User Manual

ClairEye-V Traffic Video Detector

Version: 1.0

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1.Overview

1.1 Basic Functions

The high-definition video vehicle inspection system software integrated camera is a digital monitoring product that combines traditional network cameras with intelligent detection services. It adopts an embedded operating system and a high-performance hardware processing platform, resulting in high system scheduling efficiency. The code is embedded in Flash, making it compact, with high stability and reliability. Its main features are as follows:

- **Traffic Volume**: The number of vehicles passing through the lane (counted separately for large, medium, and small vehicles).
- **Average Speed**: The average speed of vehicles in the lane, expressed in kilometers per hour.
- Headway Time: The time difference between two consecutive vehicles passing the same point in the same lane, measured in seconds.
- **Lane Occupancy Rate:** The ratio of the cumulative time vehicles spends passing through to the total observation time, expressed as a percentage.
- **Queue Length:** The actual length of the vehicle queue when congestion occurs.
- **Traffic State:** Indicates the traffic conditions as either smooth-flowing, slow-moving, or congested.

Utilizes advanced video compression technologies, supporting various encoding methods such as H.264, H.265, MPEG4, and MJPEG for flexible processing. It supports variable bitrate and, while setting video image quality, can also limit the compression bitrate to accommodate multiple streams.

1.2 Specifications

Video	Video resolution (main stream)	5M (2560*1920)
	Encoding format	H.264, H.265
	Frame rate	25 frames (adjustable)
	Minimum illumination	Color 0.02Lux@F1.2 Black & White 0.01Lux@F1.2
	Dual stream	Supports main and sub streams
	LENS	3.6-12mm (fixed lens, 12mm as default)

	Video Recording	Support OVNIF protocol for NVR recording
Processor	SOC processor	A7@600MHz
	GPU processor	1T computing power
Detection	Lanes	1-8 lanes
	Flash memory	128M (expandable)
	Real-time data	Speed, traffic flow, vehicle type, license plate etc.
	Statistics data	Speed, traffic flow, occupancy rate, headway, queue length
	Traffic status	Slow-moving, congested, queued
	Traffic flow detection accuracy	≥95%
	Vehicle type accuracy	≥95%
	Occupancy detection accuracy	≥95%
	Speed detection accuracy	≥92%
	Queue length accuracy	≥92%
	Non-motorized vehicle filtering rate	≥97%
Communication	Sampling period	30-300s, continuously adjustable
	Communication port	1*LAN
Installation	Dimension	D*W*H: 330*147*229mm (12.99*5.79*9.02inch)
	Weight	2.2KG (4.85 pound)
	Installation height	5m-8m (16.40-26.25 ft)
	Mounting bracket	Universal fixed bracket, adjustable in two axes, supports both horizontal and vertical pole installation
Environment and Reliability	All-weather operation	Unaffected by day and night, weather, and adverse conditions
	Operating temperature	-40 to 75˚C (-40 to 167˚F)
	Humidity	0-95%RH
	IP class	IP66
	MTBF	>50000 hours
Power	Power supply	AC100-240V, 50-60Hz
	Power consumption	8W

2. Applications

The video vehicle detector is suitable for various applications, including highway traffic volume information surveys, urban road intersection traffic management, and adaptive optimization of intersection signal timings. Here are two specific application scenarios:

- Application in Traffic Information Collection and Analysis Equipment for Road Segments:
  - It effectively collects information about passing vehicles.
  - The collected information, along with high-definition H.264 compressed video, is transmitted automatically through open protocols via a network interface to specified downstream application systems, such as command center systems.
- Application in Urban Intersection Signal Light Optimization and Timing Systems:
  - It connects to intersection signal lights through network, digital I/O interfaces, etc.
  - Provides vehicle detection signals to the signal lights, enabling adaptive optimization of intersection signal timings.
  - Through interfaces like Ethernet and digital I/O connections, the detector communicates with the intersection signal controller to contribute to the efficient management of traffic signals at urban intersections.

3. Hardware Installation

3.1 Site Selection for Installation

1) Choose an area where there is no obstruction between the detected lanes, such as tall trees, gantries, and columns, to ensure an unobstructed field of view.
2) Select a location for power supply that is convenient and safe and implement necessary protective measures.
3) If utilizing wireless data transmission, ensure that local wireless networks do not interfere with the normal operation of the equipment.
4) If opting for wired data transmission, ensure that the installation location of the data collection equipment is close to the data transmission network node. Also, ensure that network cables are installed in a way that minimizes the risk of damage.

These considerations are crucial for the proper functioning and reliability of the installation. They address aspects such as visibility, power supply, potential interference, and the physical integrity of the data transmission network.

3.2 Installation Conditions

1) Installation Location: Optional locations include existing L-columns, gantries, or lamp posts on the road. The installation height can refer to the minimum detection distance table, generally around 6 meters.
2) Power Supply for Equipment: Choose a location convenient for power supply, using a standard power source of 100-240VAC @ 50-60Hz.
3) Installation Tools: The installation process requires mounting the equipment at a height of at least 5 meters. Therefore, tools such as a multi-directional high vehicle support or a ladder with a height not less than 5 meters are needed. Common tools like a Phillips screwdriver. Safety equipment for installation workers, including safety belts and reflective vests.
4) Client End: The client end requires a stable and reliable computer to receive data.

These conditions outline the requirements for the installation process, covering aspects such as location, power supply, tools needed, and the computer system for receiving data.

3.3 Equipment Networking

After installing the hardware, the initial step involves configuring some network parameters of

the network vehicle detector. The essential parameters to configure include the IP address, subnet mask, gateway, port number, and other network-related settings. It is necessary to configure information such as the camera's network segment and device settings. Before configuring, ensure that there is a normal network connection between the computer and the network vehicle detector. The networking process is illustrated in the diagram below. Data from our detector must be accessed through the corresponding configured data server.

