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C300S Face/palm vein recognition module specification

V1.1

update log

Edition	Date	Revisers	Auditor	LYE
V1.0	2025-4-28	YW	LYE	version 1 was initially established.
V1.1	2025-4-29	YW	LYE	improve

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catalogue

I. Product Introduction

11. Brief description of the programme

C300S The facial recognition module is a binocular living face/palm vein recognition solution customized for the application scenario of low-power AI chip. It aims to empower the smart door lock industry with AI, promote industry upgrading, and create more secure, reliable, convenient, easy-to-use, and cost-effective smart door lock products.

The module employs proprietary facial and palm vein algorithms to achieve real-time detection of faces and palm veins, as well as registration and recognition functions. It outputs the results of face and palm vein recognition via serial port. The algorithm has been specifically optimized for smart lock applications, achieving industry-leading security while also offering excellent user experience, such as fast recognition speed, low power consumption, strong environmental adaptability (unfazed by various complex lighting conditions), and wide height coverage. The module is compact and can be embedded in most smart devices.

12. Features of the programme

It has the following characteristics:

Supports binocular living 3D face/palm vein recognition, which is fast, accurate and adaptable to various scenes, and can avoid photo, 3D model and mask attacks

Supports the SenseTime protocol V2 and is open to modification, with strong versatility

Management function: intelligent face/palm vein registration, grouping, deletion and clearing management

Learning function: Through the algorithm self-learning function, it can adapt to the changes of face/ palm vein

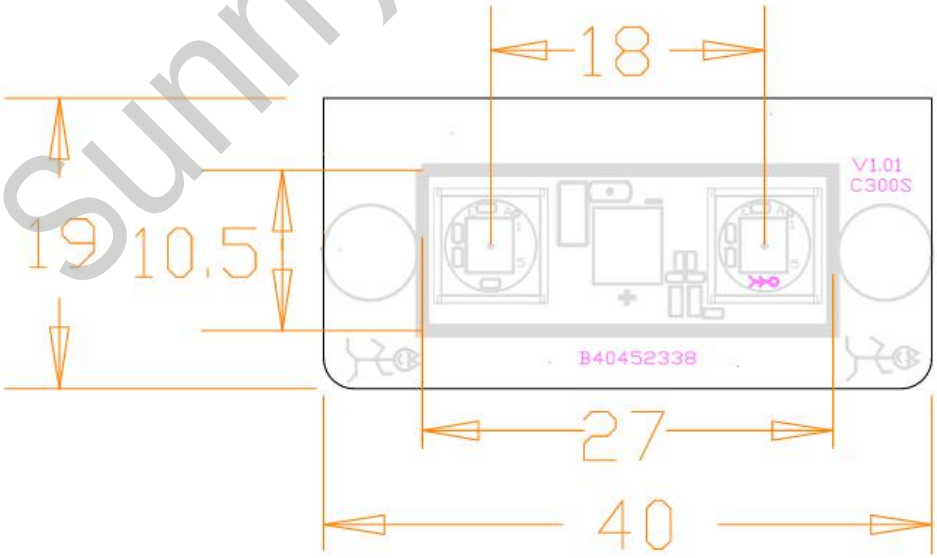
Low cost/high performance: Using face/palm vein recognition module, the goal of low cost/high performance can be achieved

The application scope of the module is extensive: wherever functions related to authorization, management, and switching are involved, facial recognition can replace fingerprint, IC card, password, and hardware switches. It is suitable for all systems from low-end to high-end, such as: facial door locks, industrial computers, safes, POS machines, and other security fields; private clubs, financial security, management software, authorization permissions, and other management fields; medical insurance claims, pension claims, and other financial fields.

