TIMEWATCH
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Manual

TW-IriGoPlus

Introduction to the TW-IriGoPlus Iris Recognition System

The TW-IriGoPlus iris recognition system offers highly intuitive, hands-free iris biometrics imaging in a compact and elegantly designed identification and authentication terminal for use in a wide range of identity management applications.

The front facing nominal 5.0inch LCD serves to display the user's face image for fast, easy and highly natural positioning for proper iris image capture. The subject merely puts his or her face in the positioning box at the top of the LCD, and then moves toward the system to size his or her head to the box to be in proper range. Image capture is fast and automatic. While user instructions are very simple, almost all subjects will be able to interact with the system without any direction.

TTW-IriGoPlus Next Generation Iris Recognition System

The capture range is a robust 35 to 45 cm, also contributing to the system's ease of use. There is an optional "fast capture mode", in which the range is further extended to 30 to 45 cm, although in this mode, images may not conform to ISO 19794-6 2011 or ISO 29794-6 standards.

And the internal automatic tilt mechanism adjusts to the user's height or vertical position over a range of 40 cm (about 16 inches), making the TW-IriGoPlus ideal for wall mount, countertop, desktop, or kiosk installations.

The TW-IriGoPlus is an embedded terminal, which means that all image processing and machine control is performed on the internal Linux-on-ARM mainboard. Typical connectivity to host systems is through TCP/IP (Ethernet). And iris biometric encoding and matching is typically performed on-board as well, so identification or authentication decisions can be made locally for fast responsiveness. For access control, there are Wiegand connections for dedicated, local communications to door controllers or panels.

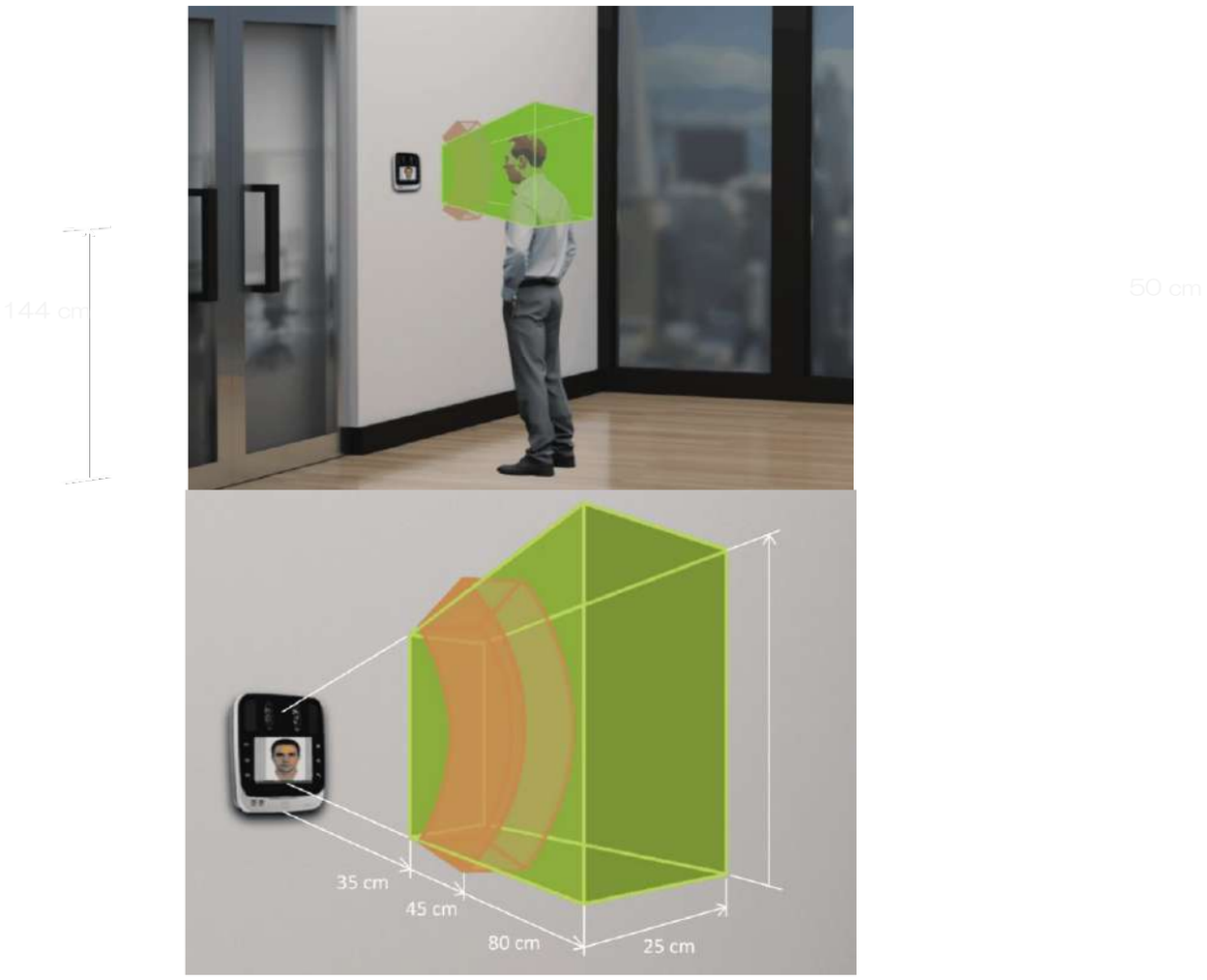
Other options include WiFi and extended on-board data base (to 40,000 users), and a smart card reader (in the AC version).

For all specifications, please see Specifications section.

Key Features

- Intuitive LCD face display positioning for fast, simple and natural iris user experience—similar to face display facial recognition systems.
- Contactless iris imaging at range of 35 to 45 cm stand-off in normal mode, and 30 to 45 in fast recognition mode. (Note: enrollment is always performed in normal mode.)
- Internal, automatic face and iris camera tilt mechanism with nominal height range of 40 cm
- Positioning guidance vocalizations selectable on / off and delay time. English is standard; all other supported languages are available with .wav file substitution
- Simultaneous dual iris recognition with typical capture speed of under 1 second
- On-board iris encoding and matching, with internal data base of up to 10,000 users in either 1:1 (verification) or 1:N (identification) modes. Option for 40,000 users with match speed of 1.0 second in 1:N mode.
- Face Recognition and Combined Face and Iris modes:
  - Supplemental face recognition in case of iris recognition failure-to-capture (FTC) in enrollment. Face recognition is used as primary modality in authentication for specific individuals.
- Supports dual factor authentication with card or PIN
- Optimized imaging for difficult ambient lighting conditions
- Optimized image capture for most sunglasses, glasses, and facial veils
- Supports imaging of all iris colors
- Kensington lock slot standard
- Standard communications connectors and protocols for TCP/IP (Ethernet RJ-45), RS-485 and -232, dual Wiegand I/O, TTL, and dry contact relay
- Connection cables with press-in connectors included in accessories kit
- External audio connector
- Tamper switch on rear panel
- Access control (AC) configuration includes wall mount plate
- Optional WiFi support (USB dongle module)
- Integrated Smart Card reader (MiFare / DesFire card)
- Meets CE mark, FCC, IEC 62471 eye safety, and RoHS standards. Iris recognition meets ISO 19794-6 2011 and ISO 29794-6 standards. (Certifications available on request.)
- Design and production processes meet ISO:9001 2008 standard.

Mounting Instructions



Recommended mounting height and UI (left), Capture Volume of TW-IriGoPlus (right)

The recommended mounting height for the TW-IriGoPlus is 144 cm (57 inches) from floor to the bottom of EF-45. The mounting height can be adjusted to accommodate the height of the average user.

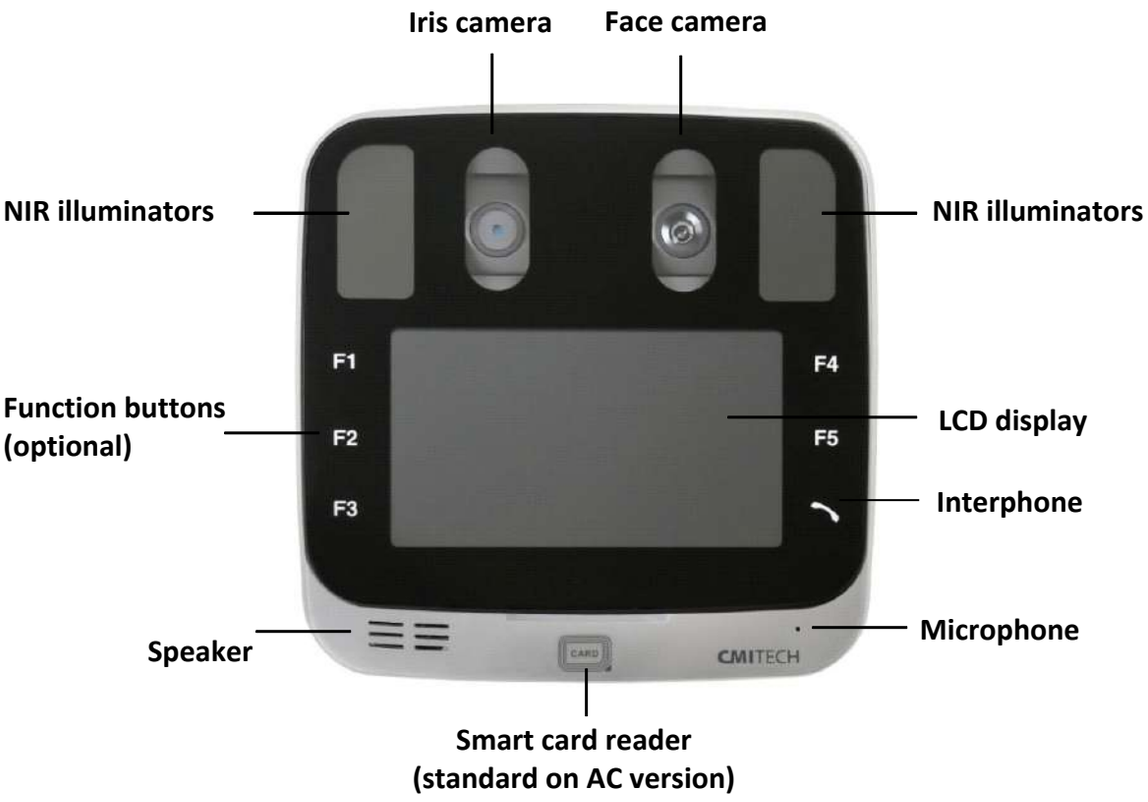
High ambient light and / or direct light into the TW-IriGoPlus should be avoided. Sunlight, halogen lamps or other strong illumination may reduce the performance of the TW-IriGoPlus and may result in increased failure-to-capture rates or failed authentication events.

