



BFN-YZ2003

TW1018-VI 6th Generation ESD Access Control System

Face Recognition Static

Test Wing Gate

User Manual

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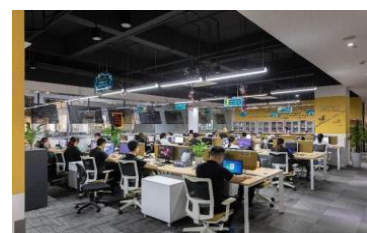
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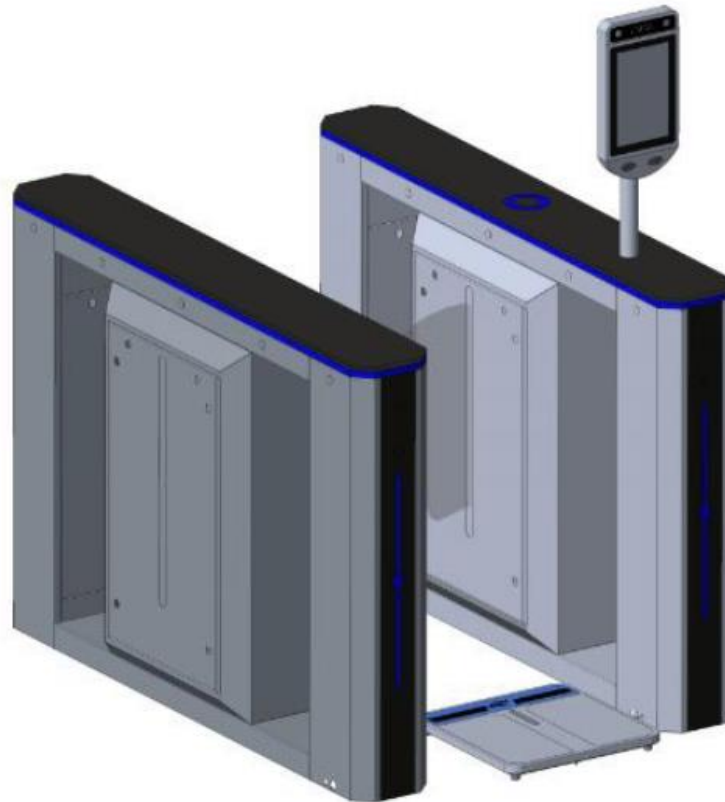
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1. Product Overview

TW1018-VI is the 6th generation human body comprehensive test access control system independently developed by HORB Technology, integrating functions such as turnstile, ESD test, identity recognition, local storage and network management. The identity recognition module supports multiple methods including face recognition, fingerprint recognition, QR Code scanning, ID/IC card swiping, ID card reading and real-person verification with ID card, and these functions can be freely selected and configured. TW1018-VI is equipped with a rich set of ESD test functions, including test interfaces for wrist straps, anti-static work clothes and anti-static work shoes. It also features a body temperature monitoring function for epidemic prevention and control, which can screen out personnel with abnormal body temperature and prohibit their passage. The system can be connected to HORB Technology's IMMP platform for network operation, and can also be used in stand-alone or multi-machine mode. In multi-machine mode or when connected to the IMMP platform, data can be uploaded and downloaded, personnel information can be synchronized, and measurement data can be shared among all devices.



Single-channel Face Recognition Flap Turnstile
(BFN-YZ1002)

◆ **Technical Parameters**

- ◇ Turnstile (Taking BFN-YZ1002/BFN-YZ1003 single/double-channel flap turnstile as an example; tripod turnstile and swing turnstile are optional)

No.	Item	Parameter
1	Overall Dimension	1400(L) * 300(W) * 1000(H) mm
2	Cabinet Material	SUS304 stainless steel, 1.5mm thick for main body and top cover
3	Door Panel Material	15mm thick acrylic
4	Channel Width	≤550mm
5	Ambient Temperature	-10°C ~ 50°C, for indoor use only
6	Input Voltage	220V~240V
7	Drive Motor	DC brushless motor
8	Device Power	35W
9	Pass Speed	50 persons/min (normally open); 35 persons/min (normally closed)
10	Protection Functions	Emergency switch, wrong entry alarm, anti-pinch, power-off door opening, etc.
11	Voice Function	Real-person voice prompt

- ◇ Identity Recognition (One or more methods optional)

No.	Item	Parameter
1	Face Recognition	Liveness detection technology; RGB, IR, or dual RGB&IR to prevent cheating
2	Fingerprint Recognition	Optical fingerprint sensor with standard USB interface
3	2D Barcode/QR Code Scanning	2D codes: PDF417, QR Code, DataMatrix; 1D codes: UPC/EAN, Code128, Code93; USB interface
4	ID/IC Card Swiping	ID card supports 8-bit/10-bit coding
5	ID Card Reading	Identity recognition, real-person liveness verification with ID card

- ◇ Data Acquisition Server

Industrial-grade motherboard, Intel quad-core processor, optional 4G/8G memory and 120G/250G SSD. Maximum supported resolution: 1920*1080; equipped with HDMI high-definition interface, 4 USB ports and Gigabit network card.

- ◇ Face Recognition Screen

Built-in 10.1-inch TFT display, HDMI connection, 3.5mm dual-channel speaker and camera module. Camera module: USB 5Vdc power supply, resolution 1280*960.

