GPS

3G

192.168.1.254

192.168.1.253
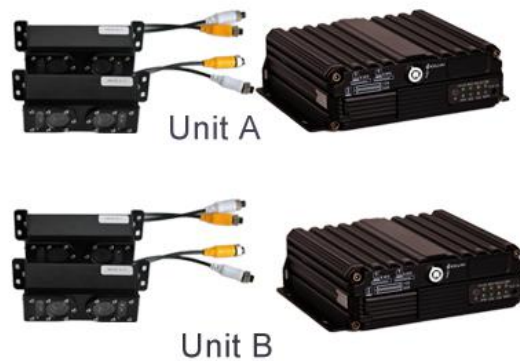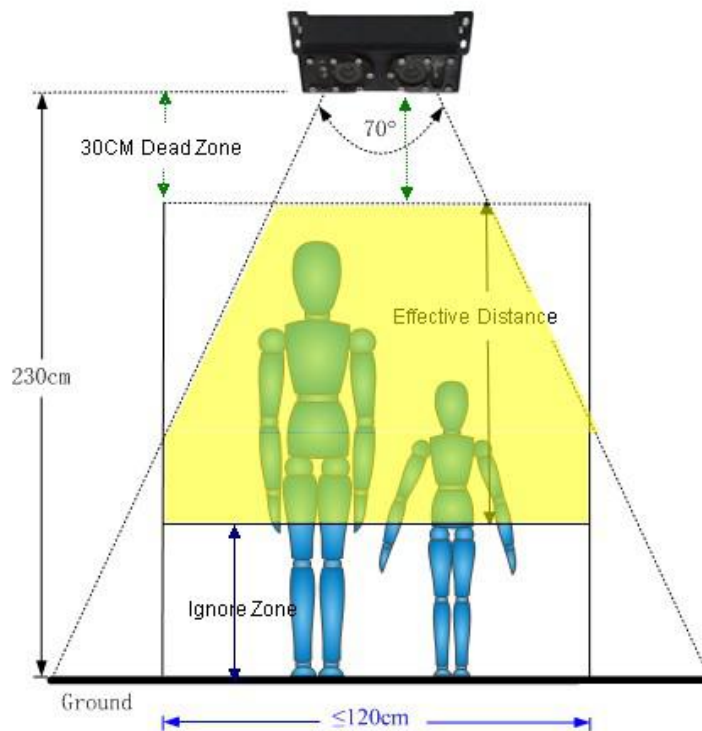
Counter A

RS-232

Counter B

1. Devices

1.1 Counter Group:

Currently one counter only supports 2pcs of binocular cameras. So for 3doors or 4doors bus, you must use the joint solution with 2units of BPC. The communication will use RS-232. You can choose RS-232-1, or RS-232-2.

Unit A

Unit B

1.2 Cameras

Binocular cameras are visual technology, so it is limited height, width and lights. Our new program already supports most popular types of bus. However, there are thousands of types of bus door in the world, so you must consult us first if you meet such door.

A. Short Door

Our default cameras with **3.6mm** lens. It can be placed in most of bus door.

Parameters	Value
Installation Height:	190 - 230cm
Detect Width:	100 -140 cm
Ignore Height:	70-110 cm (default 0)
Blind Distance:	25-30 cm (from camera lens to head)

But if your bus door is short, usually it also means installation distance is short. In such case, you must adjust installation angel or try to use **2.8mm lens**.

Counter also have a special parameter to setup in BPC client, "Counter Type". You can change the value to be 8.

B. High Door

In special cases, you also need to place cameras to monitor very high door, or entrance, for example, double-deck bus, if you want to monitor how many seat is empty now in the up deck, you must place cameras in the entrance. Sometimes you

have to place it in the up deck roof, but cameras monitor the middle or the ground floors, so the distance is very high. Sometimes it is over 3meters. Then you need 6mm lens. The installation must cover whole entrance by two sides of wall or brackets.

However, it is not enough. You must send installation distance and stairs and vision image to us, so we can remotely check the installation is OK or not.

C. Wide Door
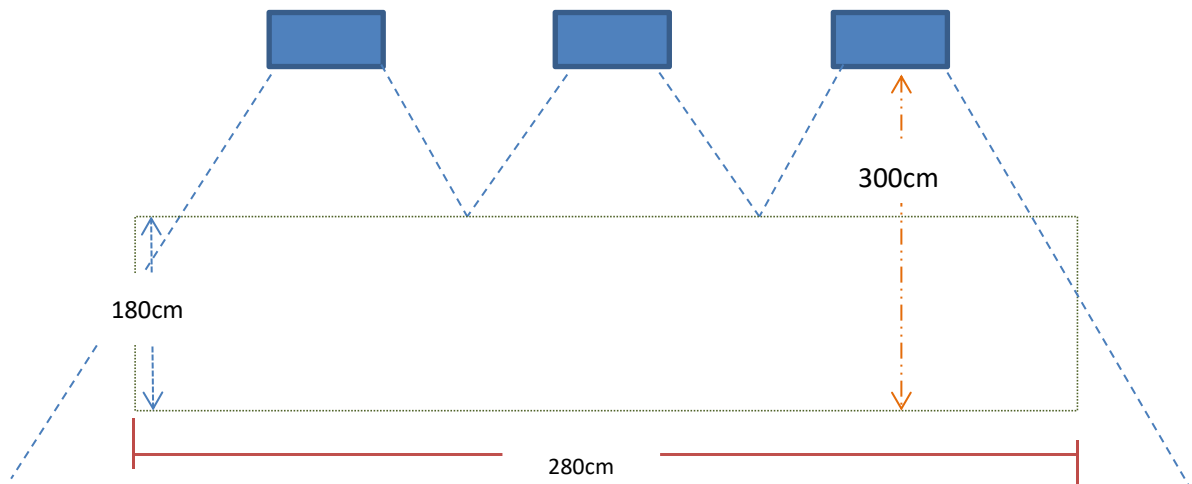There are 2 types of environment, you will meet wide door.

1. Buildings, store, library, museum, train or bus station, park, and other public sites. Sometimes these entrance are very wide, 2-3meters
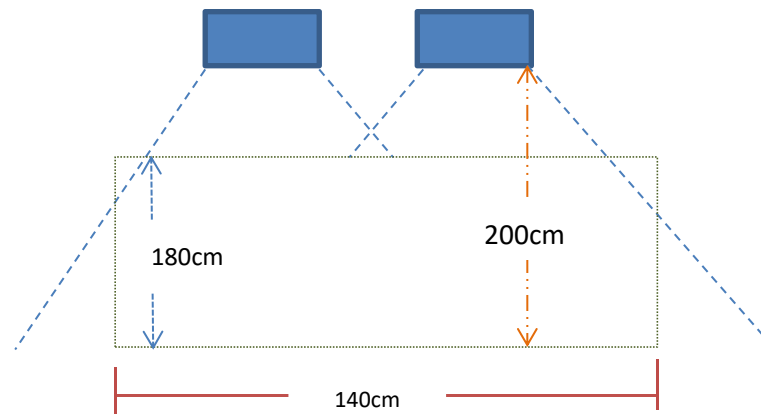Environment: High and Empty and Wide.

