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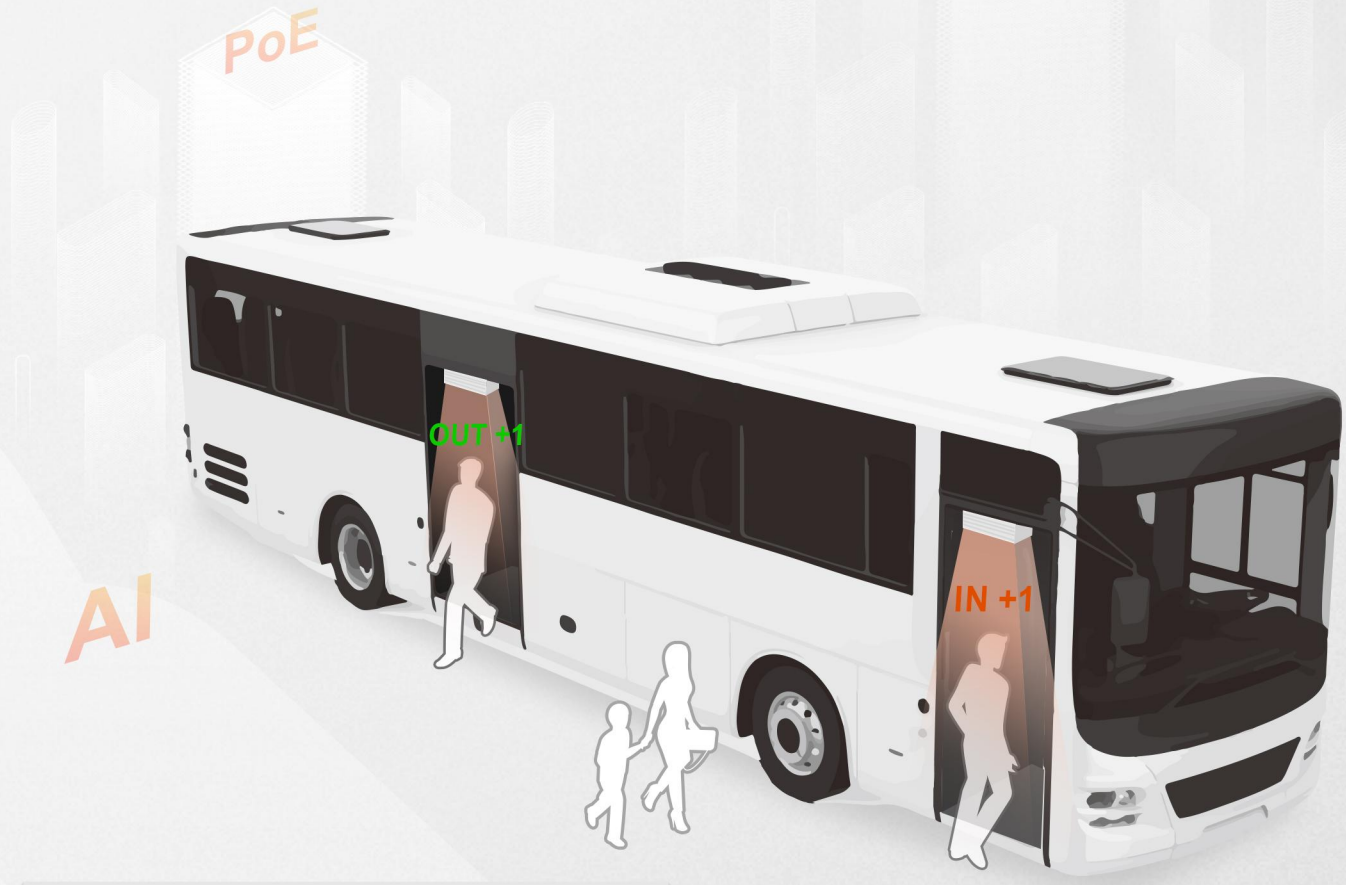
Product Manual