- ◇ Body Temperature Measurement

Non-contact infrared thermopile sensor for temperature measurement. Measuring range: 0-50°C, accuracy: ±0.3°C, resolution: 0.02°C. Maximum measuring distance: 0.8m for forehead temperature, 0.1m for wrist temperature.

◇ ESD Test System

No.	Item	Parameter
1	Test Interfaces	Anti-static shoes, anti-static work clothes, anti-static wrist strap
2	Measuring Range	100K~100M Ω , error $\pm 10\%$
3	Screen	3.5-inch TFT display
4	Foot Pedal	With three-color indicator light
5	Working Mode	Direct test mode

2. Packing List

No.	Item	Quantity
1	Bridge-type double-flap turnstile (with panel light) / bridge-type tripod turnstile (with panel light) / other electric control doors	1 set
2	BFN-TW1018-VE foot pedal (with light) (ESD accessory)	1 unit
3	BFN-TW1018-VI screen with face recognition function and dual-channel stereo speaker	1 set
4	SALM8001 data acquisition server (with HDMI cable, audio cable, USB cable)	1 unit
5	BFN-TW1018-VI host (ESD accessory), installed inside the turnstile	1 unit
6	IC/ID card reader	1 unit
7	QR code scanning module (optional)	-
8	Fingerprint collector (optional)	-
9	ID card collector (optional)	-
10	USB hub (1 to 4)	1 unit
11	Power adapter 12V7A	1 unit
12	USB converter (for temperature measurement)	1 unit
13	USB to TTL module (for temperature measurement)	1 unit
14	Product manual	1 copy

3. Function Introduction

3.1 Identity Recognition

3.1.1 Face Recognition Technology

Acquire and identify personnel information through face recognition and liveness detection to determine the access authority of the person. The face recognition adopts visible light liveness detection technology to effectively prevent cheating attacks such as secondary screen rephotography, and near-infrared liveness detection technology to achieve high-robustness liveness judgment.

Camera module: USB 5Vdc power supply, resolution 1280*960; image transmission rate 1-60fps; 88° small wide-angle lens; binocular 1.3-megapixel; EFL focal length 2.9mm; FOV angle: H:80°/V:60°/D:95°.

3.1.2 Fingerprint Recognition

Identify personnel information by reading fingerprints. The fingerprint recognition adopts an optical fingerprint sensor with a standard USB interface, effective acquisition window 15.220.3mm, image size <300400pixel, and image resolution 500dpi.

3.1.3 IC/ID Card Recognition

Identify personnel information by swiping IC/ID cards.

3.1.4 2D Barcode/QR Code Scanning

Identify personnel information by scanning 2D barcodes/QR codes. USB interface is adopted, supporting 2D codes (PDF417, QR Code, DataMatrix, etc.) and 1D codes (UPC/EAN, Code128, Code93, etc.). Scanning performance: 640(horizontal) x 480(vertical), 256 gray levels, scanning accuracy ≥5mil.

3.1.5 ID Card Recognition and Verification

Read all information of the personnel's ID card and perform real-person liveness verification to confirm the personnel's access authority.

3.2 Application Scenarios

No.	Solution	Scenario	Description	Function Configuration Options
1	A	Factory/Community	Internal personnel management (internal management + ESD control + epidemic prevention and health monitoring)	Body temperature test: select either wrist temperature or forehead temperature, or not select; select one or more of IC/ID card, fingerprint, face recognition and barcode scanning; ESD test is optional as required
2	B	Business Hall	Internal staff + real-name registration and authentication for external personnel (epidemic prevention and health monitoring + personnel registration)	Body temperature test: select either wrist temperature or forehead temperature, or not select; the above solution + ID card recognition and registration + real-person verification with ID card
3	C	Catering/ Public Places	Internal staff + real-name registration for external personnel (epidemic prevention and health monitoring + personnel registration)	Body temperature test: select either wrist temperature or forehead temperature, or not select; the above solution + ID card recognition and registration

3.3 Mode Functions

3.3.1 ESD Test Mode

Supports the test of anti-static shoes, anti-static work clothes and anti-static wrist strap, which can be selected and combined separately. Measuring range: 100K~100M Ω , error $\pm 10\%$. The ESD mode needs to be used with the BFN-TW1018-VE foot pedal. The "Reception Mode" can be selected for testing in this mode, after which customers can freely select test items (precondition: any kind of identity recognition is triggered). In addition, it supports the clock-in function to record the clock-in information of registered personnel.

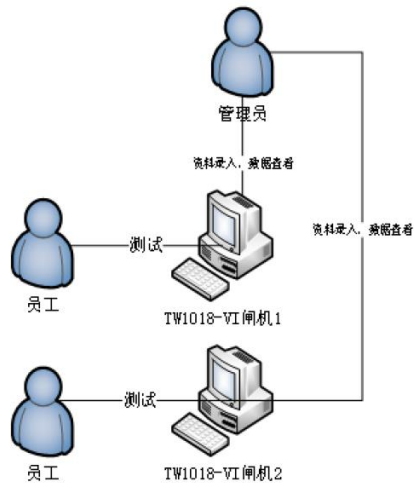
3.3.2 Body Temperature Measurement

Supports forehead temperature or wrist temperature measurement. The maximum measuring distance of the forehead temperature sensor is 0.8m, and that of the wrist temperature sensor is 0.1m. Generally, wrist temperature can reach a value closer to the actual body temperature. Measuring range: 0-50°C, sensor accuracy: $\pm 0.3^\circ\text{C}$, measurement resolution: 0.02°C. Equipped with an optical filter to resist visible light interference. The device will automatically alarm when the temperature is higher than the default set value of 37.3°C, which is conducive to the management and control of key personnel during the epidemic.