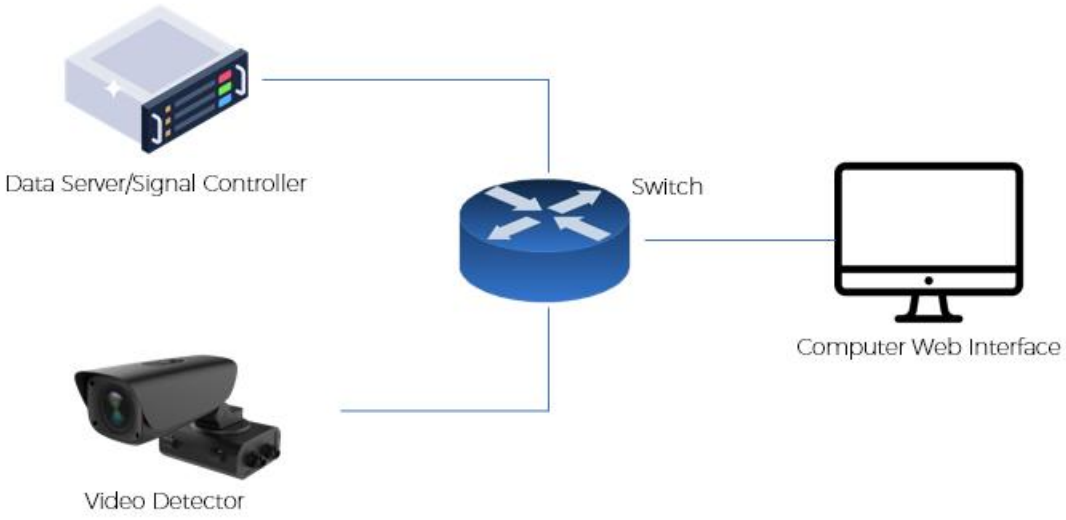


Diagram: Network Configuration Setup

4 Software Configuration

4.1 Discovering Devices

Before accessing the device, you need to know the IP address of the network vehicle detector. The default IP address of the device is 192.168.1.168. If you have once changed the IP address, you may follow the instructions below to discover the IP address of the device.

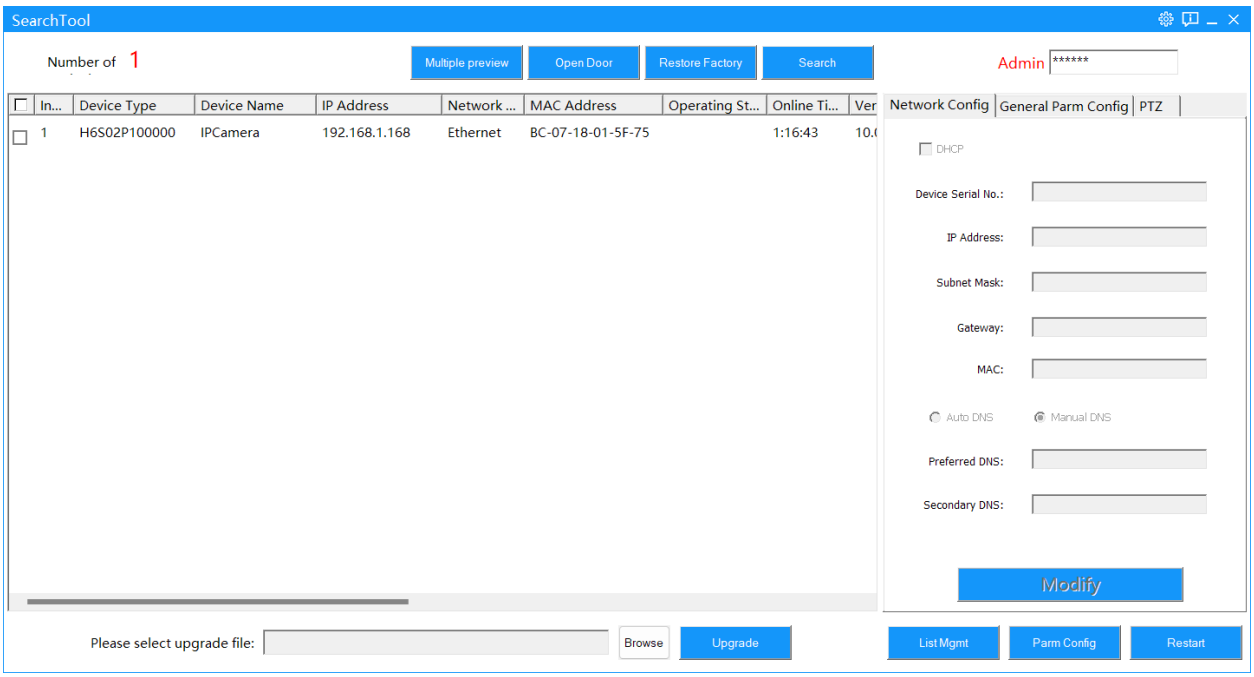
1. Run the device discovery software "HSCT" provided by our company.
2. The software will display a list of all devices running normally, showing their IP addresses, port numbers, subnet masks, device serial numbers, and version information.

This step is crucial for identifying and accessing the network vehicle detector. The provided software facilitates the discovery process by listing essential information about the devices on the network.

4.2 Device Upgrade

1. In the "HSCT" software, select the device that needs upgrading.
2. Locate the .img file provided by us in the local files.
3. During the upgrade process, ensure that the network connection remains stable. Wait for the operation status to display "Upgrade Successful."
4. After completion, wait for 20 seconds, then click "Search" again to rediscover the device.
5. If the device is rediscovered, the upgrade is successful. If not, restart "HSCT."

This process outlines the steps for upgrading the device using the "HSCT" software. It is essential to maintain a stable network connection throughout the upgrade process to ensure success. After the upgrade, rediscovering the device confirms the successful completion of the upgrade. If any issues arise, restarting the "HSCT" software may resolve them.



