People Counting System

1. Introduction

Synexens People Counting System is based on 3D ToF (time of flight) technology. It can count the number of people entering and exiting a defined region in a real-time way. It can be used in rail, buses, subway, supermarkets, shopping malls, and other scenes.

Features:

- 3D ToF technology
- Fast response speed
- The algorithm is stable, and the statistical accuracy rate is more than 98%
- Two channels statistics of the number of people entering and exiting the area
- Large FOV, 100°(H)*75°(V)
- Embedding algorithm, direct output the statistical counting result via RS485

Advantages compared to traditional RGB camera solution

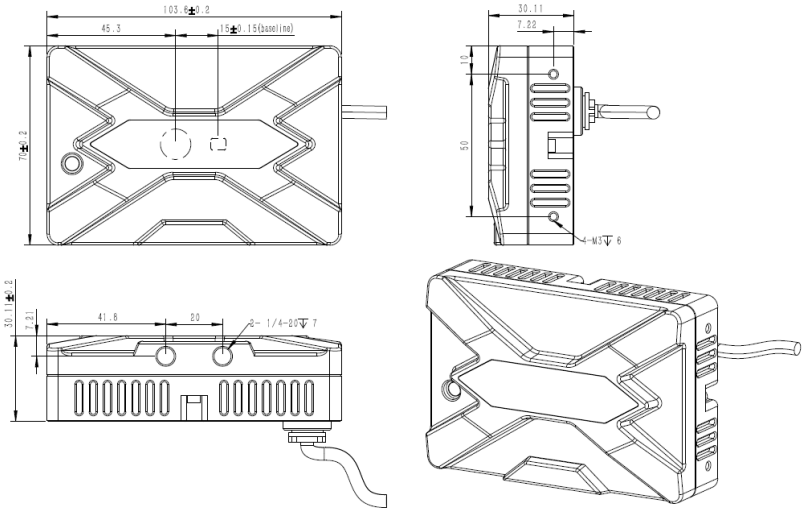
Parameters	**ToF-based People counting system**	**RGB-based People-counting system**
Privacy Protection	Yes	No
Dark environment	Yes	No
Eliminate non-human distractions (shadows, backpacks, colors, etc.)	Yes	No
Response time	Short	long
Detection accuracy	98%	Low

2. Technical parameters

Depth image	Resolution	320*240@30fps
	FOV	100° (H) x 75° (V)
Basic parameters	Working distance	0.1-5m, indoor
	VCSEL wavelength	940nm
	Accuracy	0.1~0.5m: ±3cm; 0.5~5m: ±2% @ 90% reflectivity
	Size	103.6mm*70mm*30mm
	Data transmission	TCP/IP Interface
	Power supply mode	12-24V/2A
	Power consumption	average 3.0W
	Operating system	Windows, Linux, ROS1/ROS2

	Operating temperature	-10 ~ 50C°
	Security	LASER CLASS1

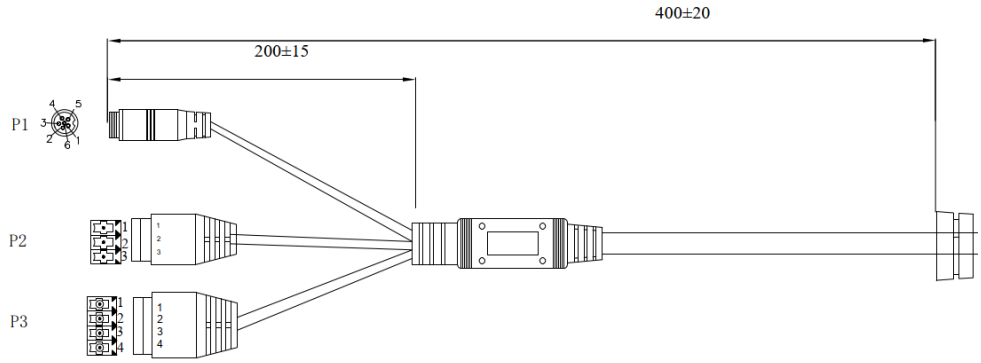
3. Mechanical structure



Dimension	Min	Nominal	Max	Unit
Length	103.40	103.60	103.80	mm
Width	69.80	70.00	70.20	mm
Thickness	29.91	30.11	30.31	mm
Weight	298.00	300.00	302.00	g

