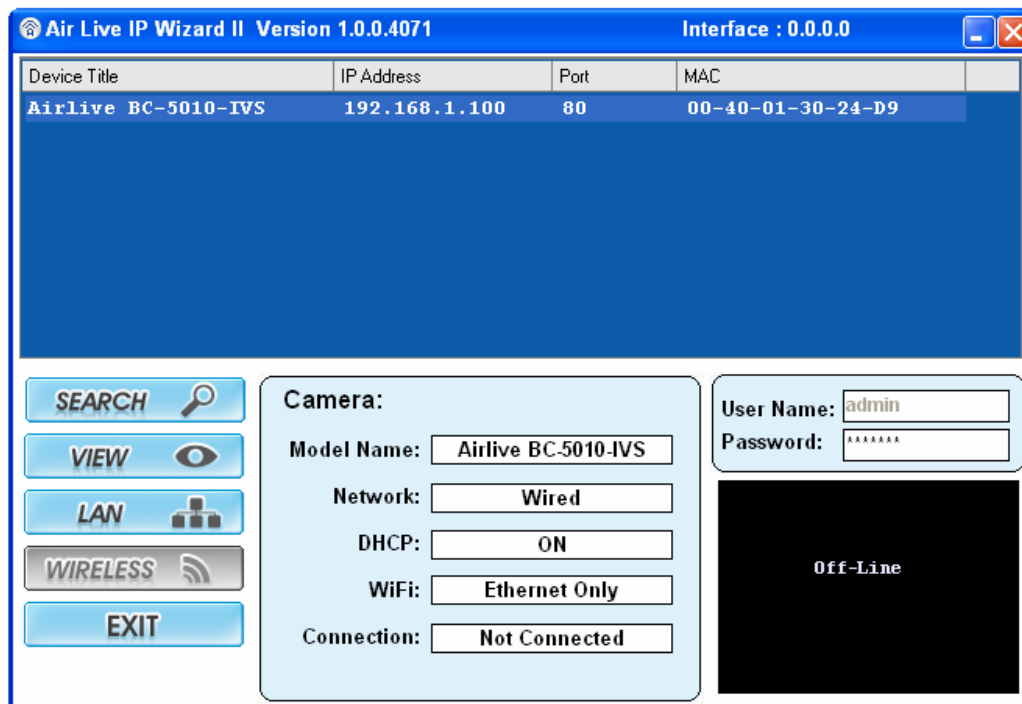
Attention: Lots vehicles in the screen will cause higher CPU loading.

3. Camera Configuration

3.1 Finding camera using AirLive IP Wizard

The IPCAM default IP address is 192.168.1.100 , but this address can change when there is DHCP server(router) in your network. Therefore, please install AirLive IP wizard to find your camera.

1. Install the “AirLive IP Wizard” from the installation CD or download it from [this link](#).
2. Run the “setup.exe” and open the AirLive IP Wizard.
3. The IP Wizard will auto search and list out the camera found. Double click on the camera that you want to configure.



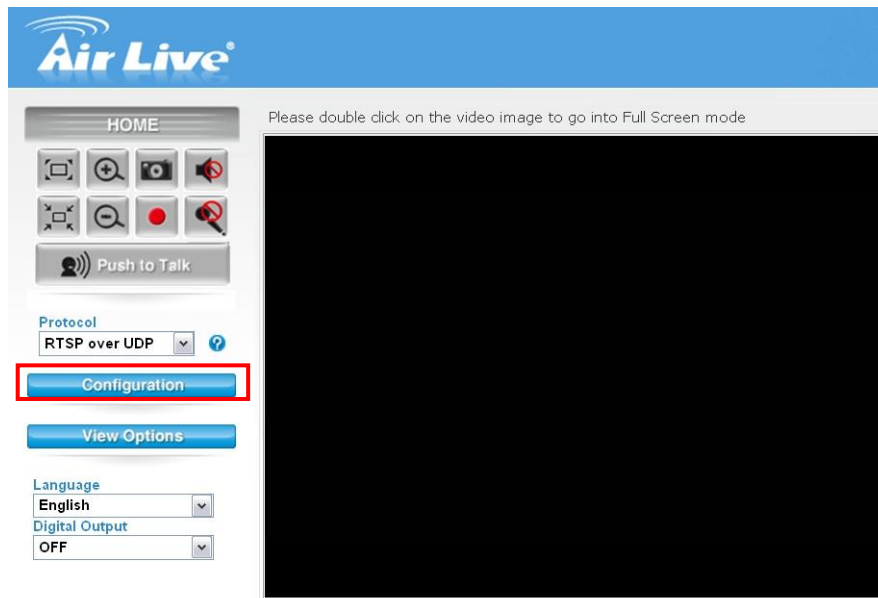
4. The IPCAM’s web configuration will open automatically after double click. Please enter the “admin” for username and “airlive” for password.
5. After entering the correct username and password. You will enter the camera’s web configuration page. When prompted to install “Media Control” from “OvisLink Corp”, please select “Yes” to install.