The TW-IriGoPlus was designed for indoor use only. This unit is not weatherproof and must not be exposed to water, ice, extreme temperatures or other adverse weather conditions. If it is required to use this unit in outdoor or extreme environments,

Note: Installation in extreme environments without proper protection may cause permanent damage and void warranty.

System, Front

System, Front



System, Bottom

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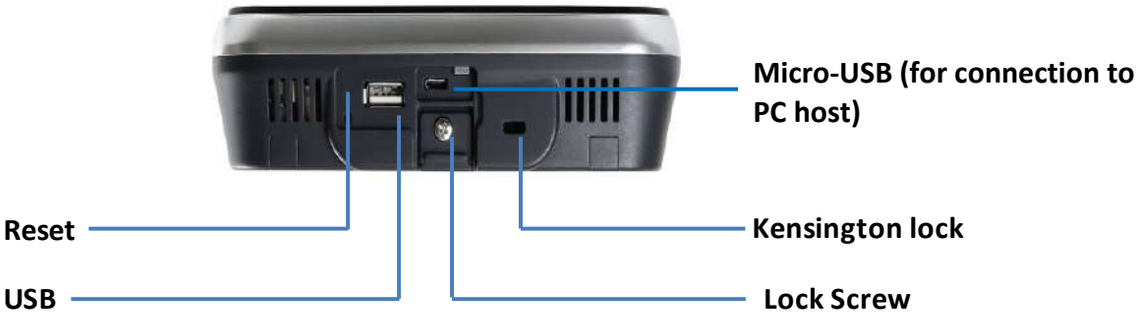
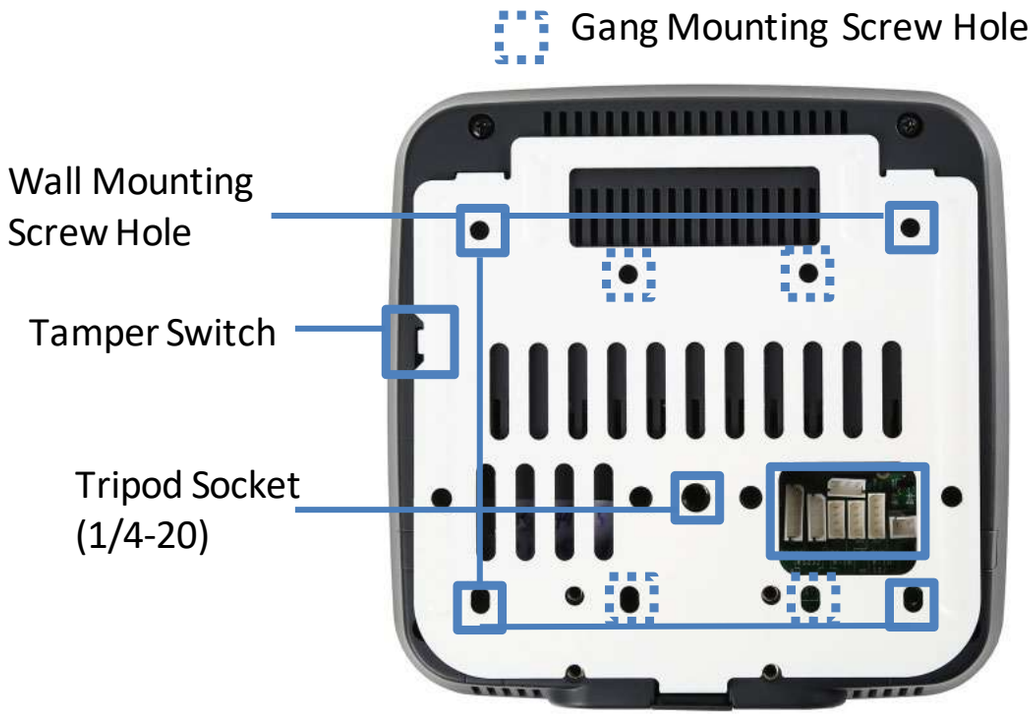
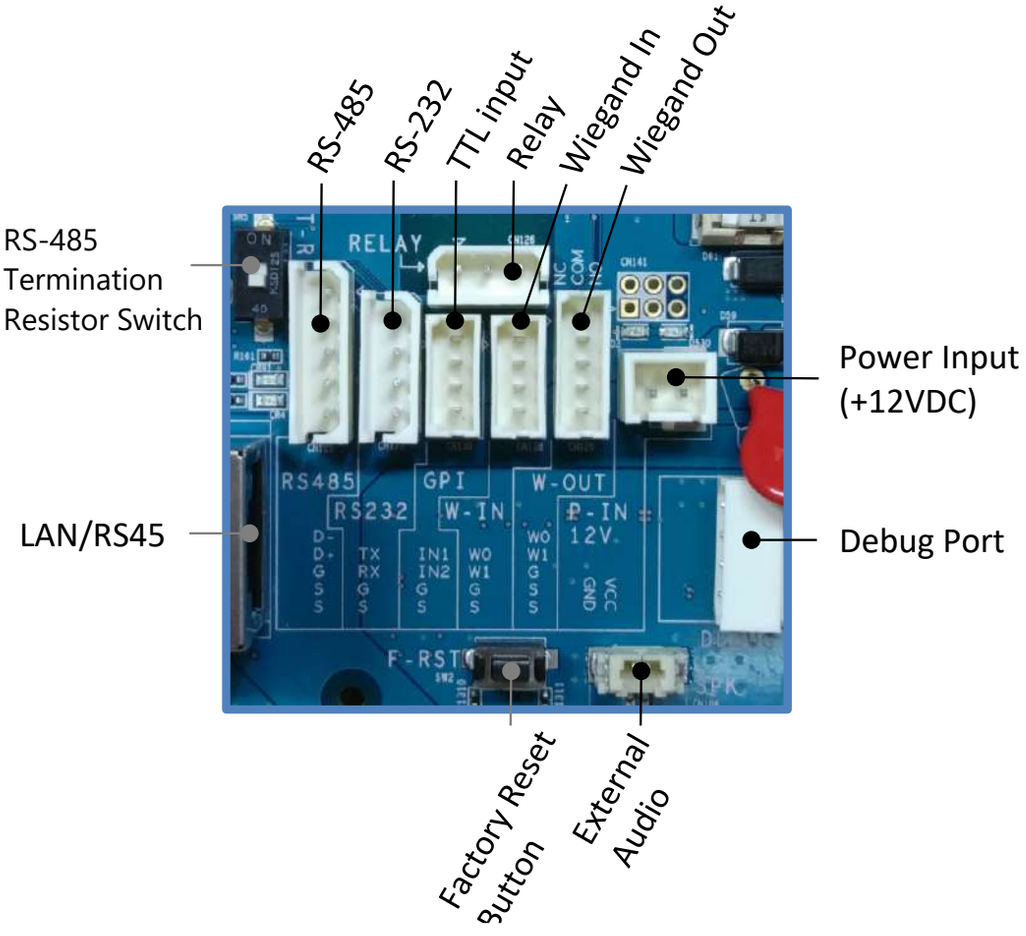


System, Rear

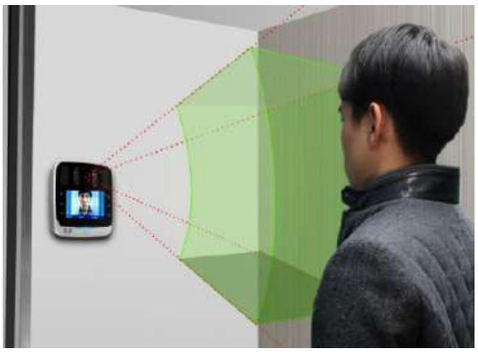


System Rear Connections Block



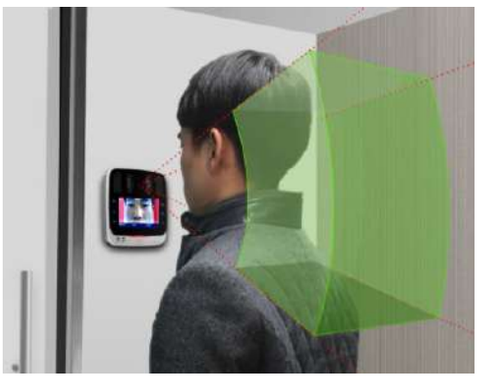
User Interface for Iris Image Capture

1) Position yourself facing straight at the LCD display. When the device detects your movement within 1.0meter range, it initiates the image capture sequence. A rectangular-shaped user guide box will appear on the screen. If it is BLUE, it means you are too far from the device. Move forward.



2) Move towards the system to size your face to the LCD display. If the user guide box flashes GREEN, it means you are at an appropriate position. Stop and hold your position until the device captures image of your face and/or iris.

3) If you are standing too close to the device, your face will not fit in the LCD display. When the user guide box flashes RED, it means the device cannot capture your image because you are too close. Move back until the box turns green.



EF-45 captures the images of subject's irises and face automatically.

On-board Demonstration Application

The on-board demonstration application shows the full capabilities of the TW-IriGoPlus for image capture including subject positioning with the face display user interface, enrollment, and on-board matching (authentication).

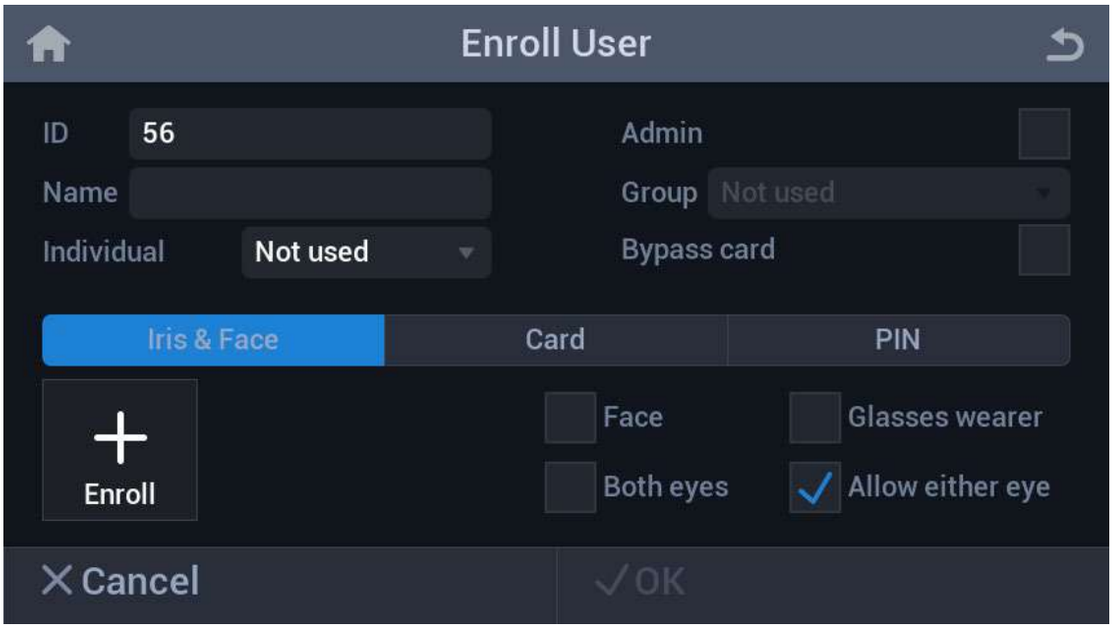
The system boots up in this demo application. It is initated by the video based motion detector that first finds the subject from about 1 meter distance, and then continues the natural iris image capture sequence for capture in recognition / authentication mode.