Solution: *Joint Camera Group*

2. Wide door.

Default bus door is 80-120cm. Sometimes you may meet very wide door bus, about 140cm, like BRT. And metro/subway door is also very wide-- 1.4m.

Environment: Short, Wide, Full

Solutions: This environment is special case, we must make decision by actual environment and

Wide doors need special software setup, it must be judged by us too. These illustrations just demo only. If you me such requirement, consult us first please.

1.3 Cables

A. Aviation Cable

Currently counter and cameras use Round 4PIN, aviation connectors. So you must use good **Shielded Twisted Pair，STP level cables.** STP cable will reduce video interference for EMC.
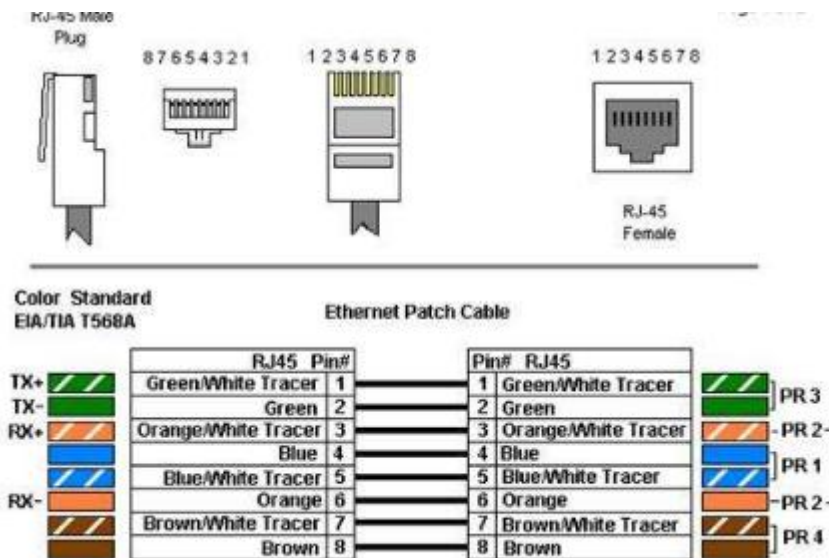

B. RS-232 & Door Sensor.

5V-OUT	RS232-RX-1	RS232-TX-1	SENSOR-IN8	SENSOR-IN5	RS485-A	RS485-B	GND	VIDEO OUT	AUDIO OUT	GND	12V-OUT
SENSOR-OUT1	GND	SENSOR IN8/SPEAD-A	SENSOR IN7	SENSOR IN4	SENSOR IN3	SENSOR IN2	SENSOR IN1	RS232-TX-2	RS232-RX-2	MIC -	MIC +

C. Ethernet Cable (Important)

BPC support LAN cable connection to computer. But you cannot use standard LAN cable to connect counter directly. The default port of RJ-45 of BPC, PIN 4&5 /7&8 has 12V DC power. So you will find counter lose image or cannot get data normally when you directly plug Ethernet cable into counter.
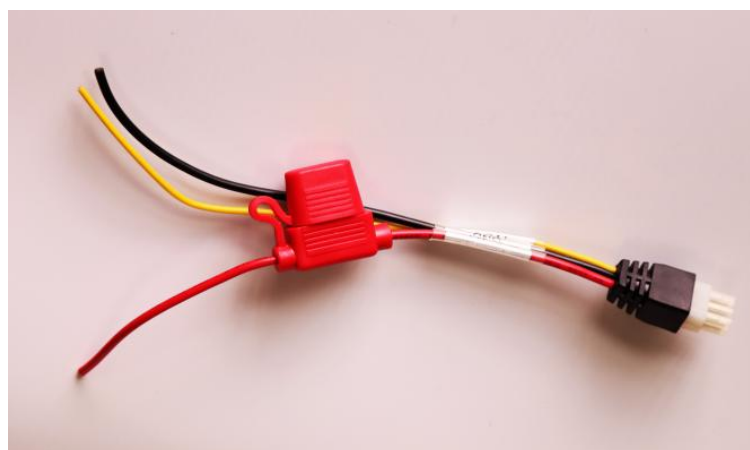
In such case, you need make a special Ethernet cable with 1&3,2&6 only. Then you can setup counter normally.

D. Power &ACC

BPC use industrial level power cord with 10A fuse. Counter run with 9-36V power from bus directly.

However, this system designed with ACC (Ignition signal). When ACC is ON, counters can run with power normally. When ACC OFF, counter will stop working and reset counts.

1.4 Monitor.

We suggest testing and installing counter with monitor. It is very helpful than anything. Our BPC use aviation Round 4PIN connector, so you must use same connectors of LED monitor. This will be easy to check accuracy and find out the reason.

1.5 Computer

BPC is designed to configure by computer. So you must prepare a notebook computer to test and setup it when installation and demo.

192.168.1.xxx   192.168.1.254

2. Connection

2.1 Video Cable Connection

All stereo cameras have 2pcs of aviation connectors target to 2pcs of CCD sensors. We mark its channel with CH1/CH2/CH3/CH4. If your model is BPC-V1 (old model is BPC-V1), you will only see 1pcs of binocular camera, and only show CH1 and CH2. If cameras connection is wrong, you will not get counts or wrong counts no matter how do you setup it.

Connection Definition

CH3	CH1
CH4	CH2

Illustration

Remarks：In real installation in the bus, please tap color marks or Channel ID labels on both ends of cables. So you can connect them correctly
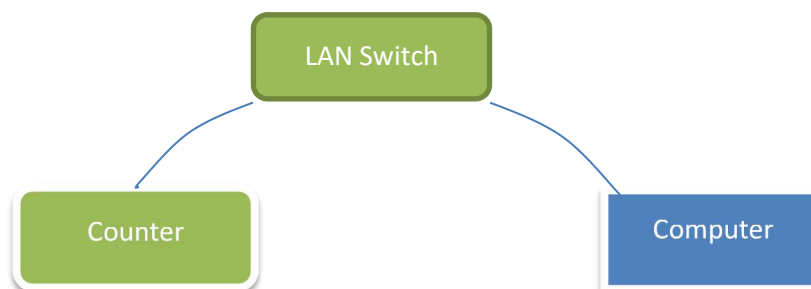
2.2 Power Connection

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.

Office Test—Never Cut Power Directly (Important)

ACC can connect to Power directly. BPC will run normally. However, If you directly remove Power of counter, you will lose reserved records which not send out yet. Because counter save records in ROM, if you cut power directly, counter can not write data to ROM. The most important, we only send station records to server, any in/out record must wait door close signal to generate new station records. If power is lose before station record is generated, you will lose such data.

