

CVX021 Facial Recognition and Temperature Measurement

Android version operation guide V1.4



Document version

Version No	Revision date	Equipment version	Revised content
V1.0	2018/12/25		
V1.1	2019/02/15	V.1.0.12	Add living judgment settings, face detection distance settings, report interval settings, etc,Fix some content errors
V1.2	2019/03/26	V.1.0.20	Add camera settings, time period settings, exposure intensity, filter settings, and fix some software bugs
V1.3	2019/06/11	V.1.0.33	The connection setting incorporated into the network setting function, adding intelligent mode, adding recognition record export, and repairing some software bugs
V1.4	2020/04/06	V1.0.36.8_9S V1.0.36.8_9S_TEMP	Five new verification modes, new data management module, new temperature sensing setting, new factory reset setting, new U-disk list backup and restore function, new U-disk batch import registration, new intelligent fill light Optimize other functions and fix some software bugs



App software runs in the integrated machine. The user has the responsibility to deploy the integrated machine according to the specifications of the integrated machine and design the safety protection mechanism during the use of the integrated machine.

Preface

Purpose of user manual

By reading this manual, users can understand the framework and composition of the face recognition all in one app, and can correctly use the face recognition all in one app.

Users of the manual

This manual is applicable to system operation and maintenance personnel, on-site technical support engineers, system administrators and business operators.

Main contents of the manual

This manual consists of three chapters. This paper introduces the framework and composition of face recognition integrated machine app, the main interface of APP recognition, APP management, fast use and common problems.

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Chapter 1. overview

1.1 Explanation of terms and abbreviations

Terms, abbreviations	Interpretation
Face recognition	Face recognition is a kind of biometric technology based on the facial feature information. Using camera or camera to collect the image or video stream containing face, and automatically detect and track the face in the image, and then carry out face recognition for the detected face, a series of related technologies, usually also called human image recognition and face recognition.
Live detection	Living detection is a method to determine the real physiological characteristics of the object in some authentication scenes. In face recognition applications, living detection can verify whether the user operates for the real living person by blinking, opening mouth, shaking head, nodding and other combined actions, using face key point positioning and face tracking and other technologies. It can effectively resist common attacks such as photos, face changes, masks, masks and screen remakes, so as to help users identify fraud and protect the interests of users.
Pedestrian gate	Pedestrian gate is a kind of channel blocking device (channel management equipment), which is used to manage the flow of people and regulate pedestrian access. It is mainly used in Metro gate system and toll gate system. Its most basic and core function is to achieve only one person at a time, which can be used at the entrance of various charging and access control occasions.
Face recognition integrated machine	Face recognition integrated machine is a completely offline face recognition access control and attendance product. It is positioned in the middle and high-end access control and attendance market, replacing the card swiping and fingerprint access control and attendance machines in the market.
Switching value	"On" and "off" are the most basic and typical functions of electrical appliances. Switching value refers to the value corresponding to the on or off of the control relay, i.e. "1" and "0". Switching value refers to the acquisition and output of discontinuous signals, including remote signal acquisition and remote control output. It has two states: 1 and 0, which are the switching properties of digital circuits. In electric power, it refers to the on and off of circuits or the on and off of contacts. In general, the output of switching value is realized by internal relay.
Wiegand protocol	Wiegand protocol is a unified international standard, which is a communication protocol developed by Motorola. It is applicable to many features of card readers and cards related to access control system. It has many formats, and the standard 26 bit format should be the most commonly used. In addition, there are 34 bit and 37 bit formats. The standard 26 bit format is an open format, which means that anyone can buy a specific format of IC card, and the types of these specific formats are publicly available. 26 bit format is a widely used industrial standard and is open to all IC card users. Almost all access control systems accept the standard 26 bit format.

Single click	Click with the left mouse button
double-click	Double click with the left mouse button
[]	Represents the window name, menu name and data table, such as [download address]
*	

1.2 App introduction

The face recognition integrated machine app is a device end application system, which mainly realizes the functions of face detection, living detection and face comparison, and realizes the opening and opening of the gate. The application system effectively manages the personnel database and recognition records, which can realize the functions of adding, deleting, modifying and checking, and can be synchronized to the personnel access system and the third-party system platform.

1.3 Basic functions

main interface

Realize the real-time video preview of the main camera, detect and track the face and frame in the video stream; support the success and failure reminders of face comparison (such as pop-up frame, voice broadcast and status light reminders).

Setting interface

The management interface of the face recognition all-in-one machine can manage the list and record; it can carry out equipment for recognition, system, output control and platform connection, and support functions such as account security and UI replacement.

Chapter 2. Main interface

2.1 Turn on the device

After the device is powered on for about 5 seconds, the screen will light up slowly and see the Android power on sign (as shown in Fig. 2.1); after waiting for 2 seconds, enter the main program of face recognition integrated machine and see the loading progress bar of face recognition integrated machine program (as shown in Fig. 2.2); after loading, enter the main recognition interface.





