3D Visual Recognition Module Specification

1. Overview

The 3D visual recognition module is a core module composed of a visual perception module and an intelligent recognition module. It can realize functions such as pedestrian recognition, trajectory tracking, height measurement, and luggage object detection. It has high reliability, ease of use, and easy maintenance. The module is installed above the gate channel, overlooking the entire channel in all directions and without obstruction, and performs real-time dynamic detection of the gate channel. It counts the number of pedestrians in the gate channel, the location coordinates of each person, height information, and the luggage they carry, providing people with a safer and more convenient gate-passing experience.

Main application scenarios: smart retail, rail transit automatic ticket inspection system, airport customs security inspection system, commercial office building access control system, and automatic equipment that requires gate access control functions, etc.

Model

Model：VPRM-001

2. Appearance and composition

2.1 Overall appearance

Image 1　3D Visual perception module Appearance

Image 2 Recognition module overall Appearance

2.2 Product Composition

The 3D visual recognition module consists of two parts: the visual perception module and the intelligent recognition module; the visual perception module is mainly composed of a 3D structured light camera and an RGB camera.

3. Dimensions

Visual perception module size:

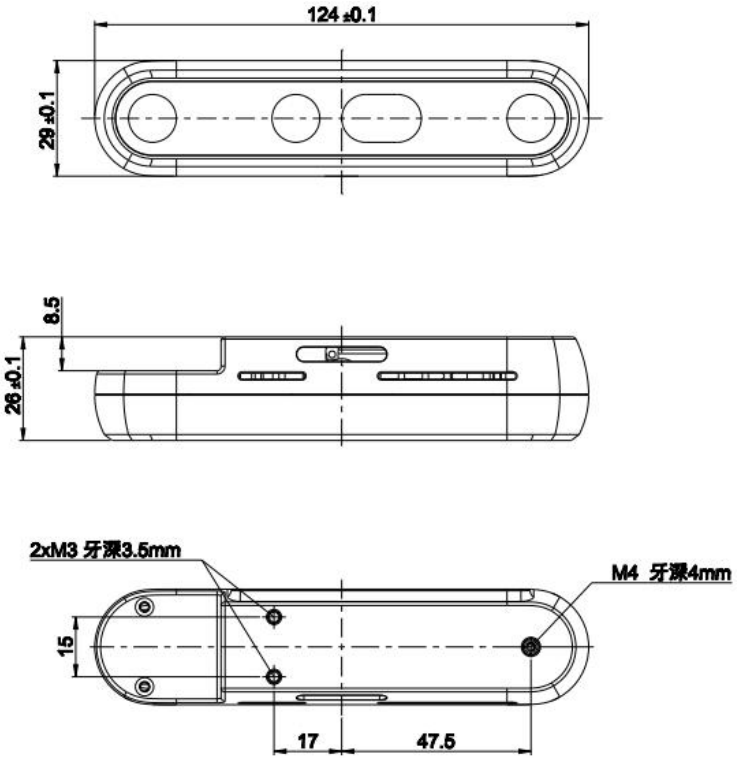

Image 3 3D Visual recognition and perception module

3D Visual recognition module Intelligent recognition module size:

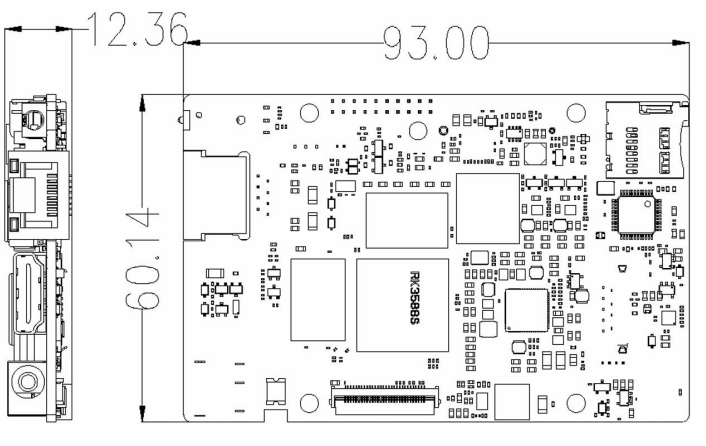

Image 4 Intelligent recognition module

4. Features

* Distinguishing between people and objects: accurately distinguishing pedestrians and objects, avoiding false alarms such as passengers carrying luggage;

* Height detection: height measurement error <3cm, accurately distinguishing adults and children;

* Anti-fraud: accurate and effective identification of close-range tailing or shoulder-to-shoulder passage;

* Full-course tracking: all-round, unobstructed, real-time dynamic detection, can achieve tracking and judgment of no less than 8 targets;

* Highly safe and reliable: can detect various special traffic conditions to ensure the safe passage of pedestrians;

* Simple and beautiful: the structural design is not constrained by sensors, simple and beautiful, greatly reducing the difficulty of maintenance;

* High traffic efficiency: no requirements for authorized positions, and the minimum distance between pedestrians is as low as 10CM;

* Flexible integration: With split configuration mode, it is convenient for equipment integration;

* Online upgrade: With online upgrade function, the algorithm and control program of 3D visual recognition module can be upgraded online;

* Video storage: With video storage function, video images can be stored for no less than 3 days, and automatically overwritten;

* Log recording: With log recording function, various states of passage are recorded to facilitate fault analysis;

* Fault self-recovery: With fault self-recovery function, it can actively detect the state of 3D visual recognition module and try to recover;

* Degraded operation: With degraded operation function, when the 3D visual recognition module fails and cannot be restored, it can switch to the traditional photoelectric sensor passage logic for control.

5.Specification

Item	Specification
Power supply	DC12V 30W
Processor	Octa-core 64-bit high-performance motherboard, main frequency ≥ 2.4GHz; NPU ≥ 6.0TOPS

Item	Specification
Camera	3D depth camera + RGB camera
Communication interface	RS485 serial interface, 1000Mbps Ethernet RJ45, USB2.0 interface × 1, USB3.0 interface × 1, USB-C multi-function interface × 1, HDMI 2.1 interface × 1
Installation	Installed on the top, just above the center of the gate channel, 2.7-3.2 meters above the ground
Weight	<2kg
Detection speed	The algorithm recognition speed is up to 30fps, which can handle large passenger flow and fast-passing scenes in real time
Detection range	3m (channel length) × 1.1m (channel width), can fully cover the gate channel, unobstructed detection
Height measurement error	<3cm
Accuracy (missing rate)	<0.02%
Tailing detection distance	≥10cm
Video Storage	Save at least 3 days of passenger video data, automatically overwritten
GCU control motherboard	Interfaces include sensor input interface × 24, RS232 interface × 1, RS485 interface × 1, RJ45 Ethernet interface × 1, CAN bus interface × 1, 8-way IO input, 8-way IO output
Work Environment	Temperature: -10~50°C
	Humidity: 5%~90% (no condensation)