3.2 Enable Camera's Video Analytic function

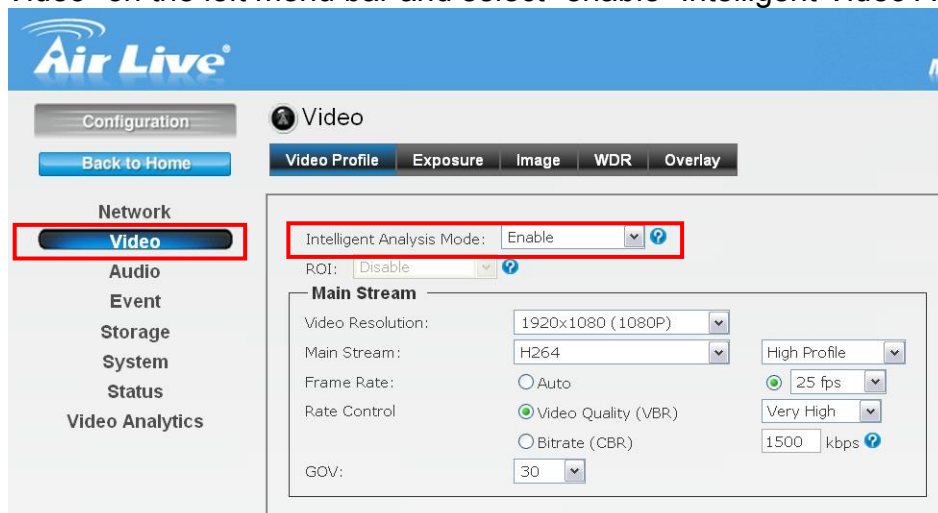
Please use Internet Explorer as the default browser. If you are using IE 11, please go to “Setup->Compatibility View Settings” and add the camera's IP address to the list.

Please follow the step below to enable camera's video analytics function.

1. Click on “Configurations” on left menu bar



2. Click on “Video” on the left menu bar and select “enable” Intelligent Video Analytics.



3.3 Setting Resolution and Frame Rate

On the video page, it is important to set the resolution and frame rate correctly.

! Please remember to click on “Apply” button after finish settings.

Installation Site	Main Stream Resolution	Main Stream Frame Rate	Second Stream Frame Rate
Intersections, arteries, parking space and highways	1280x720	10FPS	15FPS

Network

Video

Audio

Event

Storage

System

Status

Video Analytics

Intelligent Analysis Mode: Enable

ROI: Disable

Main Stream

Video Resolution: 1280x720 (720P)

Main Stream: H264

High Profile

Frame Rate: Auto

10 fps

Rate Control: Video Quality (VBR)

Very High

Bitrate (CBR)

1500 kbps

GOV: 30

Second Stream

☒ Enable Second Stream

Video Resolution: 320x192 (QVGA)

Second Stream: MJPEG

Video Quality: Very High

Frame Rate: Auto

15 fps

Mobile View

☒ Disable

☐ 3GPP without Audio

☐ 3GPP with Audio

Apply

Cancel

3.4 Configure Object Counting Function

Please go to “Video Analytics” menu and select “Object Counting”

[illegible]

Below is the main page of Object Counting.



The screenshot shows the 'Video Analytics' interface for 'Object Counting'. It includes a video feed on the left, 'Object Counting Settings' on the right, and 'Zone Settings' at the bottom. Red annotations highlight key areas:

- Click to enlarge video window:** Points to the video feed area.
- Zone Area:** Points to the video feed area.
- Zone Settings:** Points to the 'Zone Settings' section, which includes 'Edit Mode' (Rotate Mode, Transform Mode), 'Directionality' (Bi-Directional, Zone 1 to 2, Zone 2 to 1), and 'Statistics Record'.
- Please remember to press "Apply" after change settings, otherwise the settings won't take effect.** Points to the 'Apply' button at the bottom.

The 'Object Counting Settings' section includes:

- Sensitivity:** MODERATE to High
- Detect:** People, Vehicles (selected), Anything
- Calibration:** People, Vehicles
- Event Conditions:** Interval (User Define, 1 SEC), Quantity (1), Set Event Action
- Counting Result Overlay:** Enable
- Detect Line Overlay:** Enable
- Reset Counter:** NONE (selected), Daily, Hourly, User Define, Now

The 'Zone Settings' section includes:

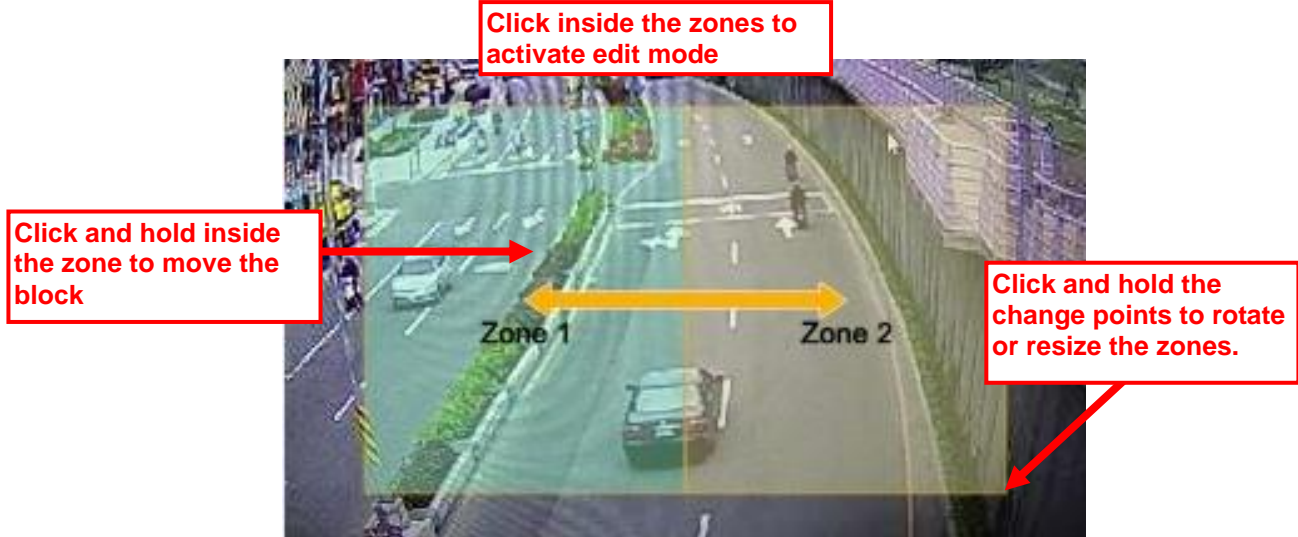
- Edit Mode:** Rotate Mode (selected), Transform Mode
- Directionality:** Bi-Directional, Zone 1 to 2, Zone 2 to 1
- Statistics Record:** Statistics Record (checked), Export Mode (Manual, Auto), Statistics Period (By minute)
- Export Data:** From (Jan 1 0 0) To (Dec 31 23 59), Export, Reset

The 'Statistics Chart Display' section includes a 'Start Update' button and a 'Show all' button.