Figure 2.1 Figure 2.2

2.2 Main interface

The main interface is the main display interface of the operation process of the face recognition all-in-one machine, including the app's logo / device name / number of currently recognized faces / current device time / software version number and other functions, as shown in the following figure:

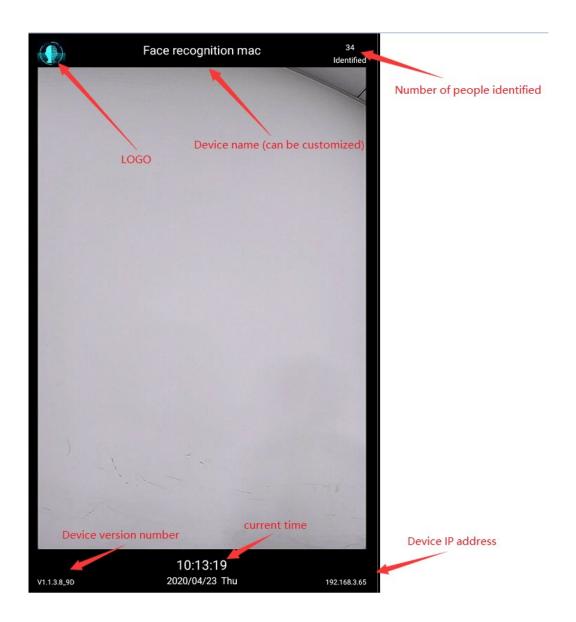
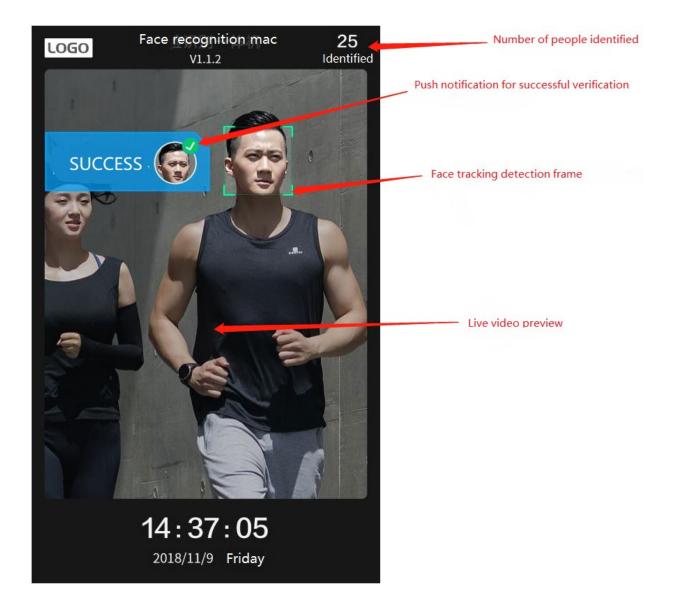


Fig. 2.3

2.3 Verification and identification

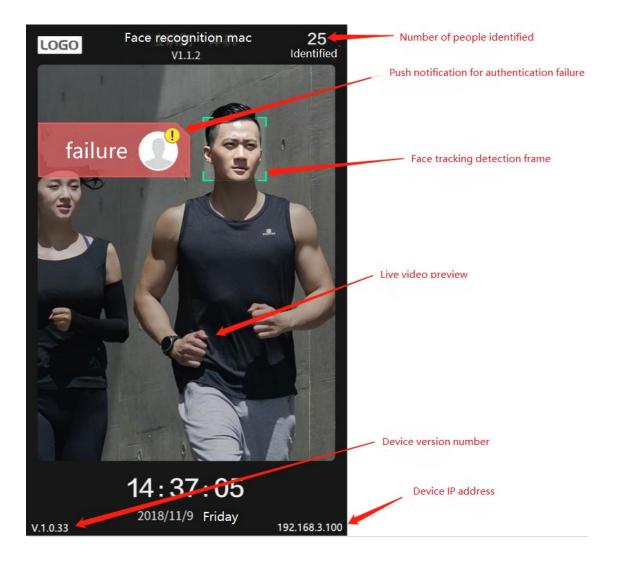
2.3.1 Verification passed

After the registered face is successfully recognized, the push result will pop up from left to right to display the name of the registered person (displayed for three seconds), broadcast voice prompt and the indicator light will be green. The main recognition interface will track the moving face in the screen at any time and display the green box in the four corners. See next image.



2.3.2 Validation failure

After the person who is not registered in the list database is photographed and recognized by the all-inone machine, he / she will be prompted that he / she is not registered (displayed to stay for 3 seconds), the voice is broadcast and the indicator light is red. The screen effect is as follows:



Chapter 3. Function management

Nine management modules can realize the management of list and record, and can set camera, system, account, identification, UI, connection and output control.

3.1 Login management function interface

The app management interface is the main functional interface for the stand-alone operation of the face recognition integrated machine, which can configure various parameters of the device.

- 1. Login method: password or administrator's face
 - a) Click on the green at the top left of the screen
 a) The app icon enters the app management interface login status;
 - b) Enter password in login status window (default factory password is 123456, confirm to enter);
 - b) Click the face button to enter the management interface after the successful face management and recognition;

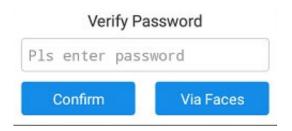


Figure 3.1

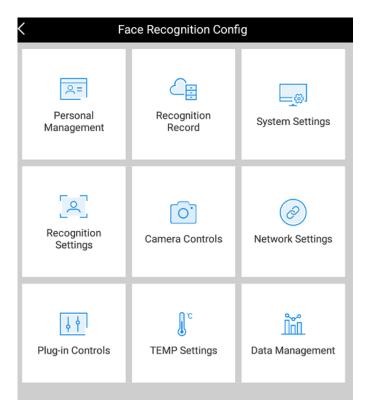


Figure 3.2

3.2 List management

List management is used to add, edit, search and delete the personnel list of the equipment; local import supports shooting and warehousing through the camera of the integrated machine, or adding and warehousing through the U disk into the equipment memory; cloud import supports batch import of multiple equipment through the personnel pass system.

