X-Telcom

X-TELCOM

Your Trusted Partner in RFID, Biometric, Palm Vein Technology & Payment Solutions

BIO WAVE PASS
Your Palm, Your ID

www.x-telcom.com
www.biowavepass.com

About BioWavePass & X-Telcom

BioWavePass is a dedicated sub-brand of **X Telcom Limited** , focused exclusively on biometric palm vein scanning solutions—from cutting-edge hardware to secure, scalable software.

We build complete identity authentication ecosystems designed for real-world applications in fintech, payment, access control, smart campuses, and eKYC.

With a global network of deployments and partners, BioWavePass empowers secure, contactless interactions for millions of users across government, education, and enterprise sectors.

BIO WAVE PASS
Your Palm, Your ID

PART 01

1 Proposal of USB Palm Vein Reader-XT-PalmVein01

BIO WAVE PASS
Your Palm, Your ID

USB Palm Vein Reader

X-Telcom Palm Vein Recognition – Key Advantages

- Secure & Compatible – Multi-layer encryption (cloud security standard + AES-256 CBC encryption for all palm vein templates and registration data)
- Dual-Mode Recognition – Palm print + vein detection for true liveness verification
- High Accuracy – RGB/IR image alignment enhances verification precision, TAR>99%
- Adaptive to Any Lighting – High-precision optics + AI-driven AE algorithm
- Contactless & Convenient – Detection range: 5–15 cm
- Built-in Palm AE – Ensures stable and efficient recognition
- Trusted for Payments – WeChat Pay-supported algorithm with full scenario testing
- Ultra-Fast & Scalable – 0.3s recognition for billions of users, accuracy surpassing facial recognition
- Built-in camera for QR code scanning (3–20 cm distance)

BIO WAVE PASS
Your Palm, Your ID

USB Palm Vein Reader

X-Telcom Palm Vein Recognition – Key Advantages

Live Detection

Palm veins are identified based on blood flow. Non-living objects without blood flow will not be identified.

Ultra-high precision

The palm vein micro features are in the tens of millions

Advanced Security

RGB+IR TAR>99%

High Accuracy

Palm vein features are very stable biological features and are unique

Health and safety

Contactless identification method,
avoiding the spread of toxic elements and bacteria

Super Quick Verification

It can realize Super Quick recognition of 5 million people IDs in 0.35 seconds, supporting the needs of billions of users

Super stable

At the DNA level, the palm veins will not be easily worn out like fingerprints

Information Security

palm vein micro-features + palm vein features into **"super native codes"**.

BIO WAVE PASS
Your Palm, Your ID

Main Introduction of our PalmVein Reader Technology

Palm vein recognition technology combines palm vein and palmprint recognition technologies. It mainly uses the computing power accumulated by artificial intelligence algorithms based on trillions of images to transform palm vein micro-features + palm vein features into **"super native codes"**. **(With RGB+ IR both mold)**

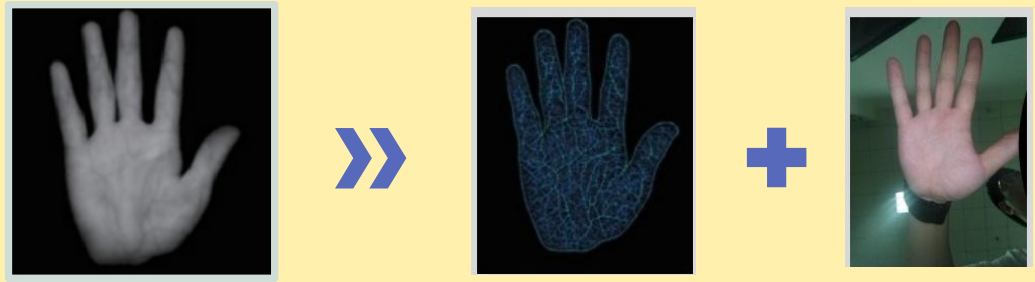
Palm vein: Irradiate the palm with infrared light, and produce a vein image based on the absorption of infrared light by hemoglobin in venous red blood cells;

Palm print: Take a photo with a high-pixel camera to obtain a clear palm print image, and the algorithm obtains palm print features based on the picture.

5-15cm Non-contact placement

Extract palm print and palm vein information

Encrypted storage images



BIO WAVE PASS

Your Palm, Your ID

Why Dual-Mode (RGB + IR) Matters for Finance (Palm Pay)

Many basic palm modules on the market only use IR light. These are fine for door access or attendance, but they do not meet the security demands of payment environments.