The first step is to set the zones according to your environment. The controls are separated in Zone Area and Zone Settings as indicated above.

Zone Settings

- Rotate Mode: this is the default mode. When you click inside the “Zone Area”, you can rotate, move, and resize the zone by holding the “change points”.

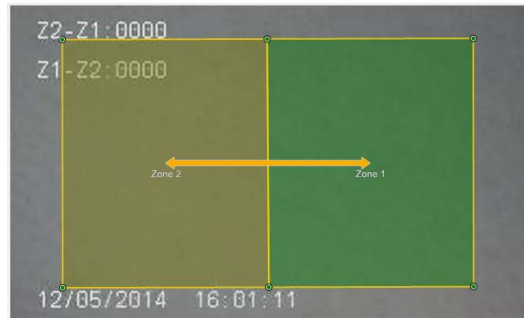


- Transform Mode: In this mode, you can freely change the shape of the zones to fit your installation site.



- Directionality: The camera’s vehicle counting function register a count when a vehicle cross from one zone to another. You can choose to count from Zone1 to Zone2, Zone2 to Zone 1, or both directions. ***You must first click on the zone block inside the Zone Area first before you are allowed to choose the direction.***
***Both directions detection needs higher camera position.**

- ※ Please enlarge the Zone 1 and Zone 2 as big as possible. The bigger zone is more accuracy.

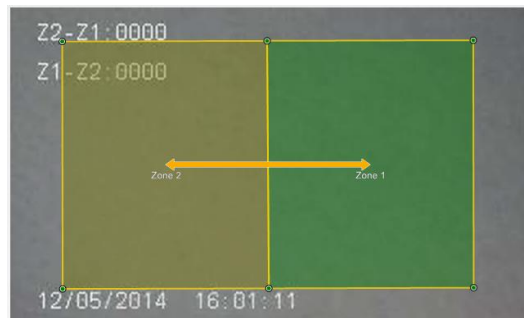


Zone size is big.

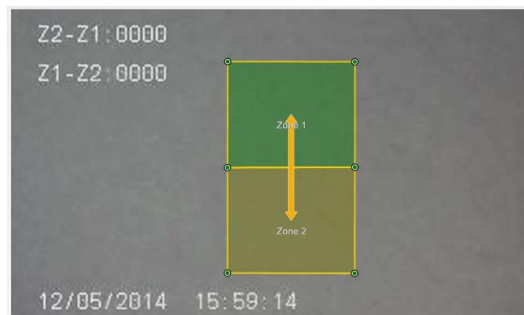


Zone size is too small.

- ※ Please extend the length of the moving path as long as possible.

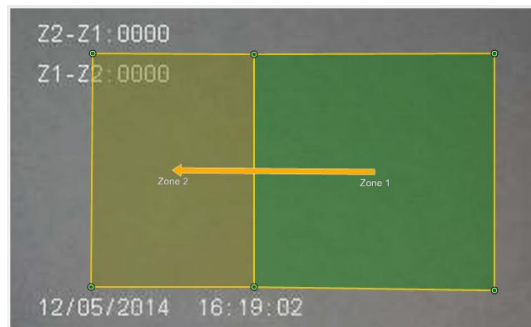


The length of the moving path is longer.



The length of the moving path is too short.

- ※ **If the moving direction is from Zone 1 to Zone 2, user can set bigger Zone 1 to increase the accuracy.**



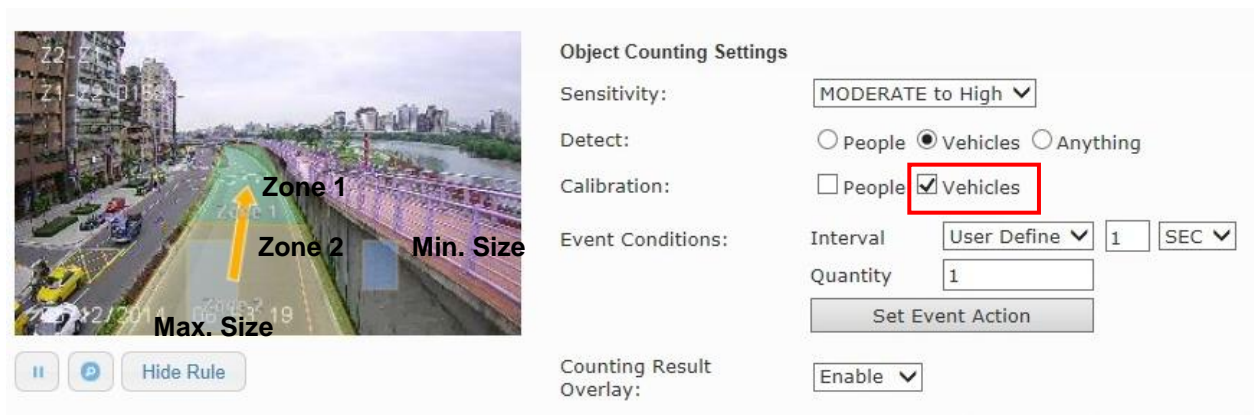
Zone 1 size is bigger

After you set the zone area correctly, the next step is to calibrate the object size according to your installation.