3.2.1 manual registration list

1. Add personnel

Click the list management icon in the management interface Enter the list management function, click the Add button in the upper right corner Enter the add interface, as shown in picture 3.3 below

Cancel	Personnel Adding				
Portrait	Name: David Sex: Female Male Auth: Admin White List Black List				
Mobile:	13111111111				
ID:	360808198807253612				
Staff Num:	12301				
Word Card:	158728				
Department:	Movie				
Post:	actor				
Authorised peri	icPls select the time >	Clear			

Figure 3.3

2. Configure the storage image mode

You can select camera to take photos or add photos from the gallery. In the add person interface, click the bottom of the configuration picture to pop up two options: camera and gallery.

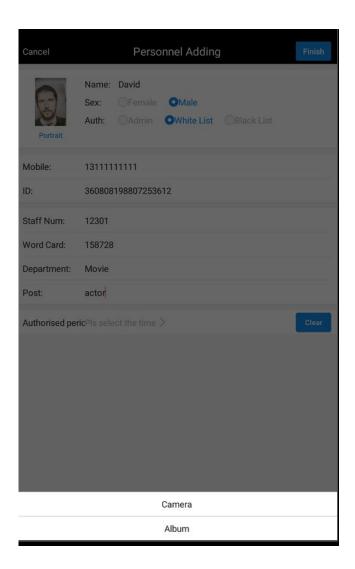


Figure 3.4

3. Camera takes face photos

Click to select the camera in the add person interface and enter the main recognition interface about 1 second later, and display a circular frame in the middle of the screen. The photographed face should be in the circular face frame, as shown in Figure 3.5 below

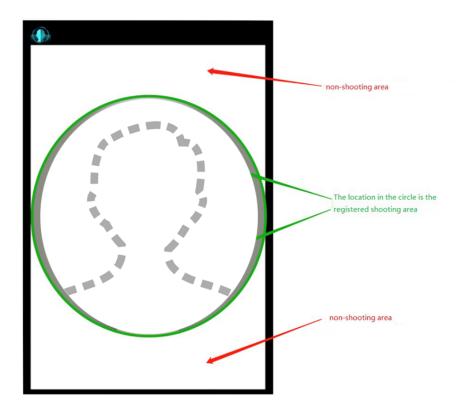


Figure 3.5

4. Shooting specifications

a) Correctly input shooting posture

Face expression

In order to ensure the input quality of face parameters and the accuracy of comparison, it is necessary

to keep the natural expression during the input / comparison process (as shown in Figure 3.6).

Please do not wear hat, sunglasses and other accessories that may affect the collection of facial features during face recording, do not let the bangs cover the facial features, and do not put on heavy makeup.



Figure 3.6 natural facial expression sample

Face posture

In order to ensure the input quality of face parameters and the accuracy of comparison, it is necessary to ensure that the face is facing the input screen during the input / comparison process.

The description of face input posture is as follows:

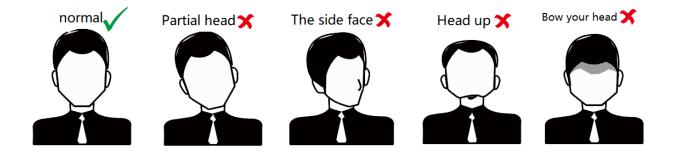


Figure 3.7 schematic diagram of face input posture

Face size adjustment in the screen

In the registration process, please try to make the face in the center of the screen; the face size adjustment diagram is as follows:

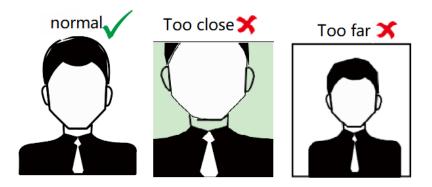


Figure 3.8 schematic diagram of face distance adjustment

- a) Add personnel list information requirements
- Add name, gender and configuration picture in personnel information as required options;
- Add the mobile phone number, ID card number, work number, card number, Department, position
 and effective time period in the personnel information as options, and fill in as required, as shown
 in the following figure:

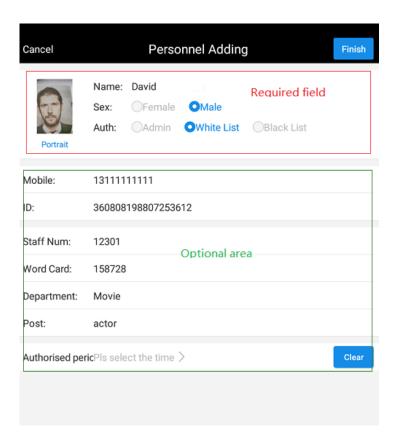


图 3.9

3.2.2 List query and editing

1. After adding the face photos and information of the personnel list and returning to the list management, all the added lists will be automatically refreshed, and the total number of the current list will be displayed in the list management title bar:



Figure 3.10 personnel query

2. Double click the corresponding personnel record in the list management interface to edit and modify the personnel information again