3.4 Operation and Networking Modes

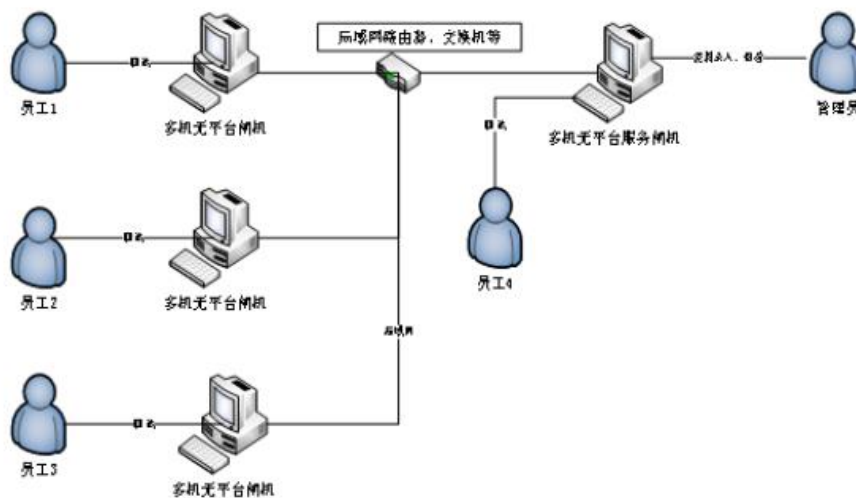
3.4.1 Stand-alone Operation Mode

The stand-alone operation mode means each turnstile runs independently, with no data sharing or centralization between turnstiles. Personnel information needs to be entered and set separately for each device. This mode is suitable for scenarios with a small number of turnstiles and personnel, or insufficient network facilities at the installation location of turnstiles.



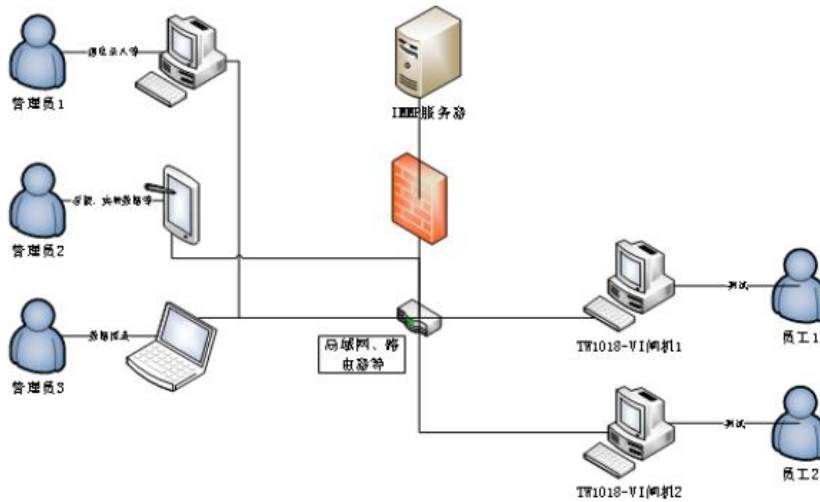
3.4.2 Multi-machine Networking Operation Mode

The multi-machine networking operation mode refers to the networking operation of multiple turnstiles, with one turnstile set as the server host. Features of this mode: personnel information only needs to be entered and set on the turnstile serving as the server host, and other turnstiles can synchronize the relevant information of the host; at the same time, the detection data of other turnstiles can be collected to the server host, making it more convenient to query, count and export data. This mode is suitable for scenarios with a large number of turnstiles and personnel, and complete network facilities at the installation location of turnstiles.



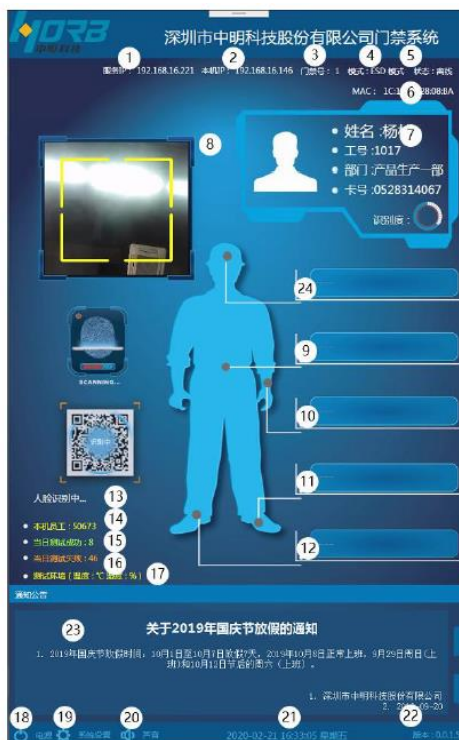
3.4.3 IMMP Platform Networking Operation Mode

The IMMP platform networking operation mode is a unified management mode with multiple turnstiles connected to the network and managed by the IMMP platform. The IMMP platform is responsible for basic data maintenance, real-time data monitoring, data statistics and analysis, etc. All turnstiles synchronize the basic data of the IMMP platform and submit the detection data to the IMMP platform. This mode is suitable for occasions with a large number of personnel, large and scattered factory areas, multiple floors, and the need for a unified data management platform and multi-level monitoring dashboards.