2. Product appearance size

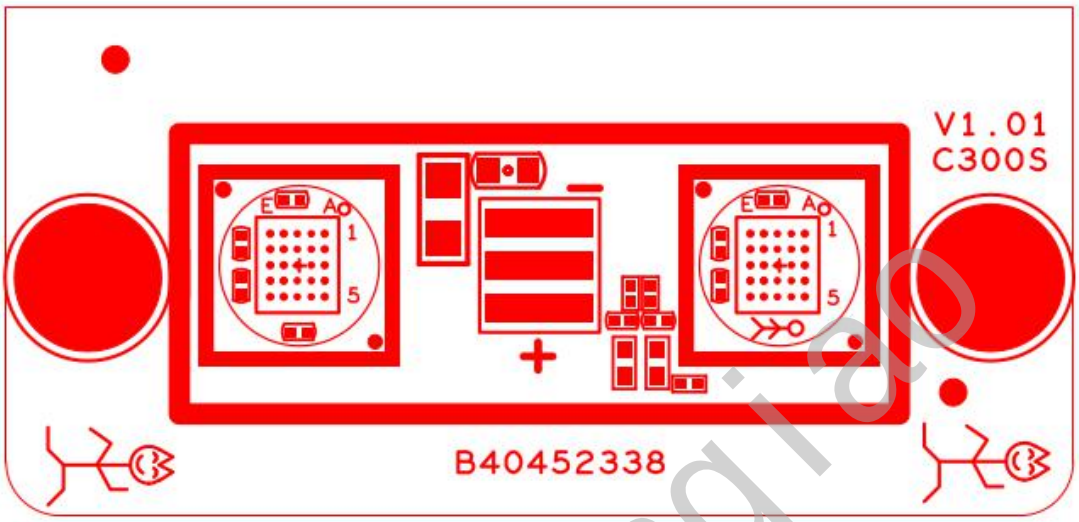
2.1 Physical diagram of the module

2.2 Structural size diagram

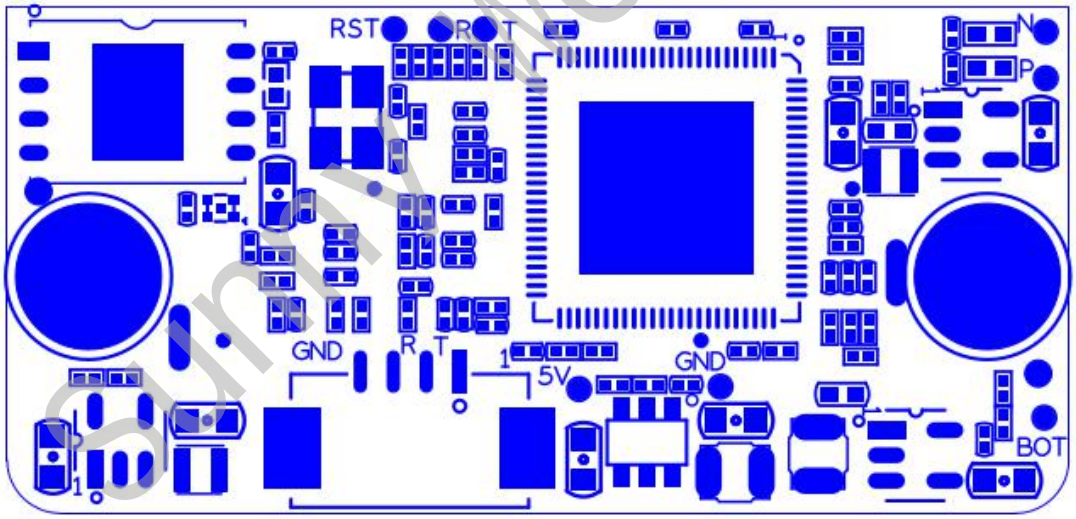


2.3 PCBA schematic diagram

front

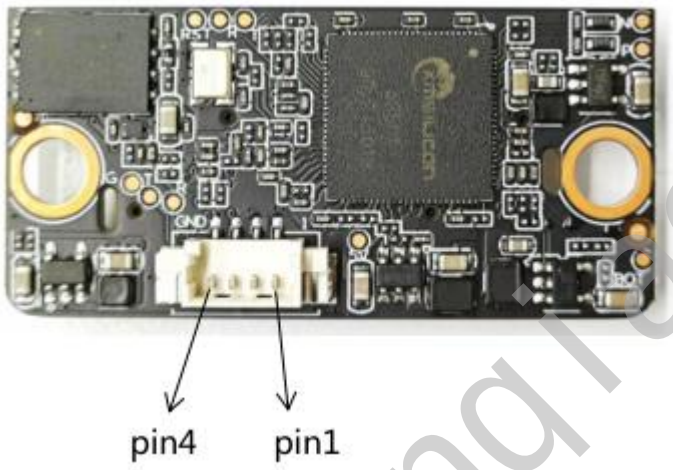


the back



3. Product interface definition

3.1 Interface definition

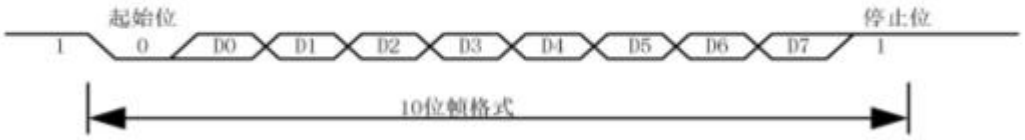


Interface definition:

UART	Definition	Explain
pin1	VCC	5-9v
pin2	UART_TX	UART 3.3V TTL
pin3	UART_RX	
pin4	GND	GND

UART communication and power supply:

All levels are referenced to the power/signal ground GND. When using half-duplex asynchronous serial communication, the baud rate is 115200bps, and the frame format is 10 bits, 1 bit 0 level start bit, 8 bits data bit (low bit first) and 1 stop bit, with no check bit.



