



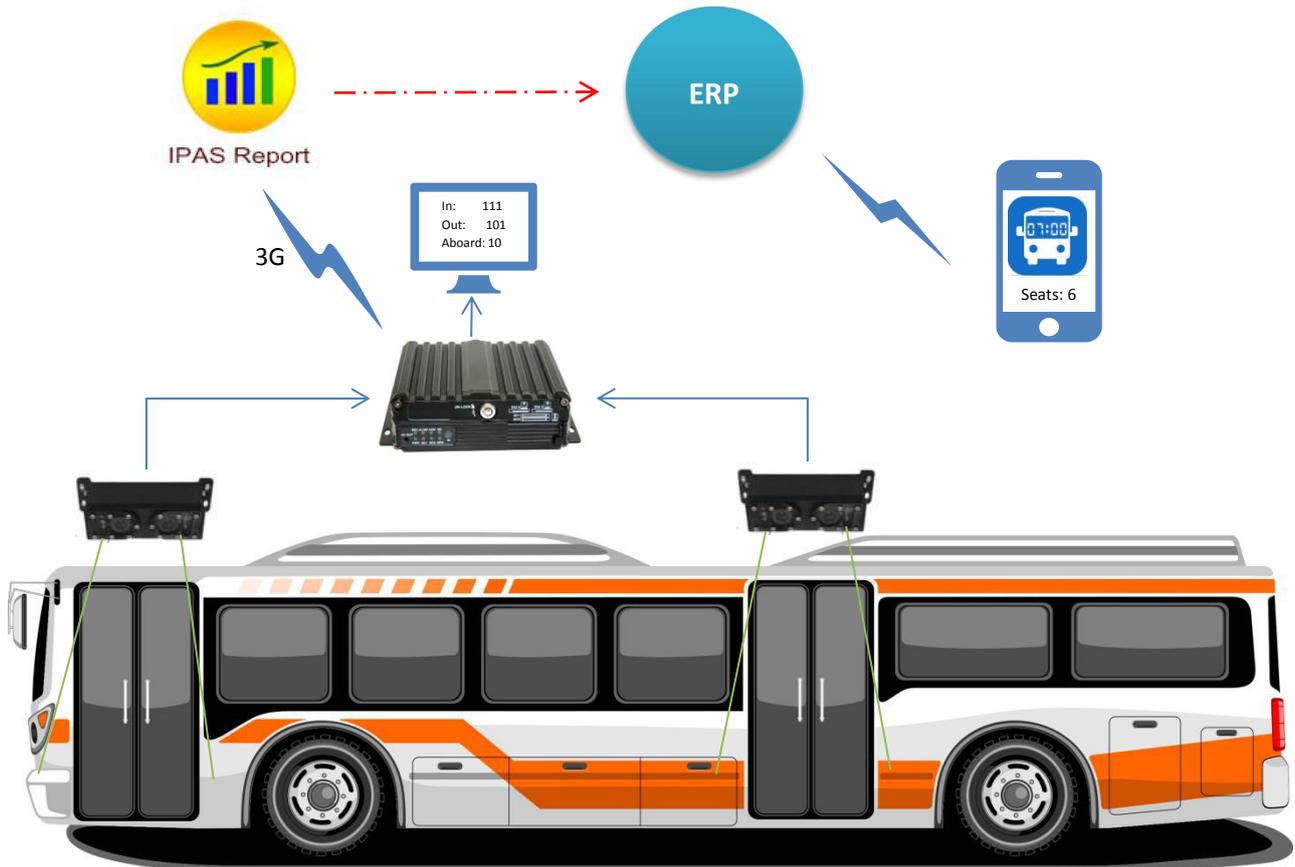
Bus Video Passenger Counter

Guidebook

OVERVIEW

STRUCTURE:

Bus Passenger Counting System is designed for transit bus fleets to obtain real-time and accurate passenger quantity information. It includes: Bus Passenger Counter, Binocular Cameras and IPAS Reporter (Intelligent Passenger Analysis System). One counter can connect 1-2 binocular cameras. 2 counters can work together for 3-4 doors long bus or other environment.