4. Working and Test Interfaces

4.1 Face Recognition Display Screen



- | | | |
|---|---|--|
| 1. Server IP address | 10. Wrist strap resistance value | 19. System settings |
| 2. Local IP address | 11. Right shoe resistance value | 20. System sound setting (the software automatically sets the maximum volume after startup) |
| 3. Current test mode | 12. Left shoe resistance value | 21. System time |
| 4. Access control number | 13. Recognition and information prompt | 22. Software version number |
| 5. Current connection status with the server host | 14. Number of local employees | 23. Notice and announcement bar |
| 6. Computer network card MAC address | 15. Number of successful tests on the day | 24. Body temperature display area: the tested body temperature is displayed on the interface |
| 7. Employee information display area after successful recognition | 16. Number of failed tests on the day | |
| 8. Image captured by the camera | 17. Test temperature and humidity data | |
| 9. Clothing resistance value | 18. Power management / exit system / restart / shutdown | |

4.2 ESD Human Body Comprehensive Tester



- | | | |
|--------------------------------------|------------------------------------|-------------------------------------|
| 1. ESD test display screen | button | 6. IC/ID card swiping area |
| 2. Single-wire wrist strap test jack | 4. Dual-wire wrist strap test jack | 7. 2D barcode/QR code scanning area |
| 3. Anti-static work clothes test | 5. Test button | 8. Fingerprint recognition area |

4.3 ESD Test Foot Pedal

Including metal pedals for the left foot test area and the right foot test area.



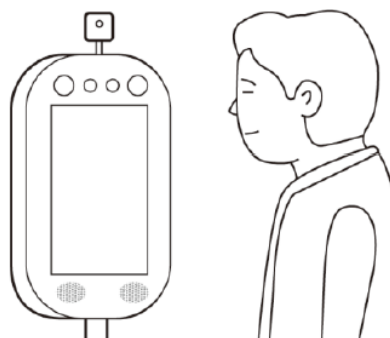
5. Installation and Use

After the device installation is completed, first import the personnel information into the device according to different operation modes (see Section 6 for data import). After the personnel information is imported, the turnstile can be used normally after power-on. The normal use process is "Identity Recognition" → "Test" → "Pass/Retest" → "Turnstile Opening".

5.1 Identity Recognition

One or a combination of several identity recognition methods can be selected, and the subsequent test can only be carried out after successful identity recognition.

5.1.1 Face Recognition



Raise your head and face the camera of the display screen for face recognition, adjust your face to the yellow frame appropriately. If the face recognition is successful, the personnel information will be displayed and the prompt "Recognition successful, please start the test" will be given; if the recognition fails, it is necessary to re-recognize.



5.1.2 ID/IC Card or ID Card Recognition

Move the ID/IC card or ID card to the RFID position. When the instrument beeps "di", the ID/IC card number or identity information is recognized successfully, the personnel information is displayed, and the prompt "Recognition successful, please start the test" is given; if the recognition fails, it is necessary to re-recognize.



5.1.3 2D Barcode/QR Code Scanning

Align the printed surface with the 2D barcode/QR code to the scanner, the 4 LEDs of the scanner will light up. When the instrument beeps "di", the information is recognized successfully, the personnel information is displayed, and the prompt "Recognition successful, please start the test" is given; if the recognition fails, it is necessary to re-scan.



5.1.4 Fingerprint Recognition

Place the fingerprint side of the finger on the glass mirror of the fingerprint scanner, the LED of the fingerprint scanner will light up, and the fingerprint reading is successful when the LED is off. The personnel information is displayed and the prompt "Recognition successful, please start the test" is given; if the reading fails, it is necessary to re-read the fingerprint.

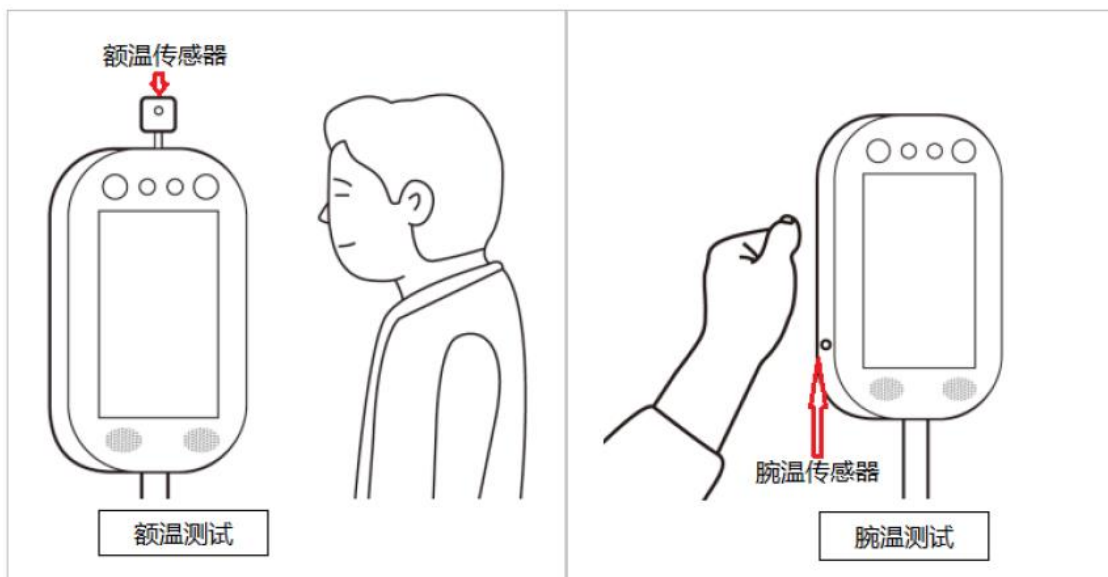


5.2 Test

According to the test mode set for different application scenarios, the test can be carried out after successful identity recognition, and the passage is allowed after a successful test.