Power input					
Project	Parameter			Unit	Remarks
	Minimum	Typical case	Maximum		Normal operating values
Supply voltage VCC	4.0	7.4	18	V	Beyond this range is ok It can cause permanent damage Physical damage
Working current Icc	160		260	mA	5V input

RXD input (TTL logic level)					
Project	Parameter			Unit	Remarks
	Minimum	Typical case	Maximum		Minimum
VOL			0.4	V	Logic 0
VOH	3.0		3.3	V	Logic 1

RXD output (TTL logic level)					
Project	Parameter			Unit	Remarks
	Minimum	Typical case	Maximum		Minimum
VIL			0.9	V	Logic 0
VIH	2.4			V	Logic 1
VI max	-0.3		3.6		Maximum input voltage

explain:

Serial port face/palm vein recognition: the serial port starts face/palm vein recognition immediately after initialization is completed, and the fastest time is 0.8s. The base library of face/palm vein can be successfully recognized, and it can be combined with PC tools and most lock boards (Tongtang protocol) to support input, deletion, upgrade, capture and other operations.

4. Product specifications

Project	Description
NPU	High performance, low power consumption NPU, processor, built-in deep learning The engine is accelerated
RAM	64MB DDR
ROM	32MB SPI NOR FLASH
Sensor Interface	MI PI + DVP, dual input
Other peripheral interfaces	Supports serial ports
Enter power supply	Input voltage: 5V ~ 9V
Image Sensor	OV02B 1 B, 1/5 ', 2 MP pixels x2
Lens	IR FOV : 95° (D) 80.8° (H) 64.5° (V) Support lens scheme: 850nm(IR) + 850nm(IR)
Infrared fill light wavelength	850nm
Supports the maximum number of users	100 Local registration (50 faces + 50 palm veins)
Face recognition	Recognition speed: fastest 0.8s
	The height of the recognition is 1.2 ~ 2.0 m, the face recognition distance is 0.4 ~ 1 m, the palm vein registration is 10 ~ 21cm, and the palm vein

	recognition is 10 ~ 23cm

	In vivo detection: TAR: 98% @ FAR: 1 in 100,000
	Face comparison: TAR: 98% @ FAR: 1 in a million
Serial communication	Supports the Sogou Mingwen/encryption protocol
Working temperature	-40C~70°C
Working humidity	10% ~ 93%, no condensation
Storage temperature	-30°C~70°C
Average power consumption	0.9W
Electrostatic proecss	Contact discharge +8 KV; air discharge + 16KV (whole machine door lock test)

5. Precautions

Please pay attention to the following matters when using the product:

1. Installation height and Angle

The height and installation angle of the module camera directly affect the height supported for face unlock. Refer to the installation definition: the camera module is installed at a height of 1.2 meters, with the main optical axis at an angle of 15° to the horizontal. The recognizable height range is 1.2 to 2.0 m, with a distance of 0.4 to 1.0 m, and the optimal recognition distance is 0.6 m.

2. glass cover-plate

The camera part needs to be covered with a glass cover plate. It is recommended to use aluminum-based toughened glass and strengthen it according to the requirements. The light transmittance of the glass cover plate for 850nm infrared light should reach at least 85%, and it is suggested to add corresponding anti-reflection film, and ensure that the inner and outer surfaces of the glass are clean.

Note: Other materials, such as acrylic cover plate, can also be used as long as the above light transmittance is achieved, but glass material is preferred. The cover plate material should also consider aging deformation and discoloration, heat resistance, scratch prevention and many other factors.

3. The facial recognition effect may be reduced in the environment of excessive sunlight.

4. The internal structure design needs to consider dustproof and waterproof to avoid pollution of the camera and affect the face recognition effect

5. With age, especially for children and the elderly, there may be significant changes in appearance, and the face recognition effect may decline or fail, which may require re-entry.