# 3D People Counter

## HX-CCD22 (Night Vision Bus Version)



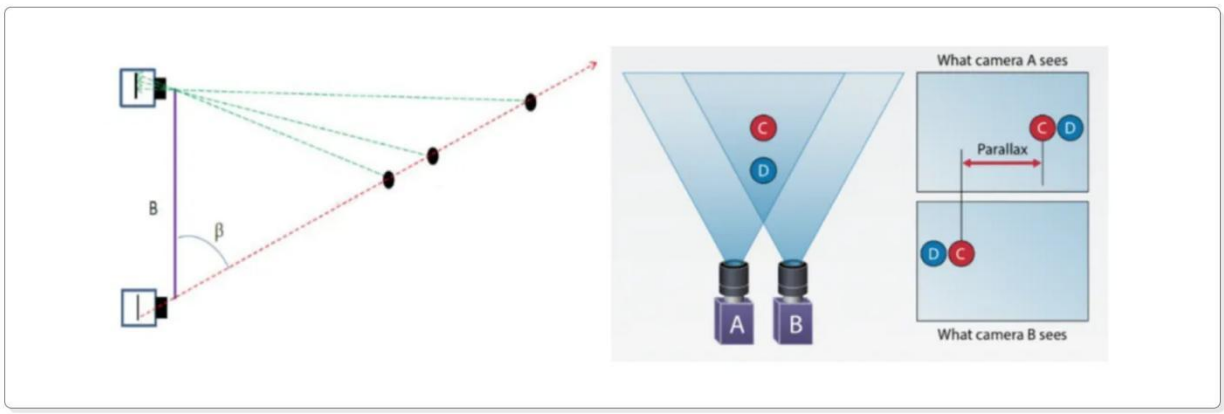


Smart Counter Provider

# Core Technology

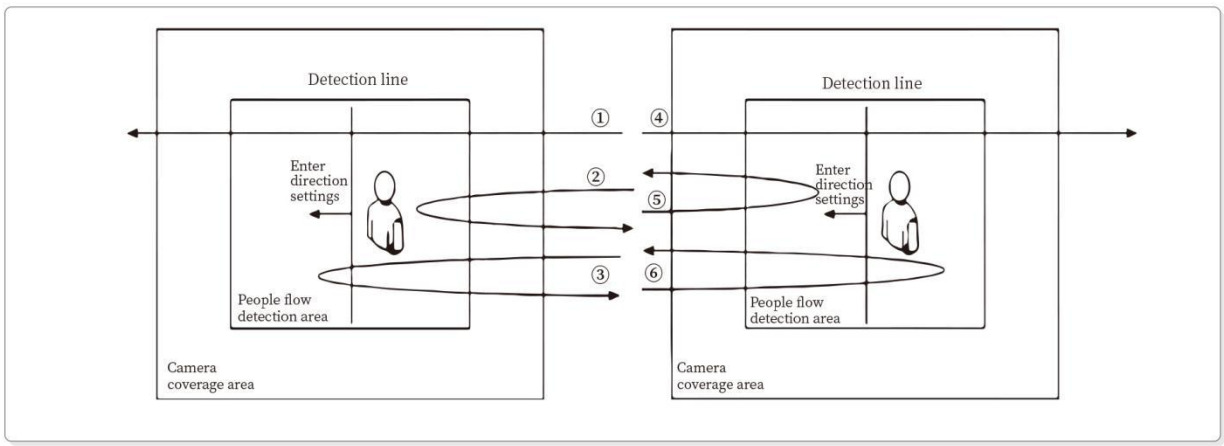
## 3D Binocular Vision

3D Binocular vision technology, as an important branch in the field of three-dimensional vision, is deeply inspired by bionics. It simulates the visual mechanism of human binoculars and captures and fuses three-dimensional image information of the surrounding environment through two lenses facing the same direction. This technology is based on the principle of triangulation and obtains the three-dimensional information of the object by constructing triangles between the observed object and the image planes of the two lenses. In a binocular vision system, as long as the relative position relationship between the two lenses and the coordinates of the object in the left and right images are known, the three-dimensional size of the object in the common field of view and the spatial position of the coordinate feature points can be calculated. Therefore, a typical binocular vision system usually consists of two lenses and corresponding image acquisition equipment.




## People Counting Based on Head and Shoulder Detection

The head and shoulders are used to detect and track human figures. When the center point of the head and shoulders crosses the pre-determined line segment, the passenger flow count is increased; as shown in the figure, action ① is entering, action ④ is leaving, action ②③ is passing, and action ⑤⑥ is turning back. It can also count the number of people staying in the passenger flow detection area in real time.