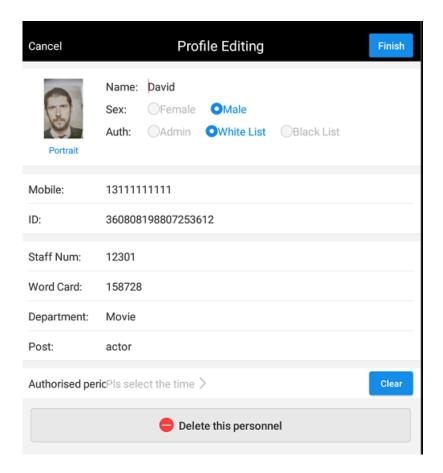


Figure 3.11 personnel editing

3.2.3 List deletion

Click the Edit button in the upper right corner of the list management interface Enter the mass management deletion function, select the corresponding personnel list and click the delete button in the upper right corner Yes, select all to select all lists. This operation deletes the list and the facial feature information of the list.



3.3 Record management

field to find all the identification records of the person.

3.3.1 Record query

Record query, query all the traffic records of the All-in-one equipment, click the record management icon

Enter the record management interface to see all the access records. Enter the name of the list in the search

In Vision 1.0.36.8 s, white list / Stranger / blacklist identification records and export are supported.

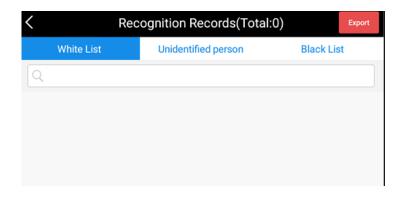
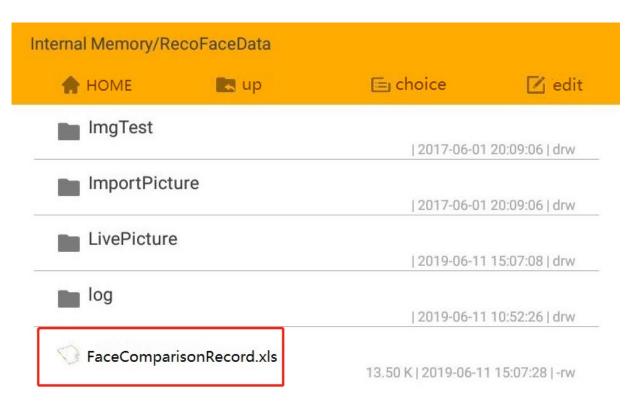


Figure 3.13

3.3.2 Record export

Record export. You can export all the traffic records of the equipment according to the time period. Click the upper right corner control lcon, the device automatically generates XLS record files of all records in the selected time period into the device memory, with the path of internal memory / recofacedata; in the resource manager, you can copy them to the U disk.



3.4 System settings

System settings include viewing the ID, software version number and software update status of the device, setting the time for automatic operation and maintenance of the device, restarting the operation immediately, and modifying the volume of the device and the brightness of the screen.

3.4.1 Setting and defining restart time

Click to customize the daily restart time, pull to select the daily restart time to be set, and press back to save successfully.

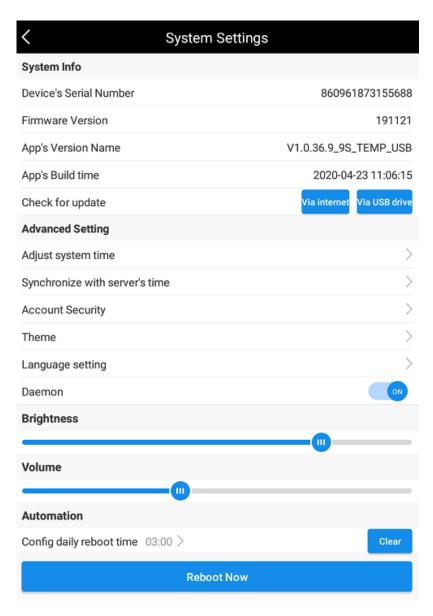


Figure 3.15

3.4.2 Viewing device ID number

The equipment ID number is the unique identification code of the equipment, which needs to be filled in when creating the equipment in the personnel pass system.

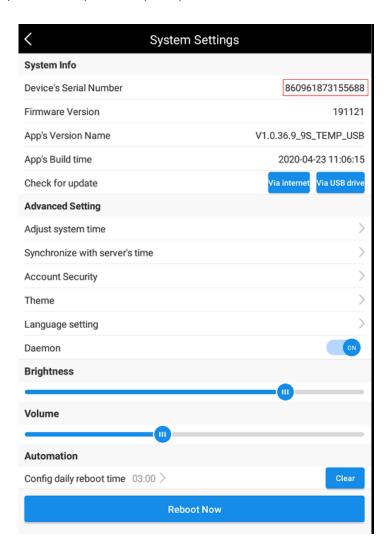


Figure 3.16

3.4.3 Brightness adjustment

Brightness adjustment adjusts the brightness of the screen display of the device. Pull it to the left to decrease the brightness, and pull it to the right to increase the brightness.



Figure 3.17

3.4.4 Volume adjustment

Volume adjustment is to adjust the volume of the device's notification sound. Pull the volume to the left to decrease, and pull the volume to the right to increase.