1.1 System Illustration

RELAIBLE HAREWARE:



1.2 Front View



1.3 Rearview

Different from others' store solutions which often fail to work normally in special bus environment, our bus passenger counter adopt the most accurate 3D binocular solution to meet bus fleet directors' demands on real accuracy (> 97%). The hardware choose "first rank" design and chips, so the system can run normally for **7*24, high vibration, EMC, unstable current and wireless network.**

SMART REPORTER:

IPAS reporter can provide customers with accurate station identification, real-time traffic, summary reports and others. Accurate records with specific arrival time, specific vehicle, empty rate and so on. More professional data is to evaluate benefited of stops location, bus interval, and vehicle cost and personnel management.

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FEATURES

- The best 3D binocular cameras solution
- Real accuracy in the bus is better than 98%
- Support all kinds of bus with especially short door
- Separate design for better repair and extension and integration
- Top rank craft with low failure rate
- Transmission Resume in poor wireless network
- Remote configuration and upgrade
- Associated with door sensor to decrease mistakes
- Open SDK, integrate most of famous MDVR factories in China
- M2M level 3G and GPS chips, fast response and stable signal
- Support SD cards backup
- Others

SPECIFICATIONS

COUNTER SPECIFICATION

	OS :	Linux
	Direction :	IN/OUT Bi-direction
	Algorithm:	3D Deep Visual Technology
	Counting :	Distinguish Head/Shoulder/Direction
	Interfaces :	2xRS-232, 1xRS-485,RJ-45,8xSensors ,
	Storage :	ROM (10000pcs) & SD Card Backup
	Optional :	3G , WIFI,GPS
	Power :	9-36V DC , 10A , Battery Connection
	Temperature :	-40°C to 70°C
	Size/Weight :	184*248*190 (mm) /1.2Kg

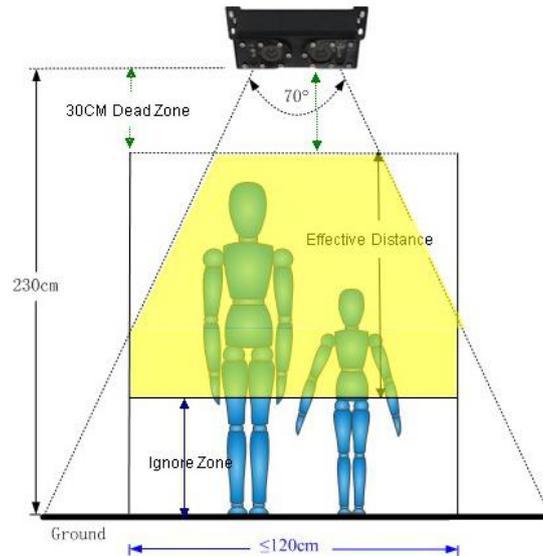
BINOCULARS CAMERAS SPECIFICATION

	Sensor :	Sony B& White CCD
	Resolution :	480TVL
	Lens :	Dobule Lens , 2.8/3.6/4mm otpional
	Valid Field :	180-280cm Height, 70-140cm Width
	Blind Field :	15-30cm Directly
	IR Distance :	200cm
	Connector :	2pcs, aviation
	Power Input :	12V , 1A,only to Counter
	Temperature :	-40°C to 70°C
	Size/Weight :	150*50*52mm/0.3Kg

HIGH ACCURACY

HOW IT WORKS?

The system runs with 3D depth vision algorithm. Camera will capture image of head and shoulder, then counter will distinguish and compare collected feature information with its big database over years. The counter also smartly counts with optimization for dozens of frequent mistakes in the real bus. Then we offer the best accuracy of result.



HOW TO GET THE ACCURACY?