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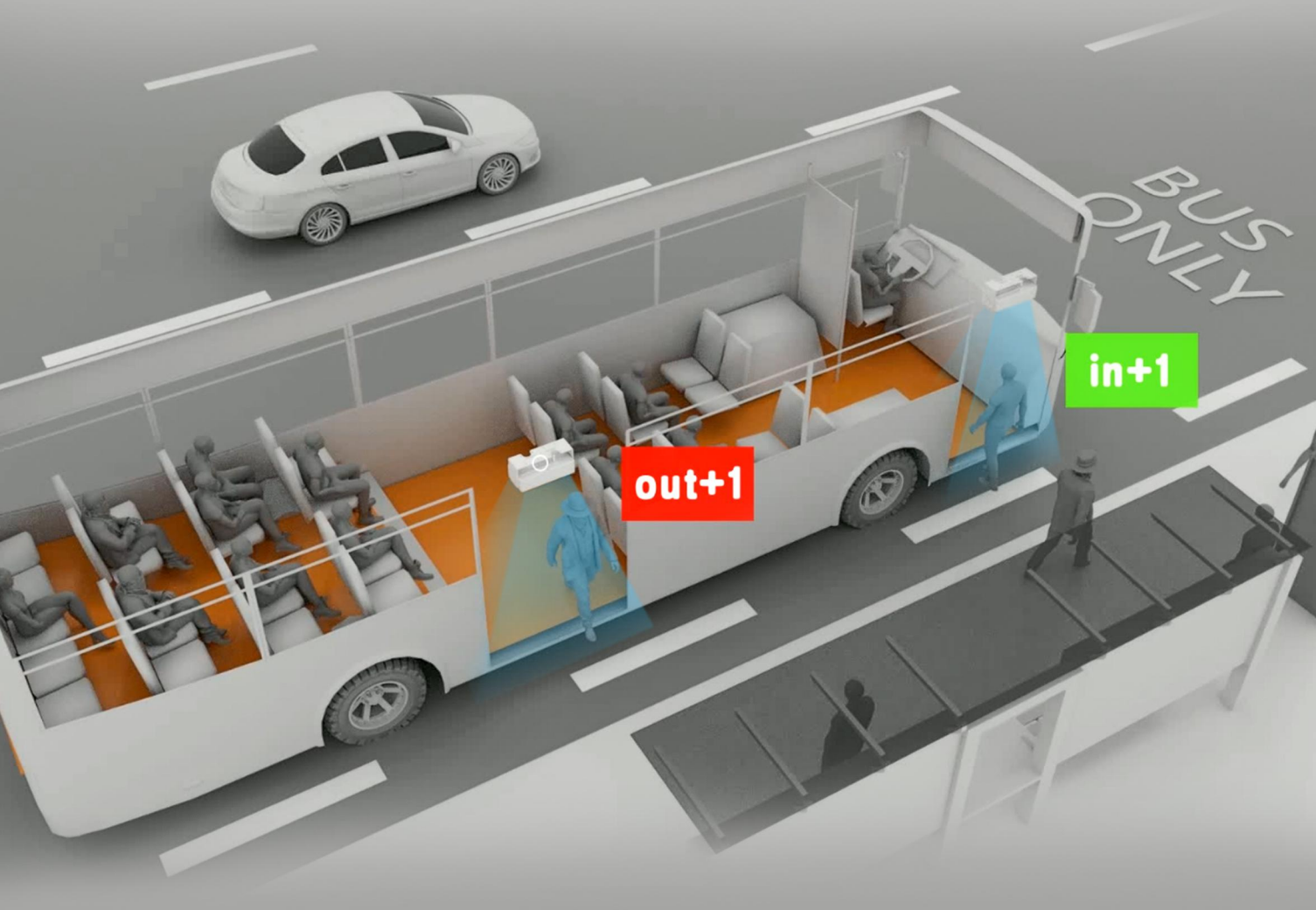
# Core Highlights

3D people counter(night vision bus version) obtain 3D depth information in real time through binocular stereo vision AI sensors, identify head and shoulders features in complex scenes based on head and shoulder feature algorithms, and achieve accurate passenger flow statistics through human body tracking algorithms.

It can be used in shopping malls, retail stores, public transportation buses, scenic spots, libraries, museums, restaurants, factories, supermarkets, parks, buildings, toilets, etc.