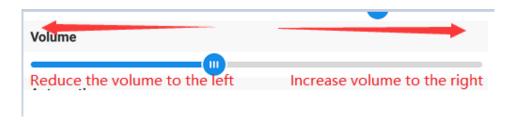


Figure 3.18

3.4.5 Theme setting

Theme setting: customized replacement of APP icon, logo, equipment title name, successful recognition prompt tone, blacklist recognition prompt tone and unregistered recognition prompt tone.

3.4.6 Set equipment title name

Click the app title to enter the editable title name status, enter the name and return to auto save, and return to the main interface to take effect automatically.

3.4.7 Setting app diagram

Click the app Icon APP Icon Enter the status of changing the app name, automatically enter the device library function, select the required app icon to automatically crop, and then automatically save it after returning to the main interface.

3.4.8 update recognition notice voice

Click to recognize voice successfully Voice Notice of success Enter the replacement voice status, automatically enter the device audio playback option function, check the new voice file to be replaced, and then automatically save it after returning to the main interface. The replacement of black and white list and unregistered speech recognition methods are the same as above, refer to the successful speech recognition replacement steps.

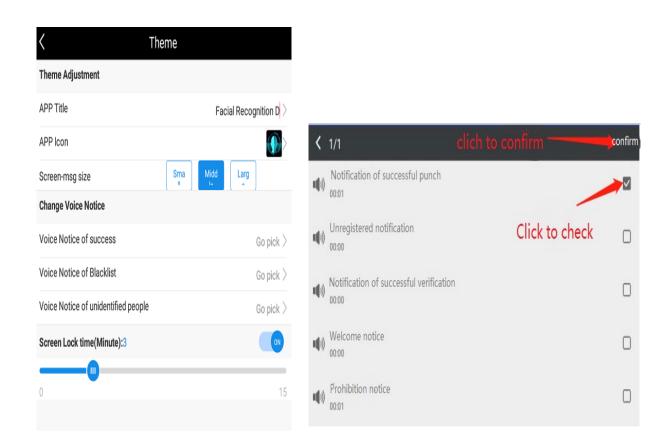


Figure 3.40

3.4.9 Account security

Account security, change account login password of management function interface

3.4.10Change login password

Click on the account security Icon Enter the change login password interface to change the login password, and click the icon to confirm the change Confirm Save automatically and take effect immediately. (default factory password is 123456)

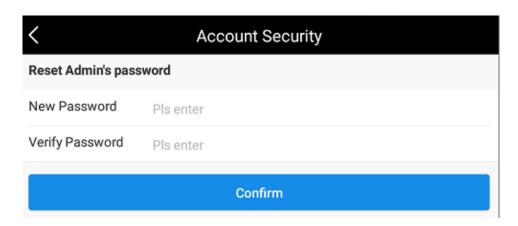


Figure 3.41

3.5 Identification settings

Recognition settings, adjustment of facial recognition similarity value, human ID recognition mode setting, face recognition distance setting and sensitivity setting of living detection and other functions, and more debugging functions will continue to be updated in subsequent versions.

3.5.1Face recognition similarity setting

In the main function interface, click the face recognition setting icon to enter the recognition setting interface, and the system default face recognition similarity value is 55; the similarity value can be adjusted appropriately according to the actual situation, and the pull similarity value becomes smaller, and the pull similarity value becomes larger to the right.

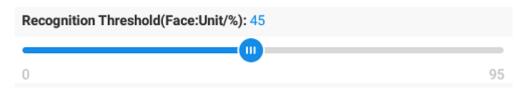


图 3.19

Note: it is generally recommended to set the similarity of face recognition in the range of 45-65, because the similarity between different people in the algorithm of this recognition all-in-one machine is relatively large, if it is more than 50, it will be determined as the same person.

3.5.2 Similarity setting of person and card recognition

In the main function interface, click the face recognition setting icon to enter the recognition setting interface. By default, the similarity value of human ID recognition is 35; the similarity value can be adjusted appropriately according to the actual situation, and the similarity value will be smaller when pulled to the left and larger when pulled to the right.

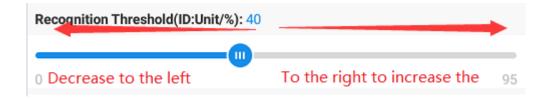


Figure 3.20

Special note: the person card comparison is 1:1 and the time span between the certificate photo and the on-site captured image is large, so the equipment will reduce the similarity by 1 point every year according to the issuance time of the ID card, but the minimum similarity is no less than 30 points.

3.5.3 Face recognition distance setting

Function Description: face recognition distance setting is to adjust the minimum detection pixel value of face recognition.

In the main function interface, click the face recognition setting icon to enter the recognition setting interface. The default recognition distance of the system is 2 meters (175px). The minimum recognition detection pixel value can be adjusted appropriately according to the actual situation. The pull detection pixel value becomes smaller and farther, and the pull detection pixel value becomes larger and closer.

Installation	C	. 11 0		• , •	•	
Inctallation	reterence	table of	tace	recognition	integrated	l machine
mstananon	1 CICI CIICC	table of	racc	rccogmuon	micgraice	i iliacilliic

Mounting height	Elevation angle of all in one	1mFace minimum	1.5mFace minimum	2mFace minimum
(height from the ground)	face machine	detection pixel	detection pixel	detection pixel
1.1 m	5degree	215px	155px	110px
1.2 m	5degree	220px	160px	115px
1.3 m	5degree	225px	165px	120px

The above values can be referred to and are not the only absolute values. Generally, you can fine tune 10 pixels according to this value.