2.3 **Network:** LAN Connection
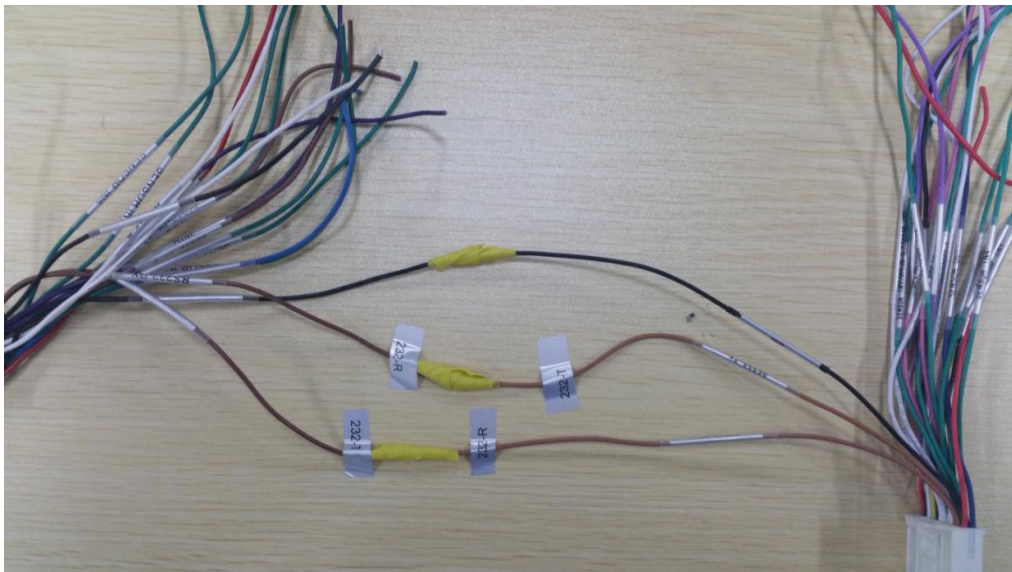
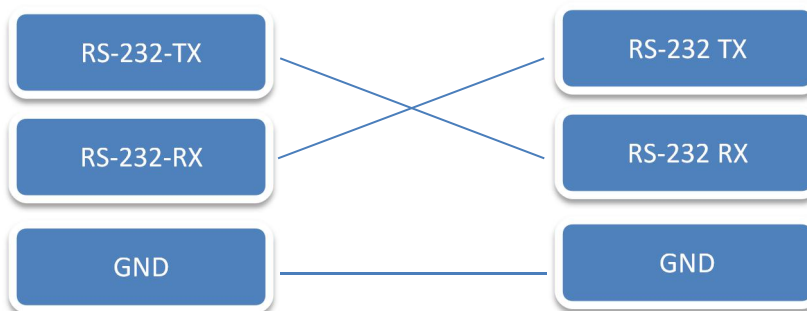   A.   LAN Connection. Any LAN cable is OK.

B. Direct Connection: *Ask special LAN cable with 1,3,2,6 PIN only. Otherwise counter will always reboot and lose image in monitor.*

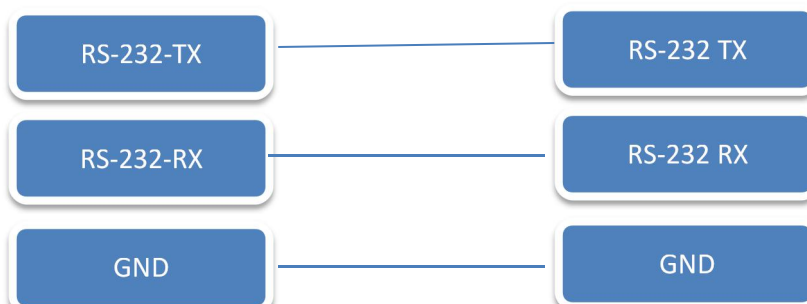| Counter		Computer

2.4 RS-232 Connection

Connect Mobile DVR or GPS Tracker or Bus Micro Computer or Other devices, you may need to use RS-232 connection. There are 2 types of connections:

Type A: The most popular connection.

RS-232-TX		RS-232 TX
RS-232-RX		RS-232 RX
GND		GND

Type B: This type connection only for special devices.

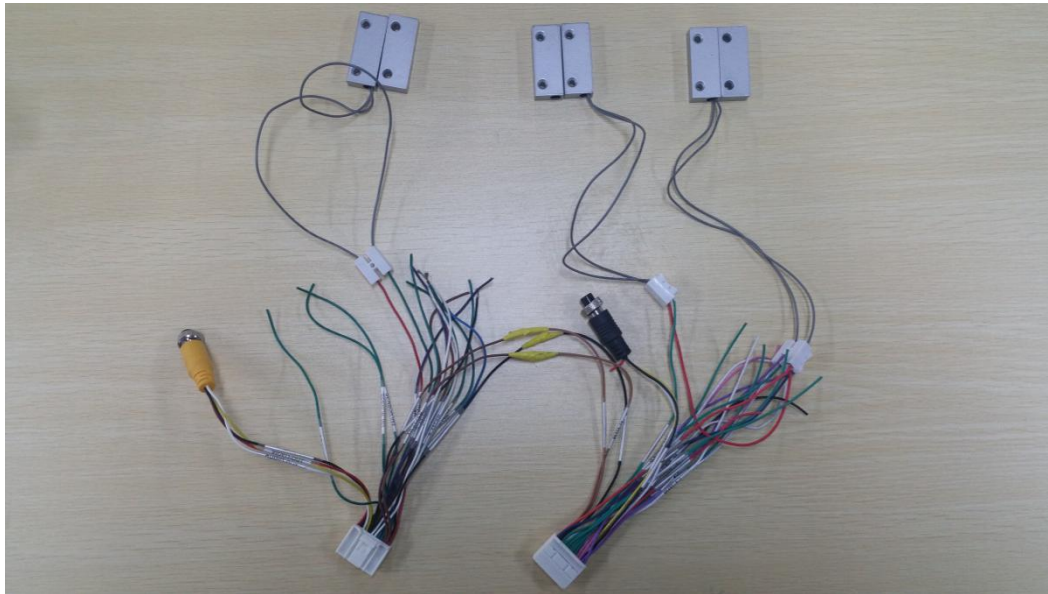| RS-232-TX		RS-232 TX
RS-232-RX		RS-232 RX
GND		GND

2.5 RS-485 Connection

RS-485 is not open now. Please not use it.

2.6 Door Sensor Connection

Door sensor is designed to enable or disable counting in this system. So it is important to make right connections. You must configure door sensor right in BPC client. If you have doubt on it, please confirm with our support team. Below image is for 3doors system.

Model	Connection	
BPC-V1	IO IN1	
BPC-V2	IO IN1, IO IN2	
BPC-V3	IO IN1, IO IN2 |	IO IN1
BPC-V4	IO IN1, IO IN2 |	IO IN1, IO IN2,

2.7 Monitor Connection

Monitors should use reliable aviation connectors. Then you can directly use MDVR to offer power to monitor. MDVR will power it with stable 12V DC. *Or you can use convertor to export video and DC to other BNC/DC connectors monitor in the market. If you need such special convertor, please contact our sales.*

2.8 Wireless & GPS Connection

BPC support 3types of connections to wireless network directly. You can choose 3G/GPS/Mobile 3G/4G Router to connect counter. If you have integrated BPC to other online devices, you can ignore this step.