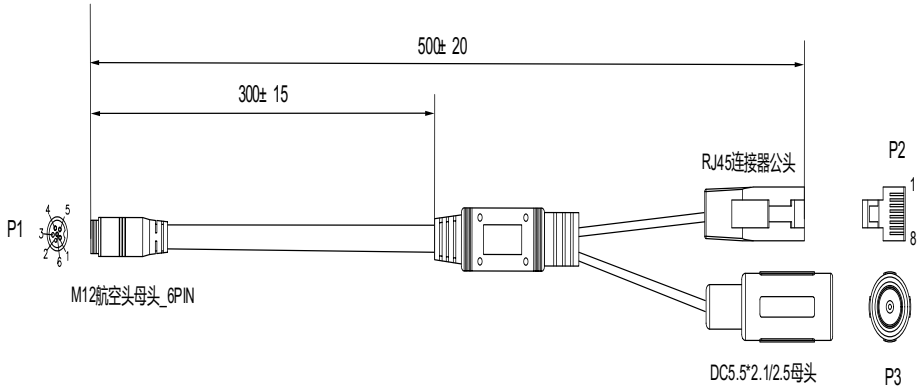
4. Connecting line

Tail cable



P1: M12 Aviation Head _6PIN		P2:DGK5.08_3PIN		P3:DGK5.08_4PIN	
Pin Number	Signal Name	Pin Number	Signal Name	Pin Number	Signal Name
1	100BASE-T：TX-	1	GND	1	GND
2	100BASE-T：TX+	2	VCSEL_IN	2	RS485_A(P)
3	V+(12-24V/2A)	3	V+(12-24V/2A)	3	RS485_B（N）
4	100BASE-T：RX-	Note: P2 Pin1 & Pin3 is a power interface that can be used to power other bypass equipment; Pin2 is an external trigger signal that controls the operating state of the laser		4	GND
5	100BASE-T：RX+			Note: 485/Uart/CAN interface communication, can be configured through software, default 485 interface	
6	EGND				

Conversion cable

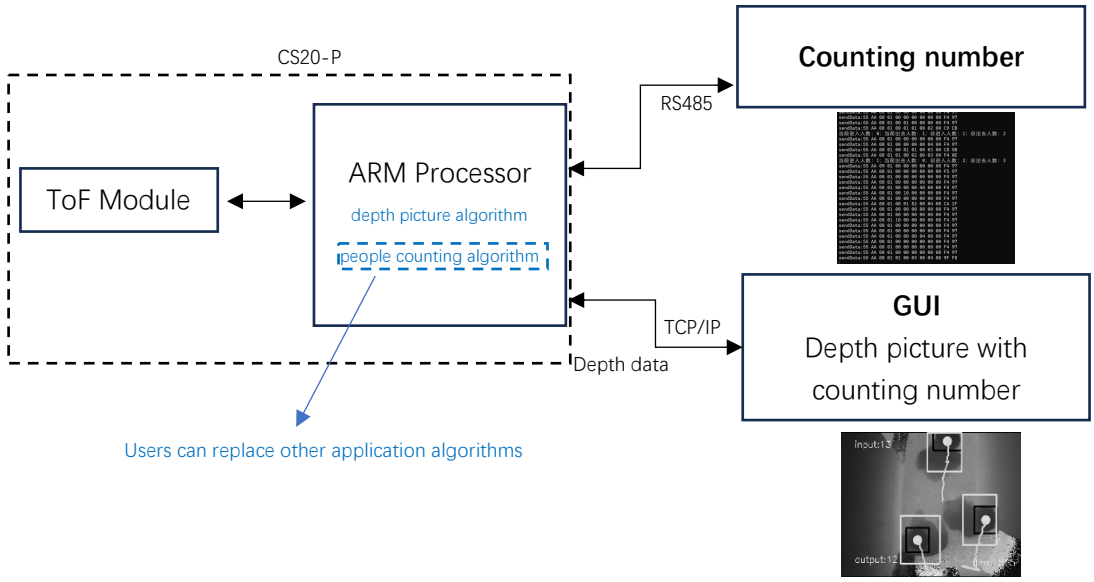


P1: M12 aircraft head female _6PIN		P2: RJ45 male		P3: DC5.5*2.5 male	
Pin Number	Signal Name	Pin Number	Signal Name	Pin Number	Signal Name
1	100BASE-T：TX-	1	100M_TX+	Note: It needs to be used with DC5.5*2.5 adapter with a power supply range of 12-24V/2A. Suggested purchase link: https://item.jd.com/100029626633.html	
2	100BASE-T：TX+	2	100M_TX-		
3	V+(12-24V/2A)	3	100M_RX+		
4	100BASE-T：RX-	6	100M_RX-		
5	100BASE-T：RX+				
6	EGND				

5. System Framework

In mode 1, customer uses system directly to achieve people number via RS485 interface, in mode 2, customer can develop their dedicated people counting running in external processor. SDK are available in this case.

Mode 1: Application algorithms in internal



Mode 2: Application algorithms in external