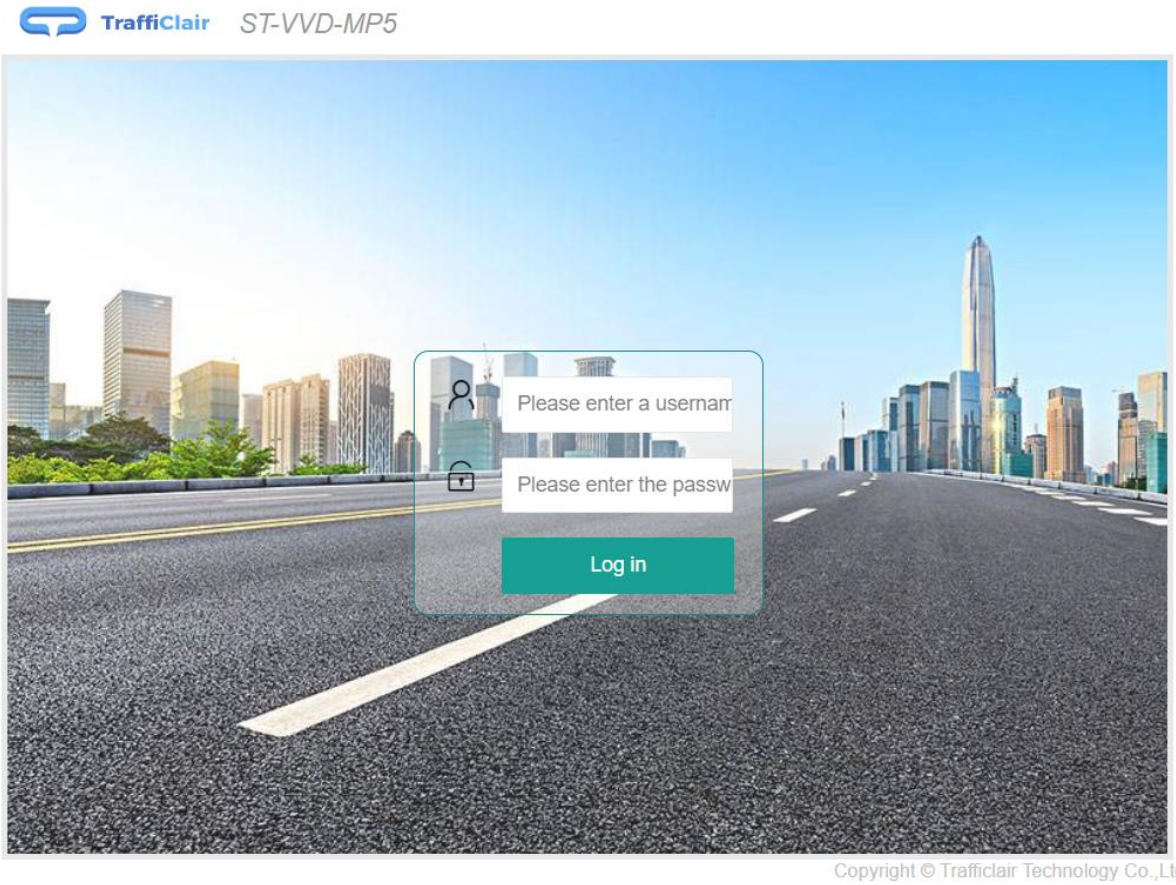
4.3 Device Login

Default device IP: 192.168.1.168; Account: sunqiao; Password: sunqiao

- Chrome/Edge Login:
  - Enter the account and password to log in.

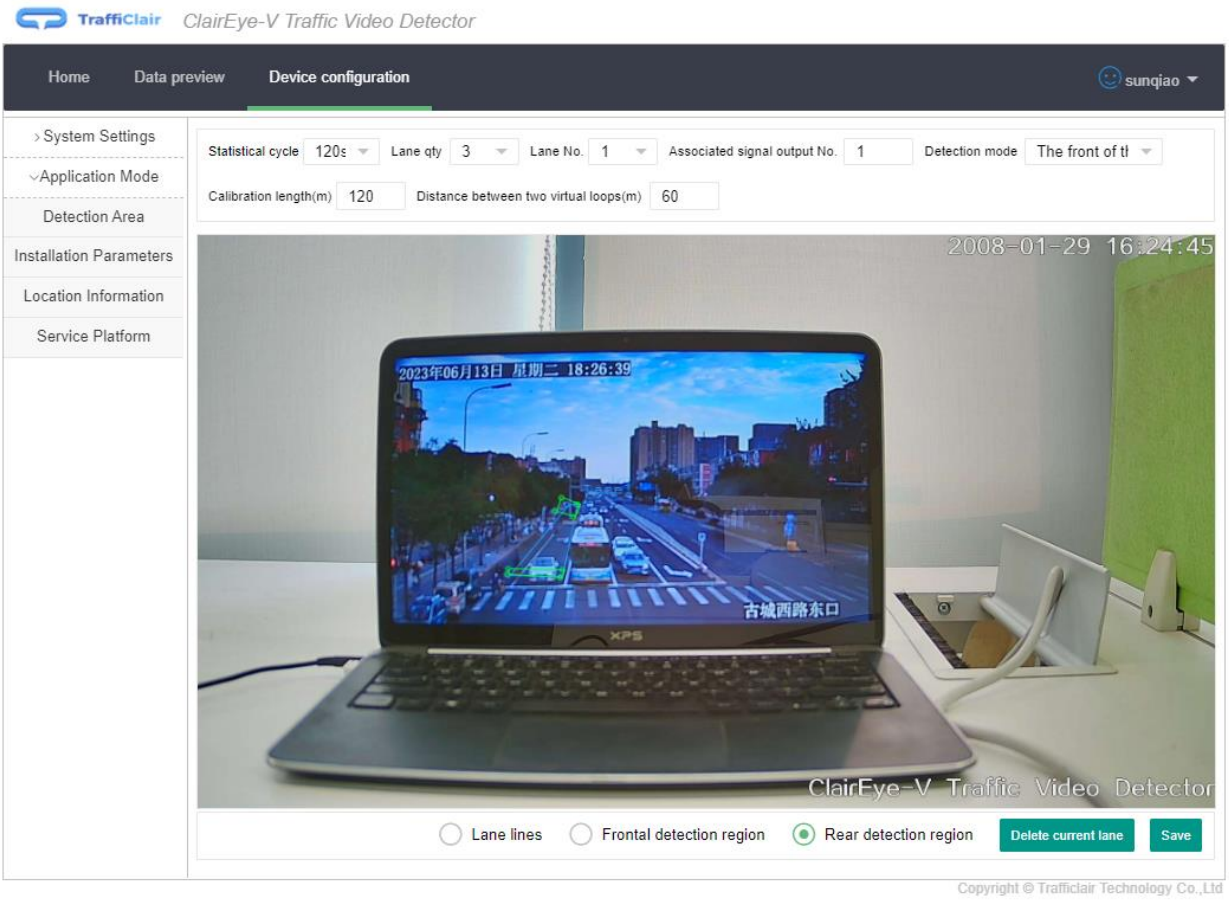
- Internet Explorer (IE) Login:
  - Use the same login method as Chrome/Edge, but you need to install the "SQPlayerOcx" plugin.

