

Datasheet

GT-521nF Series

Optical Fingerprint Recognition **EMBEDDED** Module

Version 1.1

May 12, 2025

Revision History

Version	Date	Description
1.0	2024/7/22	-Initial version
1.1	2025/5/12	-Update drawing

Table of content

Revision History.....	2
Table of content.....	3
1. General Description.....	4
2. Feature.....	4
3. Specification.....	5
4. Module Dimension.....	6
5. Pin Assignment.....	8
6. Power Sequence.....	8
7. Part Number.....	9

1. General Description

The GT-521nF Series are high performance fingerprint module with wake up on finger function developed by ADH Technology Co. Ltd. It is one chip fingerprint module designed for integration into products with UART interface.

The active area allows stable imaging and ability to cope with mass-market applications in need of both security and convenience.

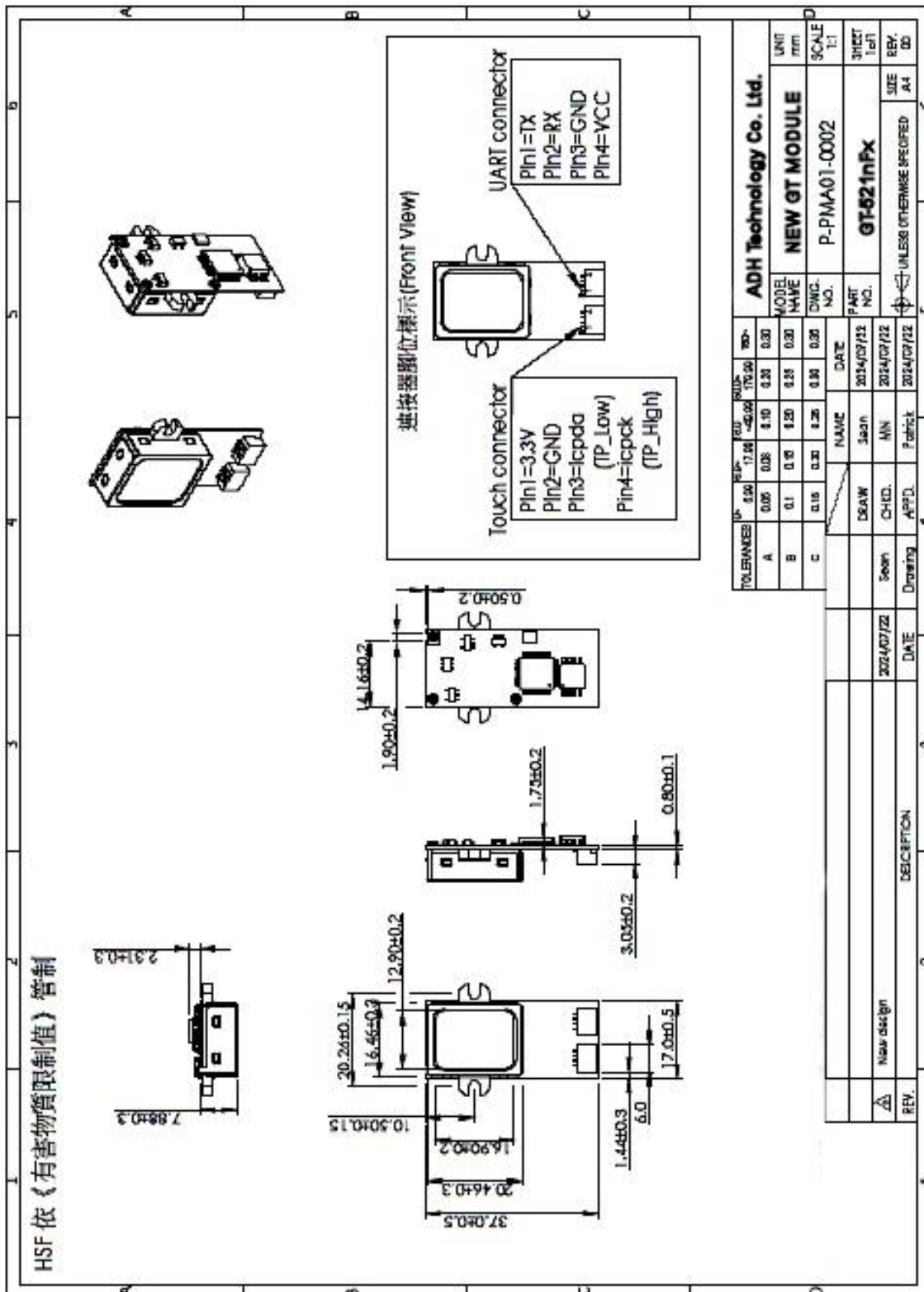
The reader within the HT32F22366 device is high performance, low power consumption 32-bit microcontrollers based around an ARM® Cortex™-M3 processor core and the fingerprint algorithm is processed on it.