X-Telcom's dual-mode devices combine RGB and IR imaging, allowing for cross-verification of palmprints and subcutaneous veins. This significantly reduces spoofing risk, enhances liveness detection, and improves recognition accuracy—critical in financial, KYC, and national ID systems.

⚠ A critical warning:
IR-only palm modules are not secure enough for payments. These low-cost, single-modality modules were originally designed for access control, not finance. In secure systems, RGB + IR is the new minimum standard.

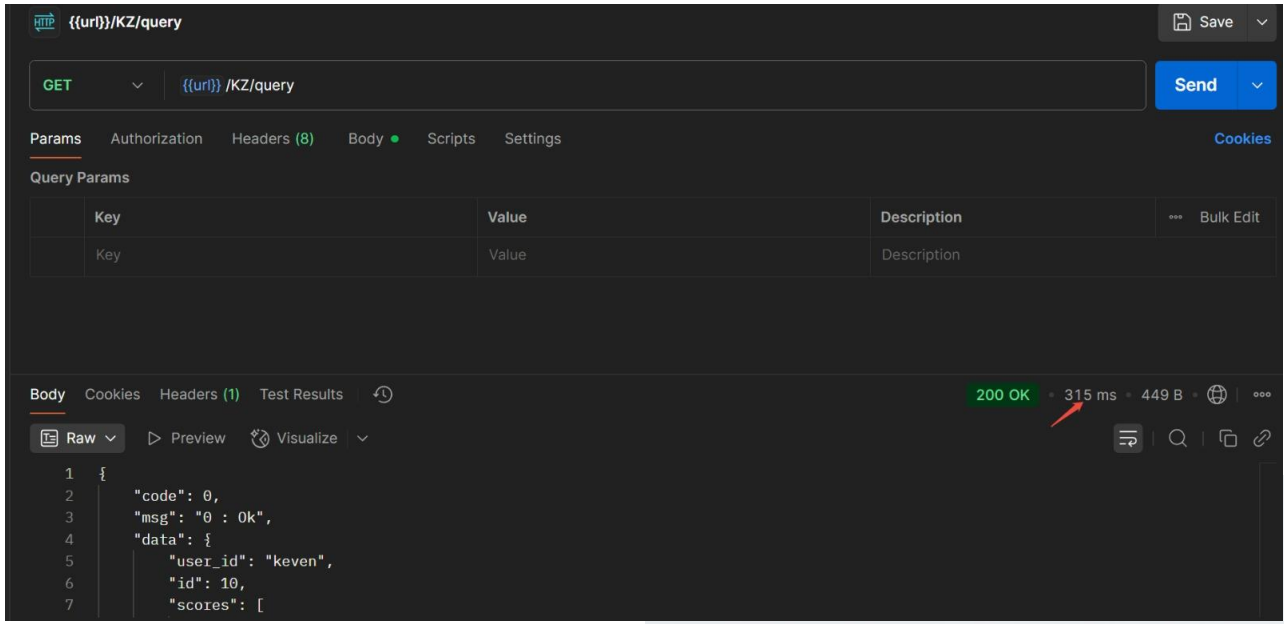
Modern palm recognition algorithms using RGB + IR can reach a false acceptance rate as low as 1 in 1,000,000 (1e-6)—exactly the precision that finance-grade applications require.

View more from our this blog: https://x-telcom.com/what-is-a-palm-payment/

BIO WAVE PASS
Your Palm, Your ID

How we redefined the Palm Vein Verification Speed

Server-side matching speed: Around 315 ms (Even when running on a database of millions of IDs, testing images on our private database as below)