To switch to enrollment mode, press large User icon in center of main Launcher page. If the system is in image capture mode, press Home icon (🏠) on top left of active user interface display, which will stop Recognition mode and return system to Launcher page.

The following main User screen appears:

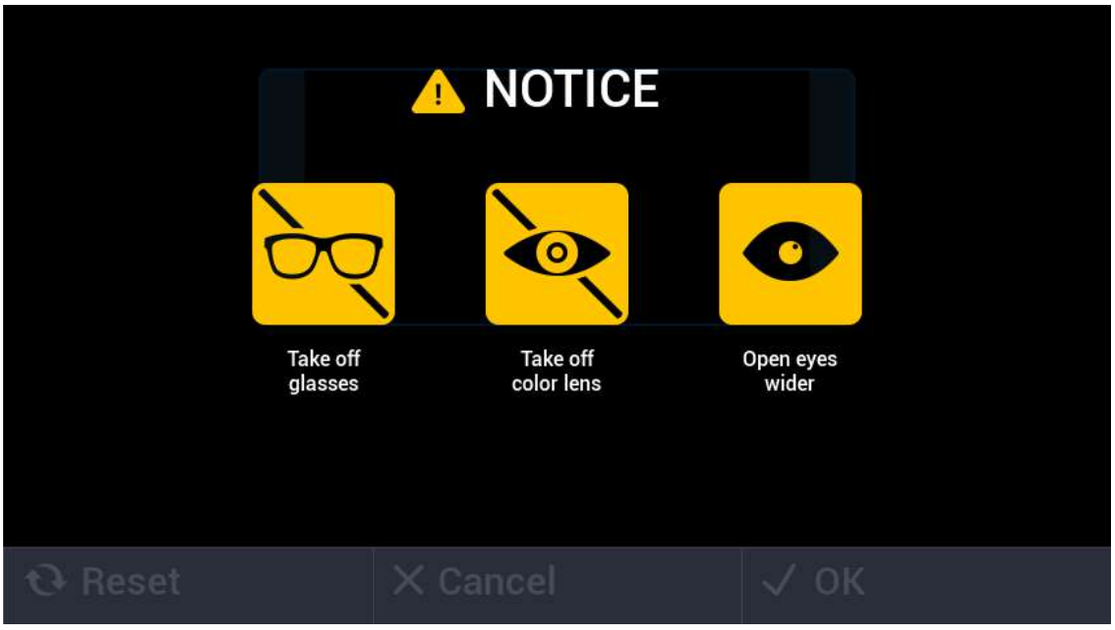
This user screen also allows simple database management. By tapping the **Delete** icon in the bottom right, one can easily delete information of enrolled users.

To enroll a new user, press the **Enroll** icon to bring up **Enroll User** screen.

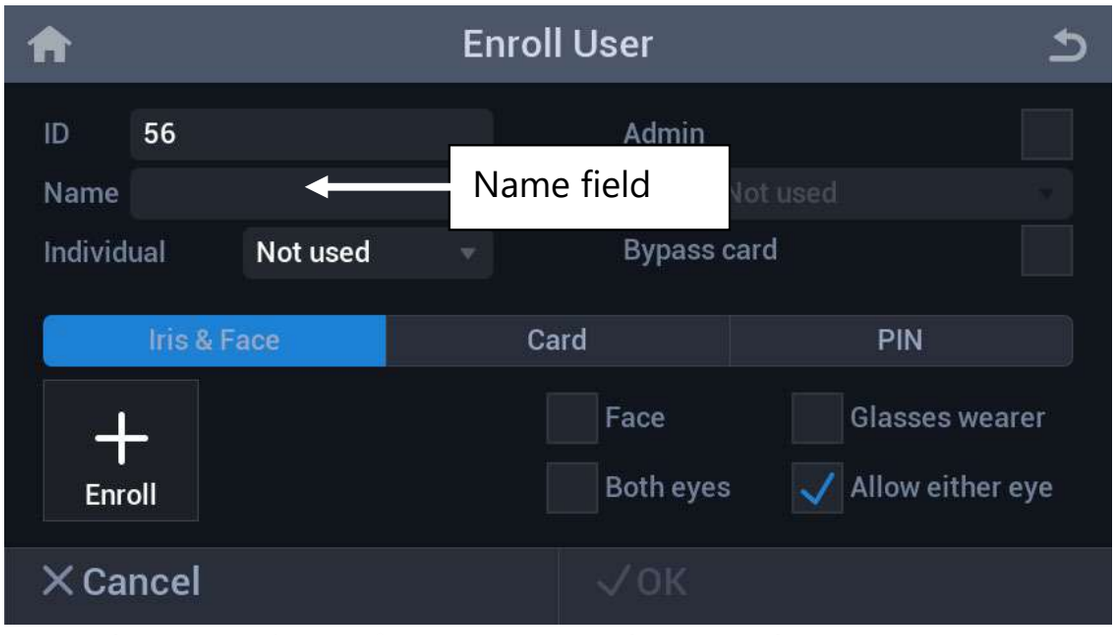


Press the plus (**+**) button in the bottom left to capture image of the new user.

An instruction screen will appear for 3 to 5 seconds, and then switch to the user interface. (The timing of this display can be changed in Settings.)



After successfully capturing iris images, click on **√OK** to accept images. The system then returns to Enroll User screen. Click on Name field to enter name of subject, then click on **√OK** to complete enrollment.



Press the Home icon (🏠) to return to the Launcher page to re-start Recognition and Authentication mode.

Summary of Technical Specifications

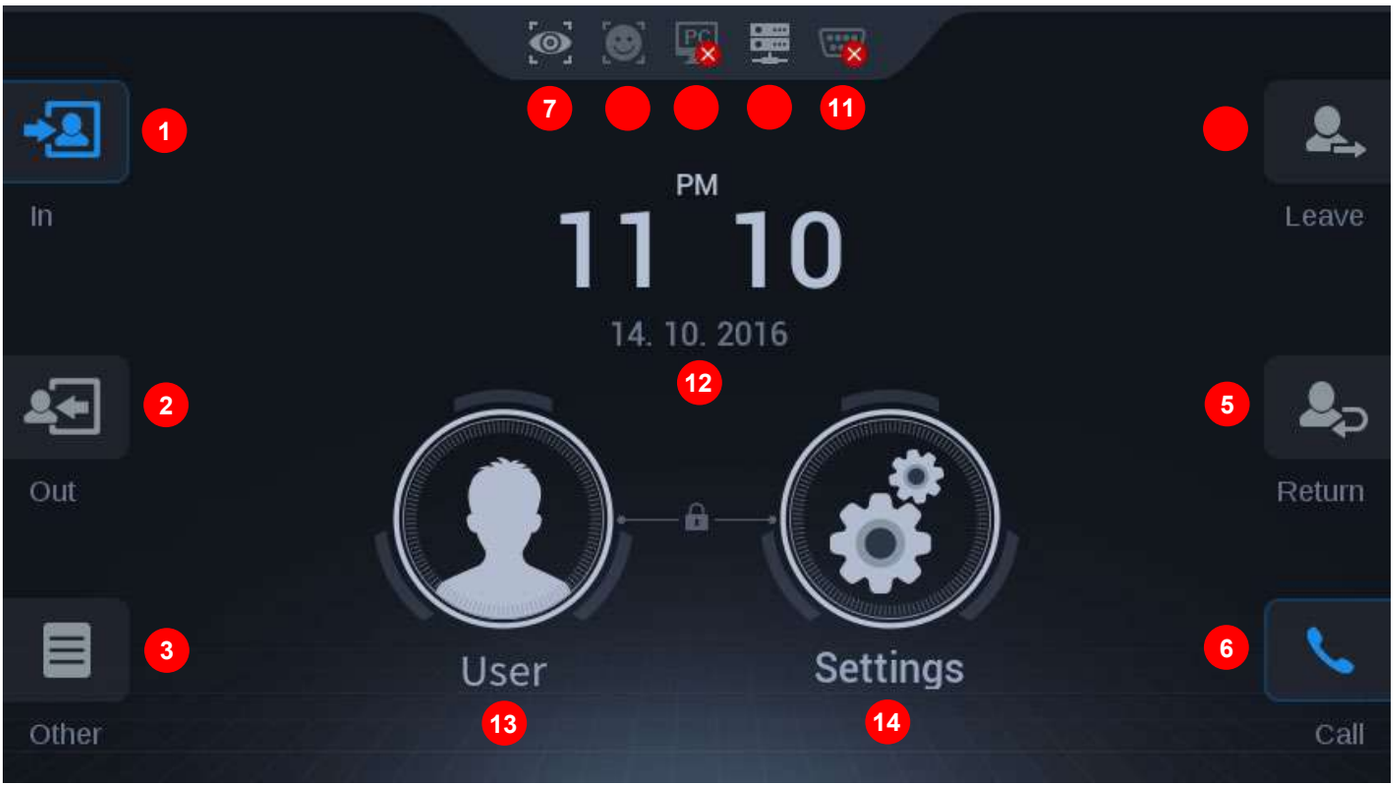
Embedded CPU	Cortex A9 Quad Core ARM
Iris on-board algorithm for encoding and matching	Standard in AC version.
Face on-board algorithm for face encoding and matching	Standard in AC version.
Web services configuration application (with embedded web server)	RESTful type SDK with C# and C++ versions for host side API
USB connectivity	Standard for Windows host PC's.
Dimensions	166 x 166 x 43 mm (6.5 x 6.5 x 1.7 inches) without mounting wall plate
Weight	630 g without wall plate
On-board data size	Up to 10,000 iris template pairs, usable in either 1:1 (verification) or 1:N (identification) modes Option for 40,000 iris template-pairs Up to 1,000 face templates
Iris image pixel resolution	640 x 480 pixels, 8bit depth. Supports multiple formats.
Operational iris imaging distance (stand-off range) and depth of field	35 to 45 cm range (10 cm depth of capture range) in both Enrollment and Recognition modes Option for extended Recognition mode range of 30 to 45 cm
Iris positioning indicators	Face positioning within box in LCD display for X – Y Face sizing to bracket (or box) within LCD display for distance (Z) positioning with simultaneous color bar display for correct distance positioning: Blue: too far away Green: OK Red: too close Supplemental voice distance feedback standard. Convertible to local language via .wav file substitution.