1 . Binocular Cameras

Binocular cameras are the best solution for object analysis. Its 3D image can obtain high accuracy than 2D single lens cameras. Most of video people counter in the world are single lens solution. Such solution same as a IP camera, is much cheaper and easy to replace. But the replacement cost also very high. And their accuracy can not meet driver boss requirements. Different from other data, each number means ticket and income for fleet boss.

2 . Algorithm

Algorithm is the most competitive but can not be touched soul of counter. It decides the accuracy even by same hardware, the accuracy also very different.

3 . Experiences & Improvement

We keep many years' experience and keep learning by different requirement and demands.

4 . Feedback & Correction

Customers always offer many nice suggestions to improve its accuracy and performance in real usage.

PLACEMENT

The installation includes Counter installation and camera installation.

COUNTER INSTALLATION

PLACED IN A SAFE POSITION..

Environments :

Vibration, heat, water, moisture, dust, damage, easy maintenance must be carefully considered.

Shock:

Mobile DVR should be placed the poorest vibration parts in vehicles to make the device away from the engine, such as the driver's seat.

Cooling:

The location of the device should be far from the heat part of the vehicle.

Waterproof:

Pay attention to the hot temperature and water. Extra bracket and protective case are required if necessary.

Moisture:

Equipment should be installed in a dry ventilated place.

Dust:

Electronic equipment must be installed in the dust-free place.

Space:

Equipment installation to select a location for the device can be installed flat for easy installation and maintenance.

Counter installed in the plane should maintain a certain distance from other objects, in order to facilitate air circulation and cooling

Electrical:

Far away from the complex electromagnetic and strong interference

BATTERY CONNECTION

- Power supply connection is the base of whole electrics works, so the power access and traces have strict requirements.
- Device should get power from the battery directly via positive and negative, or through the fuse box access (Figure 1-1, Figure 1-2 Shown). Other power line access is prohibited to protect the stability and security of host power supply.
- Select the size and length of the power wire according to the distance to the host. Pouches power cord and wire diameter requires 1.5MM-2.5MM is recommending. In long-distance traces should adopt a single line wire (diameter >2.5MM).
- Equipment wiring should fix vertically in case of interference
- Power cord connector should adapt solid connections and avoid pulling stretch work.
- All wires should convenient routed and hidden beautifully. All the lines should plus protective sleeve.



Figure1-1 Battery Power

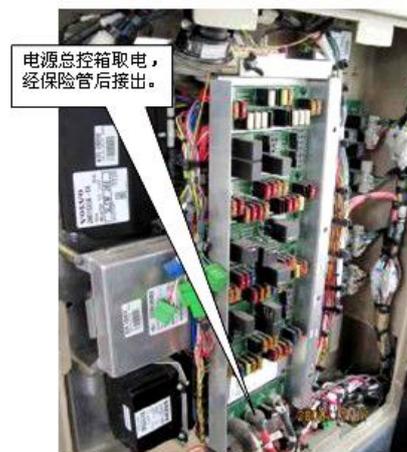


Figure1-2 Fuse Power

ANTENNAS

- There are 3types of antennas, GPS antenna, 3G antenna and WIFI antenna.



Antennas

- Antenna installation should consider the following requirements:
- In order to receive the best signal, antennas should be mounted open roof. Usually top left of the roof is better for sake of driving habits
- To prevent from possible damages, antenna mounting position should be protected by additional housing or cover.
- Ensure that all antennas will not interfere with each other
- If the antenna is not convenient to install outdoor, users should fix it in the vehicle at a firm position. The signal should be installed to ensure the normal