These login details provide access to the device, and the specific steps may vary depending on the browser used. For Chrome/Edge login, simply enter the provided account and password. For Internet Explorer, the "SQPlayerOcx" plugin is required, and once installed, the login process is the same as in Chrome/Edge.



4.4 Drawing Detection Areas

Under Application Mode-Detection Area, you may draw the detection area and detection bars. According to specific requirements, you can choose the data upload interval. Draw the lane lines, front loop lines, and rear loop lines based on the actual lane configuration. After completing the drawing, click "Save" to ensure the changes take effect; otherwise, they will not be applied.



Certainly! Here's an improved version:

To begin configuring the system, start by specifying the total number of lanes. Follow these steps to set up each lane individually:

1. Begin with Lane No. "1". Choose "Lane Lines" to define the entire lane area accurately.

2. Next, select "Frontal Detection Region" to outline the front detection area for Lane 1.

3. Proceed to draw the rear detection region to complete the setup for Lane 1.

4. Repeat the above steps for each additional lane.

Once all lanes are configured, click "Save" to apply the settings.

The “Distance between two virtual loops (m)” will be essentially related to the velocity and distance within output data. So please try to provide a distance as accurate as possible. Calibration length is the estimated visible length of the lane. This length is for reference only and

will not affect the data accuracy.

It's important to note that the "Application Mode – Installation Parameters" and "Location Information" sections are for recording purposes only. Adjusting these settings does not impact detection data but provides valuable contextual information.

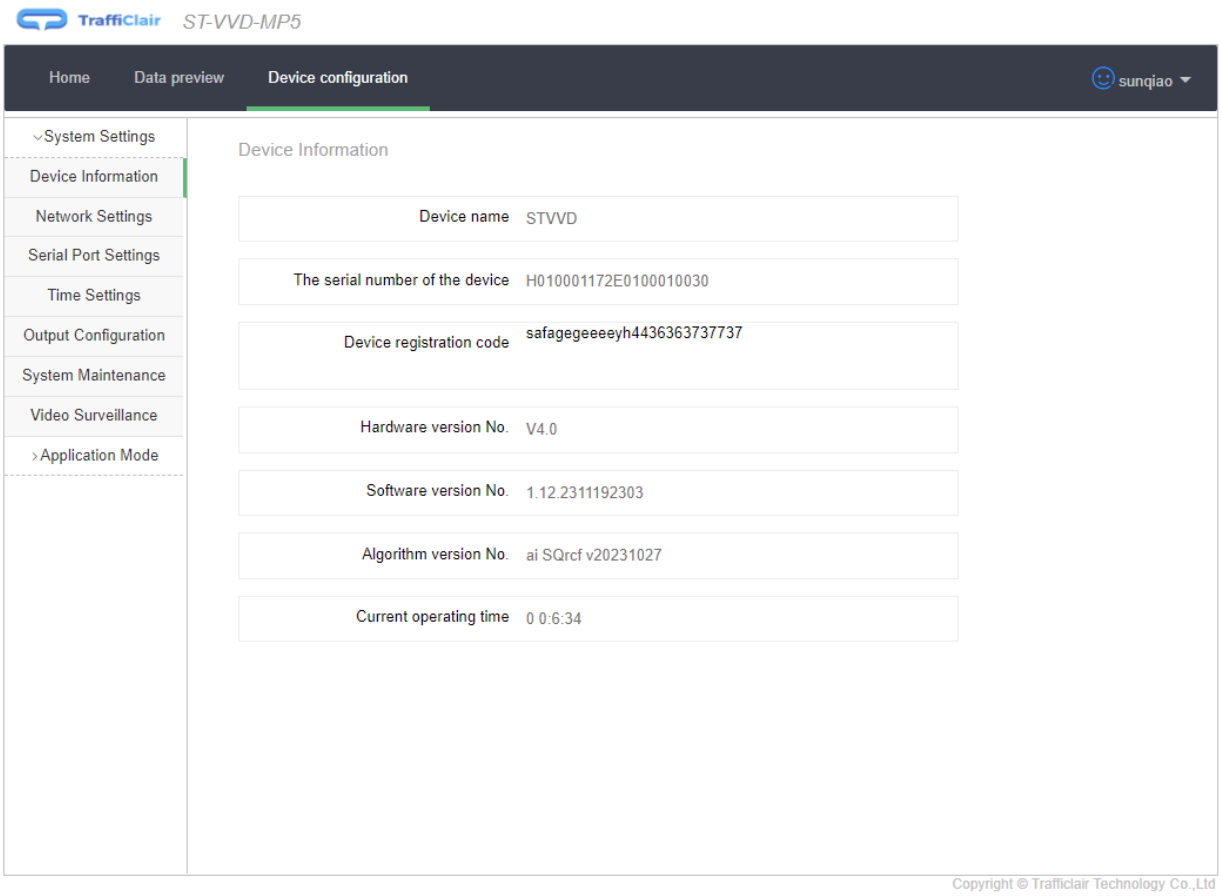
In the "Application Mode – Service Platform" section, specify details related to the data center or signal management platform only if video detection data needs to be collected by the data center. Usually, the data is transmitted directly to the signal controller through Ethernet or an Ethernet to IO converter.

Ensure that unless data collection by the data center is required, there's no need to configure settings on the Service Platform page.

By following these steps, you can efficiently set up and customize the system to suit your specific requirements.