5.2.1 Body Temperature Test

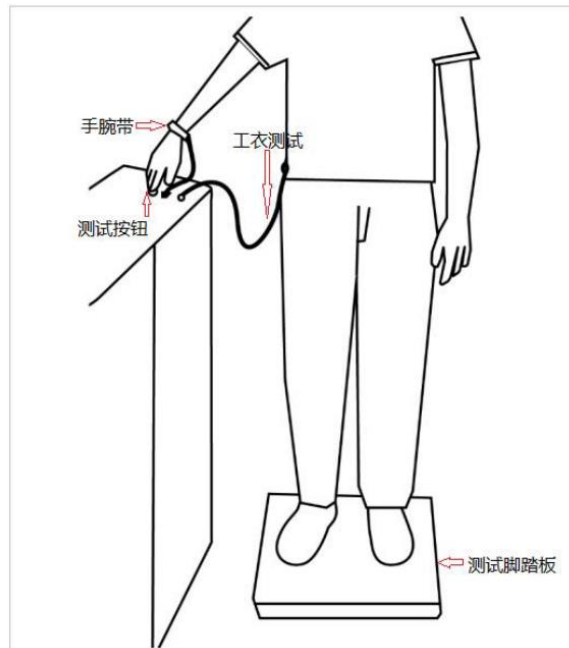
For wrist temperature measurement, bring the wrist close to the sensor on the left side of the screen. For forehead temperature measurement, there should be no obstruction such as work caps or hair, and align with the camera position of the screen. Wait for the test result and voice prompt, such as "Normal body temperature". The maximum measuring distance of the forehead temperature sensor is 0.8m, and that of the wrist temperature sensor is 0.1m (adjustable).



5.2.2 ESD Test

The ESD test mode can test the wrist strap, anti-static shoes and anti-static clothes at the same time, or test one or two of them according to the settings. During the test, step on the metal measurement areas of the foot pedal with the left and right feet respectively, insert the plug of the worn wrist strap into the test jack (note: the jacks for single-wire and dual-wire wrist straps are different), and connect the alligator clip/jean button for work clothes test to the work clothes. After hearing the voice prompt "Please start the test", press the test button. If the test is qualified, the voice prompt "Test qualified, please pass" will be given, the foot pedal will light up green, and the turnstile will open automatically; if the test is unqualified, the prompt "Test unqualified, please retest" will be given, the unqualified items of the test will be displayed on the screen, the foot pedal will light up red, and the turnstile will not open.

If the wrist strap test is not required, there is no need to insert the wrist strap into the test jack; similarly, if the work clothes test is not required, there is no need to connect the alligator clip/jean button for work clothes test to the work clothes.



6. Software Operation

The software platform of the system has flexible terminal management, mode control and information management functions on the local end and the platform; the platform supports multi-level account management and authorization; it has powerful functions of data import and export, statistics, analysis and graphical dashboard on the local end and the platform; the local 120G/250G solid-state hard disk enables long-term storage of data and information; the networked IMMP platform has a larger storage capacity for worry-free storage.

6.1 Enter System Management

Click the 'Settings' button with the mouse on the main interface of the face recognition display screen, and a password input box will pop up; enter the correct management password (the default factory password is admin123, the password can be restored by clicking 'Reset Password' if forgotten); click 'OK' to enter the management main interface.



6.1.1 Modify Password

Click the 'Modify Password' button on the password input interface, and a password modification dialog box will pop up; enter the old password and the new password, and click 'OK' to complete the password modification.



6.1.2 System Management Interface

Enter the system management interface after inputting the correct password.



1. Power management: exit system, restart computer, shut down computer
2. Current computer IP address
3. Current test mode
4. Current connection status with the server host
5. Time
6. Camera and face recognition authorization (gray means not authorized)
7. Fingerprint connection status (gray means not connected)
8. Connection status with the server (gray means offline)

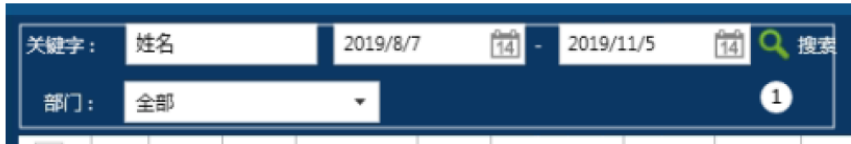
6.2 Employee Management



1. Employee information condition screening: including date, name and department screening
2. Import function: import employee information through Excel spreadsheet
3. Export employee information function (precondition: select employees)
4. Delete employees (precondition: select employees)
5. Import employee face photos
6. Open face photo shooting window
7. Open fingerprint management window
8. Check box for work shoe test
9. Check box for wrist strap test
10. Check box for work clothes test
11. Employee information pagination bar
12. New employee addition button
13. Save button

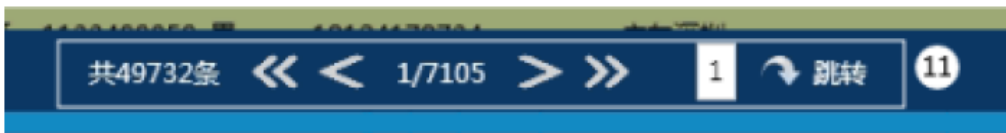
6.2.1 Search

Fill in the corresponding information in the search area, such as date, employee name, employee ID, department (support fuzzy query and conditional combination query), and click Search. The results are displayed in the list below the information area.