Technical Specifications (continued)

Auto tilt	Internal: +25 deg to -20 deg tilt
Iris time of capture	Typically about 0.5 second from time subject's eyes are placed within proper capture volume
IR illumination for iris imaging	Dual LED: wavelengths of 850 nm nominal (about 50%); and 750 nm nominal (about 50%)
Iris maximum user positioning speed	125 mm per second (4.9 inches per sec.) in "Z" direction (distance from front of system)
Face image capture	Standard 24 bit color (for reference image)
Audio	24 bit, 1.8 W embedded speaker Line out connector for external speaker
Operating temperature range	0 to 45˚C
Humidity	10 to 90% RH, non-condensing
Illuminator eye safety standard	IEC 62471
Host interfaces	10/100 Base-T Ethernet (RJ45 connector) Optional WiFi 802.11bgn with WiFi dongle USB through USB OTG connection on system
Other standard ports	USB host / slave for service
Standard mounting	¼ - 20 UNC (camera tripod)
Physical Access Control (PACS) configuration: other communications ports	Terminal and wired connectors for: Wiegand in/out, RS-232, RS-485, 2X TTL inputs, USB host (internal), USB slave (for service), 1 dry contact relay
Physical Access Control configuration: internal ID card reader	Standard: ISO /IEC 14443 A/B (MiFare) contactless reader Optional: HID multi-class reader (model to be determined)
Physical Access Control configuration: wall mounting with tamper switch	Detachable wall mount plate for easy installation. Tamper switch standard in PACS configuration
Power supply	Input 110 to 240V AC; Output 15V DC, 3.5 A. AC to DC adaptor provided standard with system.

Appendix 1

EF-45 LCD Control Screens and On-Board Demo Application



Main Launcher Page

① Check Attendance (F1 Key)

② Leave Work (F2 Key)

③ Supplement T&A (F3 Key)

④ Go Out (F4 Key)

⑤ Return Button (same as F5 Key)

⑥ Interphone Call Button (same as F6 Key)

⑦ Notice Icon of Iris mode is operating

⑧Notice Icon of Face mode is operating

⑨Notice Icon of manager is connected

⑩Notice Icon of IP network is connected

⑪Notice Icon of Serial Communication is connected

⑫Clock display

⑬User Button for registration, search, modification and deletion

⑭Settings Button for system configuration

Table of Contents

Settings

User

1 Enroll User

- 1.1 ID
- 1.2 Name
- 1.3 Individual
- 1.4 Admin
- 1.5 Group
- 1.6 Bypass card
- 1.7 Iris & Face
- 1.8 Card
- 1.9 Pin
- 1.10 Enroll

2 Search

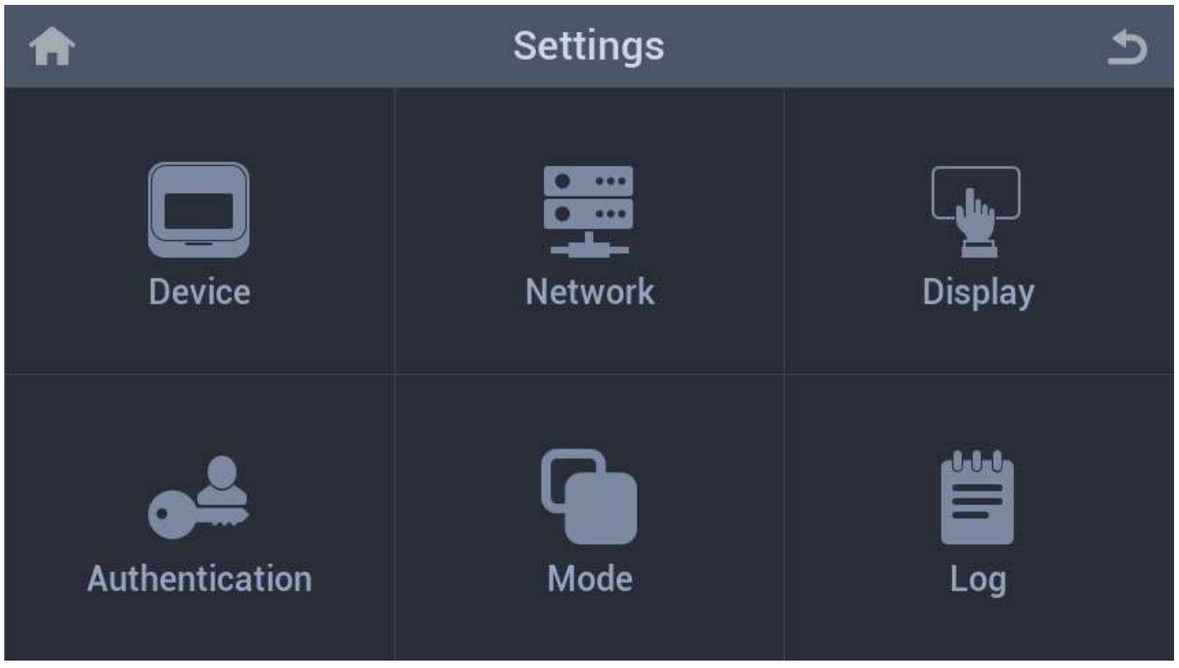
- 2.1 ID
- 2.2 Name

3 Capacity Info

4 Delete

Settings

Tap the **Settings** icon in the home screen.

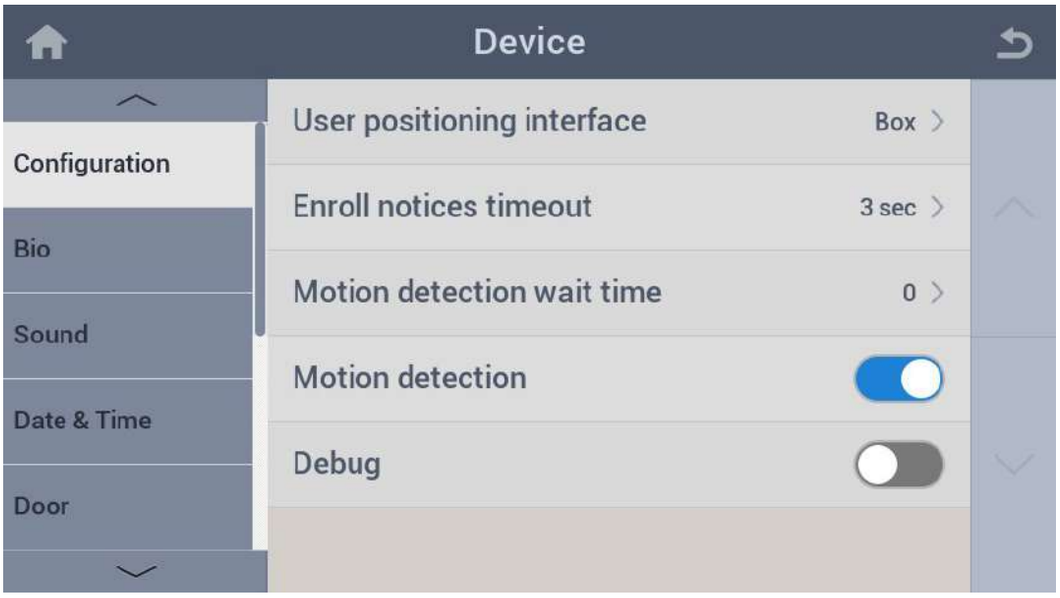


Device	Configuration for device operating
Network	Configuration for IP & serial communication
Display	Configuration for screen display
Authentication	Configuration for authentication method and T&A
Mode	Configuration for recognition operation
Log	Information of saved log and log search viewer

1. Device

Configure settings for device operation.

1.1 Configuration



User Positioning Interface Select a guide display UI when enrollment and recognition

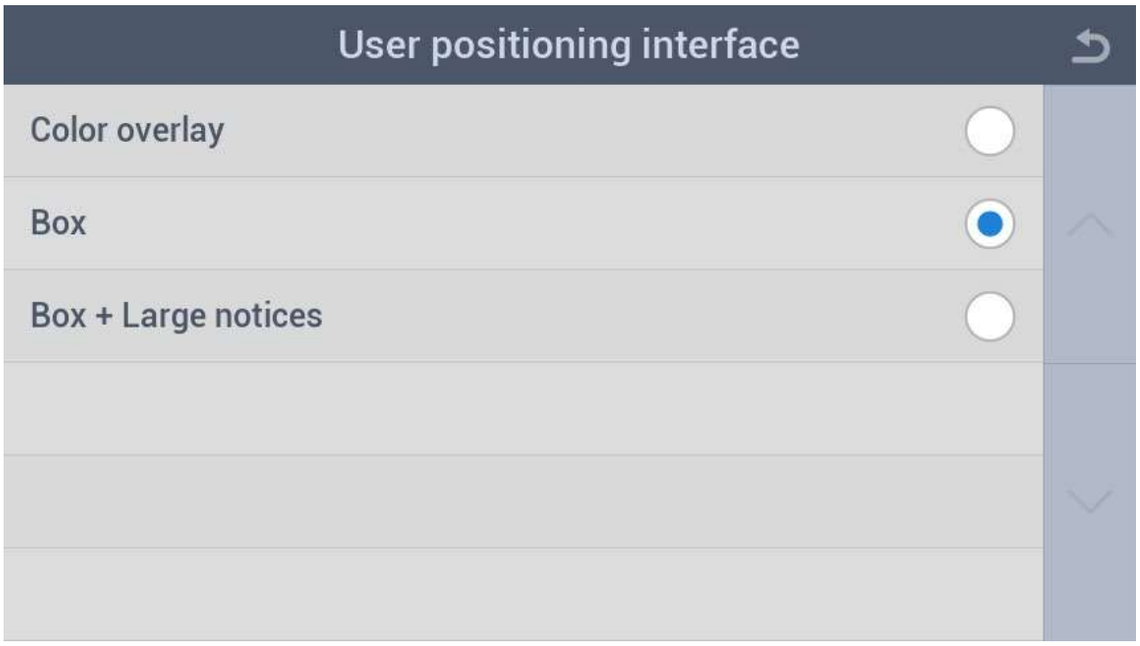
Enroll notices timeout Set notice time out time during enrollment process

Motion wait time Set motion detection delay time from last recognition operating

Motion detect Select motion detection enable/disable for starting recognition

Debug Select Debug mode enable/disable (captures image stream for off-line analysis)