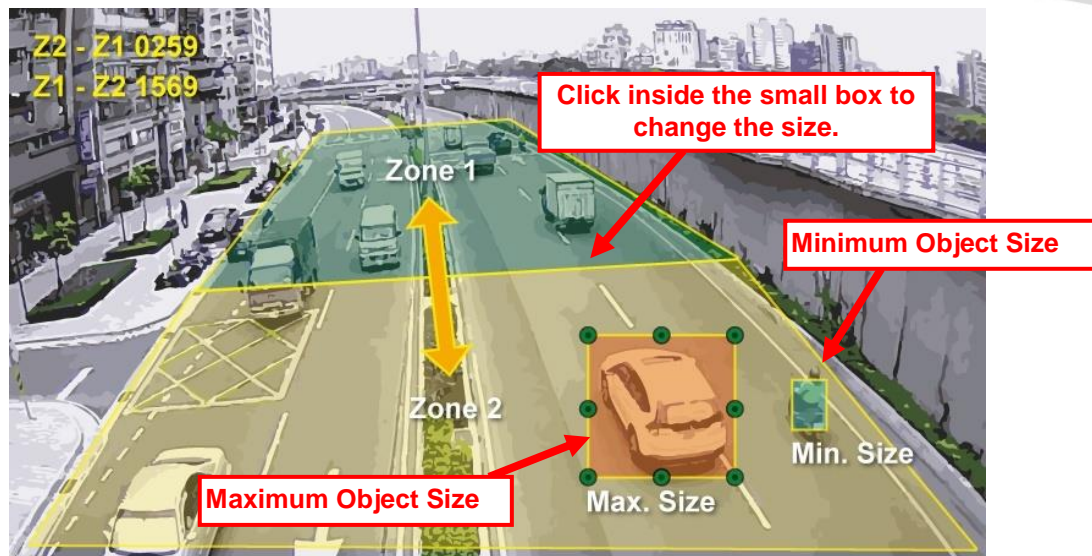
Calibration

Your installation height and location can change the size of a vehicle as perceived by the camera. It is important to calibrate the maximum and minimum vehicle size after installation.

You can perform calibration by checking the “Vehicles” in the calibration field.



On the Zone Area, two windows label “Max. Size” and “Min. Size” will appear.

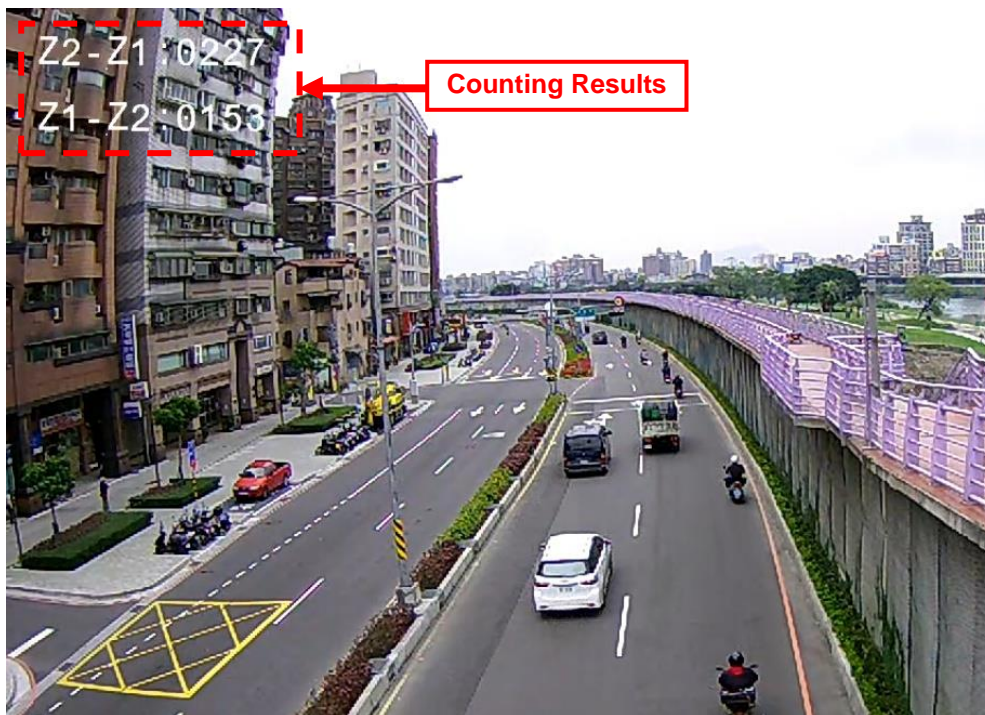


Click on either “Min. Size” or “Max. Size” window to change the size of the maximum and minimum of objects.