6.2.2 Search Information Operation

Click '<' for the previous page, '<<' for the first page, '>>' for the last page, '>' for the next page in the pagination area; enter the corresponding page number in the text box and click 'Jump' to go to the specified page.



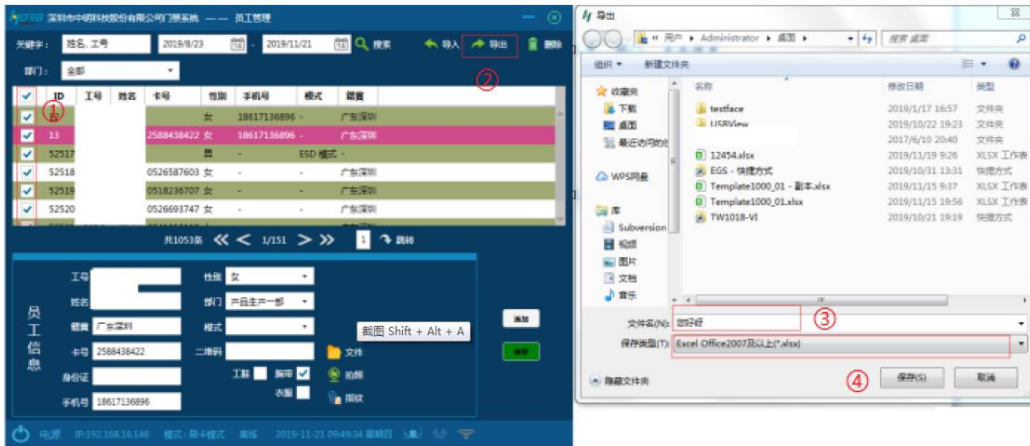
6.2.3 Delete

Select the information to be deleted, click the 'Delete' button, a deletion dialog box will pop up, confirm the deletion, and the deletion is successful.



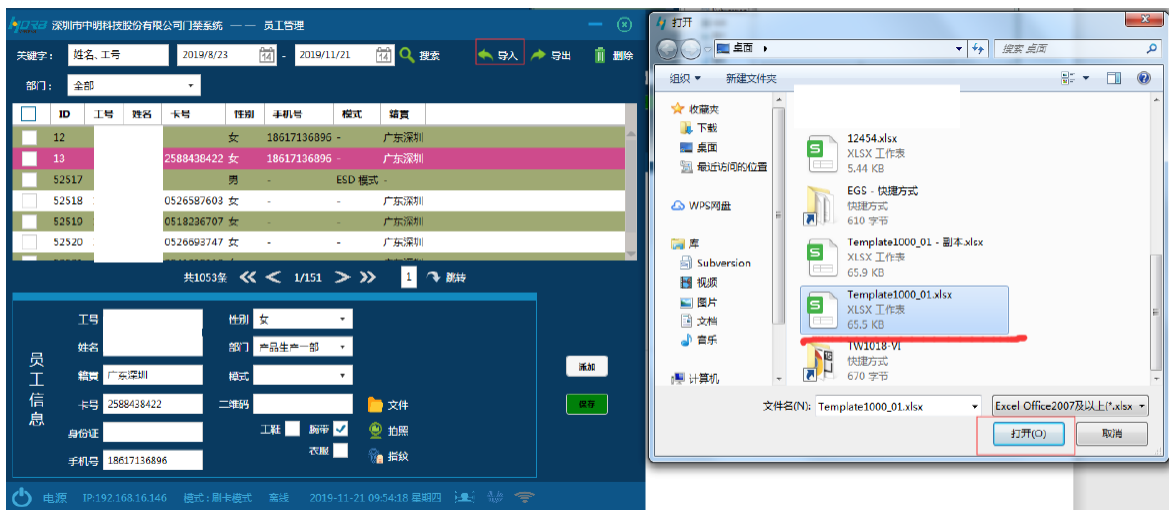
6.2.4 Export of Employee Information

First check the employees to be exported, click the Export button, a dialog box will pop up; fill in the file name and select the compatible format from the drop-down box in the system pop-up dialog box, click Save, and a success prompt will be given.