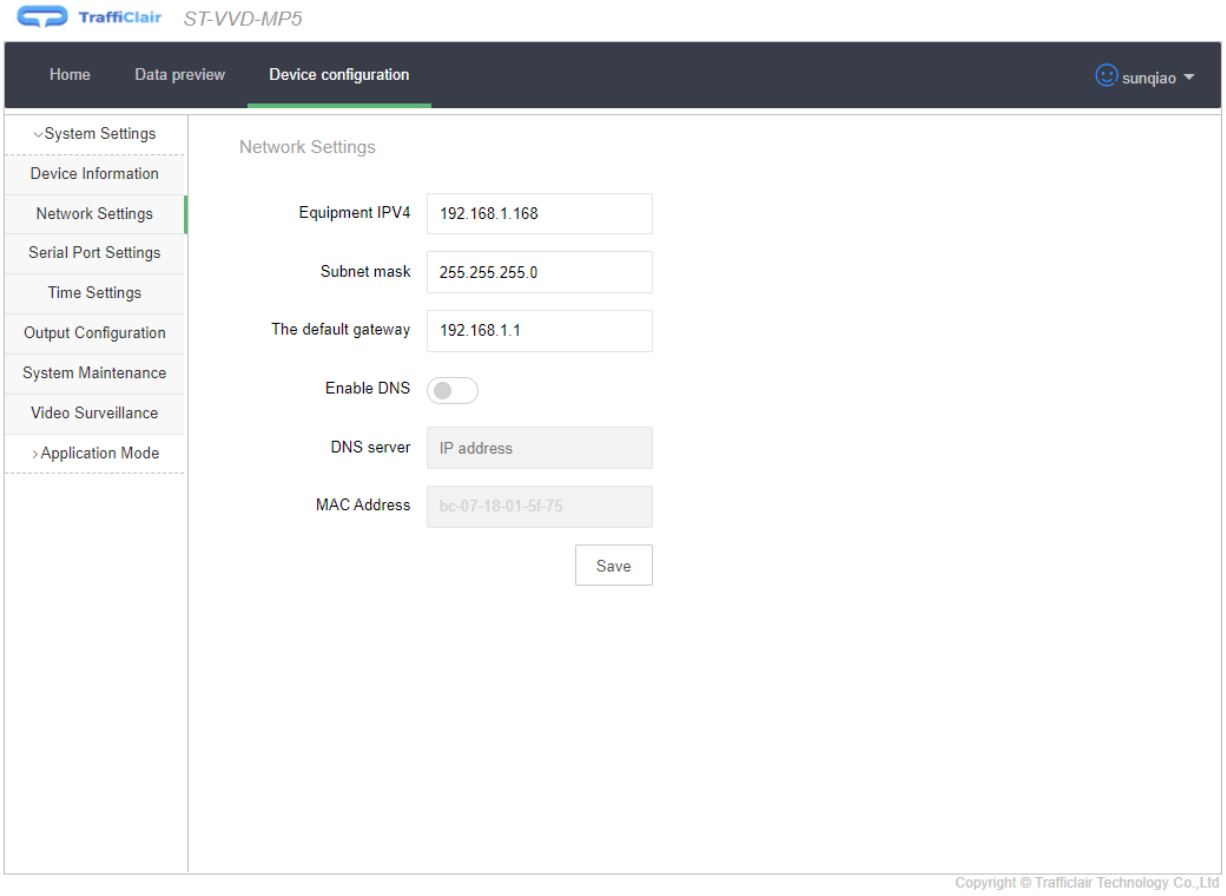
4.5 Viewing Device Information

Click on "View Device Information" to access details such as device information, manufacturer, hardware, software versions, and other relevant information. This feature allows for comprehensive device management.



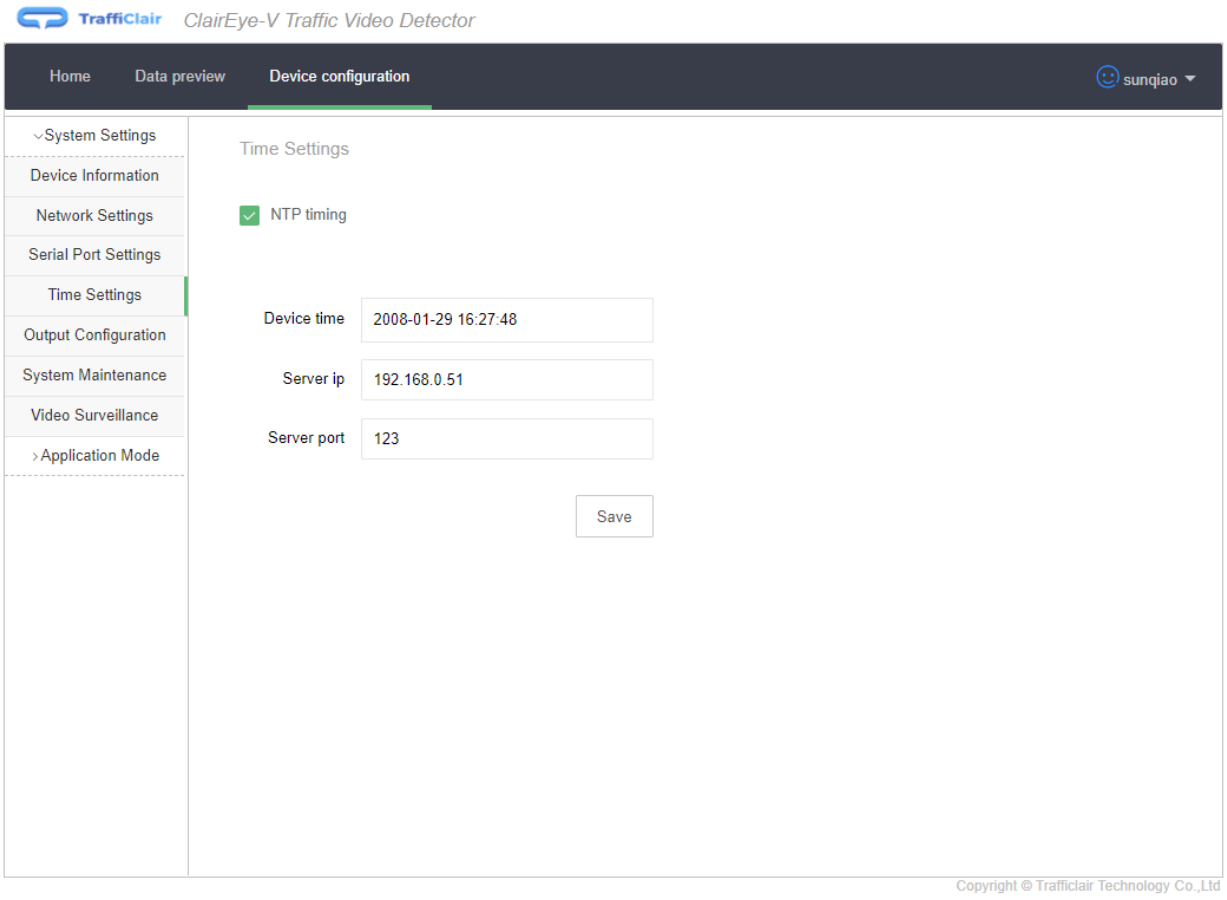
4.6 Network Settings

Through this configuration option, you can make changes to the device's network settings, including IP address, subnet mask, gateway, DNS server, and other related parameters.