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# Privacy Protection

This 3D people counter, relying on stereo vision technology, is deployed in public places, focusing on accurate passenger flow statistics, and providing data support for efficient operation of the venue.

The device adheres to the bottom line of privacy protection, does not collect face recognition data, and only collects anonymous passenger flow data, such as personnel flow trajectory, length of stay, etc., for passenger flow statistics, and does not involve any personal information, which complies with GDPR.

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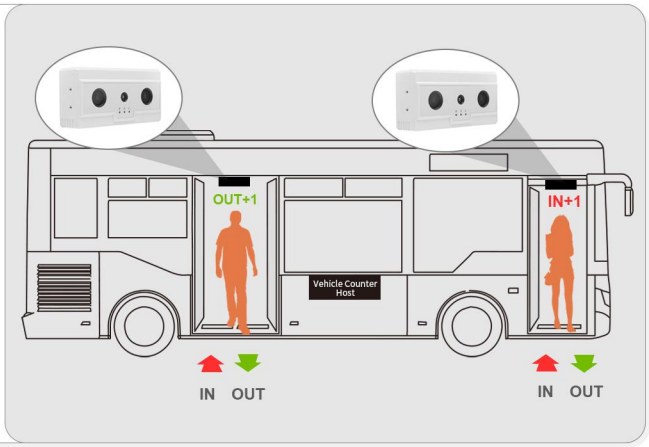
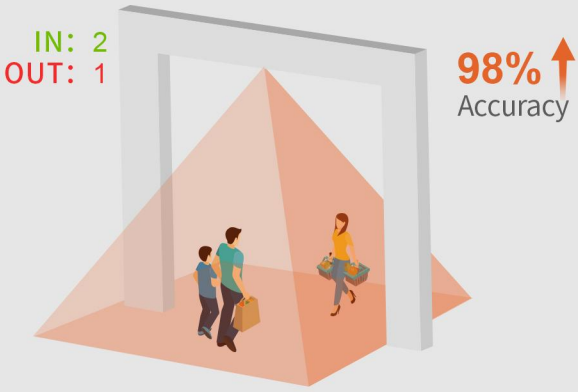
# Product Features

## Bus Mode

3D people counter can be installed on the front and rear doors of the bus to count the passenger flow at each bus stop and the number of passengers in the bus. Users can obtain accurate passenger counting through the cloud platform. It can start counting when the door is opened and stop counting when the door is closed.



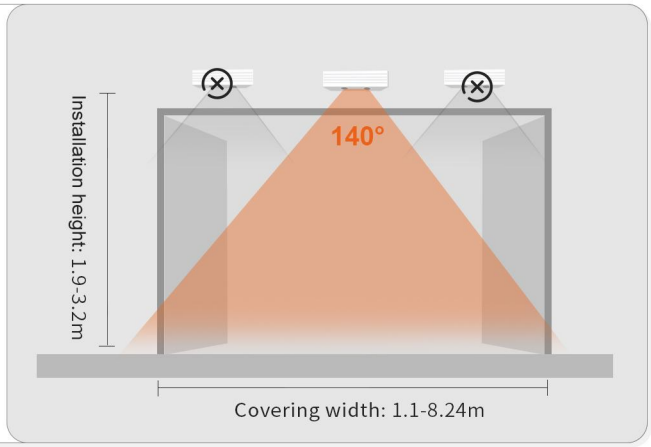




## Real-time Accurate Statistics

Real-time and accurate human identification, with an accuracy rate of up to 98%, accurately filtering out children and other large objects. With built-in fill light, the fill light is automatically turned on at night with low brightness, and the accuracy is not affected.

## Wide Coverage

3D people counter has a large 140° field of view, which can cover a wider area. It is especially suitable for places with limited ceiling installation space and spacious door areas.