1.1.1 Configuration → User Positioning Interface

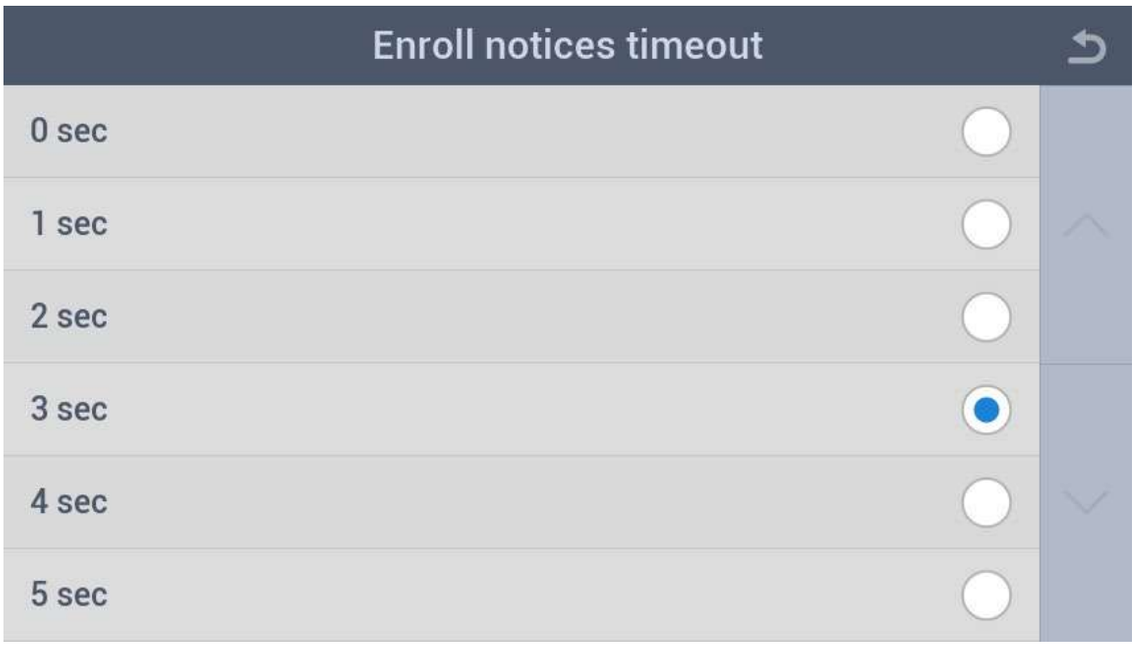


Color Overlay Select Color overlay type guide UI display

Box Select tracking box type guide UI display

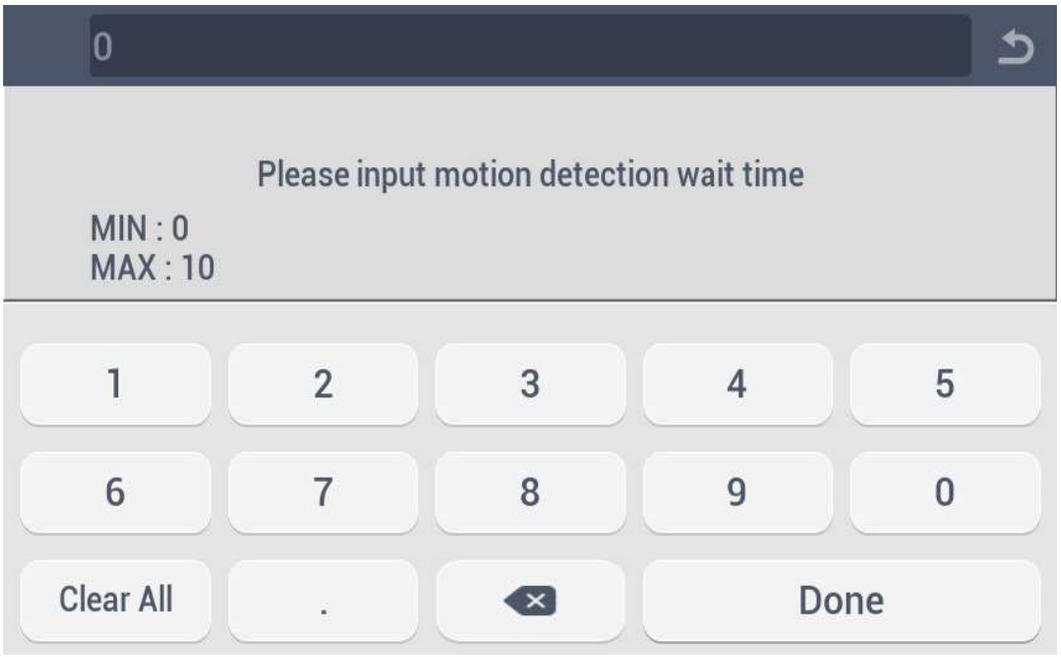
Box + Large notices Select tracking box + large guidance text type UI display

1.1.2 Configuration → Enroll notices timeout

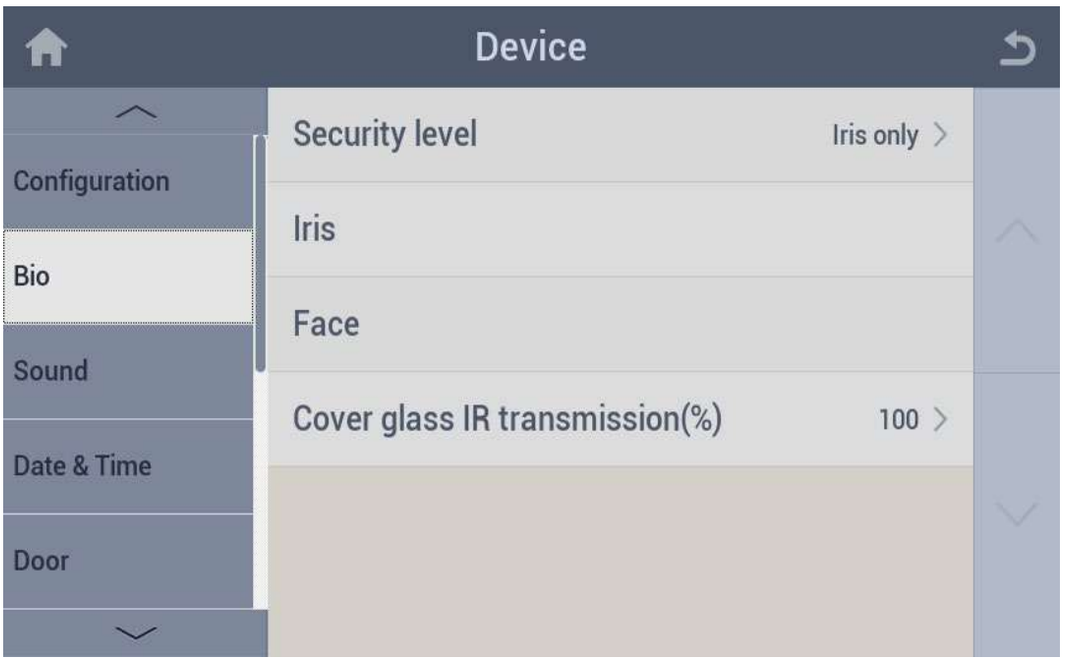


Default timeout is set to 3 sec.

1.1.3 Configuration → Motion Wait Time



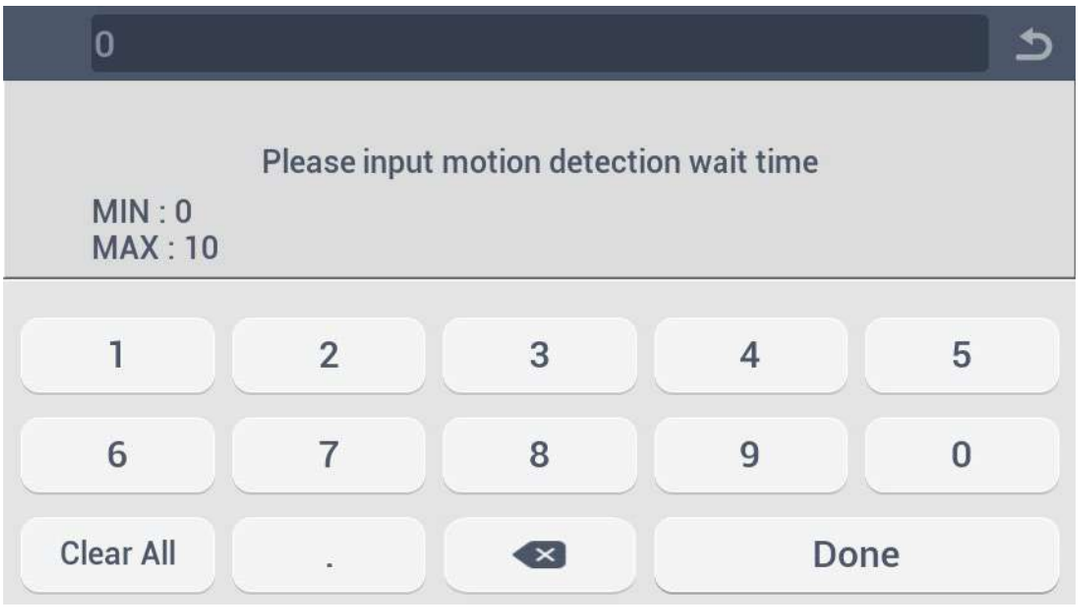
1.2 Bio (for Biometrics Selection)



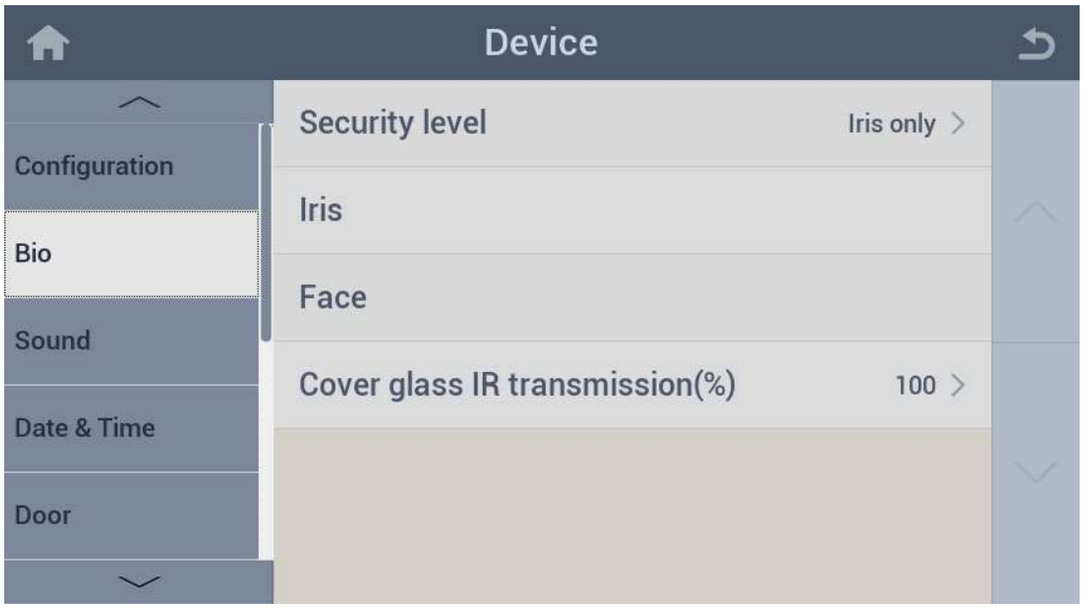
Security Level	Select a combination mode of Face and Iris
Iris	Additional configuration for Iris enrollment and recognition
Face	Additional configuration for Face enrollment and recognition
Cover glass IR transmission (%)	Adjust IR transmission attenuation if a cover glass is in front of the EF-45

(Caution: Do not change this value unless advised to do so.)