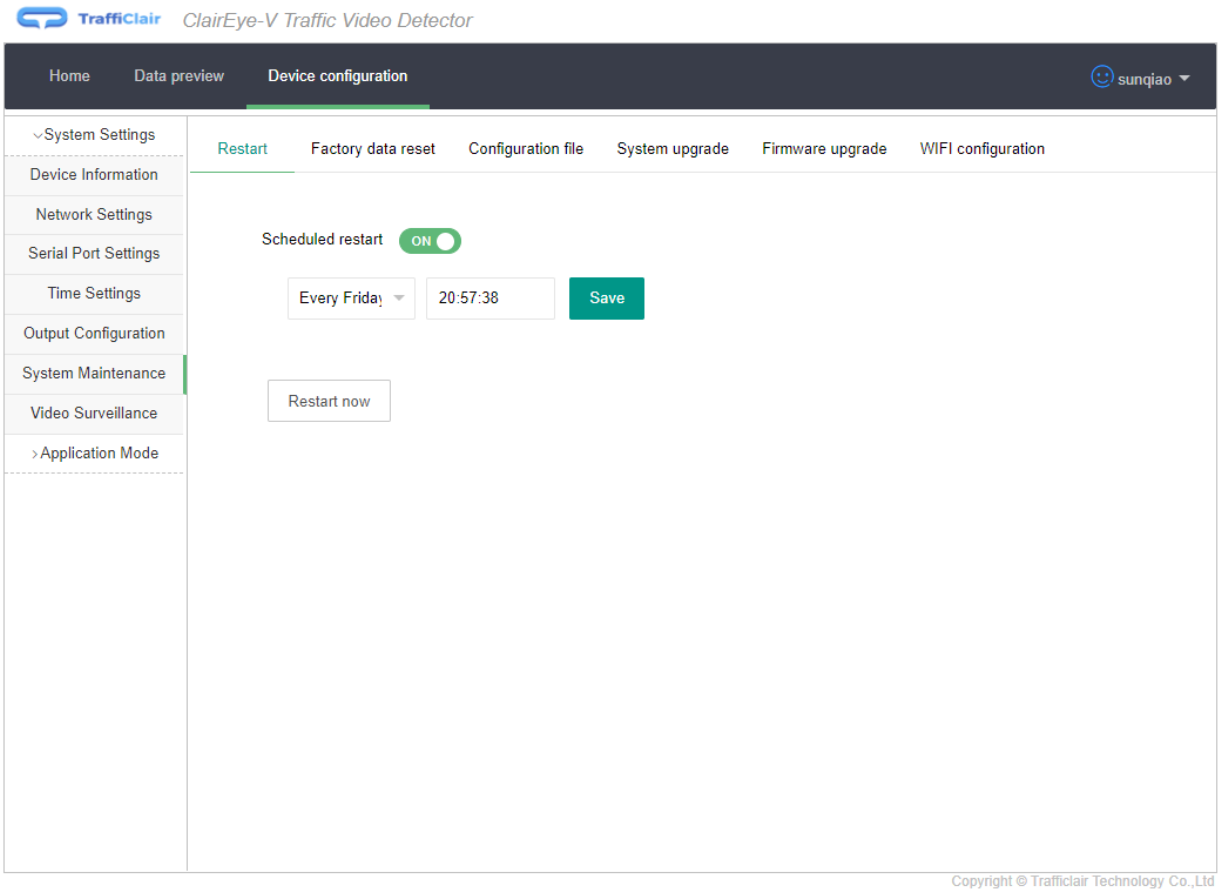
4.7 Device Time Calibration

You can choose to calibrate the device time using either an NTP server or the local PC.