6.2.5 Import of Employee Information

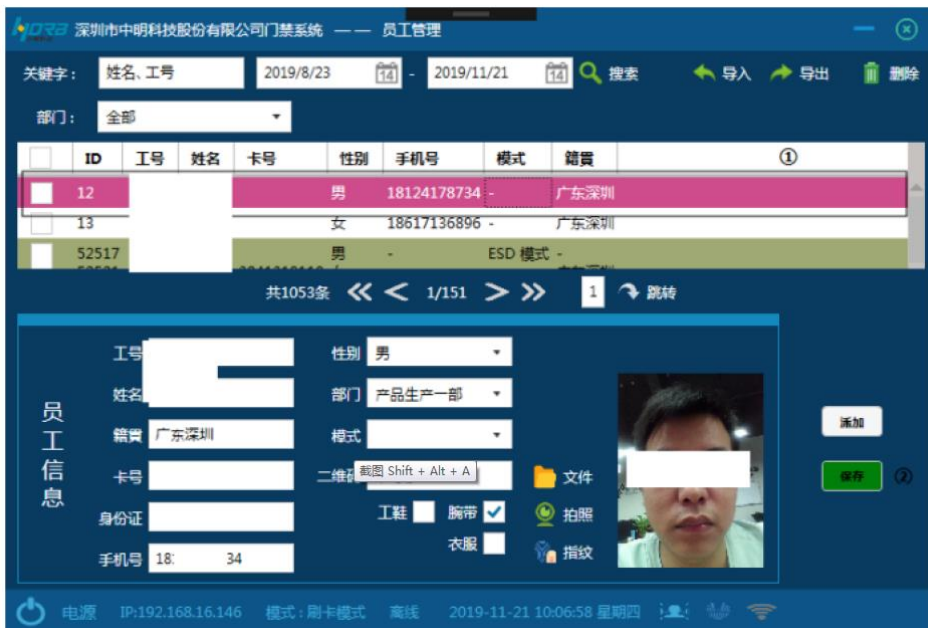
Move the mouse to the Import button and click Import; a dialog box pops up to select the prepared employee information file (supporting .xlsx and .xls formats); click the 'Open' button, the window closes, and an import progress bar is displayed as shown in the figure below. A prompt of the number of successful imports will be given after successful import (note: the information with the same employee ID will be automatically modified during import, the employee ID that does not exist will be directly added, and ensure that the card number information is not repeated during import, as only one person's information can be identified for duplicate card numbers).





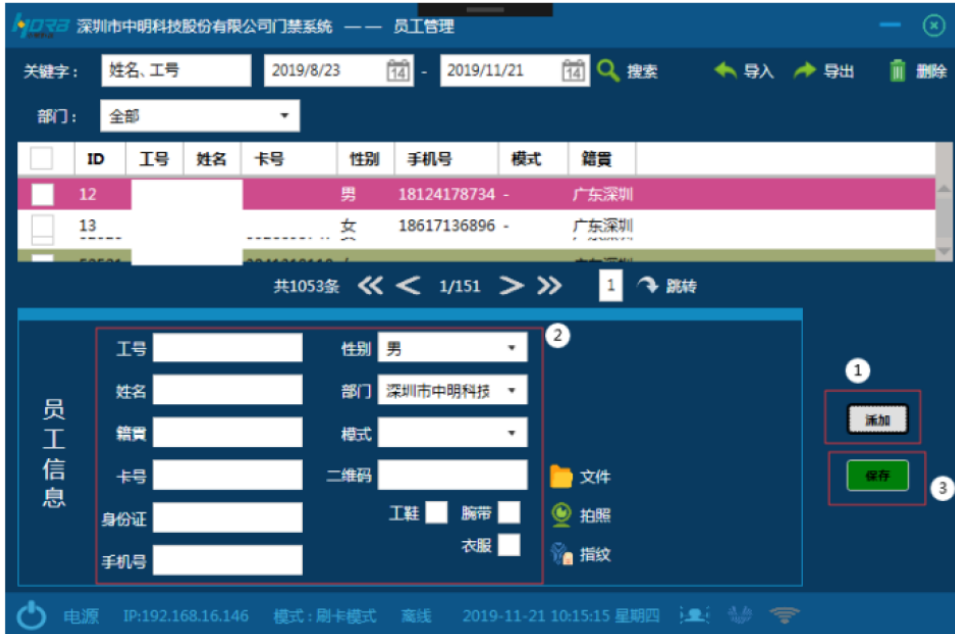
6.2.6 Modification of Employee Data

Click the mouse to select an employee, the employee information will be displayed in the 'Employee Information' bar below; modify the corresponding information of the employee; click the 'Save' button, and a prompt of successful saving will be given. If it fails, please check whether the input data is repeated.



6.2.7 Add New Employee Data

Click the ① 'Add' button with the mouse; complete the information in the ② 'Employee Information' box; click the ③ 'Save' button, and a prompt of successful saving will be given.



6.2.8 Face Information Entry

Face information can be entered by on-site photo shooting or photo file import.