1.1.3 Configuration → Motion Wait Time



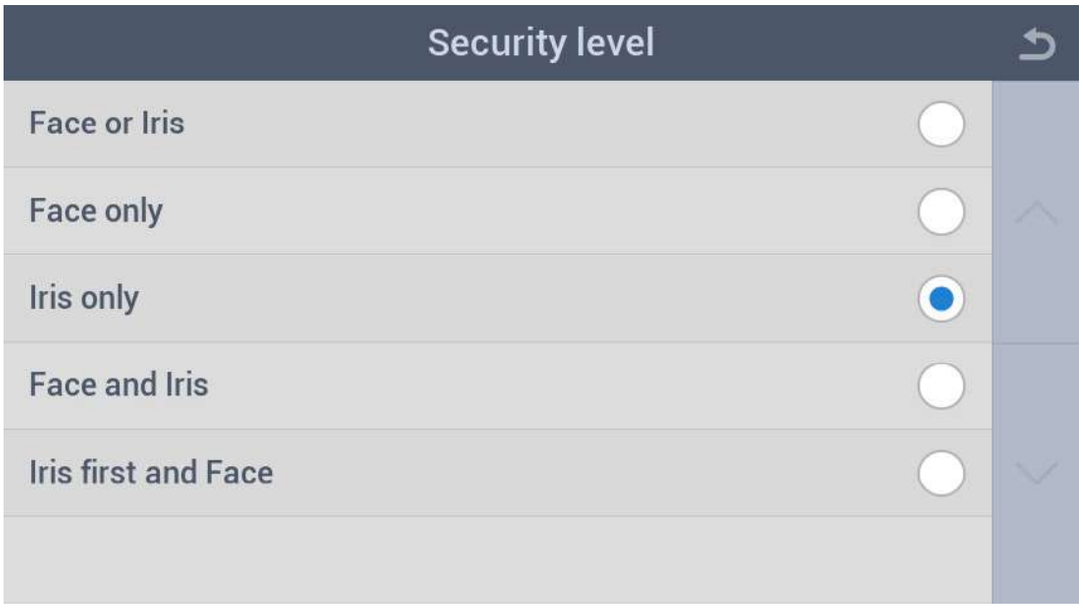
1.2 Bio (for Biometrics Selection)



Security Level	Select a combination mode of Face and Iris
Iris	Additional configuration for Iris enrollment and recognition
Face	Additional configuration for Face enrollment and recognition
Cover glass IR transmission (%)	Adjust IR transmission attenuation if a cover glass is in front of the EF-45

(Caution: Do not change this value unless advised to do so.)

1.2.1 Bio → Security Level



Face or Iris	Select two stages “Face or Iris” recognition mode (Face recognition first, and then automatic switch-over to Iris upon Face recognition non-match)
Face only	Select Face only recognition mode
Iris only	Select Iris only recognition mode
Face and Iris	Select Face and Iris recognition mode (The EF-45 reader captures Iris and Face at the same time from the Iris capture distance. If it finds the matches both in Iris and Face of the user, it will grant access to the user.)
Iris first and Face	Select one stage “Face or Iris” recognition mode for faster recognition (The EF-45 reader captures Iris and Face at the same time from the Iris capture distance. If it finds a match in Iris or Face of the user, it will grant access to the user.)

1.2.2 Bio → Iris

Enroll iris usable area (%) Set usable area for Iris enrollment

Recog false accept rate Set false accept rate for Iris recognition

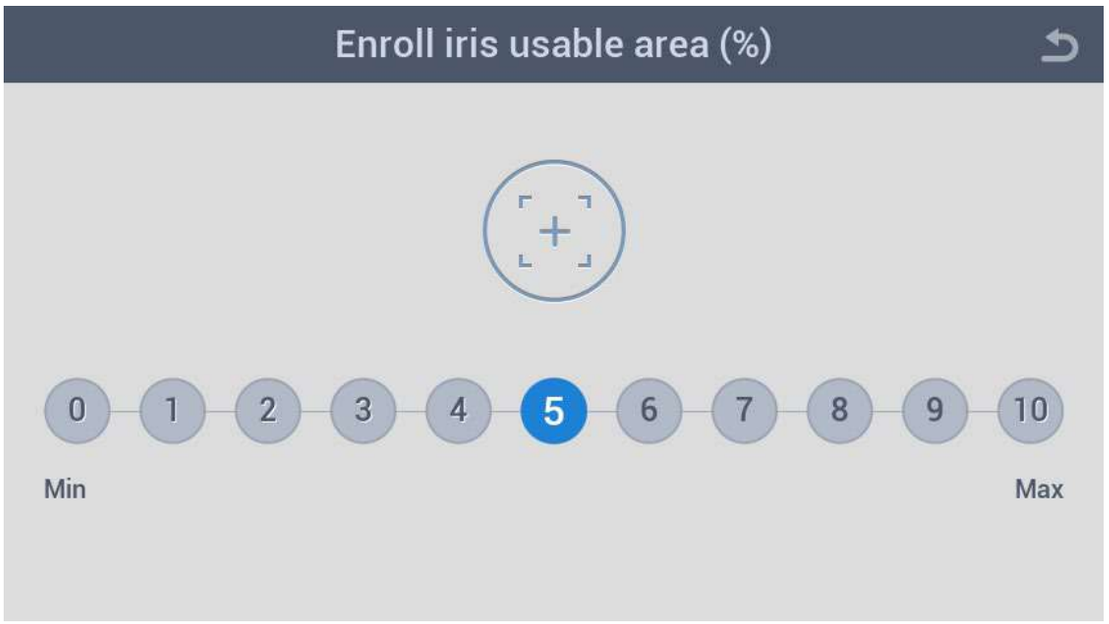
Fast recog mode Select enable/disable for fast recognition mode

Recognition: allow either eye Select enable/disable for either eye recognition mode

Enroll: either eye Select enable/disable for either eye enrollment mode

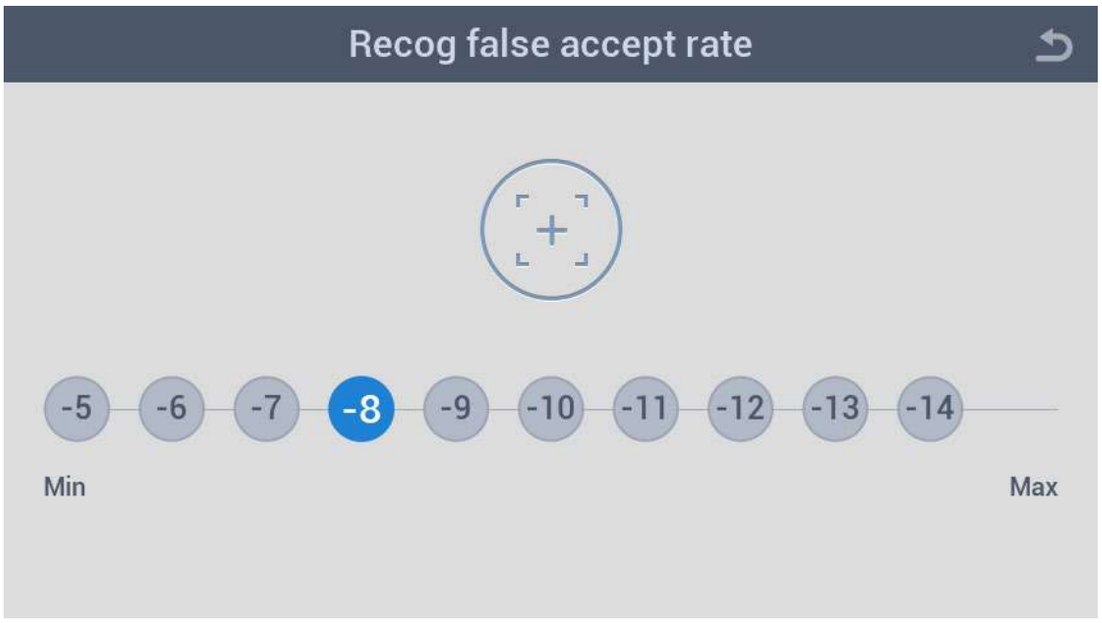
Min distance Set min distance for Iris recognition

1.2.2.1 Bio → Iris → Enroll Iris usable area (%)



Default set to 60%.

1.2.2.2 Bio → Iris → Recog false accept rate

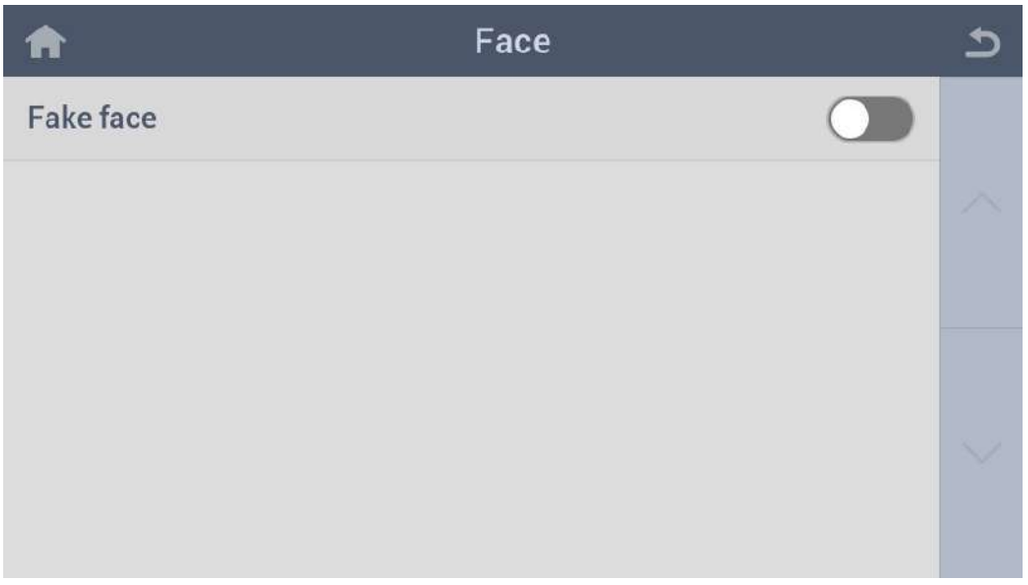


Default set at 10^{-8}. Note: decreasing Recog FAR will increase false reject rate (FRR).

