

Bus Passenger Counter Guide

1. System Structure



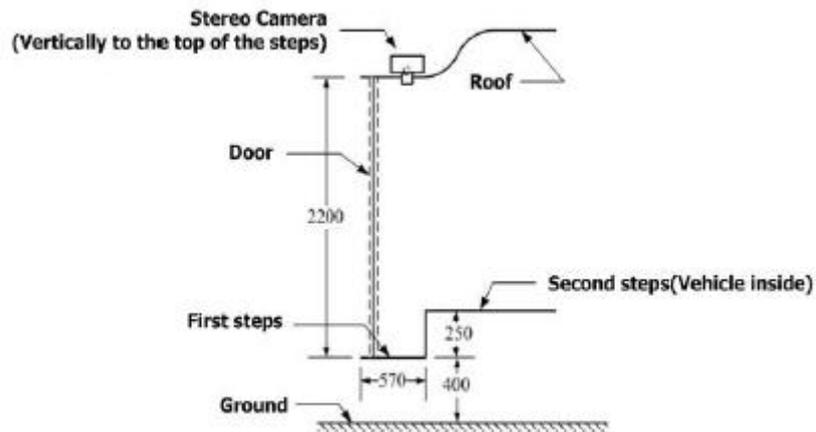
2. Camera Position.

2.1 Vertically Angel

Stereo camera should place above heads vertically, the bracket can adjust 5degree (+/-) to get the best counting accuracy.

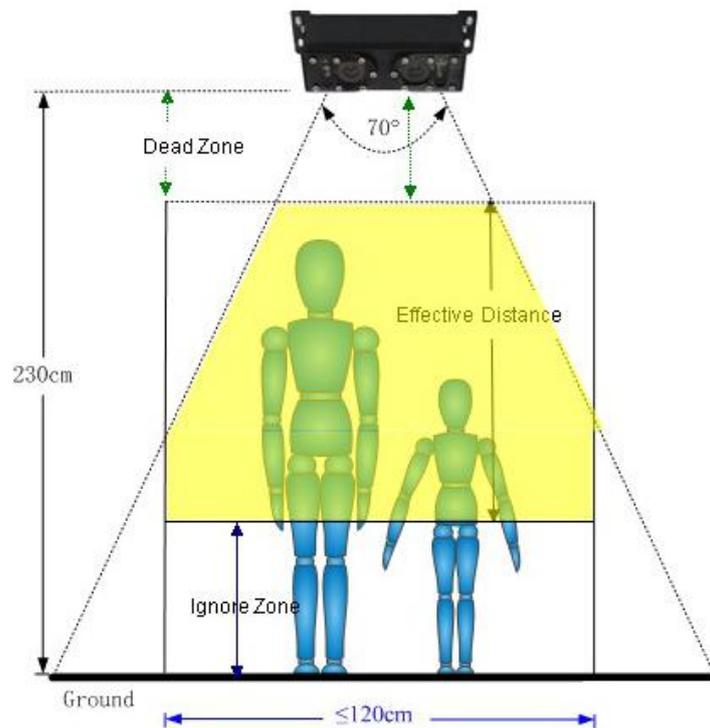


Usually 2.8mm lens for 180-220cm.



2.2 Safe Distance

The camera can keep enough distance from passenger head. If passengers' heads enter into the dead zone, it will make wrong counting. Must 15cm far away from passenger head.



2.3 Enough Width

Camera real detecting width is head width, really different from the ground width. In the above image, you can understand it is much shorter than 120cm. Different lens and installation height, will decide the checking head width.

Usually 3.6mm lens can work for 80cm-120cm bus door.

3. Counter Connection

4. Door Sensor Connection

People counter must connect door sensors. BPC-V2 should connect both front door and rear door sensor signal.

Why Connect Door Sensor?

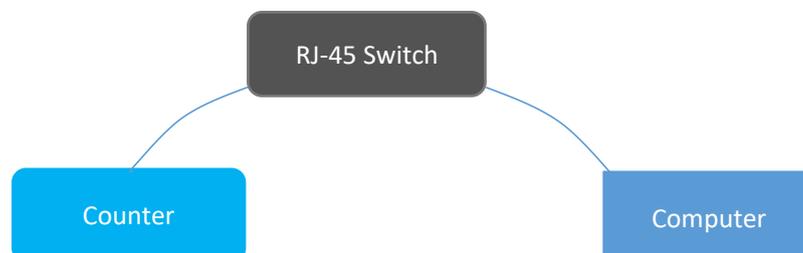
When door sensor send signal to show closed, counter will stop counting and get the station record with summary for this station. Without door sensor, these guys under the cameras will make lots of wrong counting. Many passengers love to stand at door, so they can leave the bus quickly. When door open, passengers move and start counting.



5. Configure the Counter

5.1 Network Check.

- 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.*

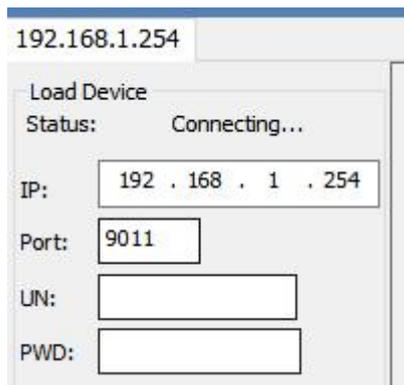


5.2 IP Check

Ensure your Ethernet adaptor LAN IP is same as counter IP.



Problems: BPC client always show connecting.



1st. Check your computer IP:

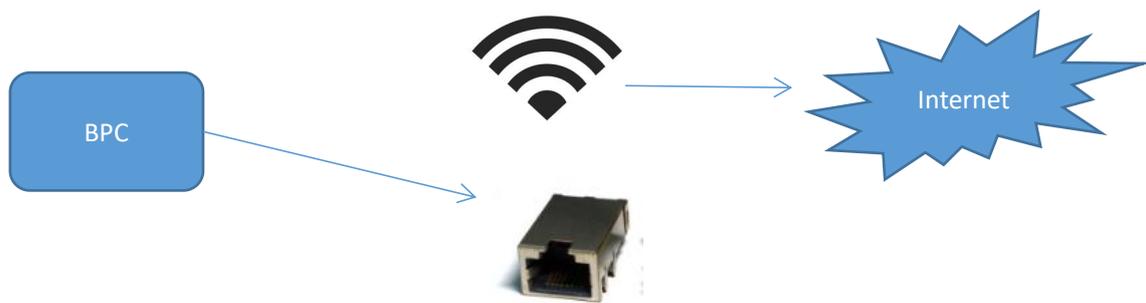
Command: ipconfig -all

```
有线局域网适配器 WLAN:
  连接特定的 DNS 后缀 . . . . . :
  描述 . . . . . : Qualcomm Atheros AR1111 Wireless Network Adapter
  物理地址. . . . . : 6C-71-D9-6C-51-64
  DHCP 已启用 . . . . . : 是
  自动配置已启用. . . . . : 是
  本地链接 IPv6 地址. . . . . : fe80::85cf:4528:109b:544d%2(首选)
  IPv4 地址 . . . . . : 192.168.0.105(首选)
  子网掩码 . . . . . : 255.255.255.0
  获得租约的时间 . . . . . : 2019年7月18日 9:43:31
  租约过期的时间 . . . . . : 2019年7月18日 20:54:07
  默认网关. . . . . : 192.168.0.1
  DHCP 服务器 . . . . . : 192.168.0.1
  DHCPv6 IAID . . . . . : 124547545
  DHCPv6 客户端 DUID . . . . . : 00-01-00-01-23-0B-E8-BD-70-54-D2-5E-EC-87
  DNS 服务器 . . . . . : 192.168.0.1
  TCP/IP 上的 NetBIOS . . . . . : 已启用

:\Users\Administrator>
```

Usually installers should use Notebook computer to configure counters. Therefore, they should

use WIFI to get network, but counter connected to notebook computer by LAN port. So the counter can not connected BPC client by LAN communication network.



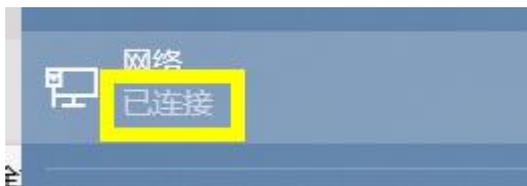
In this case, the real communication network is broken.

How to fix it?

Try to stop WIFI, only connect counter by Ethernet adaptor. You can disconnect WIFI first, if fail you need to disable the WLAN adaptor.

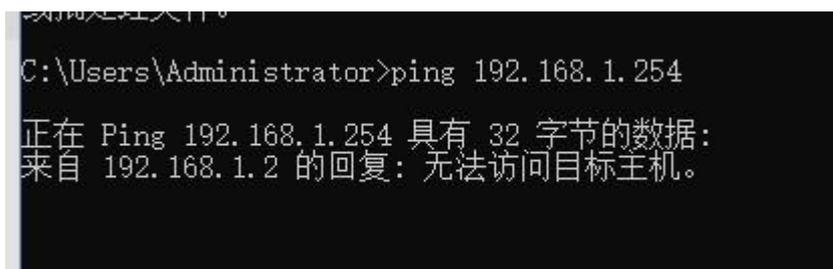


2nd. Check the LAN connection whether well.



3rd . Try to ping the counter LAN IP:

default 192.16.1.254. Command: ping 192.168.1.254



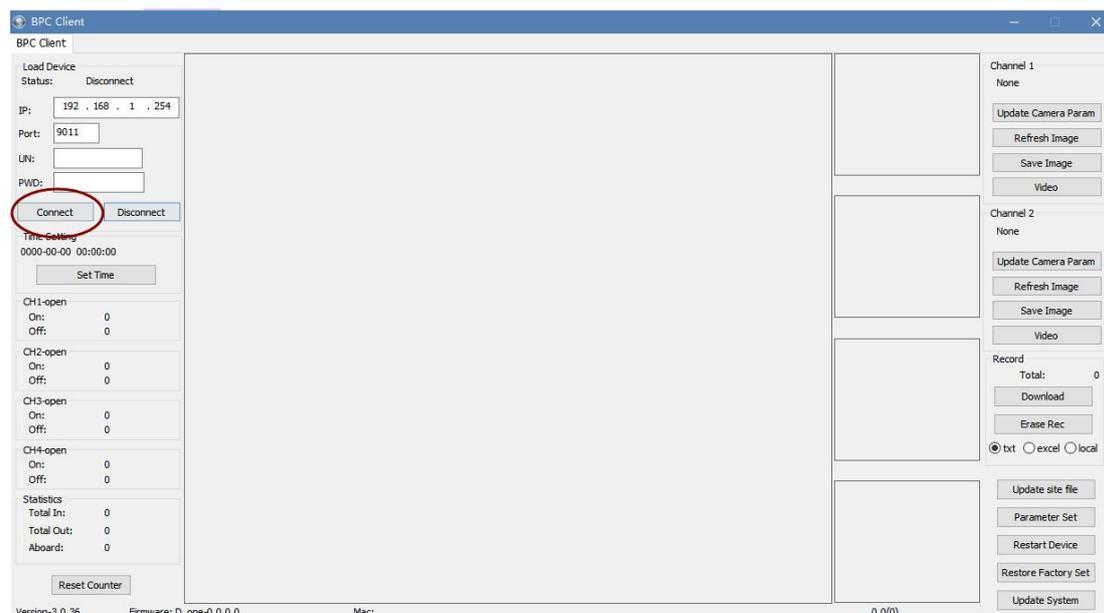
If 254 can feedback data, but it often lose data packet, you must change a new LAN cable, or change a better power supply, 12V, 3A is better, because its real current should be 12V, 2A.

5.4 BPC Client

You can use BPC client to setup people counter. Run the client.exe, you should see the below image.

名称	修改日期	类型	大小
BPC-V2 Client	2019/5/14 19:04	应用程序	416 KB
ClientContig	2019/7/18 18:36	配置设置	1 KB
opencv_core231.dll	2015/5/10 8:11	应用程序扩展	1,676 KB
opencv_ffmpeg.dll	2015/5/10 9:33	应用程序扩展	7,244 KB
opencv_highgui231.dll	2015/5/10 8:12	应用程序扩展	872 KB
opencv_imgproc231.dll	2015/5/10 8:12	应用程序扩展	1,593 KB

Use default IP, 192.168.1.254. Just click the button **Connect**. It will connected and show all information automatically.

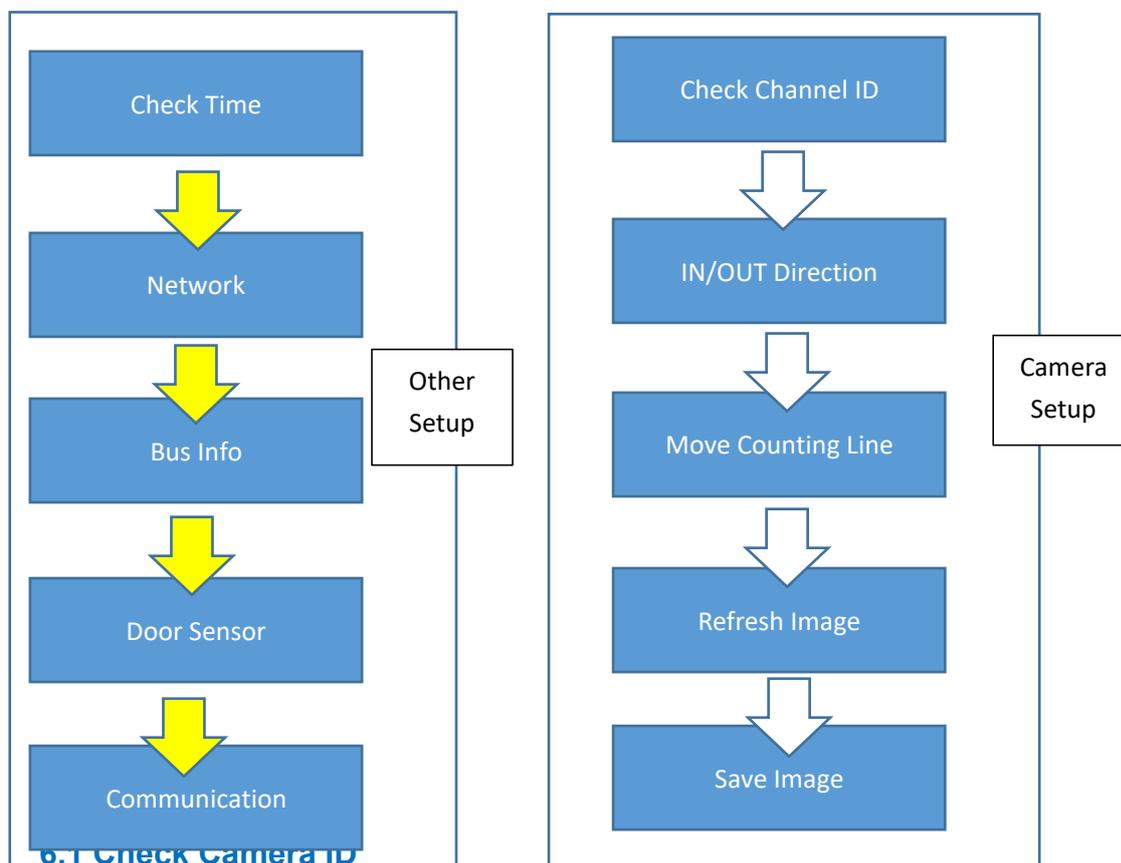


Problems: Can not run or open bpc client.

You can download and install Microsoft plugin to fix it.



6. Important Setup.



Please check the channel 1 parameter is same as CH1/CH2 stereo camera ID in the label? If not same, you must update right camera parameter files, which come from us. Usually you not need this step.

If parameter ID is correct, please **keep the bus door is open**, click "**Fresh Image**", then click "**Save Image**" to save background image.

Then you can setup the system in computer.

6.2 In-out direction.

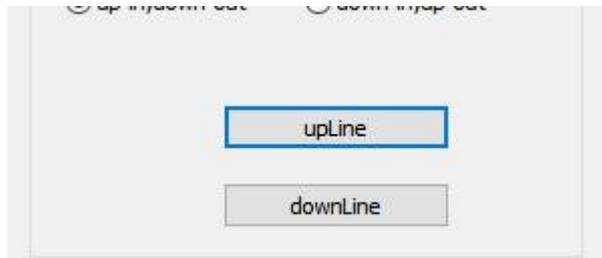
If passenger get on bus from above to the below, that is (from)UP-in, (from)Down-out.



6.3 Counting Lines

Best Position: Usually please use default counting lines position. The outdoor part occupy 1/4 of image, internal of bus occupy 3/4. In this case, the accuracy is best.

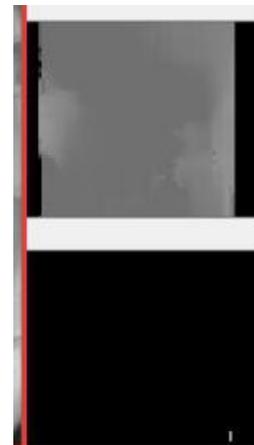
Adjust: Sometimes you need to adjust the counting lines.



6.4 Save Image

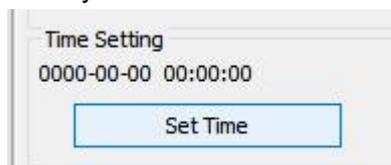
After save image, you should see such effect in gray detection image zone and black background image zone.

Remarks: If you see big white blocks in both 2 fields, that means your camera parameter is wrong. Or your stereo camera connection is wrong. Please check connection and camera ID label again.



6.5 Time Update

- Sync PC Time



- NTP Server

Server Network Set

Server IP:

Device ID:

Server Port:

DNS:

NTP Server IP:

- UTC:

Parameter Setting

Network Setting | Device Param Setting | CH1 Param Setting | CH2 Param Setting | System Status

Serial Port Setting

RS232:

RS485:

Clear Counter OPT

ClearTime:

Overman Set

Alarm Num:

Time Param

SYNC Time: M

ACC Power Delay: M

JTC: H

IO Input Set

6.6 Bus Info

Here please fill the installed bus and its line number. **It is very important.**

Device Network Set

IP:

SubNet Mask:

Gateway:

Port:

Bus number:

Line number:

Sim number:

Device number:

Server Network Set

Server IP:

Domain name:

Server Port:

DNS:

NTP Server IP:

Such information will be seen in IPAS. Then IPAS server admin can quickly register these counters to be correct bus plates with correct lines. Saved many days to check the bus plate and lines and other jobs.

- Live Data
- Analytics
- Records
- Management
- Line
- Devices
- Buses
- Stops
- Alarms
- Remote Control
- System

Home / Management / Devices

<input type="checkbox"/>	Line	Bus	MAC	SIM NO	Version	CH1	CH2
<input type="checkbox"/>	E2	Test112	b0-4c-ba-42-7b-63	15920041257	D_one-BPC-HI-V5.0.157.bin	1.0-0444	1.0-0444
<input type="checkbox"/>	E2	Test102	a4-23-27-0b-b3-db	15920041247	D_one-BPC-HI-V5.0.157.bin	1.0-0404	1.0-0404
<input type="checkbox"/>	E2	Test109	1b-ce-c6-b0-87-2f	15920041254	D_one-BPC-HI-V5.0.157.bin	1.0-0432	1.0-0432
<input type="checkbox"/>	E2	Test115	55-da-bf-d4-6f-a7	15920041260	D_one-BPC-HI-V5.0.157.bin	1.0-0456	1.0-0456
<input type="checkbox"/>	E2	Test101	78-a3-70-7a-c7-1f	15920041246	D_one-BPC-HI-V5.0.157.bin	1.0-0400	1.0-0400
<input type="checkbox"/>	E2	Test105	49-b1-1b-9d-a7-1f	15920041250	D_one-BPC-HI-V5.0.157.bin	1.0-0416	1.0-0416
<input type="checkbox"/>	E2	Test114	19-5a-08-53-63-eb	15920041259	D_one-BPC-HI-V5.0.157.bin	1.0-0452	1.0-0452
<input type="checkbox"/>	E2	Test118	eb-58-b3-76-52-eb	15920041263	D_one-BPC-HI-V5.0.157.bin	1.0-0468	1.0-0468
<input type="checkbox"/>	E2	Test106	76-30-c2-1e-a3-db	15920041251	D_one-BPC-HI-V5.0.157.bin	1.0-0420	1.0-0420
<input type="checkbox"/>	E2	Test116	82-59-65-65-6a-63	15920041261	D_one-BPC-HI-V5.0.157.bin	1.0-0460	1.0-0460
<input type="checkbox"/>	E2	Test111	84-cc-14-c1-8f-a7	15920041256	D_one-BPC-HI-V5.0.157.bin	1.0-0440	1.0-0440

Remarks:

When you open it, please click “ Read Network Param” first. Sometimes it will show wrong info same as last counter.

6.7 Network

The local IP can be modified to match your network. However, you must make labels on counter or cables, so you or other people can easily confirm its LAN IP info.

Forget IP will make troubles.

Server IP: USA demo server: 174.139.192.11, Data port: 5005.

Domain & DNS can be used to instead of static ip and port.

Parameter Setting

Network Setting | Device Param Setting | CH1 Param Setting | CH2 Param Setting | System Status

Device Network Set

IP: 192 . 168 . 1 . 254

SubNet Mask: 255 . 255 . 255 . 0

Gateway: 192 . 168 . 1 . 1

Port: 9011

BusNo:

RouteNo:

Phone number:

MAC:

Server Network Set

Server IP: 174 . 139 . 192 . 11

Domain:

Server Port: 5005

DNS:

NTP Server IP:

6.8 Door Sensor

Use meter to test the signal current, >5V is high level, <5V is low level.

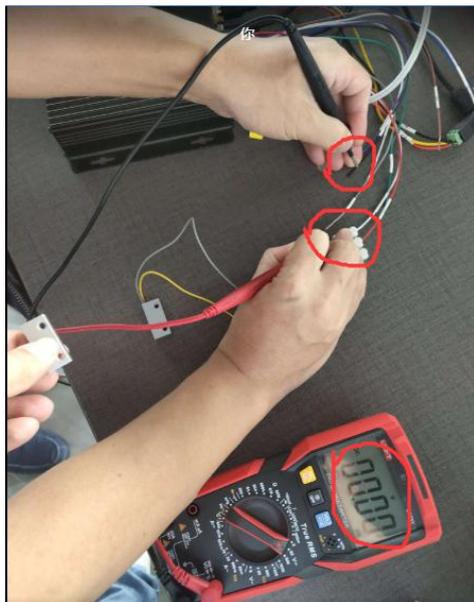
If only one door, IO can choose "None".

IO Input Set

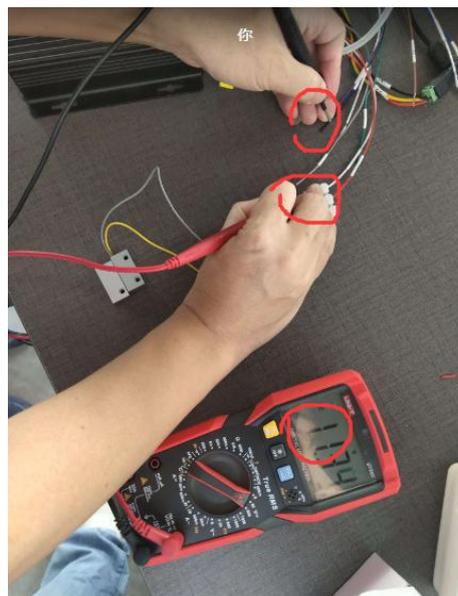
IO1: Gate Control High level - Open

IO2: Gate Control High level - Open

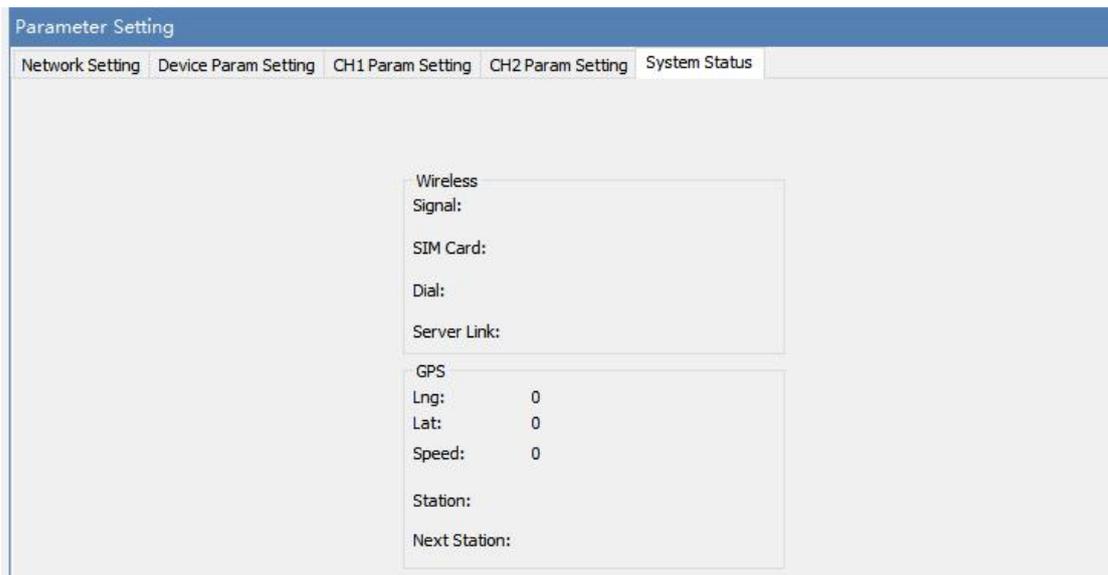
Door Open



Door Closed



7. Server Connection

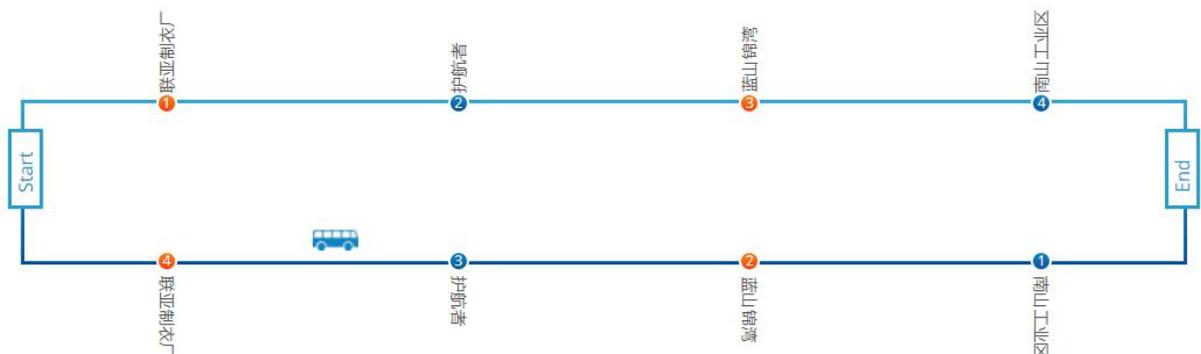


8. Test Accuracy

Arrange 1-3 people to get on and off. 10 ON, 10 FF, then check the counting result.

9. Station File

With IPAS 3.0, you can enjoy online fleet tracking by station, and analysis passenger data for each stations. It is very important and useful to improve dispatching and schedule.



9.1 Prepare Station File

To recognize station by gps of counters, you must prepare such a station file by csv.

Route	Station Name	Station ID	Order	Direction	Type	Long	Lat	Azimuth	LimitSpeed	Distance	SoundIn	SoundOut
M125	A	3000	1	1	1	114.033	22.67994	65	50	100		
M125	B	3001	2	1	3	114.0295	22.67517	86	50	101		
M125	C	3002	3	1	3	114.026	22.67263	155	50	102		
M125	D	3003	4	1	3	114.0219	22.66954	23	50	103		
M125	E	3004	5	1	2	114.0188	22.66721	356	50	104		
M125	E	3041	1	2	1	114.0188	22.66721	160	50	105		
M125	D	3042	2	2	3	114.0219	22.66954	198	50	106		
M125	C	3043	3	2	3	114.026	22.67263	45	50	107		
M125	B	3044	4	2	3	114.0295	22.67517	244	50	108		
M125	A	3045	5	2	2	114.033	22.67994	255	50	60		

9.2 Collect GPS of stations.

Bus can run the real route and only stop at registered station position. After arrive the target station, open and close the door. It will generate a record with GPS record. When bus return, these data will be download by BPC client, or upload to IPAS server by 3G/4G network.

Recommend IPAS server.

Analytics

Records

Record Query: Get the original record for other integration and comparative verification.

2019-07-18 2019-07-18 Today -All Companies- -All Lines- -All Buses- -All Stops-

-Rec Types- Search Excel

Rec Time	Company	Line	Bus	Station	Lat Lon	Direction	Azimuth	ON	OFF	On-board	Sum On	Sum Off	Load Rate
2019-7-18 20:08:13	Watchdog	Bus Station	Test85		22.672632, 114.02601	Up	172	2	1	2	3	1	2%
2019-7-18 20:08:13	Watchdog	Bus Station	Test100		22.672632, 114.02601	Up	172	2	1	2	3	1	2%
2019-7-18 20:08:13	Watchdog	E25	Test12	龙华汽车站	22.672632, 114.02601	Up	172	2	1	2	3	1	2%
2019-7-18 20:08:13	Watchdog	Bus Station	Test43		22.672632, 114.02601	Up	172	2	1	2	3	1	2%
2019-7-18 20:08:13	Watchdog	Bus	Test65		22.672632, 114.02601	Up	172	2	1	2	3	1	2%

9.3 Filter Useless GPS records.

With IPAS 3.0, it is very easy to judge whether it is real stops. Surely if your bus can only stop at real station, these data must be reliable too. If not, IPAS can help to judge by google map.

2019-07-17 10:00:00 2019-07-17 13:33:08 Watchdog Bus Station Test58 Search Show Station

Export Station

Select	NO	Rec Time	Lat Lon	Azimuth
<input type="checkbox"/>	1	2019-7-17 10:10:30	22.654907, 114.02583	248
<input type="checkbox"/>	2	2019-7-17 10:09:28	22.657047, 114.02367	46
<input type="checkbox"/>	3	2019-7-17 10:08:27	22.660501, 114.02048	207
<input type="checkbox"/>	4	2019-7-17 10:07:26	22.663614, 114.01808	8
<input type="checkbox"/>	5	2019-7-17 10:06:25	22.664957, 114.016975	168
<input type="checkbox"/>	6	2019-7-17 10:05:24	22.667208, 114.01875	329
<input type="checkbox"/>	7	2019-7-17 10:04:23	22.669538, 114.02193	130
<input type="checkbox"/>	8	2019-7-17 10:03:22	22.672632, 114.02601	291
<input type="checkbox"/>	9	2019-7-17 10:02:21	22.67517, 114.029526	92
<input type="checkbox"/>	10	2019-7-17 10:01:20	22.679937, 114.032974	252
<input type="checkbox"/>	11	2019-7-17 10:00:19	22.679937, 114.032974	53

9.4 Shown All Records in Google Map.

NO	Lat	Lon
1	22.654907	114.02583
3	22.660501	114.02048
4	22.663614	114.01808
5	22.664957	114.016975
6	22.667208	114.01875
7	22.669538	114.02193
8	22.672632	114.02601
9	22.67517	114.029526
10	22.679937	114.032974

关闭

You can download the record file, and easily to fill their name following the map position.