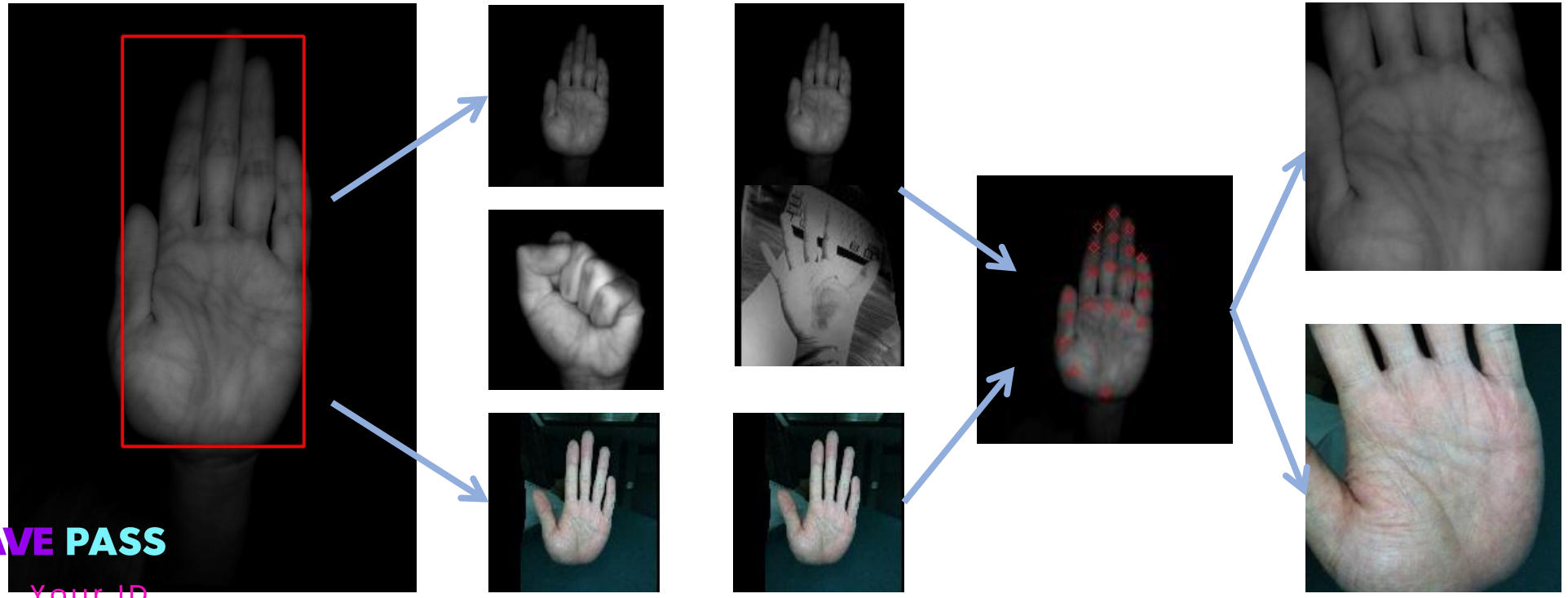


BIO WAVE PASS
Your Palm, Your ID

Our PalmVein Recognition Algorithm Route

X-Telcom

Palm detection → Palm image quality → Liveness Detection → Palm key point detection → Palm image Alignment → Palm print and palm vein identification