1.2.2.3 Bio → Iris → Min distance

Default set at 30 cm.

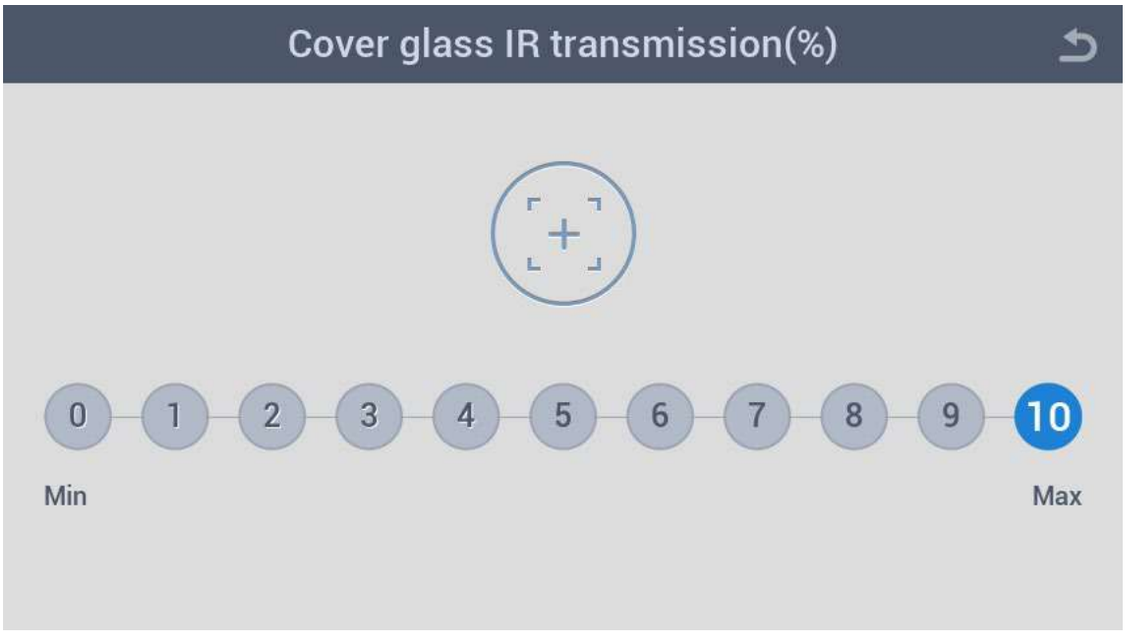
1.2.3 Bio → Face



Fake face Enable/Disable fake face detection (e.g. face photo)

(Note: With Fake face enabled, it may take a little more time to recognize face than if disabled)

1.2.3 Bio → Cover glass IR transmission (%)



1.3 Sound

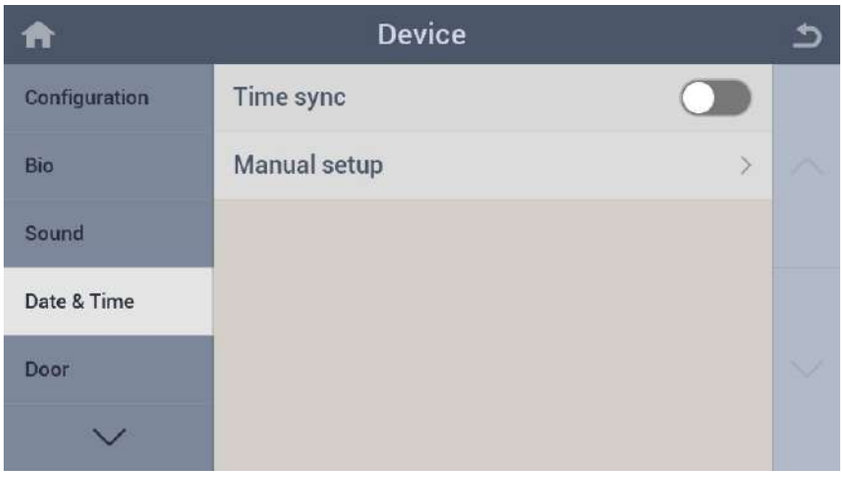
Speaker volume	Set speaker volume for instruction sound and interphone voice
MIC volume	Set microphone volume for interphone voice

1.3.1 Sound → Speaker Volume

1.3.2 Sound → MIC Volume

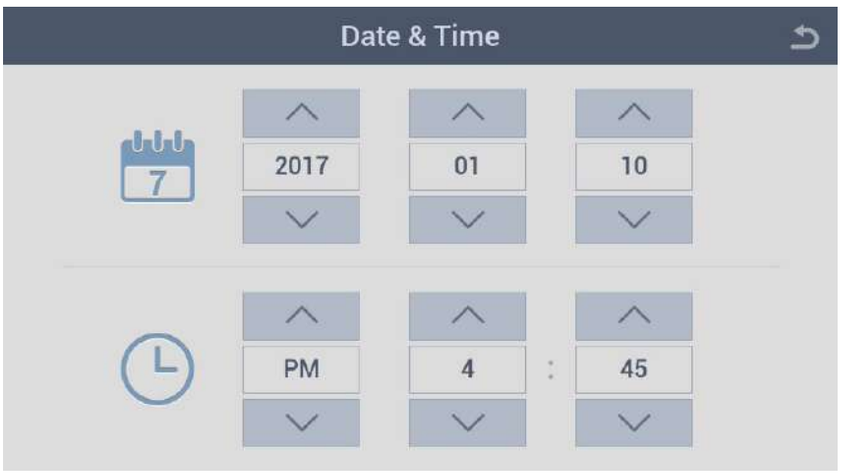
Identical to settings for speaker volume

1.4 Date & Time

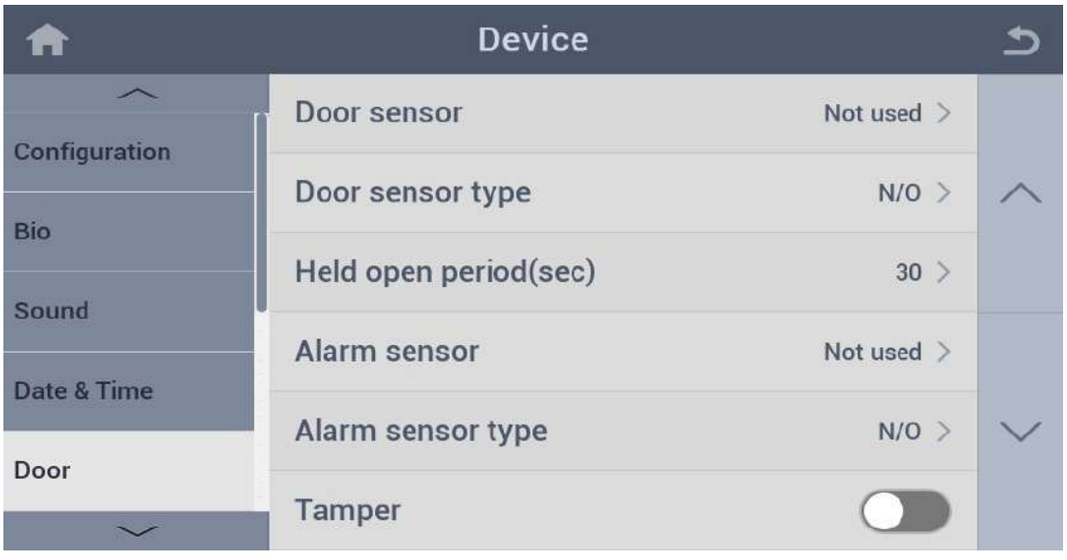


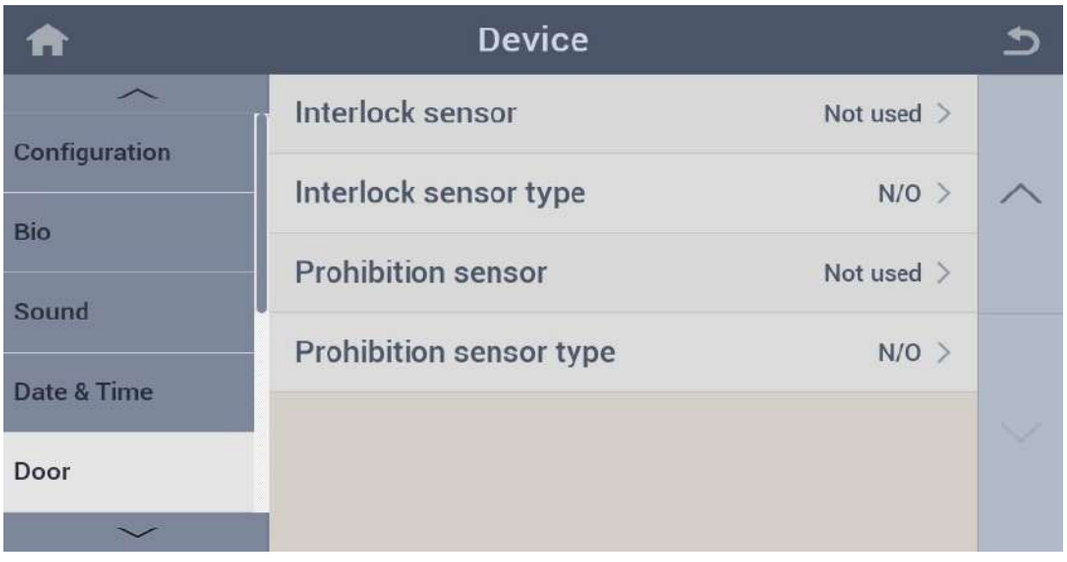
Time sync	Select enable/disable for time sync with ID Manager (note: under development)	
Manual setup	Set date and time manually	