3.5.4 Living judgment settings

Function Description: the living body judgment setting consists of the living body recognition sensitivity setting and the living body confidence setting.

Sensitivity setting of living recognition: click the face recognition setting icon in the main function interface to enter the recognition setting interface. By default, the living file bit of the system is moderate, and the continuous frame rate is determined as 2 frames. According to the actual situation, we can adjust the living body judgment gear appropriately, and the judgment of pull continuously frame rate becomes smaller, and the judgment of pull continuously frame rate to the right becomes larger.

Special note: it is recommended to adjust the parameters according to the actual situation. The more the number of frames is, the higher the accuracy is, but the recognition speed will decrease accordingly. On the contrary, the less the number of frames is, the lower the accuracy is, but the faster the recognition speed is.

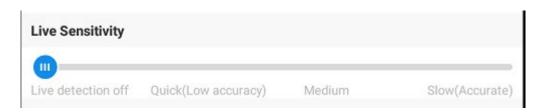


Figure 3.21

Live recognition confidence setting: in the main function interface, click the face recognition setting icon to enter the recognition setting interface. The default live confidence of the system is 65. The live confidence value

can be adjusted appropriately according to the actual situation. The left pull confidence value becomes smaller and the right pull confidence value becomes larger.

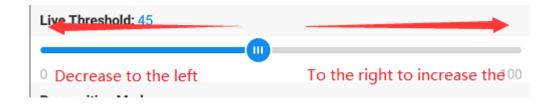


Figure 3.22

Reference table of living judgment settings

Equipment use environment	In vivo sensitivity value	In vivo confidence value (threshold)	
Indoor (no backlight)	fast	75	
Indoor (no backlight)	moderate	70	
Indoor (no backlight)	slow	65	
Outdoor (with backlight)	fast	65	
Outdoor (with backlight)	moderate	60	
Outdoor (with backlight)	slow	55	

3.5.5 Identification mode

* the face all-in-one device supports 5 recognition modes by default (the ID card device supports the human ID card and the IC card device supports the human card)

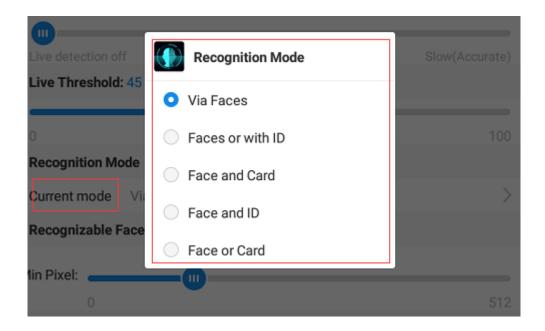
Face: only the registered person and blacklist are recognized

ID card: only compare the ID card with the photo taken on site

Person and card: face comparison and registration card number verification are carried out at the same time. If both pass the verification at the same time, the verification will be successful; otherwise, the verification will fail.

Person or certificate: preferred face comparison method. If the user is not registered, it can also pass the person certificate comparison.

Person or card: preferred face comparison method, if registered users can also pass through IC card comparison.



3.5.6 Interval identification setting

The default value of factory interval identification is 0.8s (800ms), and the maximum support is 5000ms



3.5.7 Failure prompt cumulative setting

Cumulative setting of failure prompts is a function of filtering failure prompts for special scenarios. It is recommended to set the value 3 times



Figure 3.23

3.6 Camera settings

Camera setting is to adjust indoor and outdoor mode, exposure intensity, recognition width, camera resolution, filter setting and time period setting of equipment camera

(see Figure 3.21 below)

Applicable objects of this function: field implementation engineer and technical maintenance personnel

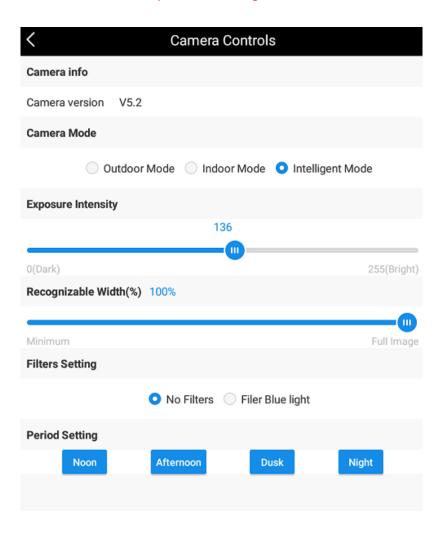


Figure3.24

3.6.1Camera mode

The camera mode is divided into indoor mode and outdoor mode. It can be configured according to the actual environment. Click the settings to return to the identification main interface to take effect.

The indoor mode is pre exposure compensation mode, which is suitable for the scene where there is no backlight and the indoor light is dim.