4.8 Device Reboot

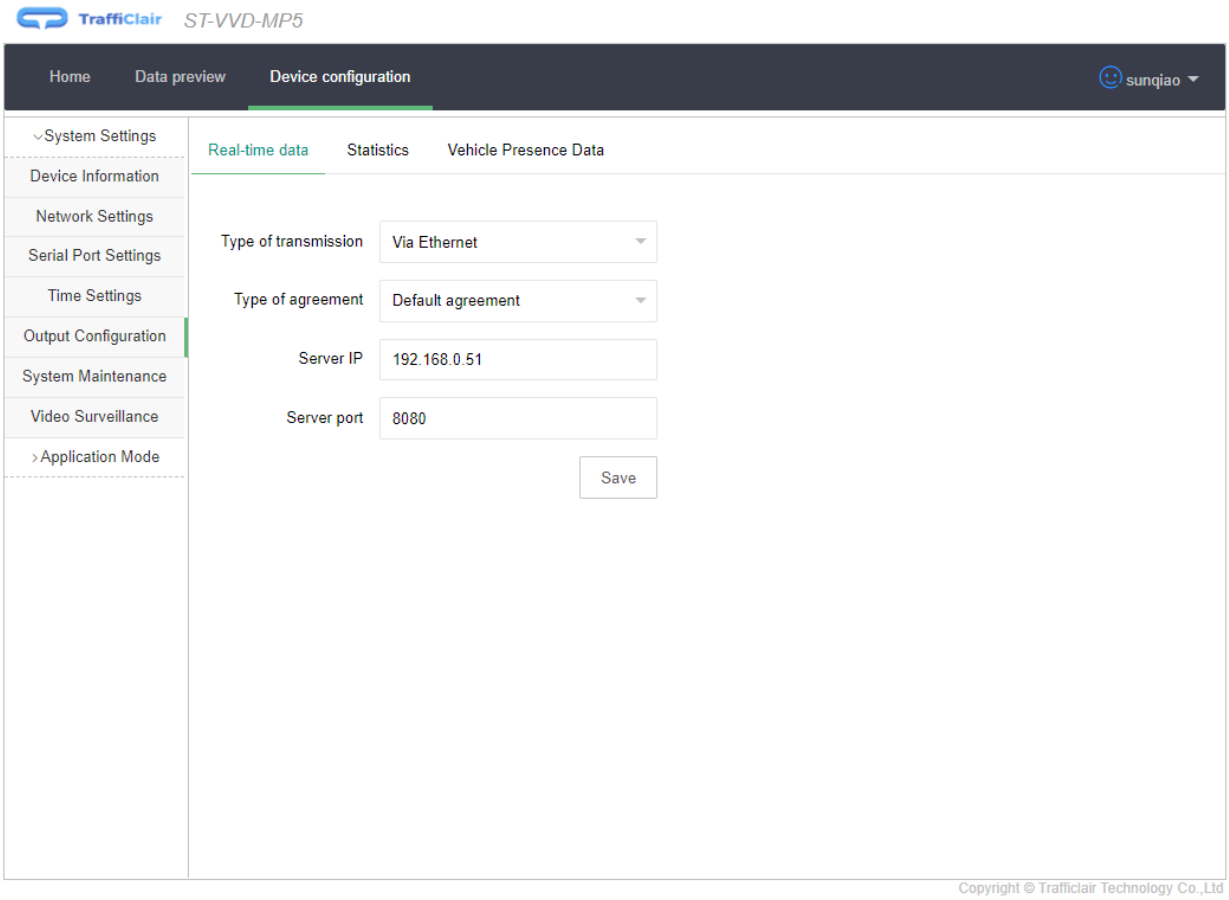
You can initiate a manual restart of the device or set up scheduled reboot functionality.



4.9 Data Output Configuration

The current version only supports network data transmission for data output configuration. So please select “Via Ethernet” under “Type of transmission”.

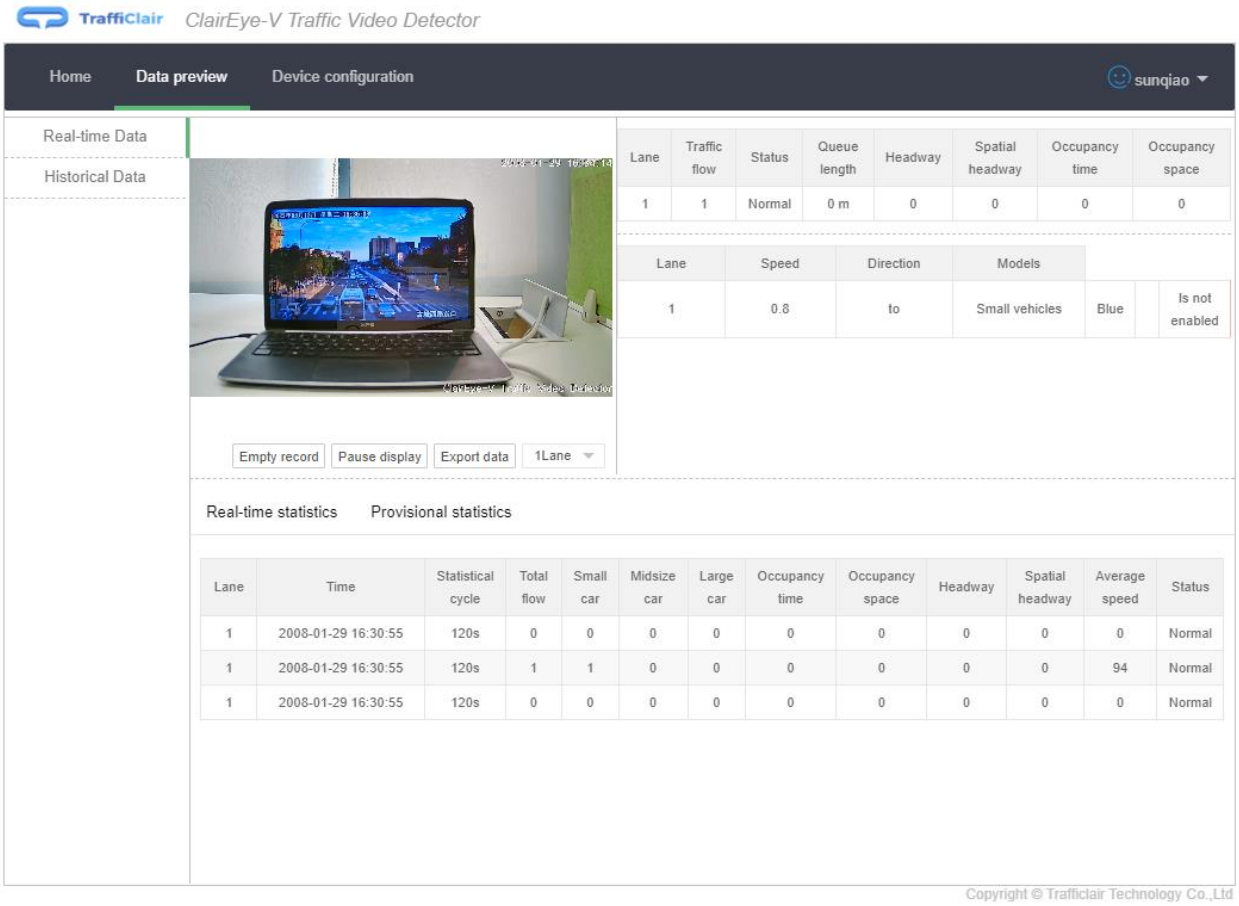
You may set the server IP address and port to connect the server. The default protocol agreement will be TCP.