A. 3G

BPC offer built-in Huawei 3G module and antennas. It will bring high speed but reliable network to upload and remote upgrading. You just need prepare a paid SIM card. Usually 1GB every year is enough. Built-in 3G kits can offer stable signal so you never worry about its signal in shaking bus.

Remarks: 3G antennas should be put outdoor to get a good signal.

B. GPS

We recommend GPS module and antennas with our counters, so you can enjoy our IPAS system with exact station records.

Remarks: GPS antennas should be put outdoor to get a good signal.

C. **External 3G/4G Router**

3G/4G router is accepted to connect internet. But we suggest industrial level 3G/4G router for buses.
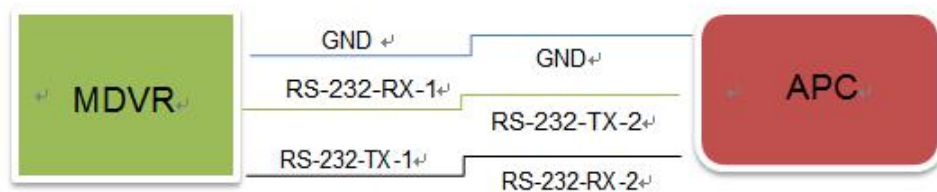

Remarks: Please use good quality RJ-45 connectors like AMP/Samzhe/CHOSEAL. The loose of connection will stop communication and bring lots of troubles.
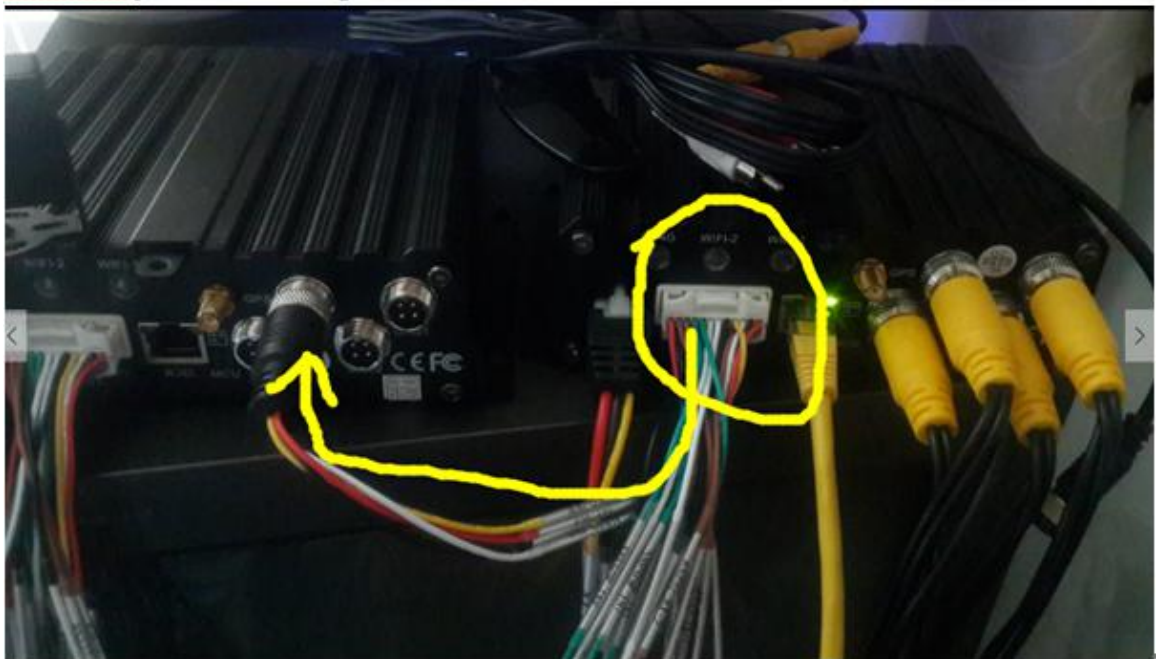
2.9 MDVR Connection(optional)

Standard MDVR with APC-V1 or V2.

MDVR		APC
	GND — GND	
	RS-232-RX-1 — RS-232-TX-2	
	RS-232-TX-1 — RS-232-RX-2	

Place round video connectors among these IO connectors of BPC to any MDVR Video connector.
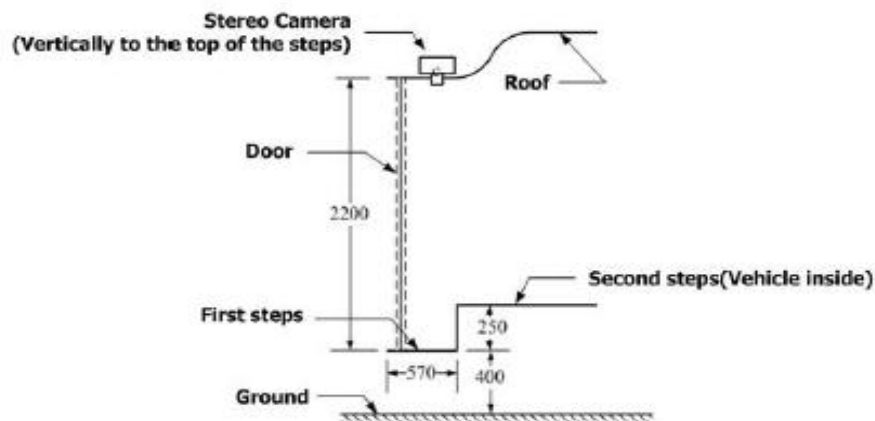Then you can see image in TFT LCD monitor of MDVR.

3. Placement

3.1 Camera Placement.

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.

And cameras must be fixed stably without any movement. Otherwise you must save new background again.

Stairs

There are 3types of cases about steps. We must notice the counting lines position and its coverage zone. So ensure nobody fail to monitored in entrance. *On the other hand, we must put 2 counting lines within same step. It is very important.*