The outdoor mode is post exposure compensation mode, which is suitable for the outdoor face with backlight to be used in scenes such as dark and black in the picture, and can adjust the unrecognizable problem caused by sunlight behind the face. (Figure 3.25)

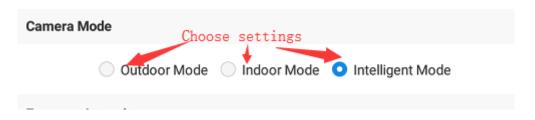


Figure 3.25

3.6.2 Exposure intensity

The function of exposure intensity is to adjust the ISP exposure value. Adjusting the exposure intensity can adjust the image problems of too dark and too white (too white) face in the screen, so as to improve the face recognition effect. (see Figure 3.26 below)

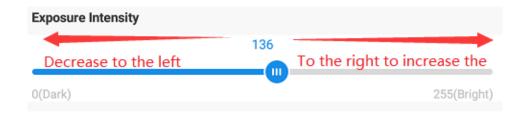


Figure 3.26

3.6.3 Identification width

To set the recognition width is to adjust the camera to capture the face in the full screen or the face in part of the screen



Figure 3.27

3.6.4 Filter settings

The filter setting is used to filter the interference of blue light in the screen of the equipment, and the blue light with light and signal light of the filter gate

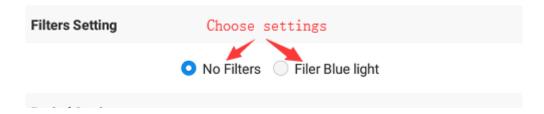


Figure 3.29

3.6.5 Time period setting

The time period setting is used to pre configure the equipment to dynamically adjust the environment with changeable light in a day according to the time change, which is divided into morning setting, afternoon setting, evening setting and night setting.

Four kinds of time period settings can be linked circularly to take effect corresponding to parameter groups in each setting, so as to automatically change the image and face detection effect corresponding to the appropriate time period from day to night.

- the steps are as follows: (describe the setting process in the morning, and the method of other time periods is the same)
- 1. Click any time period setting to enter the time period parameters



Figure3.30

2. Enter the parameters of the morning period, modify and adjust the values, click the effective time to set the start time and end time, and then click Finish to save to return to the main interface.

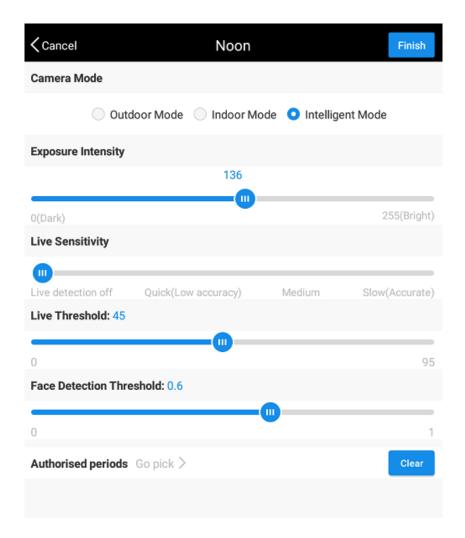


Figure 3.31

Reference table of indoor and outdoor modes with exposure intensity

Timet period Outdoor	6: 00—11: 59	12: 00—15: 59	16: 00—19: 30	19: 30—5: 59
Indoor mode	120	100	100	130
Outdoor mode	56	50	48	56
Indoor mode	0. 9	0.9	0.8	0.8
Outdoor mode	0.8	0.7	0.7	0.8

The above values can be referred to and are not the only absolute values. Please refer to the table for the fine adjustment of \pm 15 intensity points and \pm 0.3 detection thresholds corresponding to the field environment in the corresponding time period.

3.7 Network connection

The network connection function includes the remote connection IP address and port number of the all-in-one machine, and the connection test function with the server. Configure all in one device native IP / subnet mask / gateway / DNS.

3.7.1Configure remote connection

Click the server address to enter the IP address or domain name of the personnel access system server, click the port number to configure the server communication port number and reporting interval time, and after confirmation, it will automatically save and take effect. It will automatically connect to the server in about 10 seconds and report the identification record. (see Figure 3.29 below)

After configuring the server address, you can click the Test the connection status with the server. If the connection is successful, it indicates that the access to the server is successful. If the connection fails, it indicates that the access to the server is not successful.

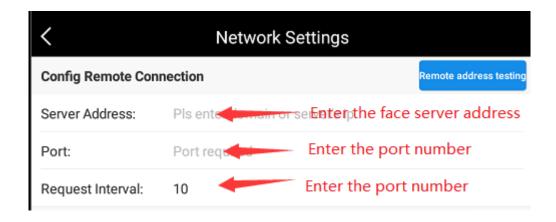


Figure 3.32

3.7.2 WiFi settings

Click WiFi settings to enter the device WiFi connection interface, and enter the password to connect.

3.7.3 Ethernet settings

Ethernet settings can be used to configure the device to dynamically obtain IP address or static configuration.

The configuration content includes (IP address / subnet mask / gateway / DNS) configuration, which will take effect after confirmation and return.

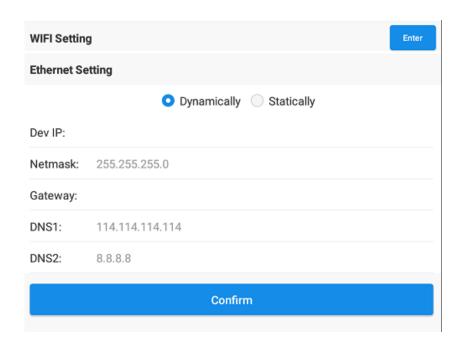


Figure 3.33

3.8 Peripheral control

The peripheral equipment includes selecting the output signal mode of the all-in-one machine, configuring various output signals, such as switch signal output time, configuring Wigan 26 bit and 34 bit signal options, configuring the output switch signal and Wigan signal output mode at the same time, configuring the positive and negative sequence rules of Wigan input and output signals, and setting the on or off fill light.