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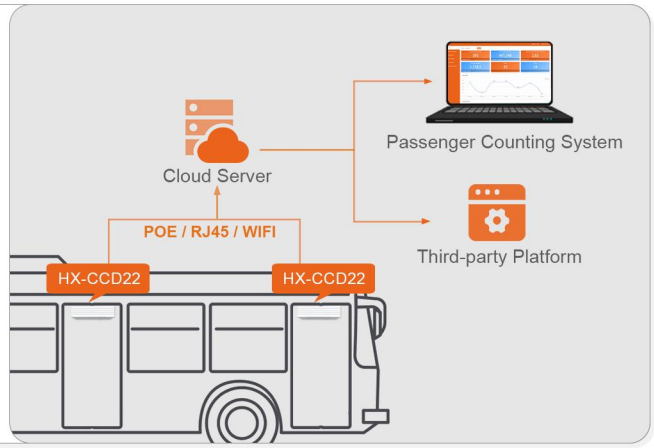
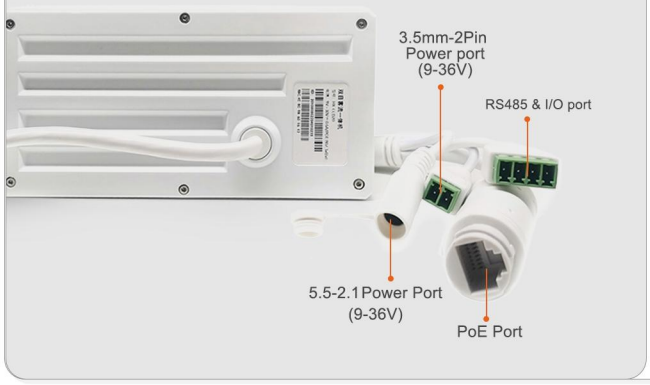
# Product Features

## Multi-protocol Support

3D people counter transmits data to the server via HTTP POST/HTTPS POST/ Modbus-RTU/Modbus-TCP/MQTT protocol, supporting secondary development and data docking. Users can log in to the WEB interface through a browser to enter the management platform to view or export data.




## Rich Open Interfaces

The device integrates various connection methods such as RS485, IO interface and POE power supply, fully adapting to different installation environments and data transmission requirements to ensure efficient and flexible deployment and application.

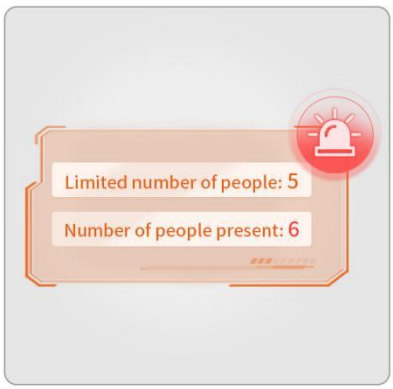
## Network Smart Devices

Supports local computing without the need for a local server, supports Flash offline storage, supports resumable downloads when disconnected, supports POE power supply, and supports wired/wireless connections.

# Functional Mode

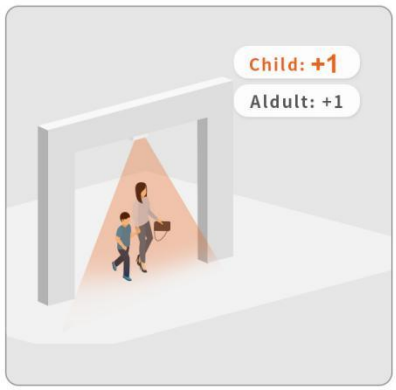
## Capacity Limitation Mode

When the number of people exceeds the set value, the device sends a signal to the alarm and the alarm sounds.




## Child Mode

After setting the height of children, people who are lower than the height will be recognized as children.




## Control Mode

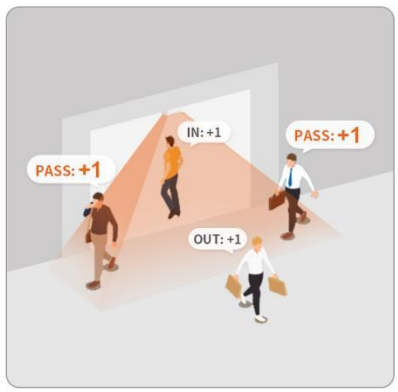
equipment works with relay, control a variety of electrical appliances.


## Data Display Mode

The device and the host are matched to visualize the data.


## Channel Mode

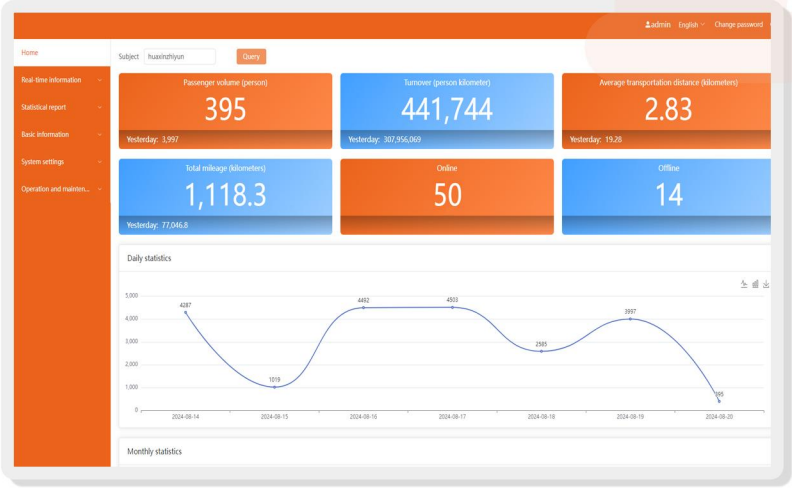
which can detect the number of people passing by the door and the number of people entering the store.




## Standalone Mode

The local data of the device can be stored for 90 days, can be exported, and can be used without network.

# Data Display



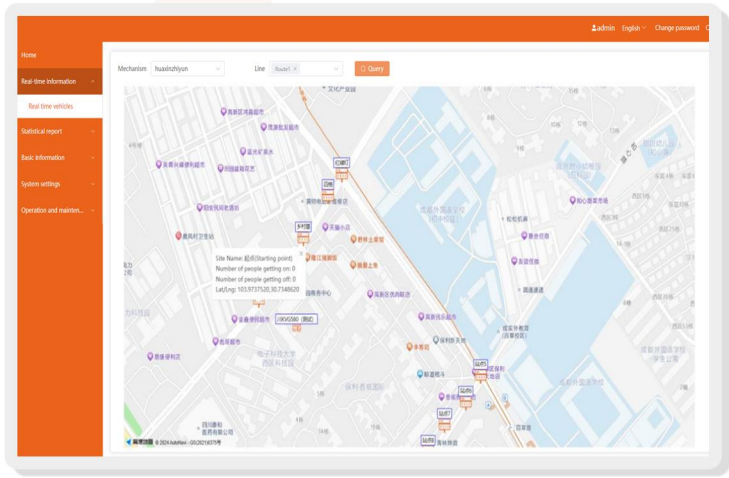

## Passenger Counting System

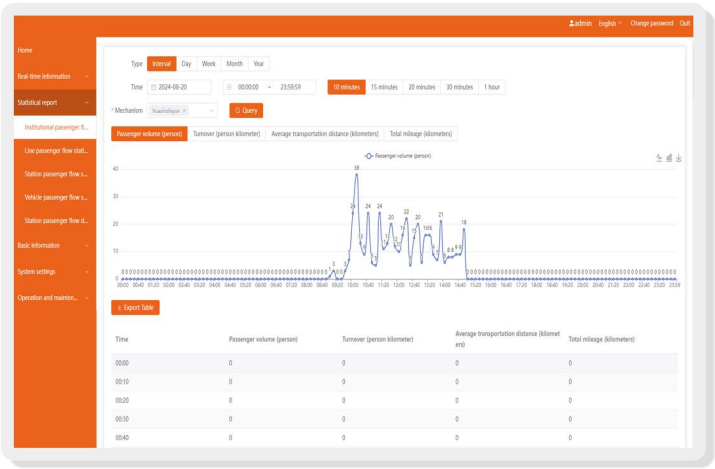
The Passenger Counting System relies on the Vehicle Counter Host and 3D people counter data upload to provide users with real-time vehicle location and real-time passenger flow at sites; multi-dimensional statistical analysis reports; basic information management.

## Real-time Information

Use GPS to track the vehicle and record and query its historical routes. Provide an intuitive visual interface to display the vehicle's connection status in real time.

Real-time information: Displays the real-time location of the vehicle, station information, and the number of passengers getting on and off the bus at each station on the day.