BIO WAVE PASS

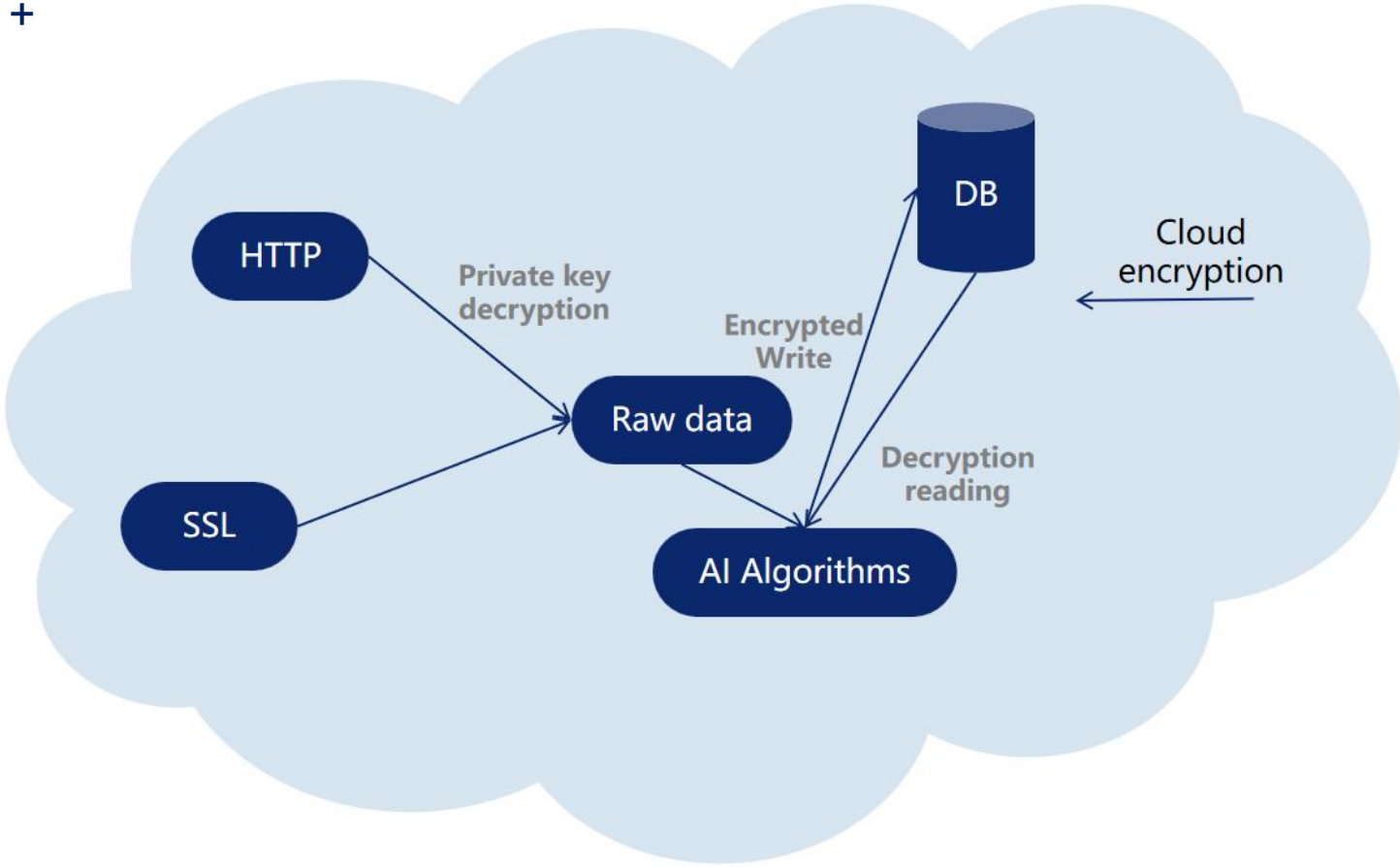
Your Palm, Your ID

Palm Vein Reader

X-Telcom

Security Design--Cloud security protection mechanism

* Transmission interface encryption: HTTP + SSL
* Cloud database encrypted storage
  - ✔Encryption before writing
  - ✔Decryption when reading
* Cloud encryption service and firewall
* AES-256 CBC



BIO WAVE PASS
Your Palm, Your ID

USB Palm Vein Reader Datasheet

X-Telcom

Main Features

INRODUCTION

PalmVein 01 RGB&IR dual-modal palm scanner camera utilizes high-precision optical technology, incorporating a high-performance ISP and AI module. It features a unique software-based AE algorithm, enabling efficient palm detection and closed-loop Palm AE under various lighting conditions, including low-light environments, to provide high-quality palm print and palm vein images.

SYSTEM REQUIREMENTS

- Image algorithm processing is carried out inside the module
- The upper computer needs to perform palmprint recognition algorithms, including liveness detection and feature extraction. It is recommended to have a system with computing power of at least Arm 4*A17@1.8GHz

FEATURES

- Palmprint/Palm Vein Dual-Modal
- Polarized light system
- RGB/IR aligned
- Palm AE inside
- Customized Lighting Interaction System
- Large Field of View (FOV), 5~15cm Palm Scanning Working Distance

APPLICABILITIES

- Palm ID and access control
- Subway turnstiles
- Retail payments

BIO WAVE PASS

Your Palm, Your ID

Palm Vein Reader Datasheet

X-Telcom

Specifications

Model & Specification		PalmVein 01
Module parameters	Overall dimensions	L53.33mm * W53.33mm * H14.43mm
	Camera	RGB/IR
	Communication interface	USB TypeC (USB 2.0 Agreement)
	Palm scanning working distance	5~15cm
	QR code scanning working distance	3~20cm,Supports for Simple QR Code
	Operating voltage	5V~12V
	Power supply current	>1.5A @5V
	Module power consumption	Average 2.5W
	ESD level	Contact discharge ±4KV, air discharge ±8KV
	RE level	Complies with GB 9254 CLASS B specifications
Palmprint Algorithm Performance	Palm Scanning Angle	Pitch angle ≤ 30°, roll angle ≤ 30°, horizontal rotation ≤ 360°
	Palm Recognition Success Rate	98%
	Host Computing Power Requirements	≥4*A17 @1.8GHz
	Algorithm Deployment Method	Support for Local Deployment and Cloud Deployment

BIO WAVE PASS

Your Palm, Your ID

PalmVein Reader Datasheet

X-Telcom

Specifications

Firmware and SDK Capability	Image Processing	High-Performance ISP inside/ Palm AE inside
	Security	Palmprint Feature Encryption
	OTA Support	Support for USB Upgrade
	Compatibility of the system	Support for Android 7/8/9/10; Support for Windows 10
Operating Conditions	Operating Temperature	-10℃~50℃
	Relative Humidity	0~95%
	Illuminance	0~50,000Lux （Module Not Exposed to Direct Sunlight）
Storage Conditions	Storage Temperature	-40℃~85℃
	Storage Humidity	10%~95%