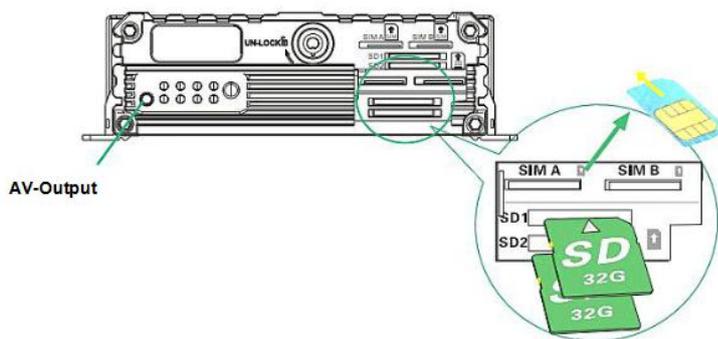
GPS ANTENNA

GPS antenna should be mounted to the top of the roof. It must avoid the obstacles to for receiving satellite signal. GPS antenna with magnetic can be attached to the bottom surface of the metal roof. And please fix it with glass glue.

3G ANTENNA

The 3G antenna should be attached to the window glass or plastic shell, but not attached to the metal top, so as not to affect the effect of communication signal attenuation.

3G SIM CARD AND SD CARD



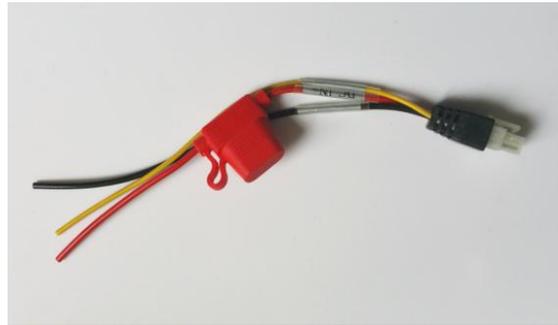
Only 3G models support SIM card.

2G SD cards can save over 1 year records. If you want safer backup, you can place SD cards.

POWER CONNECTOR:

Counter power cord has 3 cables. ACC(Yellow)/ Power(Red)/GND(Black), **ACC cable must connect bus Ignition switch.** So when driver start the bus, counter will start working soon. When bus engine stops, counter can keep working during

configure power delay time. It will prevent counter from many accident or unexpected cases, then all counting passenger will be counted.



Yellow: ACC, Red: Power Native, Black: GND negative

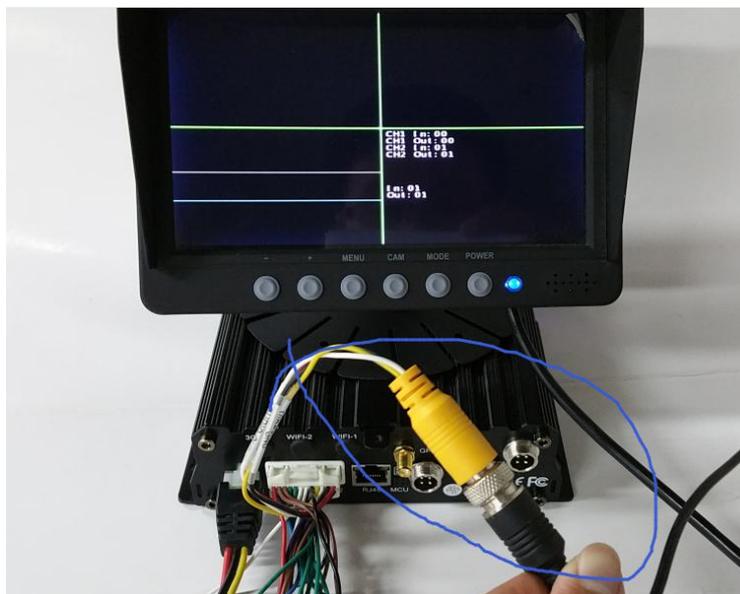
In office test, ACC can be connected Red Power connector with a button switch. In this case, you can simulate bus stop and check what happen.

VIDEO OUTPUT.

Bus Passenger Counter offer 2CH video output, these port not to connect cameras, they are for Monitor or Mobile DVR only.