3.8.1 Wigand

Wigand signal supports 26 bits and 34 bits, and its mode needs to be selected when using

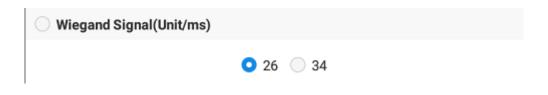


Figure 3.34

3.8.2 Switching value

Switch output mode, which can support output signal to open or open the door. The user needs to configure the continuous output time of switch signal (default value is 300ms); the output time value can be adjusted appropriately according to the actual situation, and the pull-up time value becomes shorter and longer.

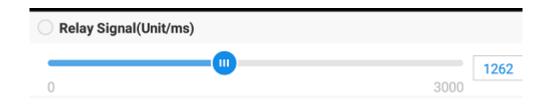


Figure 3.35

3.8.3 Switching value + Wigand

The integrated equipment supports the output signal through the switching value and Wigan at the same time after the recognition is successful.

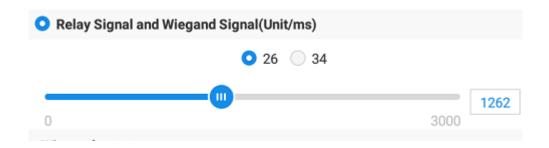


Figure 3.36

Special note: in this mode, you also need to select the number of Wigand digits, 26 or 34.

3.8.4 Wigand output positive and negative sequence signal configuration

Configure whether the Wigand signal output is positive sequence signal or negative sequence signal output to the third-party control equipment



Figure 3.37

3.8.6 Intelligent fill light

Click the on and off button of the fill light to automatically turn on and off the fill light in the selected time period

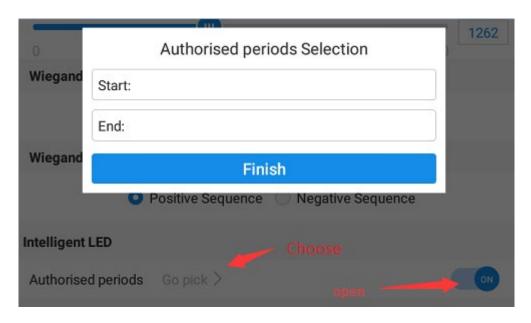


Figure 3.39

3.9 Temperature sensing setting

The temperature sensing setting is used to adjust the temperature measurement accuracy, power, self-adaptive ring temperature and other parameters of the temperature sensing integrated machine

It is recommended to set the temperature alarm value: 37.3~°C, and the minimum temperature is 35.8~°C; the accuracy is medium or above.

It is recommended to turn on the self-adaptive ring temperature function if the room temperature change difference is more than 10 $^{\circ}\mathrm{C}$

**App upgrade released for temperature reading in Fahrenheit. Download and install the upgrade:

https://www.TURNSTILES.us/cvx021-downloads

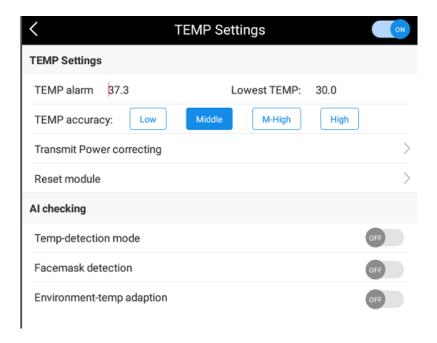


Figure 3.41

3.9.1 Power correction

Click power correction to enter the correction mode. When the face is kept within 0.5m, observe whether the temperature value above the screen is close to the 36.5 range of human body temperature; if it is lower, click +; if it is higher, click -.



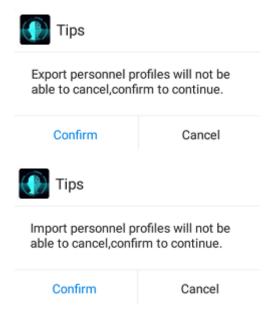
Figure 3.41

3.10 Data management

Data management functions include personnel list backup and recovery, personnel batch registration, storage management, reporting configuration and other functions.

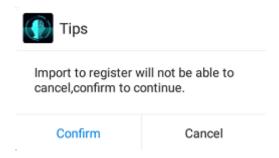
3.10.1 Personnel and backup and recovery

* insert the USB disk into the USB interface of the device, and then click list data migration to migrate the list data of the device personnel to the root directory of the USB disk. This method will overwrite the original device data and information when data is migrated to other devices.



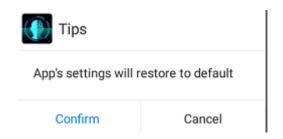
3.10.2 Batch import registration

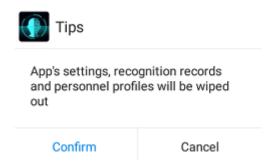
* click batch import registration to open the file management page, and users are required to select excel template data and table files in the U disk



3.10.3 storage management

* clear the application settings to clear all parameters of the equipment and restore all data of the equipment that will be completely cleaned before leaving the factory (be careful)





3.10.4 stranger reporting

* the device is not opened by default and the stranger report setting is required to be opened or closed by the user according to the actual needs.