A: Low Floor Bus (1 Step)
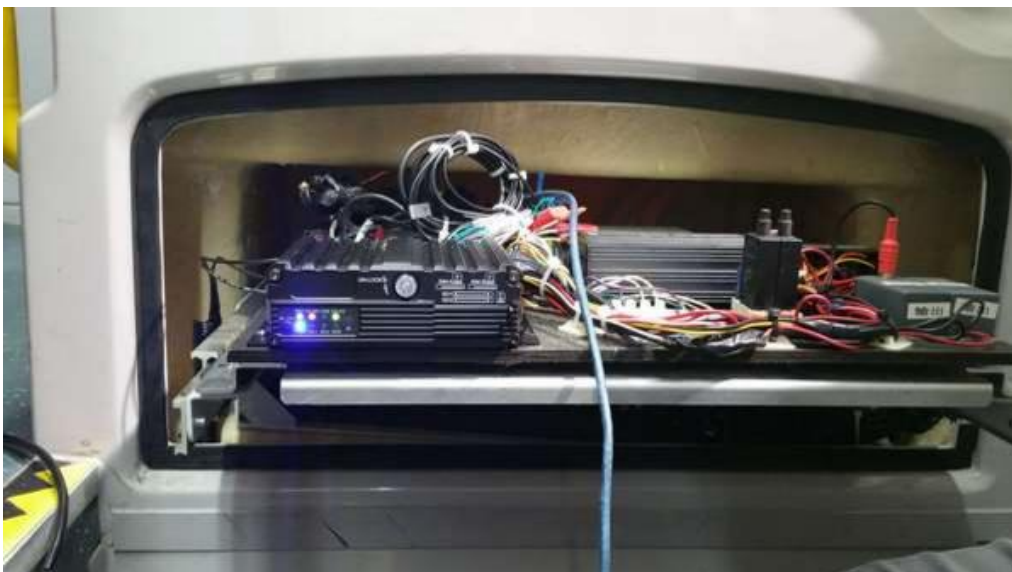

B: High Floor Bus (2-4 Steps)

C: Double-decker Bus (Lots of Steps)

3.2 Counter Placement.

Counter must be well protection so others cannot damage it. A hidden installation with lock is important.

If BPC with 3G and GPS function please notice the antennas placement, the cable is not very long.
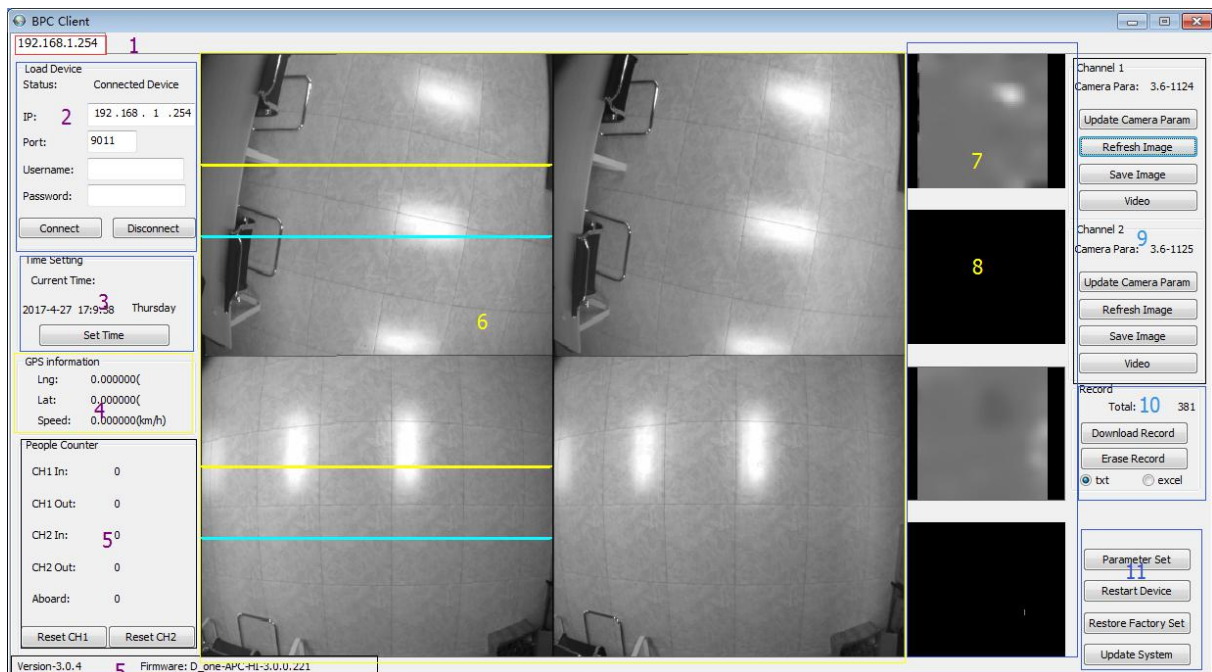
3.3 Cable Placement.

Cables must be placed in safety and beauty. Video cables should keep away from other electrics cables.

3.4 Antennas Placement(optional)

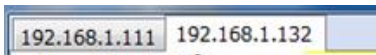3G and GPS antennas must be placed outdoor to get best signal first.

4. Setup Counter in BPC Client

Menu Interface

Interface Introduce

Area NO.	Function	Description:
1	Device Tap List	192.168.1.111 192.168.1.132
2	Log in BPC	192.168.1.254 default
3	Update Date and Time	Check Device Time
4	GPS Status	GPS Data if antenna is available

5	Current Numbers	Counting Result without Reset
6	4CH Display	Images display for 2pcs binocular cameras max
7	Detect Image	Check Detection Effect
8	Background Image	Compare Effect
9	Camera Parameters	Check camera parameters
10	Record Operation	Download, Erase and delete Record File
11	Control Panel	Configure, Reboot, Upgrade counter

4.1 Login BPC Client (LAN IP in Same Network P. 8)

Prepare a notebook computer with Ethernet cable to connect counter device.Then log in BPC Client by the default IP: **192.168.1.254**, Click **Connect.** Then you can setup the system in computer.

New counter support Quick Connection to setup each counter without password. If you need password protection, you can add password in BPC client.
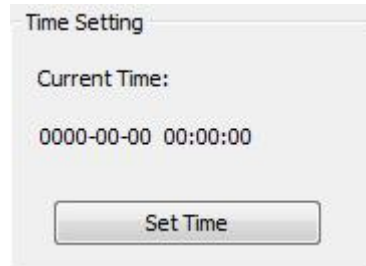

- Default IP: 192.168.1.254

- Port: 9011

- Default Username: (Null)

- Default Password:（null）

Remarks:

BPC client can browse multi devices by enter different IP in the login field. You can click and shift each tap to setup other counters like Chrome.

Time Synchronization

You need to synchronize the time in counter same as your local computer time. It is important for future static and reports. Here you can update time by hand.
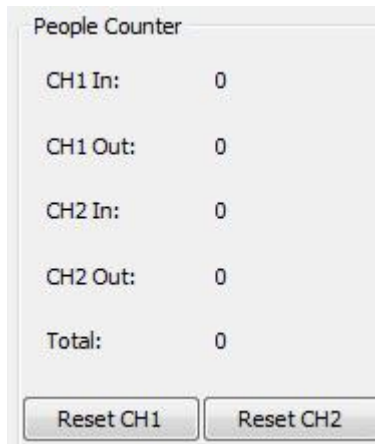
```
Time Setting

Current Time:

0000-00-00  00:00:00


        Set Time
```

Current Count Result

Users can learn current in and out records in door 1 and door 2. Usually the top detected line is IN. And the bottom line is OUT. You can configure the place of detected line and direction in each camera.
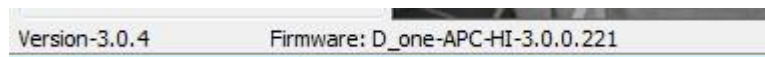
```
People Counter

CH1 In:        0

CH1 Out:       0

CH2 In:        0

CH2 Out:       0

Total:         0

  Reset CH1      Reset CH2
```

Version Info

```
Version-3.0.4        Firmware: D_one-APC-HI-3.0.0.221
```
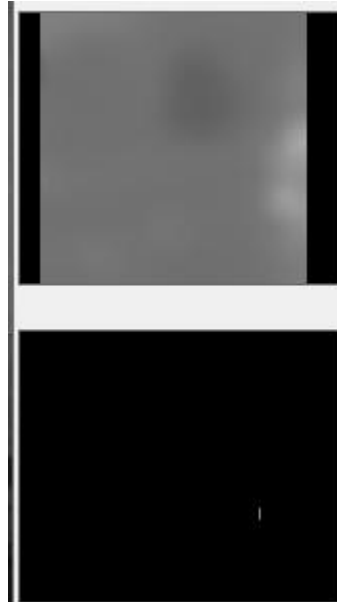
4CH Display Mode

After counter is logged in, users will see 4CH images in the filed. Sometimes you must click "Refresh" to get four images.