MONITOR

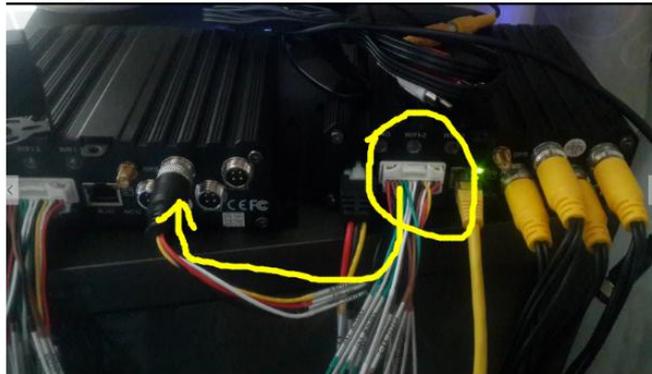
Counter can connect a monitor, so driver or tester can see the counting result when passenger gets in or out. It is good to check accuracy anytime.



Remarks: About display content. As default, we export video with counting numbers. If you don't want to display video information, we can offer special firmware to hide it.

MDVR

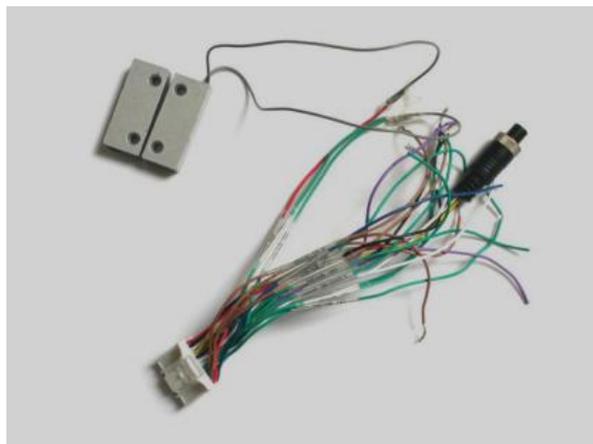
Users can directly connect our 3G SD MDVR or HDD following this guide picture. Other MDVR please contact their sales to confirm the connection.



Door Sensor

Counter must work with door sensors, otherwise it will keep counting but never send out any data to your device or server.

Default sensor type is High/Low signal. You can connect bus console switch of the door, or external door sensors to connect IO IN1/IN2. External door sensor also need to connect 5V DC.



The test door sensors

Detect Door Sensor

Find two probable lines can get different signals when doors open or close, such as the door-status-lights, or the switch of doors. Judge the mode is Switch or Level by experience. If you cannot find, you can install a magnetic-switch or other on-off switch in the proper position of the door.



CAMERA PLACEMENT

CAMERA STANDARD POSITION;

Stereo cameras should be placed above the first stair. And its vision field should close to the door so that nobody can be

missed to count. The camera also be well fixed with screws and its cables must be hidden completely inside of the roof.



SECONDARY POSITION

1. Tilt Installation

In many cases, installation can not find a good place to fix the cameras. So you have to make a hard choice. To tilt cameras with it double adjustable ears. It can keep the visual distance longer.