BIO WAVE PASS

Your Palm, Your ID

Palm Vein Reader Datasheet

Specifications

System components	No
Type C interface	1
RGB_Camera	2
IR_Camera	3
Uniform Illumination Ring	4

Components of PalmVein 01

BIO WAVE PASS
Your Palm, Your ID

PalmVein Reader Demo Functions

Demo Videos

For local verification: https://www.youtube.com/watch?v=L6XuBvuAOqw (Tested on XT-PalmVein01 model)

Cloud-based verification demo video: https://www.youtube.com/watch?v=AVuyY2gbgJU (Tested on XT-PalmVein01 model)

Cloud-based Android app demo video: https://youtu.be/abDJiscPImM (Tested on XT- WavePass 500 model)

Palm Vein Recognition + NFC card demo video: https://youtu.be/qcVk9VMT0PE (Tested on XT- WavePass 500 model)

Pls Note: XT-Palm Vein 01 & XT-WavePass500 is using same Palm Vein module.

BIO WAVE PASS
Your Palm, Your ID

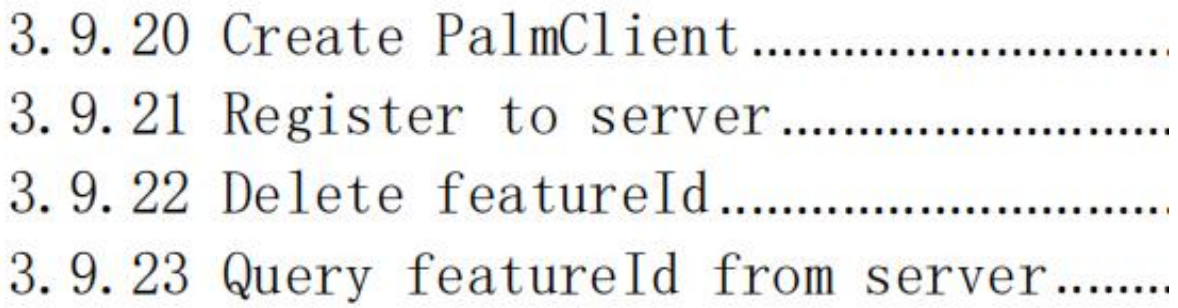
PalmVein Reader Demo Functions

X-Telcom

Demo Function 2)

How to do verification in cloud server?

A: In our SDK part, we will share the demo of server part enrollment and verification. SDK manual page screen-shot is attached.



B: If want to use our server to do demo testing. We can share testing account information

Pls Note: Over 10,000 Palm IDs, need to buy extra large verification license package mold to deploy on client's server.

3.9.20 创建 PalmClient

```
boolean createPalmClient(@NonNull String companyId, @NonNull String s
String ip, @NonNull String port, String hostName);
```

参数：

[in]	companyId	Company ID
[in]	sn	SN 号
[in]	ip	IP 地址
[in]	port	端口
[in]	hostName	域名

返回 成功:true
失败:false

BIO WAVE PASS
Your Palm, Your ID

PART 03

3 Cost Details

BIO WAVE PASS
Your Palm, Your ID

Other Models Which is using same PalmVein Reader Module

01

Cloud Palm Pay and NFC Device

(XT-WavePass 500)

With Access Control function too

02

Linux Palm Vein Device

(XT-WavePass100)

Best For： Integrators needing local ID output

(Local Verification)

BIO WAVE PASS

Your Palm, Your ID

Case Studies

01

Shanghai Bank Palm Vein Recognition Smart Kiosk

02

Metro palm vein recognition rapid verification

03

Wechat PalmVein Payment

BIO WAVE PASS
Your Palm, Your ID

Contacts Information

01

Main Sales Support

Based: Shenzhen, China

008619860843404
info@x-telcom.com

02

Main Technical Support

Based: Shenzhen, China

(0755) 3686 1479
TechnicalSupport@x-telcom.com

03

Other Overseas Support Team

Based: U.K, India, Ghana

Pls contact us to get more details

BIO WAVE PASS
Your Palm, Your ID

www.x-telcom.com

X-Telcom

THANK YOU.

Your Trusted Partner in RFID, Biometric, Palm Vein Technology & Payment Solutions

www.x-telcom.com
www.biowavepass.com

BIO WAVE PASS
Your Palm, Your ID