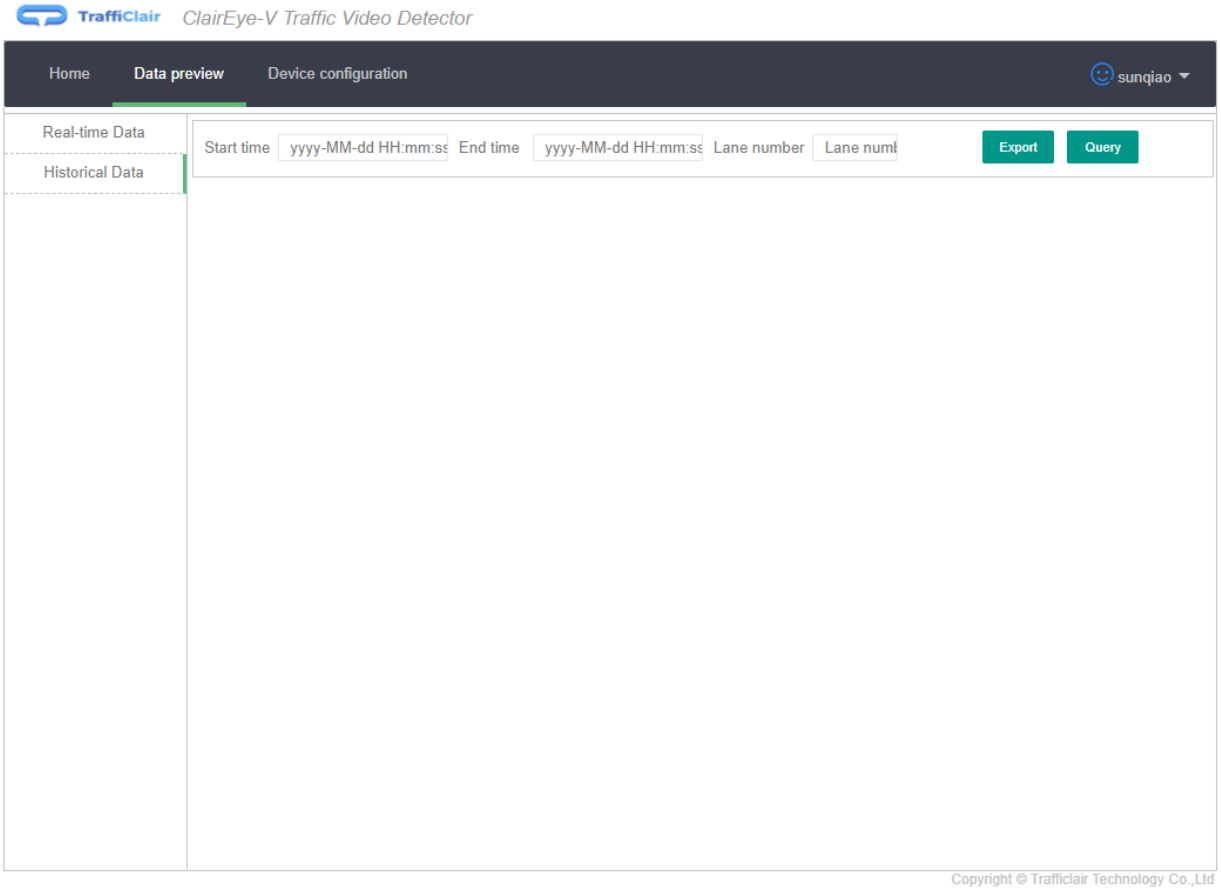


For the same reason, “System Settings” – “Serial Port Settings” will not be available for this model. Please ignore this setting page.

4.10 Detailed Data Preview and Export

On this page, under “Real-time Data”, you can freely select each lane's passing vehicle information that you want to view. Additionally, you can preview and export historical information under “Historical Data”.




TraffiClair
ClairEye-V Traffic Video Detector
Home
Data preview
Device configuration
sunqiao
Real-time Data
Historical Data
Start time
yyyy-MM-dd HH:mm:ss
End time
yyyy-MM-dd HH:mm:ss
Lane number
Lane numl
Export
Query
Copyright © Trafficlair Technology Co.,Ltd

5 Service Information

5.1 Device Maintenance

Notes:
1) Do not attempt to open, repair, or disassemble the detector without authorization.
2) Such actions may void the warranty of the detector.
3) Contact the manufacturer when the detector requires maintenance.
4) Pay attention to waterproofing, shock resistance, and dust prevention.
5) Store the equipment in a safe place.

5.2 After-sales Service

If you are unsure whether the equipment has issues, it is recommended to inquire with the manufacturer for specific details. In case of confirmed problems with the equipment, promptly contact technical support for assistance. The manufacturer will provide technical support, perform repairs, or offer replacements.

If the equipment needs to be sent back to the factory for inspection or repair, please fill out the "Video Traffic Detector Fault Feedback Form" and notify the company. Provide information such as the equipment model, serial number, software check number, and details of the specific issue.

Damage caused to the equipment due to customer negligence or mishandling may not be covered under warranty by the manufacturer.

5.3 Transportation Method

If the original packaging is not available, wrap the detector in thick plastic and use a double-layer box for packaging. Place approximately 4 cm of padding material between the detector and the inner packaging box. Seal the box with strong tape, taking protective measures to ensure that the machine is not damaged during transportation.

5.4 Warranty

1) The company guarantees that this product will not have inherent quality issues for two years from the delivery date. However, this does not include malfunctions caused by accidents, misuse, improper maintenance, unauthorized modifications, or operation contrary to the instructions. The company will be responsible for repairing or replacing faulty equipment or parts during the warranty period.

2) Opening the box cover without authorization, damaging the lead seal, or tearing the device label will render the warranty period invalid.

3) The company guarantees that, under proper installation conditions, the equipment's software and hardware can execute the designated commands. However, the company does not guarantee that the software or hardware will operate without disturbances or errors.

4) The company handles warranty or repairs. If the device needs to be sent back to the manufacturer for repair, the user is responsible for one-way shipping costs. The company is responsible for repairing and returning the equipment to the user after maintenance.

6. Device Fault Feedback Form

Company			
Address			
Phone		Email	
Contact		Mobile	
Device Installation Date		Model	
Number of Lanes Detected at the Faulty Device Installation Location		Road width (m)	
Communication	☐Ethernet ☐I/O Convertor		
Description of Equipment Malfunction			