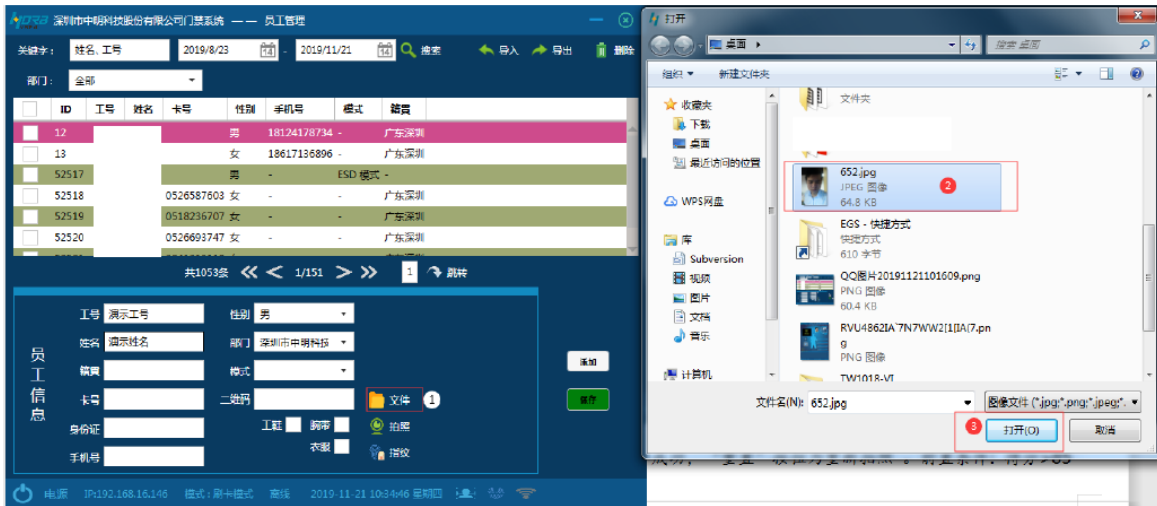
6.2.8.1 On-site Photo Shooting

Click the ① 'Shoot' button with the mouse on the employee management interface (precondition: employee ID is required); the on-site photo shooting window pops up; click 'Shoot' or 'OK', a prompt of successful saving will be given (re-shooting is required if it fails), and the 'Reset' button is for re-shooting (precondition: score > 85).



6.2.8.2 Photo File Import

Click the ① 'File' button with the mouse (precondition: employee ID is required); a dialog box pops up to select the picture to be imported ②; click ③ 'Open', a prompt of successful saving will be given (re-import a higher-quality picture if it fails) (precondition: the system automatically identifies the face score during import, score > 85).



6.2.9 Fingerprint Information Entry

Click the ① 'Fingerprint' button with the mouse on the employee management interface to open the fingerprint management window (precondition: employee ID is required); after the fingerprint management box pops up, place the finger on the mirror of the fingerprint scanner for fingerprint entry, at this time the fingerprint will be displayed in window ③, and 'Press fingerprint for the 1st time' will be displayed in ④ (change another finger if the fingerprint is repeated); press the same finger three times in a row; a prompt of success will be given and a new fingerprint information will be added to the fingerprint list.



6.3 Data Management

Data management has the functions of test data search (screening/query), export and deletion of selected employee data. Click Data Management to enter the data management interface.



The test data search (screening/query) function is the same as the search function of personnel management, which can be screened by conditions such as date, name and department (see position ① in the figure to select search conditions, for specific operations, refer to 6.2.1 Search / 6.2.2 Search Information Operation / 6.2.3 Delete, etc.); the data export function is the same as the export function of personnel management, for specific operations, refer to 6.2.4 Export of Employee Information.

6.4 System Settings

System settings can set the "basic parameters", "network", "upper and lower limits" of ESD test and the operation mode, the interface description is as follows:



- | | |
|--|---|
| 1. Device number | 1, the system will prompt 'Retest' once) |
| 2. Restore factory settings | 8. Turnstile test mode selection |
| 3. System date setting | 9. Local IP address setting |
| 4. System language selection | 10. Server IP address setting |
| 5. Face recognition liveness mode setting | 11. Server port setting |
| 6. ID card bit number | 12. Test upper and lower limit standard setting |
| 7. Number of retests after unqualified test (if set to | 13. Service mode setting |

6.4.1 Basic Parameter Setting

Enter the system setting interface and fill in the content to be set in area ①; among them, the "device number" corresponds to the device number of the human body tester. Inconsistent device numbers will cause the test data to fail to be sent and received normally, and the device number of each machine shall not be repeated. Judge liveness through RGB camera, IR camera, or dual IR&RGB cameras (IR RGB is generally recommended for face mode). The turnstile mode can be selected as "Card Swiping", "Reception" or "ESD" according to the operation mode. The card bit number is set according to the actual card bit number used. Set the number of retests after unqualified test (if set to 1, the system will prompt 'Retest' once). After filling in, click ② 'Save', and a prompt of successful saving will be given (recheck the input if it fails).



6.4.2 Network Setting

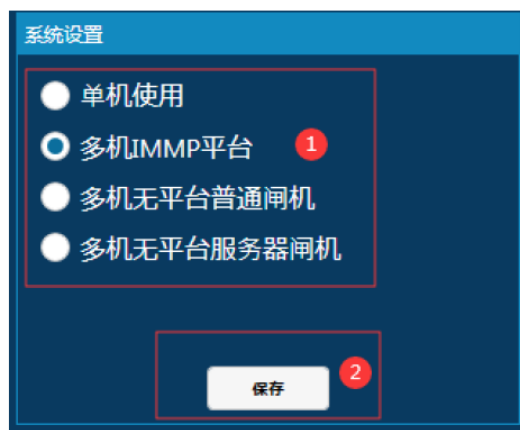
Enter the system setting interface, fill in the IP address content in area ① (local IP address and other information); fill in the server address content in ② (IMMP and server turnstile provide TCP communication for the turnstile, the default port is 8122), which is not required for stand-alone operation mode (will not appear); click ③ 'Save', and a prompt of successful saving will be given (recheck the input if it fails).



6.4.3 Service Mode Setting

Enter the system setting interface, select the service mode in area ① (see 3.4 Operation and Networking Modes for the description of service modes); click ② 'Save', and a prompt of successful saving will be given.

Note: Do not change the server at will after the setting is successful and the communication is normal (online) (the IP can be changed, the server host cannot be changed), which may lead to data inconsistency and data conflict!



7. Troubleshooting

7.1 System No Response

You can try to turn off the power and restart the computer to observe whether the system can return to normal.

7.2 No Display for Camera/Fingerprint Recognition

Plugging and unplugging the device's USB (including mouse and keyboard) will cause the software to reload. If no device is displayed, you can exit the software and reopen it. Do not plug or unplug various peripherals when the system is running normally.