The images must be correctly shown. Left and Right cameras must shown in right position,in other words, you must connect cameras connectors to counter correctly, otherwise cameras will not work normally.

Detect and Background:

Standard Detect Image(Grey) and Background Image(black). Grey detect image should be as many layers as possible. But Background image should be as black as possible.

Configure Camera

Cameras configuration is the most important setup for this system. It will decide the accuracy directly.

Good enough detect image and background image will promise you ideal precision for counting.

	Refresh:	After you click to refresh image, you can see latest image in the left Channel Filed. Never many clicks, need save image too.
	Save:	To save the best image as background image. It will decide accuracy of counter.
	Camera Para:	Cameras ID: Sames as label on camera
	Update Cam:	If your camera parameter is not right, especially you connect wrong camera, you must update camera parameter to support this counter.

Records Management

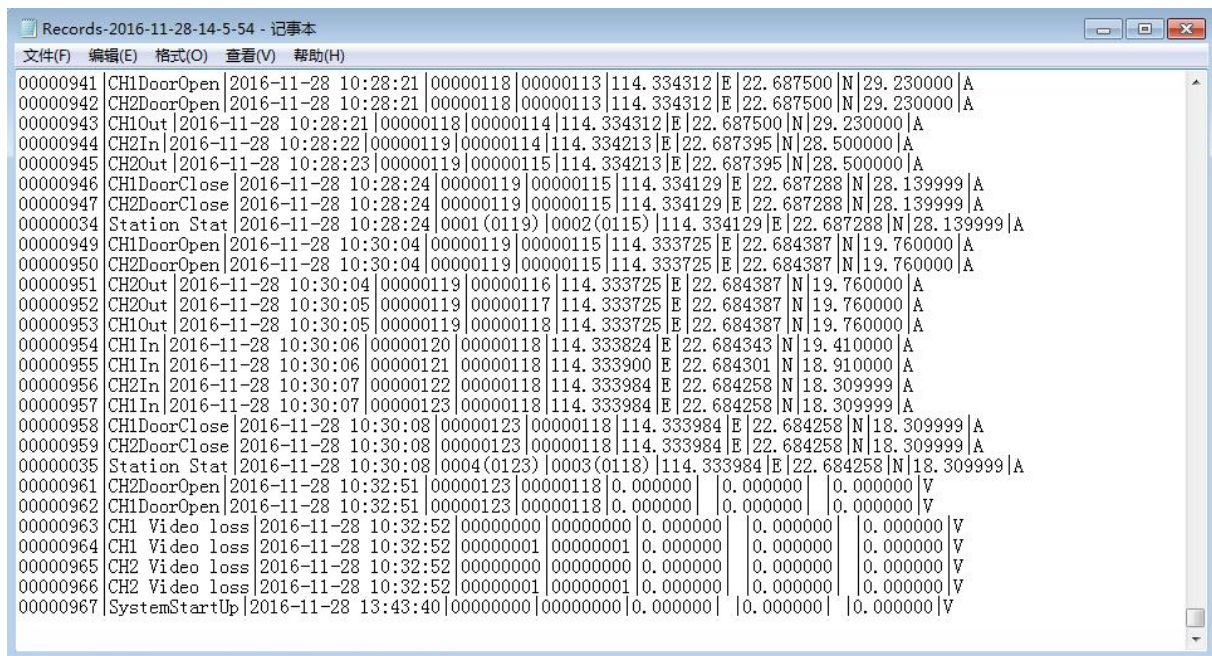|	Total	Quantity of Records i
	Download Record	Download record file to your computer
	Erase Record	Erase all records and no data will be found

Download Records:

Users can download records from counter. The counter can save over 30days records. If need longer time, you can saved it in SD card. However, the best idea is backup in our IPAS server by 3G.

```
Records-2016-11-28-14-5-54 - 记事本
文件(F)  编辑(E)  格式(O)  查看(V)  帮助(H)
00000941|CH1DoorOpen|2016-11-28 10:28:21|00000118|00000113|114.334312|E|22.687500|N|29.230000|A
00000942|CH2DoorOpen|2016-11-28 10:28:21|00000118|00000113|114.334312|E|22.687500|N|29.230000|A
00000943|CH1Out|2016-11-28 10:28:21|00000118|00000114|114.334312|E|22.687500|N|29.230000|A
00000944|CH2In|2016-11-28 10:28:22|00000119|00000114|114.334213|E|22.687395|N|28.500000|A
00000945|CH2Out|2016-11-28 10:28:23|00000119|00000115|114.334213|E|22.687395|N|28.500000|A
00000946|CH1DoorClose|2016-11-28 10:28:24|00000119|00000115|114.334129|E|22.687288|N|28.139999|A
00000947|CH2DoorClose|2016-11-28 10:28:24|00000119|00000115|114.334129|E|22.687288|N|28.139999|A
00000034|Station Stat|2016-11-28 10:28:24|0001(0119)|0002(0115)|114.334129|E|22.687288|N|28.139999|A
00000949|CH1DoorOpen|2016-11-28 10:30:04|00000119|00000115|114.333725|E|22.684387|N|19.760000|A
00000950|CH2DoorOpen|2016-11-28 10:30:04|00000119|00000115|114.333725|E|22.684387|N|19.760000|A
00000951|CH2Out|2016-11-28 10:30:04|00000119|00000116|114.333725|E|22.684387|N|19.760000|A
00000952|CH2Out|2016-11-28 10:30:05|00000119|00000117|114.333725|E|22.684387|N|19.760000|A
00000953|CH1Out|2016-11-28 10:30:05|00000119|00000118|114.333725|E|22.684387|N|19.760000|A
00000954|CH1In|2016-11-28 10:30:06|00000120|00000118|114.333824|E|22.684343|N|19.410000|A
00000955|CH1In|2016-11-28 10:30:06|00000121|00000118|114.333900|E|22.684301|N|18.910000|A
00000956|CH2In|2016-11-28 10:30:07|00000122|00000118|114.333984|E|22.684258|N|18.309999|A
00000957|CH1In|2016-11-28 10:30:07|00000123|00000118|114.333984|E|22.684258|N|18.309999|A
00000958|CH1DoorClose|2016-11-28 10:30:08|00000123|00000118|114.333984|E|22.684258|N|18.309999|A
00000959|CH2DoorClose|2016-11-28 10:30:08|00000123|00000118|114.333984|E|22.684258|N|18.309999|A
00000035|Station Stat|2016-11-28 10:30:08|0004(0123)|0003(0118)|114.333984|E|22.684258|N|18.309999|A
00000961|CH2DoorOpen|2016-11-28 10:32:51|00000123|00000118|0.000000|  |0.000000|  |0.000000|V
00000962|CH1DoorOpen|2016-11-28 10:32:51|00000123|00000118|0.000000|  |0.000000|  |0.000000|V
00000963|CH1 Video loss|2016-11-28 10:32:52|00000000|00000000|0.000000|  |0.000000|  |0.000000|V
00000964|CH1 Video loss|2016-11-28 10:32:52|00000001|00000001|0.000000|  |0.000000|  |0.000000|V
00000965|CH2 Video loss|2016-11-28 10:32:52|00000000|00000000|0.000000|  |0.000000|  |0.000000|V
00000966|CH2 Video loss|2016-11-28 10:32:52|00000001|00000001|0.000000|  |0.000000|  |0.000000|V
00000967|SystemStartUp|2016-11-28 13:43:40|00000000|00000000|0.000000|  |0.000000|  |0.000000|V
```
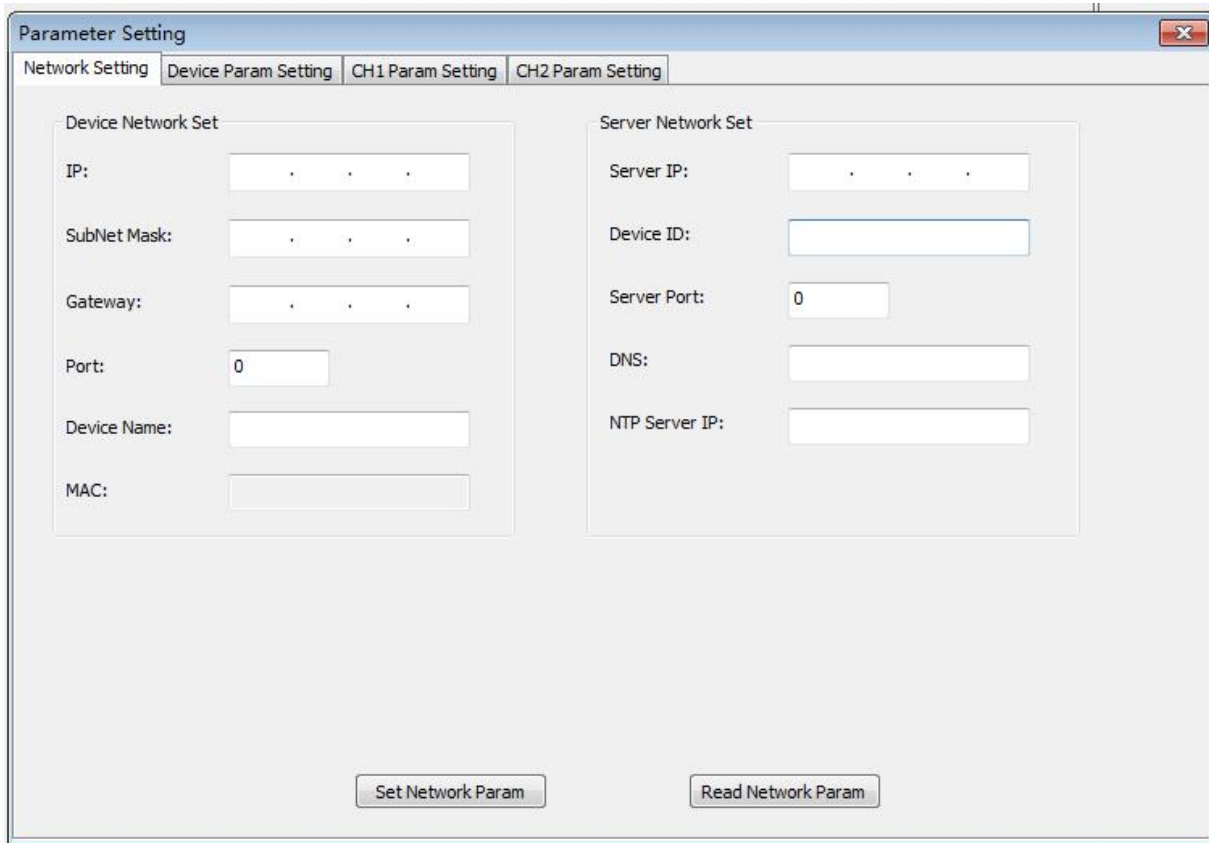
Erase Records:

When you erase it, you will lose it forever. So do it carefully.

Tools

Parameter Set	Parameter Setup: Configure Counters Network and Protocol and Camera detecting zone
Restart Device	Restart: Reboot device, all counts are cleared. No data will lose.
Restore Factory Set	Restore: Reset device to factory settings. No data will lose.
Update System	Update: Upgrade firmware of counter. No data will lose

Network Setting

Device Network:

- **Counter IP**: The LAN IP address of BPC.
- **Subnet mask**: The BPC subnet mask.
- **Gateway**: The BPC gateway.
- **Port**: The port of login a computer.

User Access：

- **Username**: Login BPC name. Default
- **Password**: Login BPC password.

Device Info:
- **Counter Name**: Any name, like car plate number
- **MAC**: MAC will be the unique address for all devices. It must register in IPAS first if you want to use our IPAS.

Button:
- **Read Network Param:** User must click to get current parameter before you change anything.

● **Set Network Param:** Save these parameters value to the BPC.

Server Network:

If you want to use our IPAS/IPAS 2.0, or send data to your own server software, you need to enter right static server IP or domain.

Server IP： our IPAS demo server is : 174.139.192.11

Domain: If you can not get static ip, you can use domain and DNS

Server Port: IPAS default port: 5005

DNS: If you use static ip, not setup it. Only for Domain.

NTP Server IP: Get the accurate time from your local time server.

Device Parameter：

Serial Port Setting: use Default only

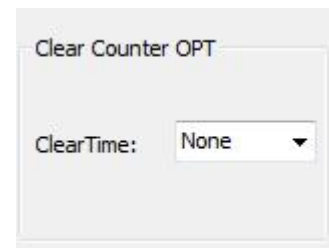When you need to connect other device by RS-232 or RS-485, you

should configure such parameter. Otherwise you can ignore it.

- Baud Rate
- Address

Clear Counter Operation

If you want to clear counts to 0 everyday, you can configure the timer. The unit is Hour sharp.