2. Unique Entrance

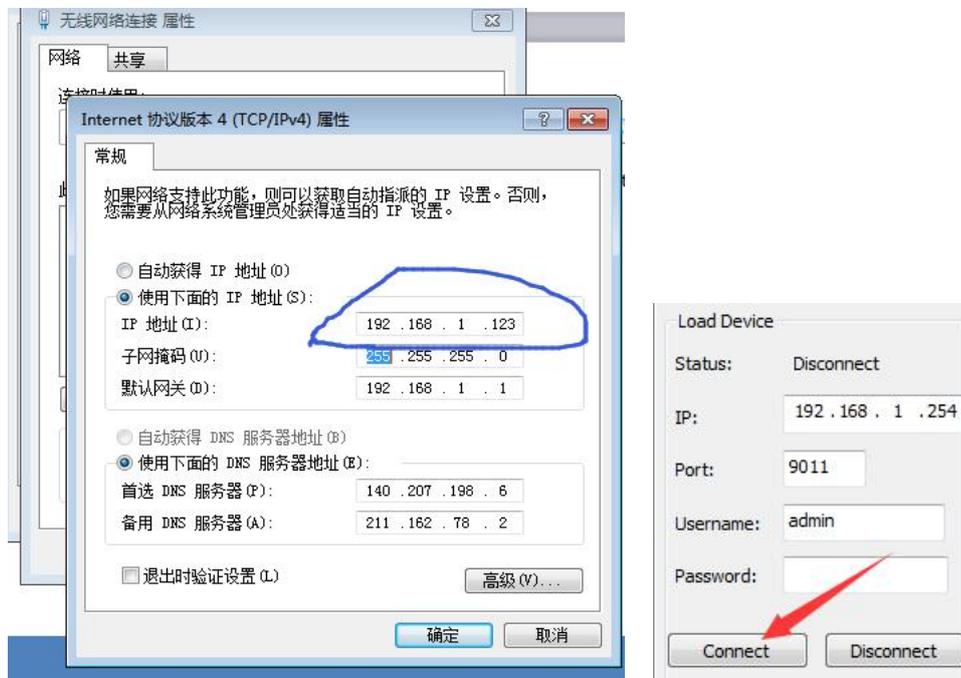
Coach and some special bus, can choose a better position if it has only 1 door. Its stairs maybe twisted so it will reduce accuracy. If we change cameras to the unique entrance besides of two rows of stairs, it can get a good accuracy too.



SETUP COUNTER

BPC setup must be done by BPC client or BPC server in LAN network. If wireless model or WLAN, the fresh or save image will be delay much.

BPC Support LAN connect your computer directly. But before it, you must setup your LAN IP of your current computer. Counter default IP is 192.168.1.254. So you must change the LAN IP range to be same.

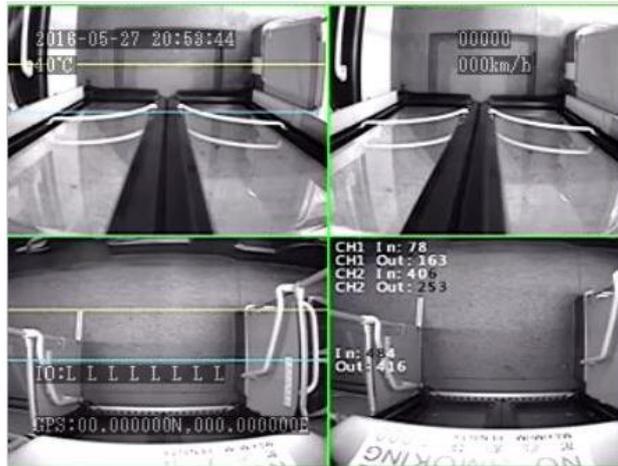


Other Setup please read our user manual

DISPLAY

NUMBERS WITHIN IMAGE

LCD Monitor or TV Monitor



NUMBERS WITHOUT IMAGE

1. Show Total Number



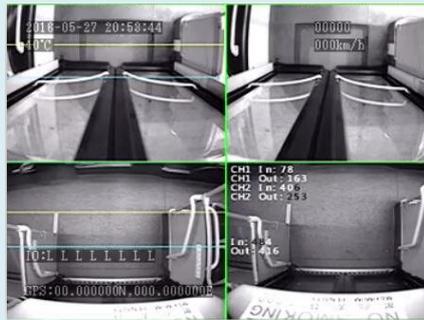
3. UP Deck Balance Number



DEMO VIDEOS

Type:	Link
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1. Test in Office