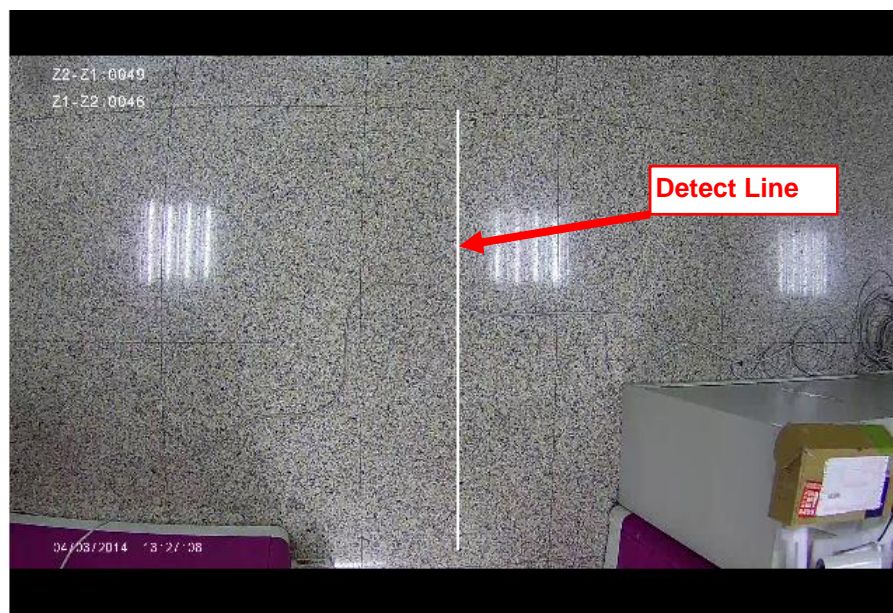
- Max. Size: Object larger than this size will be counted as more than one object. You should set it to the size of a car.
- Min. Size: Object smaller than this size will not be counted. You should set it to the size of a motorbike.

Other Important Settings

- Detect: Please choose “Vehicle”
- Sensitivity: “Moderate to High” is the recommended settings
- Counting Result Overlay: Please “enable” this setting. Enable this setting will display the counting result on screen.

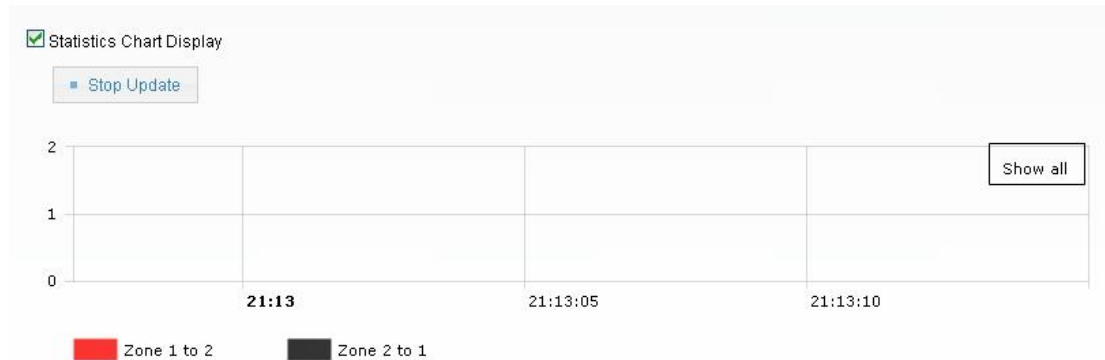


- Detect Line Overlay: If you want to see the detect line on the Live View screen, please enable this function.



- Reset Counter: The displayed counting result will reset to zero according to the choices
- Statistic Records: Please enable this item. We recommend choose “hourly” which can report the number of counting in each hour for up to 30 days (firmware 1.60 or later). When you choose “by minute”, the camera will hold the per-minute data for 48 hours (firmware 1.60 or later). Choosing daily will hold daily count for 30 days.

- **Statistic Chart Display:** When enabled, it will show the counting result in a statistic graph. It is not recommended to turn on this function as it might use a lot of CPU resource which can influence counting performance. If you use this function, please remember to **turn it off** after finish using it.



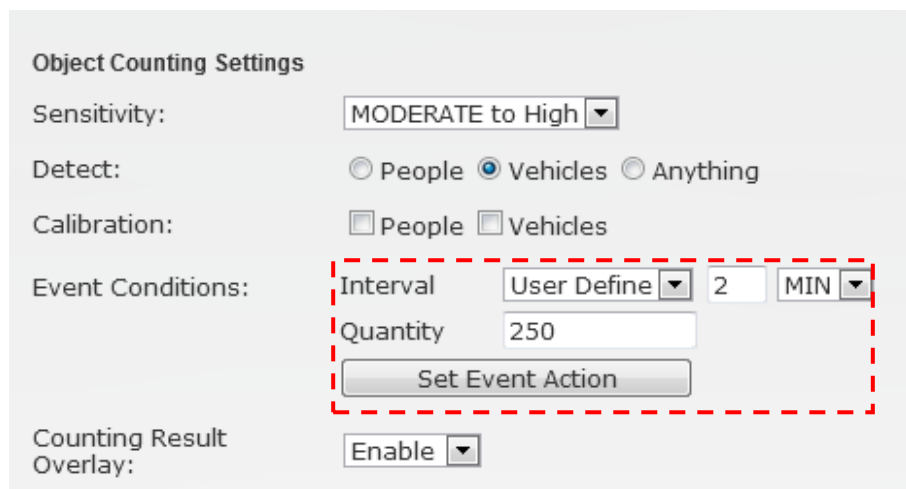
Event Action

The camera's objection counting function not only can do counting, it can also perform certain action when event conditions are met. For example; it can be set if the number of vehicles counted exceeds 250 in the last 2 minutes, it will send an email to the center or operator. This function can be used for traffic control.

Example:

Setting if the number exceeds 250 vehicles in 2 minutes between 7am to 9am, the camera will send an alarm email to control center with a subject message like "Heavy Traffic. Please monitor it and do proper traffic control".

1. Please make sure you have done the Mail Server setting and specific subject of email.
2. Go to "Video Analytics" and "Object Counting". Change Interval to 2 minutes and quantity to "250". Then press "Apply" button to save settings.