If you choose 5:00, it means counter will show in and out number are 0 after 05:00 sharp. Otherwise please use default "None".
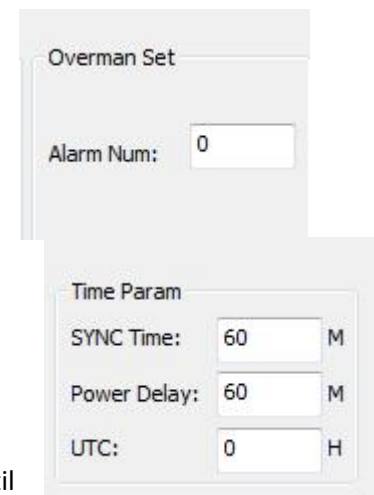
Overman Alarm

If you need to limit numbers of passengers, you can configure a number to remind drivers, When passengers is more than the limited value, counter can send alarm signal through IO output.

Default is 0. OFF。

Time Control

Sync Time: Devices can update time by GPS or 3G. Here you can setup update frequency. Default is every 60minutes.

Power Delay: Counter must connect ACC signal. When driver turn off bus power, counter will not shut down at once. It will keep working until the time is out. It is safe for final station or emergency stop.

UTC Time Zone: Counter will use device time and specific UTC time zone.

IO Input：

Counter must connect door sensor. You must confirm the door sensor type first and connect it correctly.

Door Mode:

Different doors quantity require different setup. Now you can directly select door numbers, then BPC client will setup IO mode smartly. Very easy now!

Data Communication:

When counter will send data to server or other devices, you must connect cable and setup counter correctly.

External: Connect MDVR/GPS Tracker/Computer/Router

Internal: RS-232 only. It is work to build 3-4 door system.

Wireless Setup:

3G: Need fill right APN and other information

WIFI: SSID and Password(AES Encryption only)
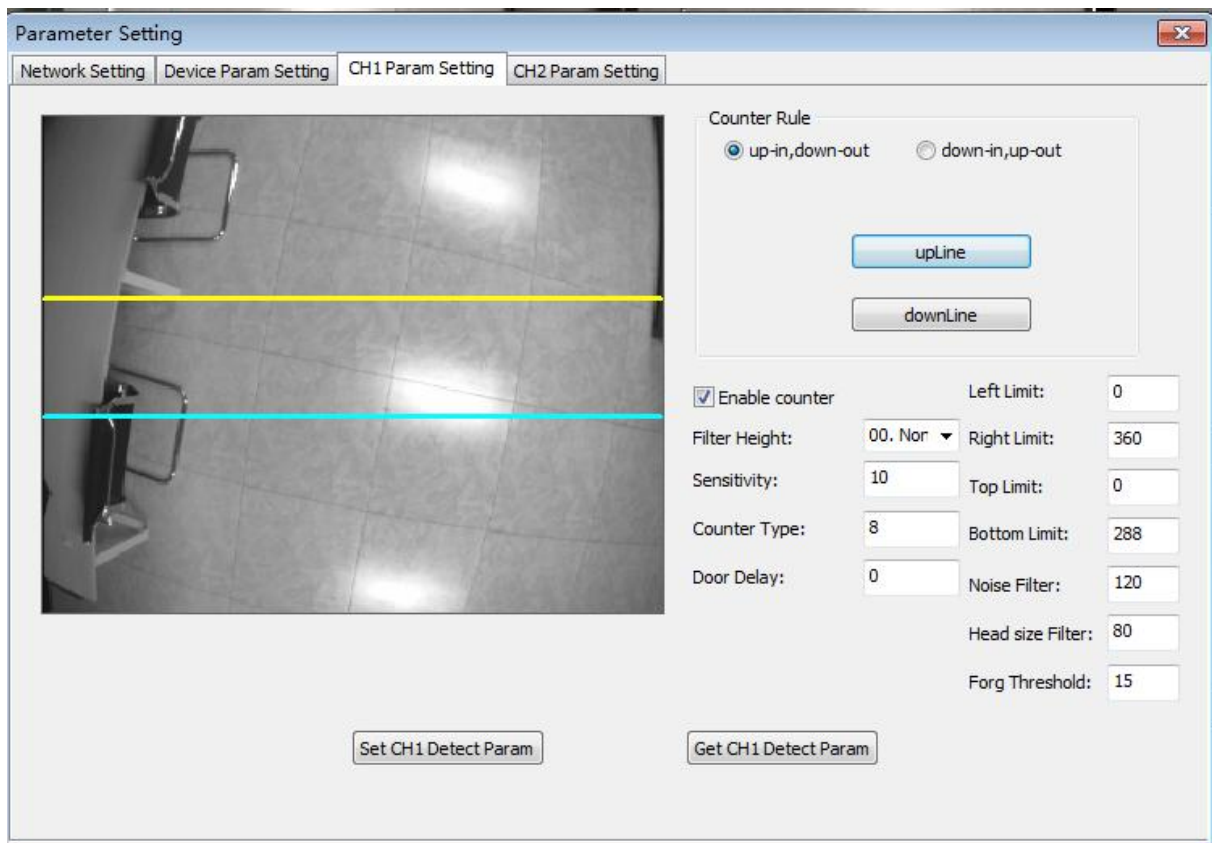

- Record Resend: Continue to send failed record to server by RJ-45 or 3G.

- Serial Response：When you connect to other device by RS-232/485,

- Shutdown Reset：When counter is powered off, current numbers will be reset to 0.

- Conb Size：Work for wide door solution

Camera Setting

Counter Rules：

- Direction:

  Passengers only crossing the line 1/2 from the down or up in the screen area will be detected and counted. Changing the settings, the three counters will be exchanged the IN and OUT numbers automatically. Users can adjust direction to get the normal counting environment and range. Line 1 and Line 2 can work as in or out line.

  - Up and Down Line:

  Users can adjust detect lines to get the ideal counting environment and range. This is important to promise a high accuracy. Right detect lines will improve accuracy.

  If you want to move UP/DOWN LINE, please click the right button upLine/downLine first, then click the position where you need.

- Filter Height:

  If you need to ignore children or pet and baggage, you can configure a height to ignore it, then counter will not count it as a passenger.

- Counter Type:

8/12/14. Default is 8. When bus is too short and cameras is 3.6mm lens, you can use 12 or 14.

● Sensitivity：

Default 10. When counting result is wrong, you can add it or reduce it. Usually you need to add it. Try 20, 25, 15 one by one.

5. Test

After installation, you must test accuracy first. Please follow such test mode. Like in 10, out 10. Then check the numbers in BPC client or LCD monitor.

● Single Man Test

● Single Direction Test

● Bi-direction Test

● Random test

6. FAQs in Test.

6.1 Question: More than Real value
Solution: Reduce Sensitivity, if cameras parameter is right and installation height is standard
6.2 Question: Less than Real value
Solution: Add sensitivity,if cameras parameter is right and installation height is standard
6.3 No Counts
Please check video connectors of cameras. It should be wrong. Or door sensor in closed mode.

7. Live Support

When you install counter and cameras in the bus at the first time, please contact us in advance, so we help you to adjust it to the best position, then make it to be the best accuracy. You may need such software.

Teamviewer：
Wechat:
Skype:
Whatsapp: