ASPC102 Passenger Flow Sensor User Guide

Applicable Model: T633L

Change History

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Contents

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2 Product Introduction

2.1 Product Functions

- Count the number of passengers entering or leaving a vehicle from the front or back door.
- Count the total number of passengers entering or leaving a vehicle from the front or back door.
- Count the number of remaining passengers inside a vehicle.

2.2 Product Overview

The ASPC102 is a compact and precise embedded AI passenger flow sensor based on contactless deep learning algorithms. The ASPC102 can collect 3D stereoscopic information about customers for analysis and recognition, and accurately capture the moving people. Even in densely populated areas, the sensor can reach more than 95% of the accuracy rate. While implementing real-time video surveillance, it can collect and analyze the number of people in the specified area and direction. This provides real-time accurate flow data for managers, which facilitates efficient management. The sensor is applicable to buses, long-distance coaches, shopping malls, and other scenarios.

3 Passenger Flow Sensor and Accessories

Standard Accessory	Quantity	Picture
Passenger flow sensor	1	

RS485 cable with an aviation connector (20 cm)	1	

Optional Accessory	Quantity	Picture
4-pin cable with two aviation connectors (optional. It is recommended that you select a cable 3 meters, 5 meters, 10 meters, 15 meters, or 20 meters in length based on your business requirements.)	1	

4 Product Specifications

Item	Specifications
Weight	0.52KG
Dimensions	136 mm × 60mm × 38mm
Operating voltage	12–60 V DC
Power Consumption	<5W
Communication interface	RS485 port
Video output	RTSP
Operating temperature	–20°C to +70°C
Operating humidity	10%–95%. Non-condensing
Water resistance rating	IP45 (water and dust resistance)
Counting height	1.8–10.0 meters

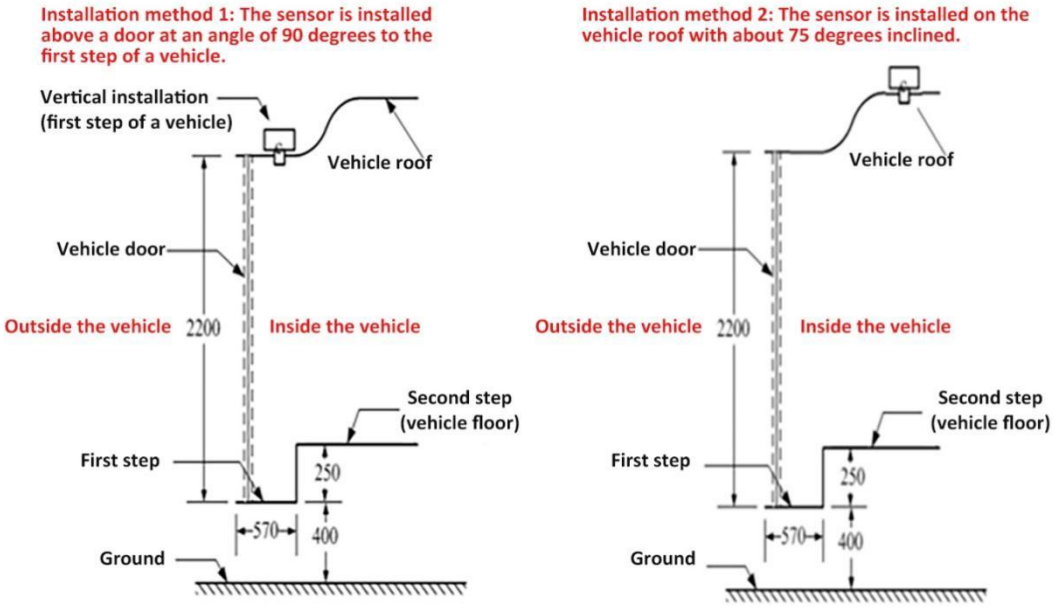
5 Installation

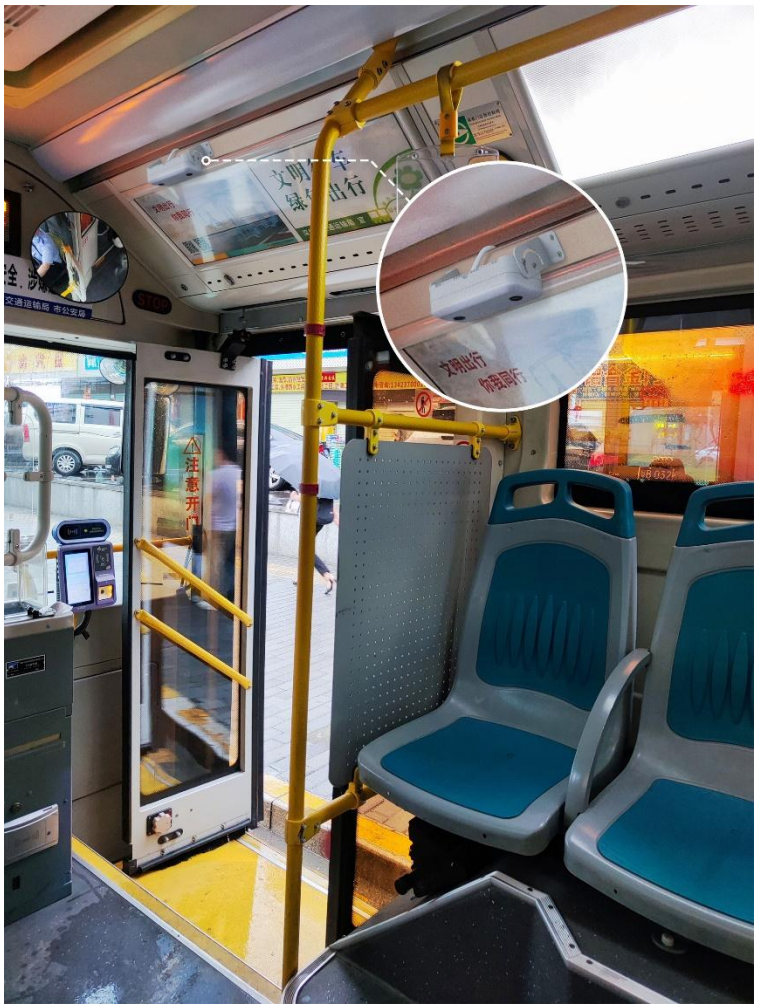
5.1 Installing the ASPC102

1. The ASPC102 shall be installed at an angle of 90 degrees to the ground. Both ends of the sensor have an L-shaped bracket, so that the installation location of the sensor's camera can be adjusted at a maximum angle of 90 degrees.
2. The installation height of the ASPC102 should be kept within 190–250 cm (applicable to vehicle scenarios).

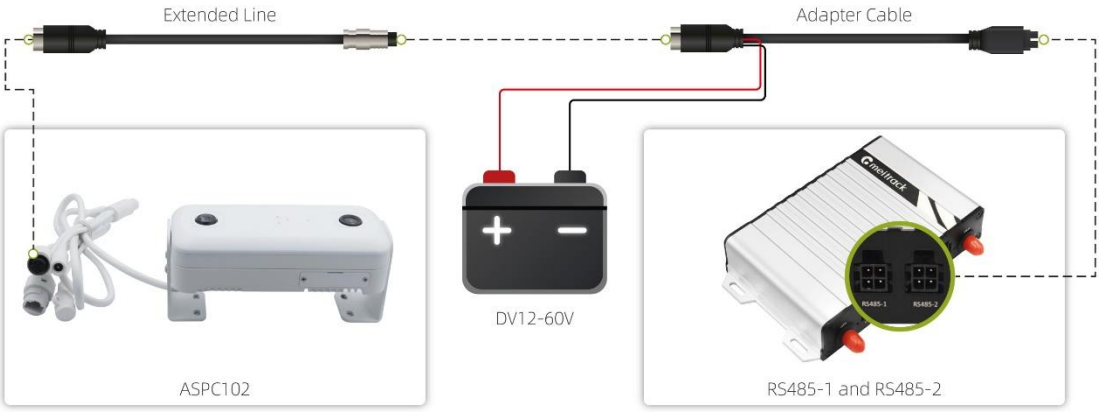
Installation method 1: The sensor is installed above a door at an angle of 90 degrees to the first step of a vehicle. This installation method is suitable for large buses with two doors more than 1.9 meters in length.

Installation method 2: The sensor is installed on the roof or air duct of a vehicle. This installation method is suitable for vehicles whose top door has a small gap or whose door is short. If the sensor is installed on a vehicle whose top door has a small gap, the door may not be opened or closed.





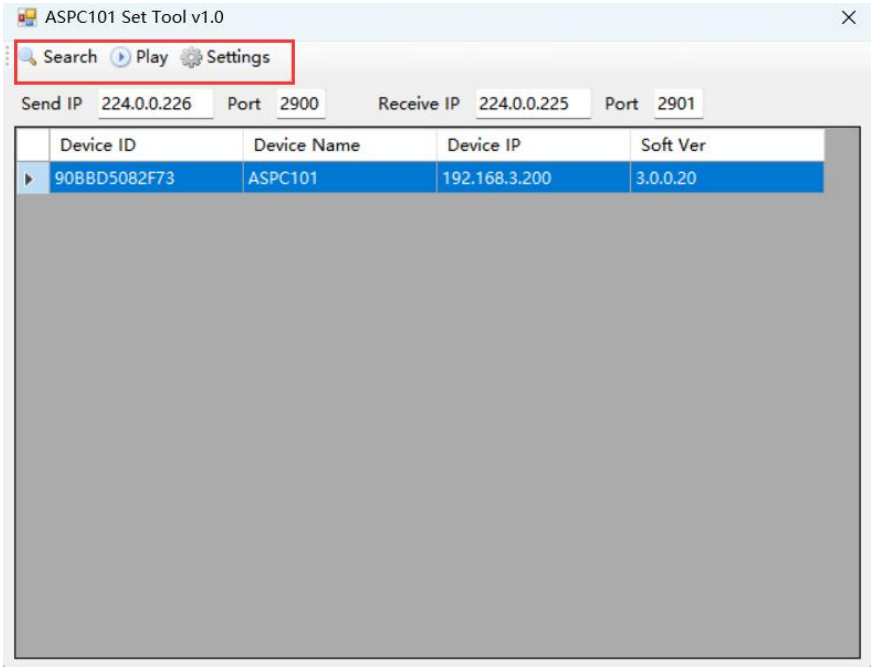
5.2 Connecting the ASPC102 to the T633L



6 Configuring the ASPC102

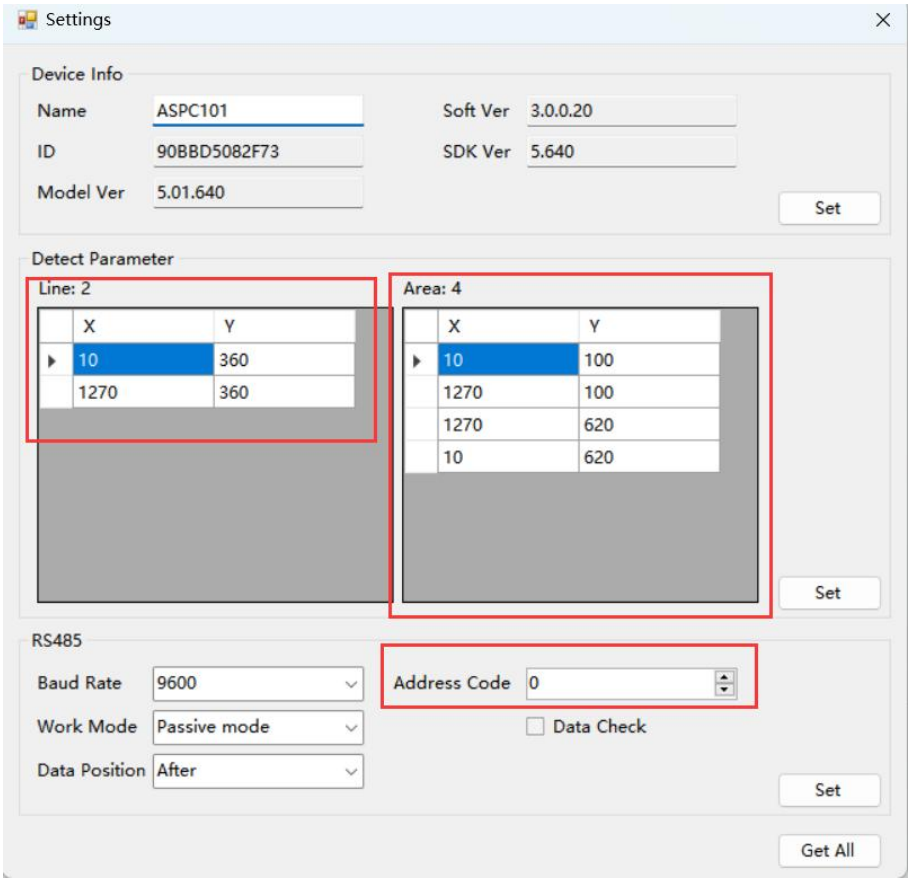
6.1 Configuring Sensor Parameters by Using a Configuration Tool

Contact us to obtain the ASPC102 configuration tool. The following section describes the ASPC102 configuration tool.



1. Click Search to search for ASPC102 sensors in the same local area network (LAN). If ASPC102 sensors cannot be found, change the IP address of the LAN and make sure that the IP addresses of the LAN and the sensor are in the same network segment. The IP address of the sensor is in the 192.168.3.xxx network segment. For more information about how to change an IP address, see the video tutorial at https://www.youtube.com/watch?v=7p3pbsCFouE.
2. Select a sensor and click Play to play a live video about the sensor.

3. Select a sensor and click Settings to configure the sensor. You can change an address code and modify a detection area and detection line where passengers enter and leave a vehicle.



Set an address code: You must set multiple address codes if multiple sensors are connected to the same T633L tracker. For example, the address code of the sensor installed at the front door of a vehicle is set to 0, while the address code of the sensor installed at the back door of the vehicle is set to 1.

Modify a detection area and detection line where passengers enter and leave a vehicle:

Under Detect Parameter, the left side is the setting area of a detection line. You can modify the detection line by changing two coordinates.

The right side is the setting area of a detection area. You can modify the detection area by changing four coordinates.

The camera resolution is 720p (1280*720). The coordinate of the upper left corner is (0,0), while the coordinate of the lower right corner is (1280,720), as shown in the following figure. You can set a detection area and detection line based on the preceding coordinates.

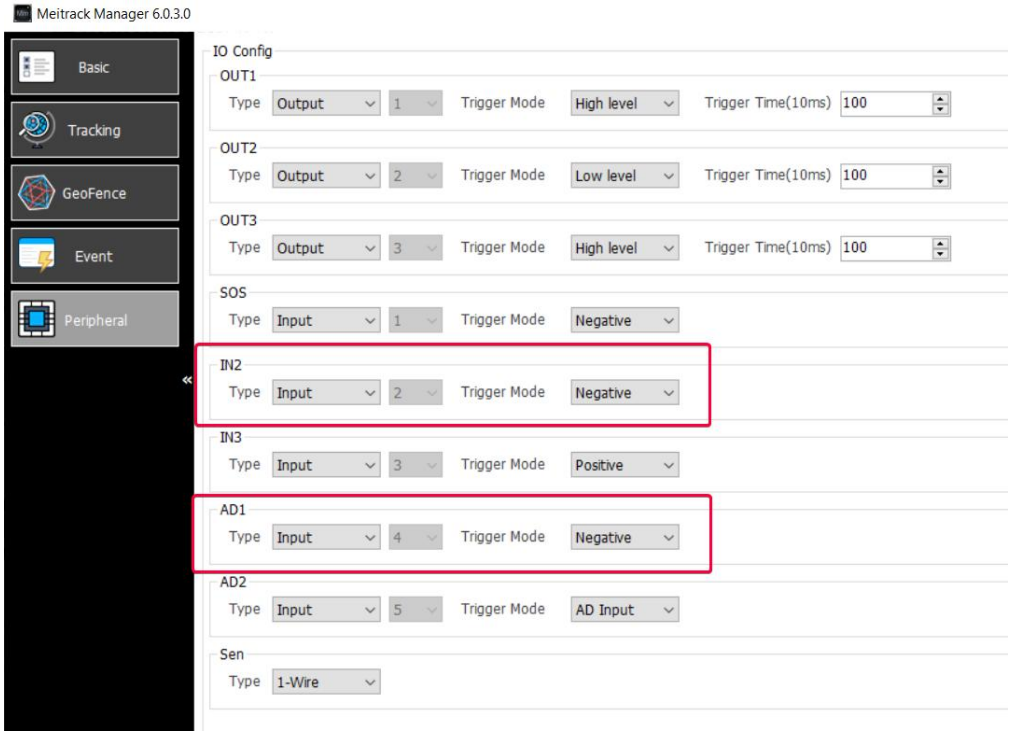
You can set a proper detection area and detection line based on your business requirements, as shown in the

following figure. This helps improve the counting accuracy of the sensor.

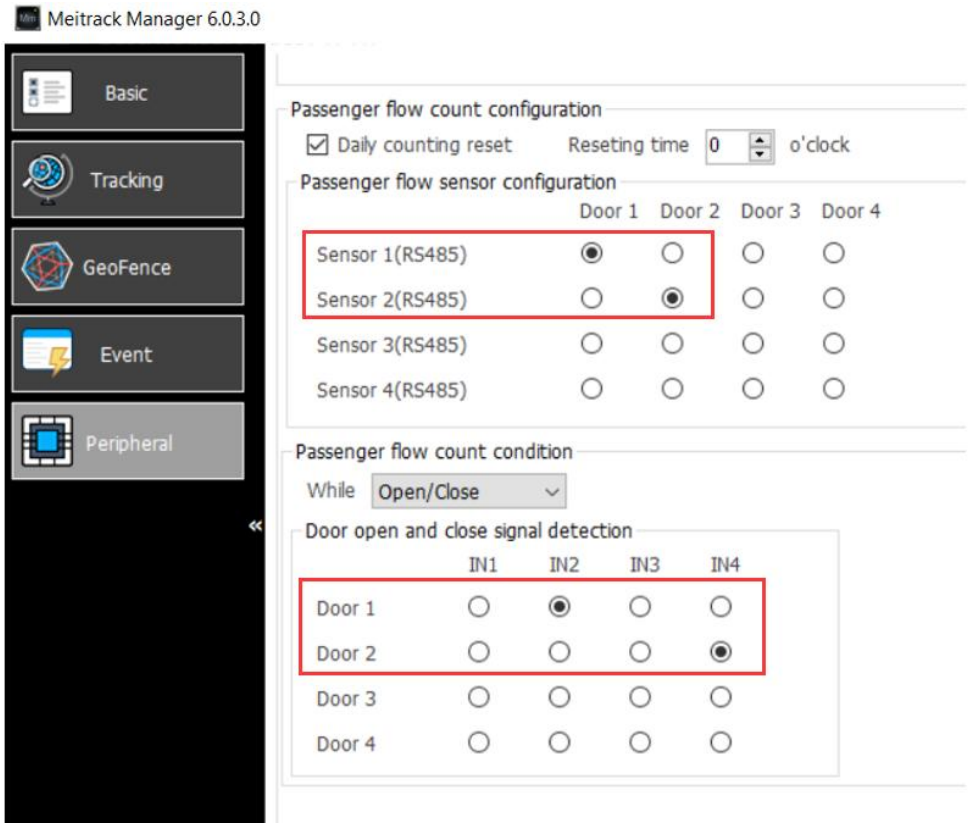
6.2 Configuring the Counting Mode on Meitrack Manager

Mode 1: Count the number of people by opening and closing vehicle doors. This is the default mode.

1. Configure input ports. Input 2 and input 4 of the T633L are connected to the sensors at the front and back doors respectively.

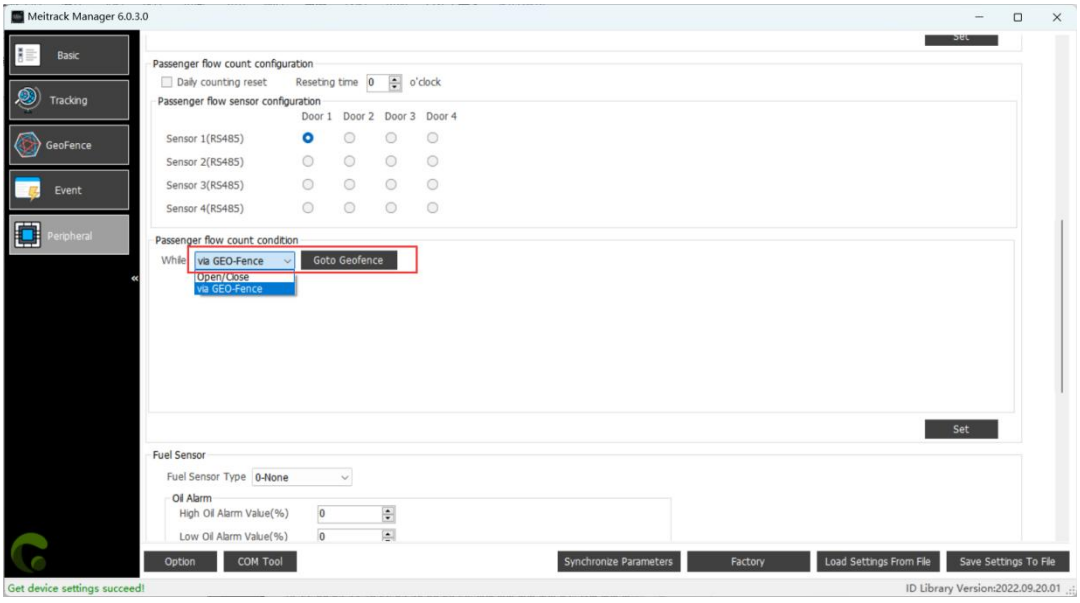


2. Configure sensor 1, sensor 2, door 1, and door 2, and make sure that the vehicle doors and input ports correspond to the sensors.

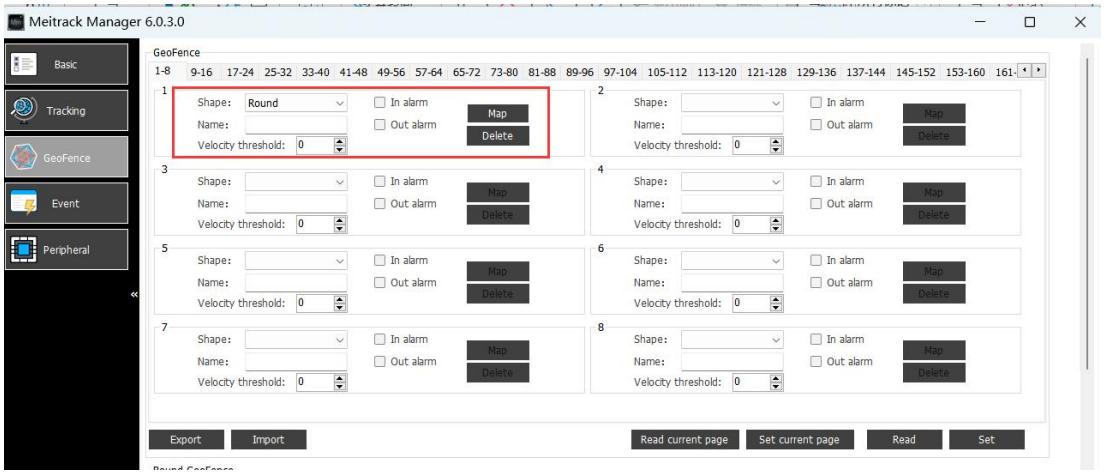


Mode 2: Count the number of people by entering and exiting a geo-fence.

1. Set **Passenger flow count condition** to **via GEO-Fence** and click **Goto Geofence** to go to the **Geo-Fence** page.



2. A maximum of 256 geo-fences can be configured. On the **Geo-Fence** page, you can select a round or polygonal geo-fence and set the geo-fence name (example: the name of a bus station). When the device enters the geo-fence, the passenger flow sensor starts to count the number of passengers entering a vehicle from the front or back door and the number of remaining passengers inside a vehicle. When the device exits the geo-fence, the passenger flow data is uploaded to the server.



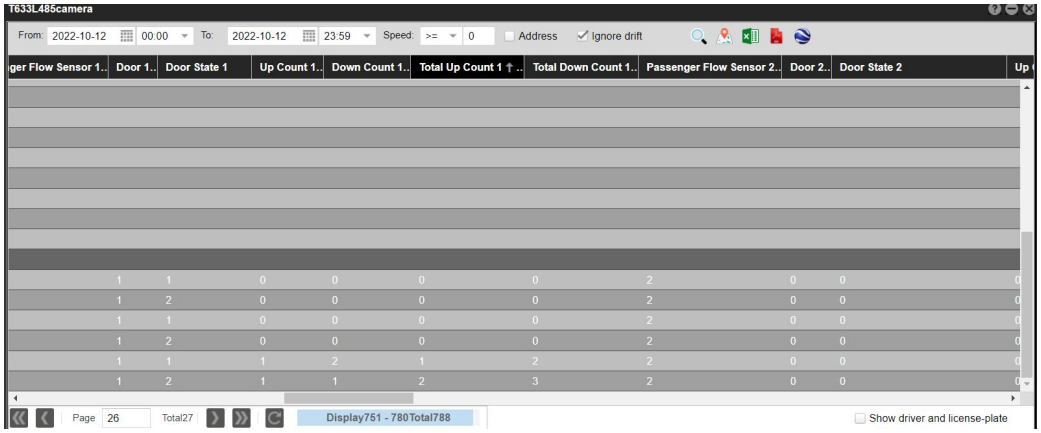
6.3 Configuring the ASPC102 by Using a GPRS Command

GPRS Sending	BDA,A,[B,C....]
GPRS Reply	BDA,OK
Description	A: indicates the setting type. 0: Set the data clearing time. Data format: B,C B: The parameter value is 0 or 1. 0: The function is disabled. 1: The function is enabled. C: indicates time when data is deleted. Value range: 0:00 to 23:00. 1: Clear data by using a command. After the data clearing command is received, data is cleared. 2: Configure the location (address of the ASPC102) of the door on which a sensor is installed. Data format: A, door1, door2, door3, door4 Doorx: indicates the location of a door. The parameter value is 0 to 4. 0: invalid. The same door location cannot be configured for the sensor. 3: Configure triggering conditions. Data format: A,B,[C,D,E,F] B: indicates the triggering type. 0: triggered by an I/O port. 1: triggered by a GPS geo-fence. When the value of parameter **B** is 0, [C,D,E,F] can be configured. [C,D,E,F]: indicate input ports corresponding to doors 1–4. The value of parameters **C**, **D**, **E**, or F is 0 to 4. 0: invalid. 1: input 1. 2: input 2. 3: input 3. 4: input 4. 4: Query passenger flow data. Data format returned: Sensor 1|Door location|Total number of passengers entering a vehicle|Total number of passengers leaving a vehicle, Sensor 2|Door location|Total number of passengers entering a vehicle|Total number of passengers leaving a vehicle, Sensor

	3|Door location|Total number of passengers entering a vehicle|Total number of passengers leaving a vehicle, Sensor 4|Door location|Total number of passengers entering a vehicle|Total number of passengers leaving a vehicle, Total number of passengers entering a vehicle|Total number of passengers leaving a vehicle|Number of remaining passengers inside a vehicle
Applicable Model	T633L
Example	
GPRS Sending	@@V27,353358017784062,BDA,4*F6\r\n
GPRS Reply	$$S63,353358017784062,BDA,1|1|1|1,2|2|0|0,3|3|0|0,4|4|0|0,1|1|0*A7\r\n

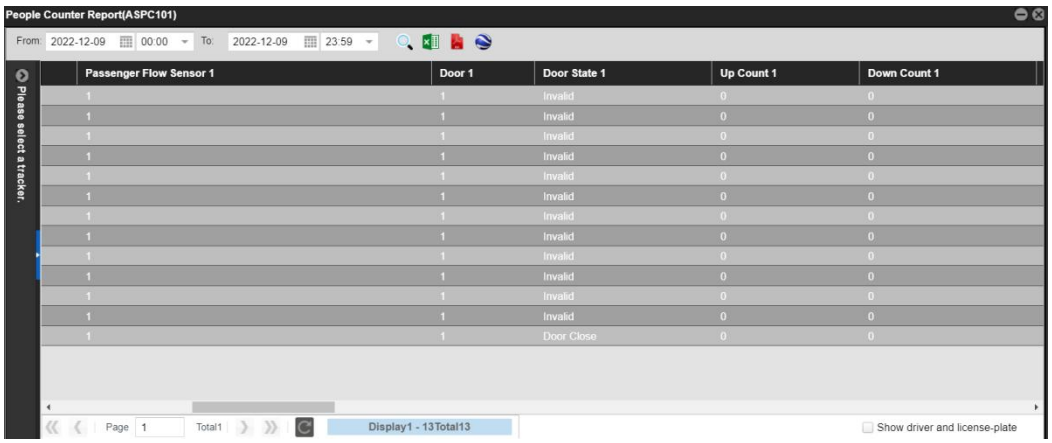
7 Viewing Passenger Flow Sensor Data on the MS03 Platform

1. View passenger flow data from historical data or event reports.



2. View passenger flow sensor reports.

Before you view passenger flow sensor reports, your account must be grant the required permissions. Contact us to apply for the required permissions.



8 GPRS Protocol for the ASPC102 Passenger Flow Sensor (CCE Protocol Based on the T633L)

Notes: For more information about the GPRS protocol excluding the information about the ASPC102, see *MEITRACK T633L GPRS Protocol*.

Passenger flow data of the ASPC102	CCE ID: 0XFE96	<ID_Len><Version><Sensor 1><Sensor 2><Sensor 3><Sensor 4><All sensor data>
		Sensor: signed. Its data structure is as follows:
		typedef struct
		{
		byte number; (1 byte) // Sensor number. Example: sensor 1 or sensor 2.
		byte door_number; (1 byte) // Door number. 0: UNLL. 1: door 1. 2: door 2. 3: door 3. 4: door 4.
		byte state; (1 byte) // Sensor state. 0: invalid. 1: Detect door opening by an I/O port. 2: Detect door closing by an I/O port.
		// 3: Enter a geo-fence. 4: Exit a geo-fence.
		dword up_car; (4 byte) // Number of passengers entering a vehicle
		dword down_car; (4 byte) // Number of passengers leaving a vehicle
		dword all_up_car; (4 byte) // Total number of passengers entering a vehicle
		dword all_down_car; (4 byte) // Total number of passengers leaving a vehicle
		
		}aspc_data;
		
		All sensors: signed. Their data structure is as follows:
		typedef struct
		{
		dword up_car; // Number of passengers entering a vehicle. The data is detected by all sensors.
		dword down_car; // Number of passengers leaving a vehicle. The data is detected by all sensors.
		dword all_up_car; // Total number of passengers entering a vehicle. The data is detected by all sensors.
		dword all_down_car; // Total number of passengers leaving a vehicle. The data is detected by all sensors.
		dword surplus; // Number of remaining passengers inside a vehicle
		
		}all_data;

If you have any questions, do not hesitate to email us at info@meitrack.com.