The screenshot shows the IPAS Analytics 3.0 interface. On the left, there is a navigation menu with categories: Live Data, Analytics, Records, Management, Remote Control, and System. The 'Records' section is expanded, showing a list of records. A table displays the following data:

Select	NO	Rec Time	Lat Lon	Azimu
<input checked="" type="checkbox"/>	1	2019-7-17 10:10:30	22.654907, 114.02583	248
<input type="checkbox"/>	2	2019-7-17 10:09:28	22.657047, 114.02367	46
<input checked="" type="checkbox"/>	3	2019-7-17 10:08:27	22.660501, 114.02048	207
<input checked="" type="checkbox"/>	4	2019-7-17 10:07:26	22.663614, 114.01808	8
<input checked="" type="checkbox"/>	5	2019-7-17 10:06:25	22.664957, 114.016975	168
<input checked="" type="checkbox"/>	6	2019-7-17 10:05:24	22.667208, 114.01875	329
<input checked="" type="checkbox"/>	7	2019-7-17 10:04:23	22.669538, 114.02193	130
<input checked="" type="checkbox"/>	8	2019-7-17 10:03:22	22.672632, 114.02601	291
<input checked="" type="checkbox"/>	9	2019-7-17 10:02:21	22.67517, 114.029526	92
<input checked="" type="checkbox"/>	10	2019-7-17 10:01:20	22.679937, 114.032974	252
<input type="checkbox"/>	11	2019-7-17 10:00:19	22.679937, 114.032974	53
<input type="checkbox"/>	12	2019-7-17 09:59:18	22.67517, 114.029526	214

At the top of the interface, there are filters for date (2019-07-17 09:00:00 to 2019-07-17 11:43:15), location (Watchdog), and station (Bus Station). An 'Export Station' button is visible. A red arrow points from the 'Export Station' button to the download icon in the top left of the table. A red circle highlights the download icon.

9.5 . Create a New Line

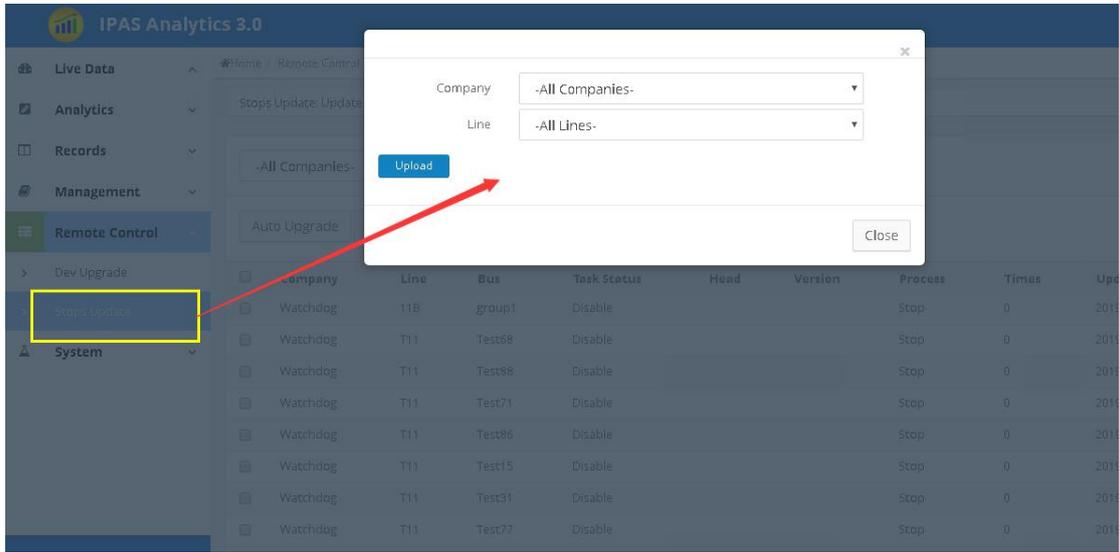
Upload Station File into IPAS. Then you can get a new line below the company.

The screenshot shows the IPAS Analytics 3.0 interface with a dialog box open for creating a new line. The dialog box has a 'Company' dropdown menu set to 'Cooperativa'. Below it, there is a 'Select File' button and a 'Choose File' button circled in red. To the right of the 'Choose File' button, it says 'No file chosen'. There is also an 'Import' button and a 'Close' button.

9.6 Station Update:

In the Stop Update menu, you can copy station files to all counters in the bus under the same lines. Very easy to finish it by click only. Never need to waiting bus rest in the dark night after weeks.

When the bus shift to the other lines, you can change this bus relationship to new line first, then update the new line stations data. In this mode, you never need to remember which bus from old lines.



More information, please read relative manuals.