- Now, please click on “Set Event Action”. Click on “Add”. Then the following screen will appear. Please enter the data as shown below. Please remember to click on “Save” after finish settings.

! *Note: The Event Name does not allow spaces in between words. Please enter the event name as one single word.*

Event List

	Event Name	Status
<input checked="" type="radio"/>	oc	Enable

Add

Edit

Delete

Please remember to save settings after you add or edit event.

Event Settings

Event Name: Car Counting

☒ Enable

Schedule

☐ Always

☒ From 07 : 00 To 09 : 00 hh:mm

☒ Sun
☒ Mon
☒ Tue
☒ Wed
☒ Thu
☒ Fri
☒ Sat

Trigger

☐ Motion Detection
☐ Digital Input 1 Low
☐ Digital Input 2 Low
☐ Tamper Detection

☒ Video Analytics OC
☐ Periodically time 001 seconds

Action

☐ Enable FTP
☐ Enable SD CARD
☐ Trigger digital output for 01 seconds

☒ Enable EMAIL
☐ Enable TCP
☐ Audio File Playback

☐ Enable Samba(Net Storage)
☐ Enable HTTP

Save

Cancel

4. Retrieve Counting Data

You can retrieve the counting results using one of the methods below:

- Export data from camera's web interface manually.
- Let camera send the daily counting report automatically to remote FTP or Samba Server. Users have to define the upload time and data saving location first.
- Retrieve Data using CGI Commands. If you are a developer or system integration, you can use this method to get data for your CMS or management system.

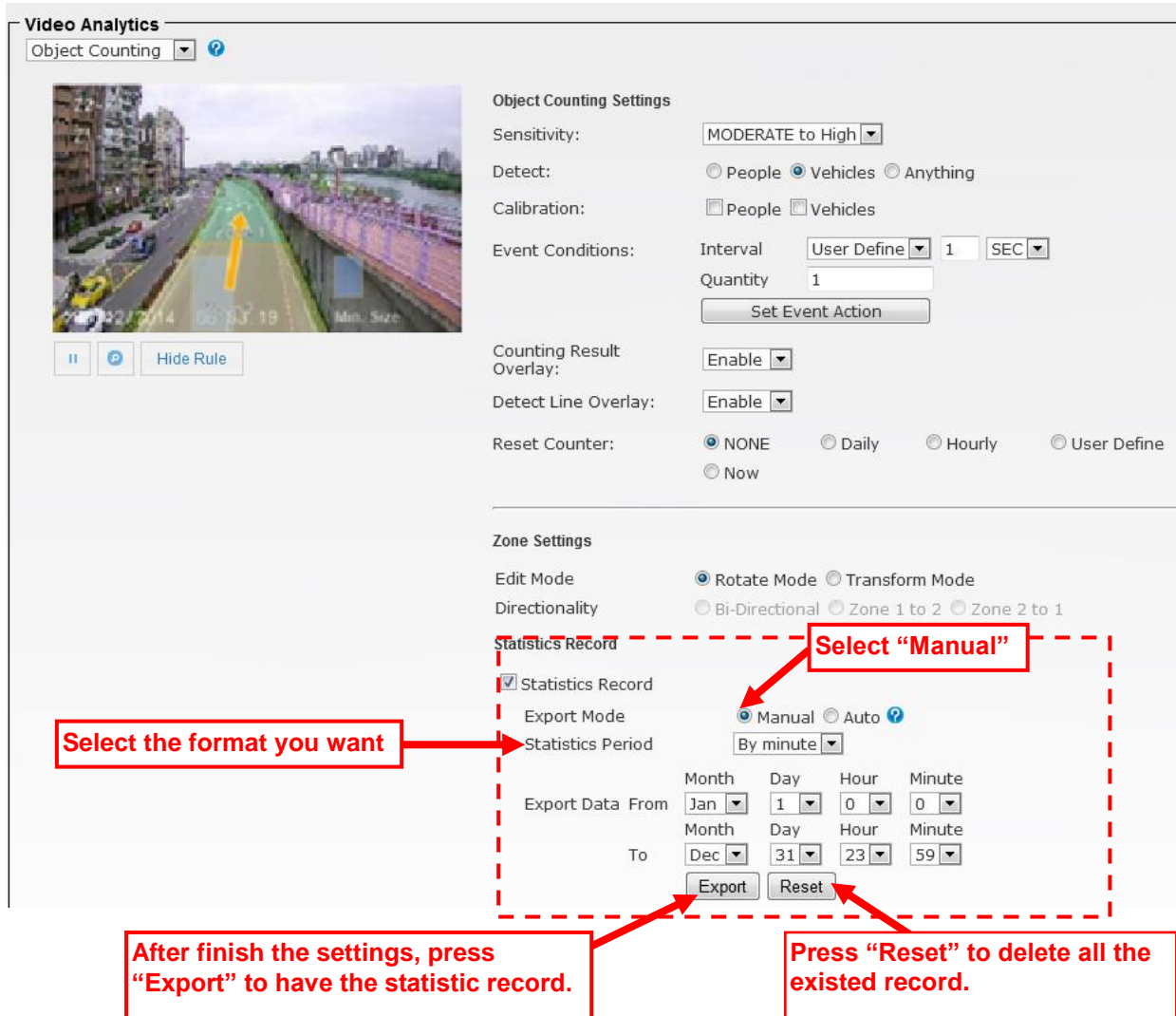
Export Data from Camera's Web UI

Please go to the Object Counting page (Configuration->Video Analytics->Object Counting). You can select the date, time, and format you want to export. The keeping time of the data depends on the "Statistic Period" you choose (firmware 1.60 or later):

By minute: 48hours

Hourly: 30days

Daily: 30days



The screenshot shows the 'Object Counting' settings page in the AirLive Web UI. The page is divided into two main sections: 'Object Counting Settings' and 'Zone Settings'.

Object Counting Settings:

- Sensitivity:** MODERATE to High
- Detect:** ☐ People ☒ Vehicles ☐ Anything
- Calibration:** ☐ People ☐ Vehicles
- Event Conditions:** Interval: User Define, 1 SEC, Quantity: 1, Set Event Action
- Counting Result Overlay:** Enable
- Detect Line Overlay:** Enable
- Reset Counter:** ☒ NONE ☐ Daily ☐ Hourly ☐ User Define ☐ Now

Zone Settings:

- Edit Mode:** ☒ Rotate Mode ☐ Transform Mode
- Directionality:** ☐ Bi-Directional ☐ Zone 1 to 2 ☐ Zone 2 to 1
- Statistics Record:** ☒ Statistics Record
- Export Mode:** ☒ Manual ☐ Auto
- Statistics Period:** By minute
- Export Data From:** Month: Jan, Day: 1, Hour: 0, Minute: 0
- To:** Month: Dec, Day: 31, Hour: 23, Minute: 59
- Buttons:** Export, Reset

Annotations:

- A red box labeled "Select the format you want" points to the "Manual" radio button under "Export Mode".
- A red box labeled "Select 'Manual'" points to the "Manual" radio button under "Export Mode".
- A red box labeled "After finish the settings, press 'Export' to have the statistic record." points to the "Export" button.
- A red box labeled "Press 'Reset' to delete all the existed record." points to the "Reset" button.

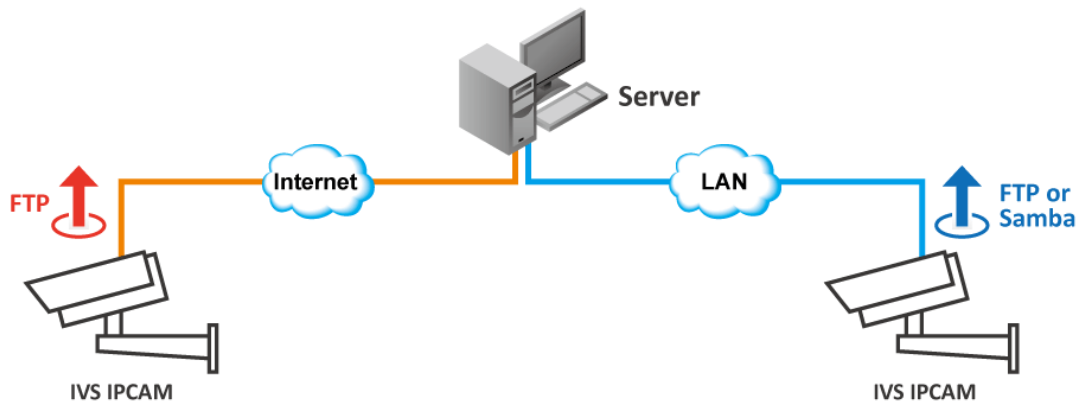
Camera Auto Send Counting Report

The camera will automatically send counting report to remote FTP or File Server (Samba). This function provides great advantage for large installations because data can be uploaded via internet to a centralized server. Please choose Auto mode and setup the periodic time and exporting method.

In addition, there is no need to configure the server when there is a new camera installation.

The auto export function is now available. If you do not find this function in your firmware, please go to AirLive website to download or contact our tech support by email at tech@airlive.com.

Upload Counting Data




Configuration Steps:

Please go to the “Video Analytics”→”Object Counting” configuration page. The Statistic Record page is on the lower right side.

Configuration
Back to Home
Network
Video
Audio
Event
Storage
System
Status
Video Analytics

Video Analytics

Object Counting



Z2-71-0021
Z1-22-0027
Zone 1 Zone 2
04/03/2014 15:13:40

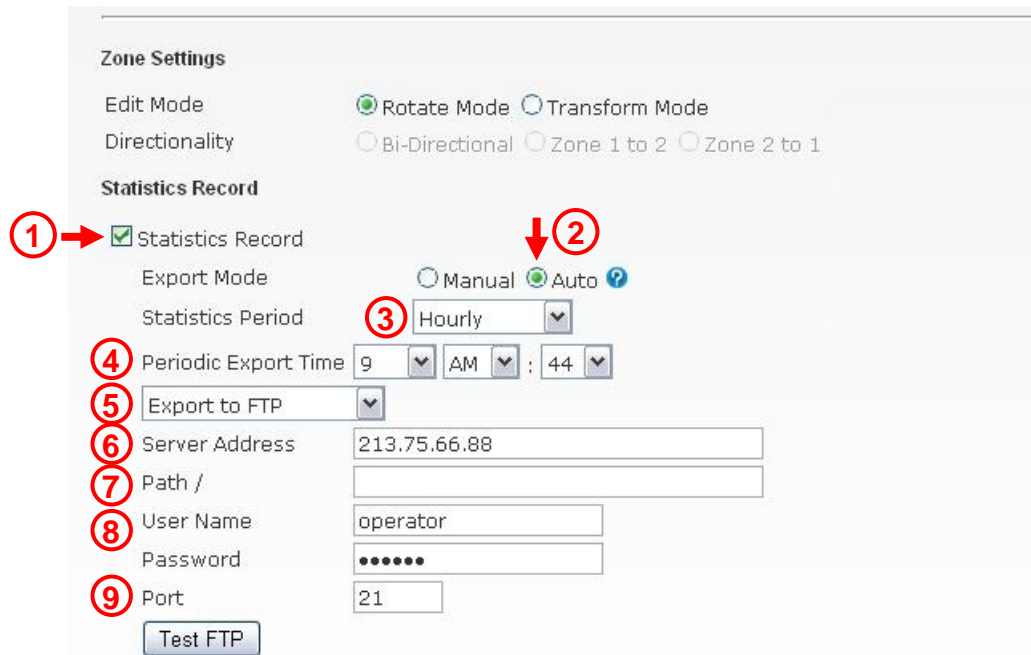
Object Counting Settings
Sensitivity: MODERATE
Detect: ☐ People ☐ Vehicles ☒ Anything
Calibration: ☐ People ☐ Vehicles
Event Conditions: Interval User Define 1 SEC Quantity 1 Set Event Action
Counting Result Overlay: Enable
Detect Line Overlay: Disable
Reset Counter: ☒ NONE ☐ Daily ☐ Hourly ☐ User Define ☐ Now