Watch Online

2. Test In the Bus



Watch Online

SOLUTIONS BY BUS TYPE

ONE DOOR SYSTEM

Mini Bus



Model:	BPC-V1
Lens:	2.8mm
Recommend:	3G and GPS, handle POS

School Bus



Model:	BPC-V1
Lens:	2.8mm
Recommend:	RFID ID Card Reader

Coach/Long Trip Coach



Model:	BPC-V1
Lens:	2.8mm
Recommend:	3G MDVR

DOUBLE DOORS SYSTEM

City Bus (8-12M)

	Model:	BPC-V2
	Lens:	2.8-3.6mm
	Recommend:	3G 4CH MDVR

Double Decks Bus (only 2 doors)

	Model:	BPC-V2
	Lens:	3.6mm
	Recommend:	3G 8CH MDVR

3-4 DOORS SYSTEM(8-14M)

Double Decks Bus

	Model:	BPC-V2+BPC-V1
	Lens:	2.8/3.6mm
	Recommend:	3G 8CH MDVR, LED/LCD Screen

School Bus

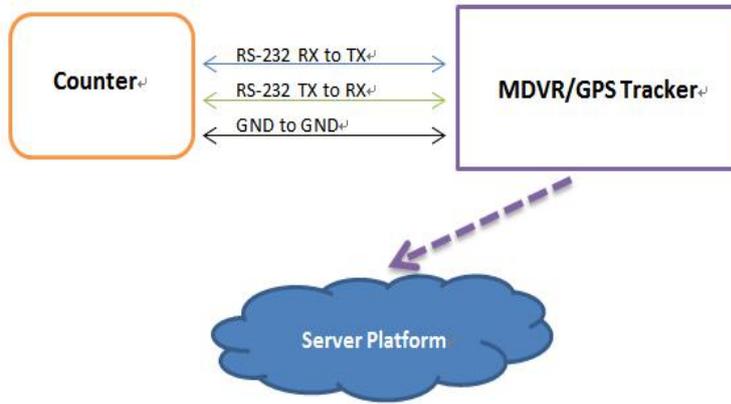
	Model:	BPC-V2 +BPC-V2
	Lens:	2.8/3.6mm
	Recommend:	3G 8CH MDVR, LED/LCD Screen

BRT

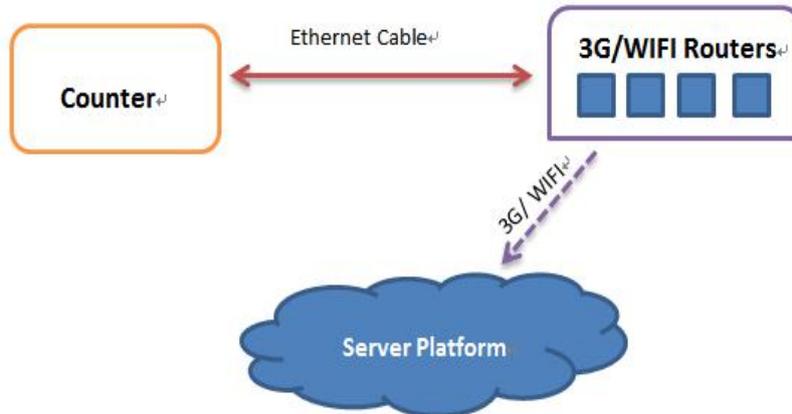
	Model:	BPC-V2+BPC-V1
	Lens:	3.6mm
	Recommend:	3G 8CH MDVR

INTEGRATION TO THIRD PLATFORM

RS232: 3G MDVR/GPS TRACKER



RJ-45: 3G/4G ROUTER/SWITCH



PROTOCOLS DOWNLOAD.

Protocol Type	Download Link
RS-232(for MDVR & GPS Tracker)	Visit our Website
TCP-IP (3G/WIFI Router)	Visit our Website

FAQ

Please visit our website to get answers. www.vehicle-dvr.com

OTHER INTERESTING APPLICATIONS

1. Authority or Confidential Place



2. Assembly Places