2. Feature

- Simple UART communication protocol
- Ultra-thin Optical Sensor
- Resolution 508 DPI
- GT-521nF52/GT-521nF5 3000 fingerprints storage,
- GT-521nF32/GT-521nF3 200 fingerprints storage
- Wake up on Finger Function
- Works well with dry, moist or rough fingerprints
- Anti-Scratch with surface high hardness $\geq$ 5H
- 1:1 verification, 1:N identification
- Reading & writing fingerprint template(s) from/to the device
- High-accuracy and high-speed fingerprint identification technology
- Downloading fingerprint image from the device
- Convenient & Safe & Facilitation—Just one touch and easy to enroll

3. Specification

Item		GT-521nF Series
CPU		ARM Cortex M3 Core (HT32F22366)
Sensor		Optical Sensor
Window (mm)		16.9 x 12.9
Effective area of the Sensor (mm)		12.90 x 10.17
Image Size		258 x 202 Pixels
Resolution		508 dpi
The maximum number of fingerprints		200/3000 fingerprints
Matching Mode		1 : 1; 1 : N
The size of template		496 Bytes (template) + 2 Bytes (checksum)
Communication Interface		UART, default baud rate=9600bps after power on
False Acceptance Rate (FAR)		< 0.001%
False Rejection Rate(FRR)		< 0.1%
Enrollment Time		< 3 sec (3 fingerprints)
Identification Time		< 1.5 sec
Operating Voltage (V)		Power pin DC 3.3~6V TX/RX 3.3V.
Operating Current (mA)		< 130
Touch	Operating Voltage	DC 3.3 V
	Operating Current	< 3mA
	Standby Current	< 5uA
	Touch Function	Chooser Touch Active Low or High : Pin3 Touch Low Pin4 Touch High



GT-521nFx : Vertical type

5. Pin Assignment

Touch Connector

No.	Name	Description
1	VDD	Power voltage that range is 3.3V
2	GND	Ground
3	ICPDA (TP_Low)	Active Low. It could be waked-up function from touch IC to VIL = 0.66V, VIH = 2.64V
4	ICPCK (TP_High)	Active High. It could be waked-up function from touch IC to VIL = 0.66V, VIH = 2.64V

UART Connector (Baud rate 9600~115200bps)

No.	Name	Description
1	TX	Transmitting serial data VIL = 0.8V, VIH = 2V
2	RX	Receiving serial data VIL = 0.8V, VIH = 2V
3	GND	Ground
4	VCC	Power voltage that range is from 3.3~6V

6. Power Sequence

Power On: we need voltage of power pin from 0V to operating voltage within 15ms.

Power Off: we need voltage of power pin to 0V that it make sure module off.

7. Part Number

Port Number	The maximum number of fingerprints
GT-521nF32-01	200
GT-521nF52-01	3000
GT-521nF3-01	200
GT-521nF5-01	3000

Device No.	GT-521nF32-01	GT-521nF52-01	GT-521nF3-01	GT-521nF5-01
Dimension				
Mechanism	Horizontal		Vertical	
Durability	IP56			
LED light	White light			
Touch and wakeup	V			
Fingerprint storage	200	3000	200	3000