Zone Settings
Edit Mode: ☒ Rotate Mode ☐ Transform Mode
Directionality: ☐ Bi-Directional ☐ Zone 1 to 2 ☐ Zone 2 to 1

Statistics Record
☒ Statistics Record
Export Mode: ☐ Manual ☒ Auto
Statistics Period: Hourly
Periodic Export Time: 9 AM : 44
Export to FTP:
Server Address: 213.75.66.88
Path /
User Name: operator
Password: *****
Port: 21
Test FTP

Apply Cancel Default

Now check the “Statistics Record” checkbox and fill in the information



Zone Settings

Edit Mode ☒ Rotate Mode ☐ Transform Mode

Directionality ☐ Bi-Directional ☐ Zone 1 to 2 ☐ Zone 2 to 1

Statistics Record

☒ Statistics Record

Export Mode ☐ Manual ☒ Auto ?

Statistics Period ☒ Hourly

Periodic Export Time 9 AM : 44

Export to FTP

Server Address 213.75.66.88

Path /

User Name operator

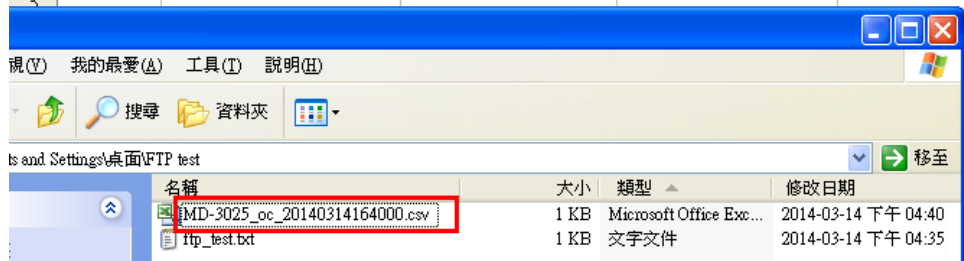
Password

Port 21

Test FTP

1. Check the “Statistics Record” box.
2. Export Mode: Select “Auto”.
3. Statistics Period: Please choose the report format you preferred.
 - By minute: The record file will show the number of occurrence in each minute
 - Hourly: The record file will show the number of occurrence every hour. This is the recommended format to use.
 - Daily: The record file will show the number of daily occurrence.
4. Periodic Export Time: The camera will send counting report once a day. You can choose what time the camera should send the report.
5. Choose whether to send the counting report via FTP or Samba. Samba means local file server or NAS. In this example, we will choose FTP.
6. Server Address: Please enter the IP address of your FTP server.
7. Path: This is to specify the file directory path. Leave it blank if you want to put it under root directory.
8. Username and Password: Enter the FTP account’s information.
9. Port: The server port of the FTP server. The default is 21 but it can be changed according to your server setup.
10. Click on “Test FTP” to check if your FTP information is correctly entered.
11. *Make sure to click on the “**Apply**” button to save settings.*
12. After correct settings are made, the counting report to send to remote server under the file name “MD3025_<ivs type>_<year-date-time>.csv”. The file can be opened using spreadsheet program such as Microsoft Excel.”.

	A	B	C	D	E
1	Datetime	Total Zone1 to Zone2	Total Zone2 to Zone1	Max Zone1 to Zone2	Max Zone2 to Zone1
2	2014-3-13	27	33	1	1
3					



CGI Command to Export Statistic Records

Note: This requires administrator access (administrator authorization).

Method: Get

Syntax:

[http://<servername>/cgi/admin/va_trigger.cgi?action=<value>\[&<parameter>=<value>...\]](http://<servername>/cgi/admin/va_trigger.cgi?action=<value>[&<parameter>=<value>...])

With the following parameters and value

<parameter>=<value>	Value	Description
action=<string>	export	
mode	Fd oc	Which records of IVS function will be exported. fd= Face Detection oc=Object Counting
period	0~2	Which records of period will be selected. 0=Minutely 1=Hourly 2=Daily
begin	month-day%20hour:minute	Search time begins,%20 is the html character code of space, ex: 10-21%2012:31
end	month-day%20hour:minute	Search time ends,%20 is the html character code of space, ex: 10-21%2012:31

Example:

Export daily face detection statistics records from Jan.1 to Dec.

31http://myserver/cgi/admin/va_trigger.cgi?action=export&mode=fd&period=2&begin=1-1%200:0&end=12-31%2023:59

return:

Succeed	HTTP/1.1 200 OK Content-Type: text/csv Content-Length: 40 Connection: keep-alive Content-Disposition: attachment; filename=fd_event_log.csv Set-Cookie: fileDownload=true; path=/ 2014-02-12 13:58,3 2014-02-12 13:59,3
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