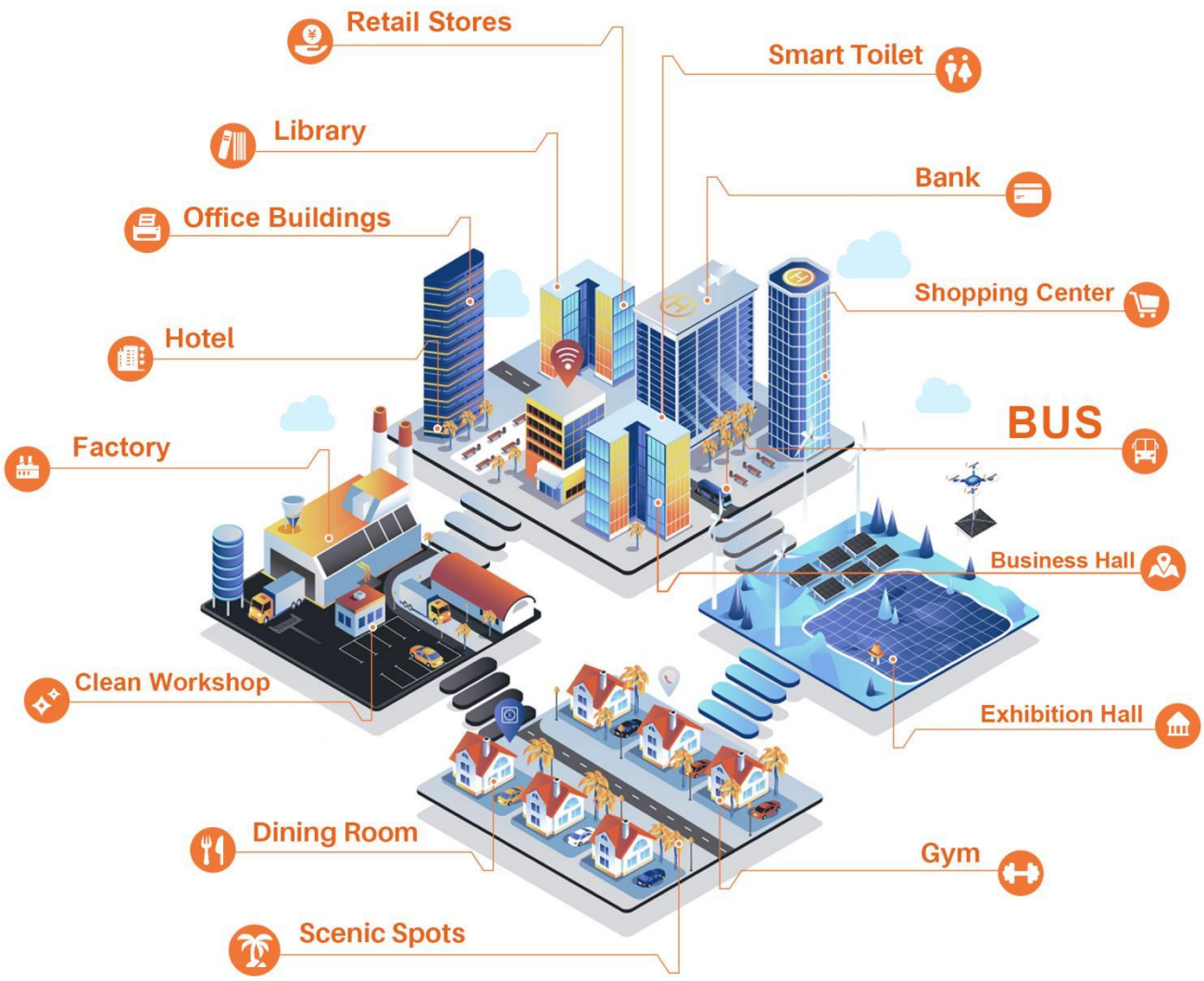




## Statistical Report

Statistics reports can provide users with institution passenger flow statistics, route passenger flow statistics, station passenger flow statistics, vehicle passenger flow statistics, and station passenger flow distribution. It presents the overall passenger flow change trend of the institution in detail, providing strong data support for optimizing resource allocation and improving operational efficiency.

# Applicable Scenarios

This people counting solution is widely applicable to long-distance passenger transport, urban public transportation systems, and various scenarios that require personnel flow management, including but not limited to travel agency passenger vehicles, daily public transportation operation vehicles, corporate shuttle buses, passenger ships, shopping center shuttle buses, etc. At the same time, it can also be flexibly applied to places that require accurate population counting, such as supermarkets, exhibition halls, public transportation hubs (such as airports, railway stations/subway stations), entertainment venues, business halls, scenic spots, and various public entrances and exits.



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