1.4.1 Date & Time → Manual Setup



1.5 Door





Relay Select a door open relay

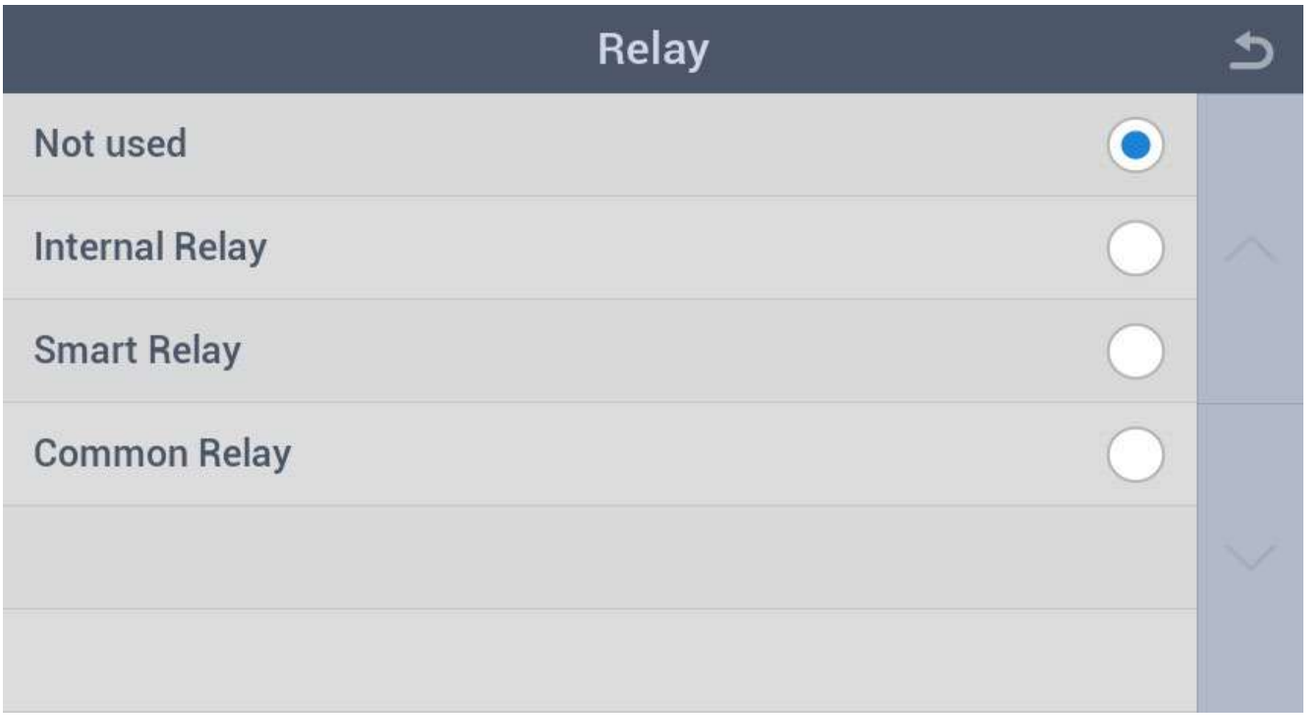
Relay ID Relay ID when relay is used

Driven by Select an event mode for door open relay

Duration (sec) Set time duration for door open relay operation

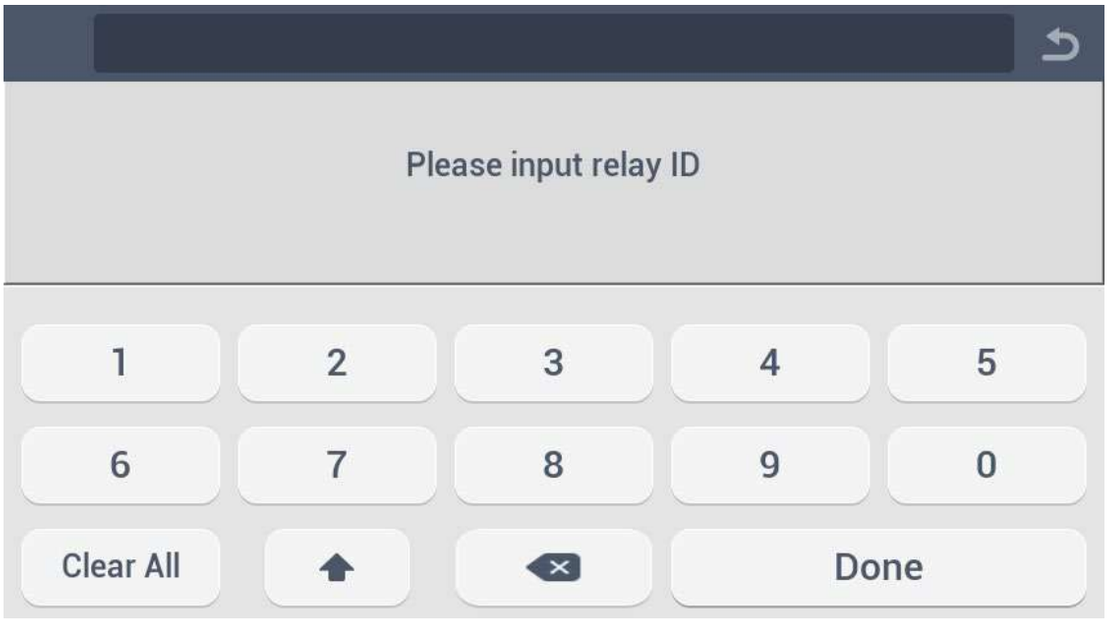
RTE (Exit button)	Select a door exit button
RTE Type	Select relay operation type of RTE
Door sensor	Select Door sensor input
Door sensor Type	Select Door sensor type
Held open period (sec)	Select Door open period
Alarm sensor	Select Alarm sensor input
Alarm sensor type	Select Alarm sensor type
Tamper	Select enable/disable Tamper function
Interlock sensor	Select Interlock sensor input
Interlock sensor type	Select Interlock sensor type
Prohibition sensor	Select Prohibition sensor input
Prohibition sensor type	Select Prohibition sensor type

1.5.1 Door → Relay



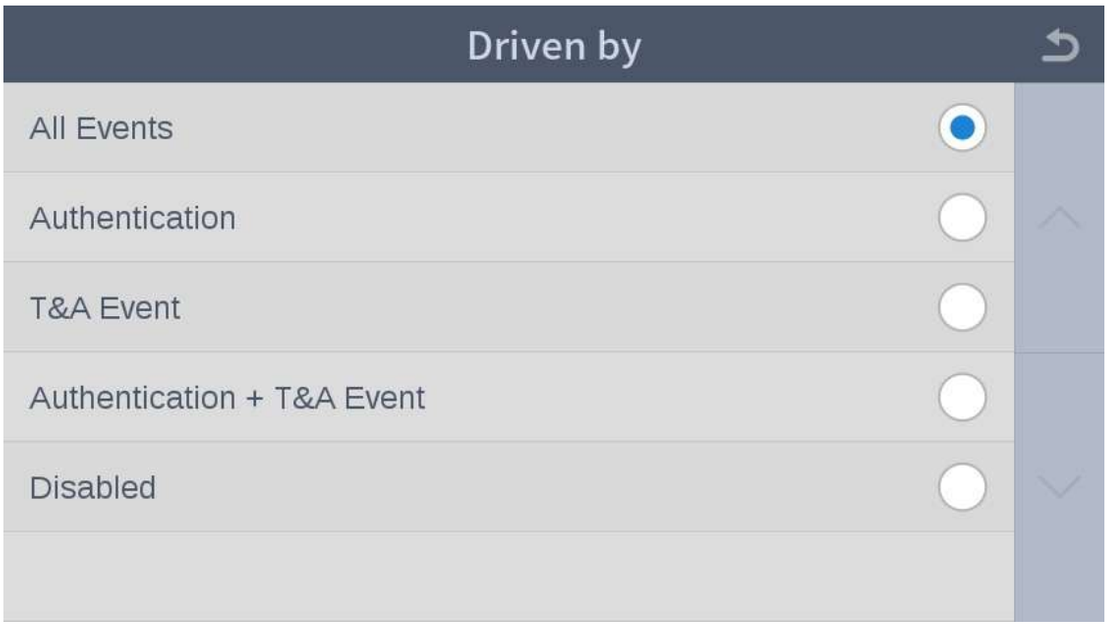
Not used	Select not used
Internal Relay	Select internal relay
Smart Relay	Select external relay
Common Relay	Select common relay

1.5.2 Door → Relay ID



Please input the ID when using Smart Relay

1.5.3 Door → Driven by



All Events Select door open for all events

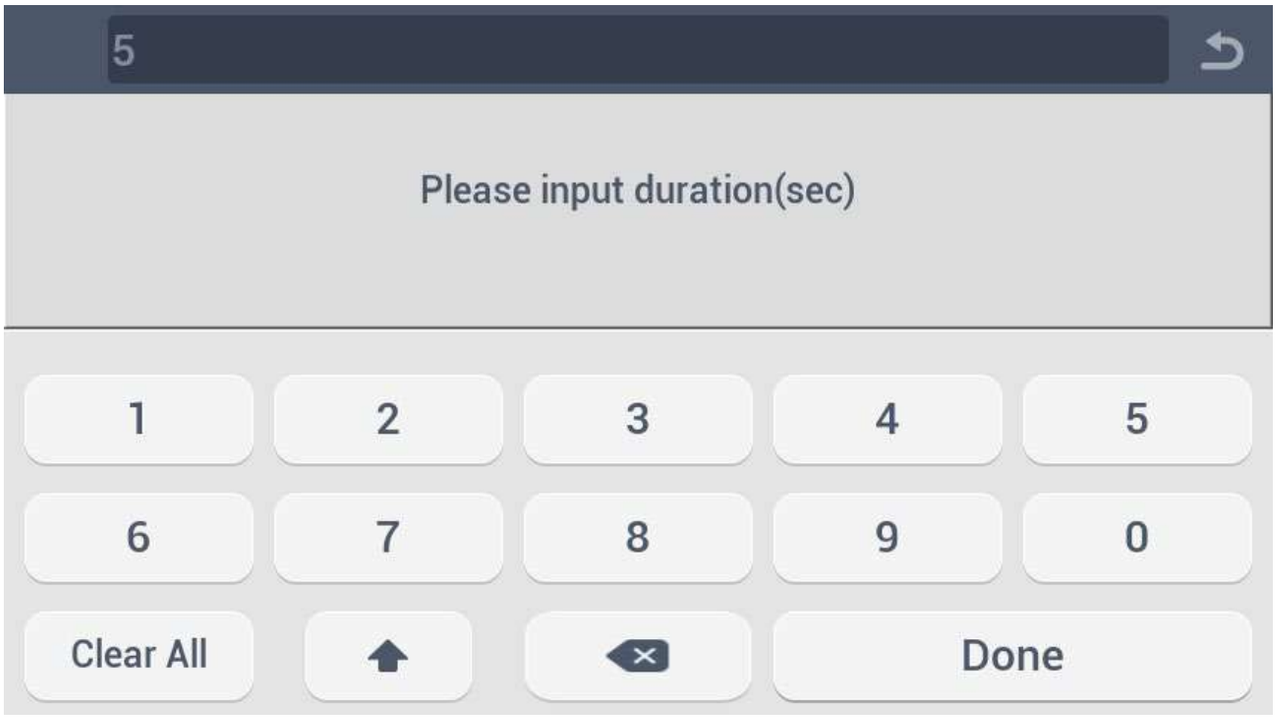
Authentication Select door open for authentication event

T&A Event Select door open for T&A event

Authentication + T&A Event Select door open for authentication plus T&A event

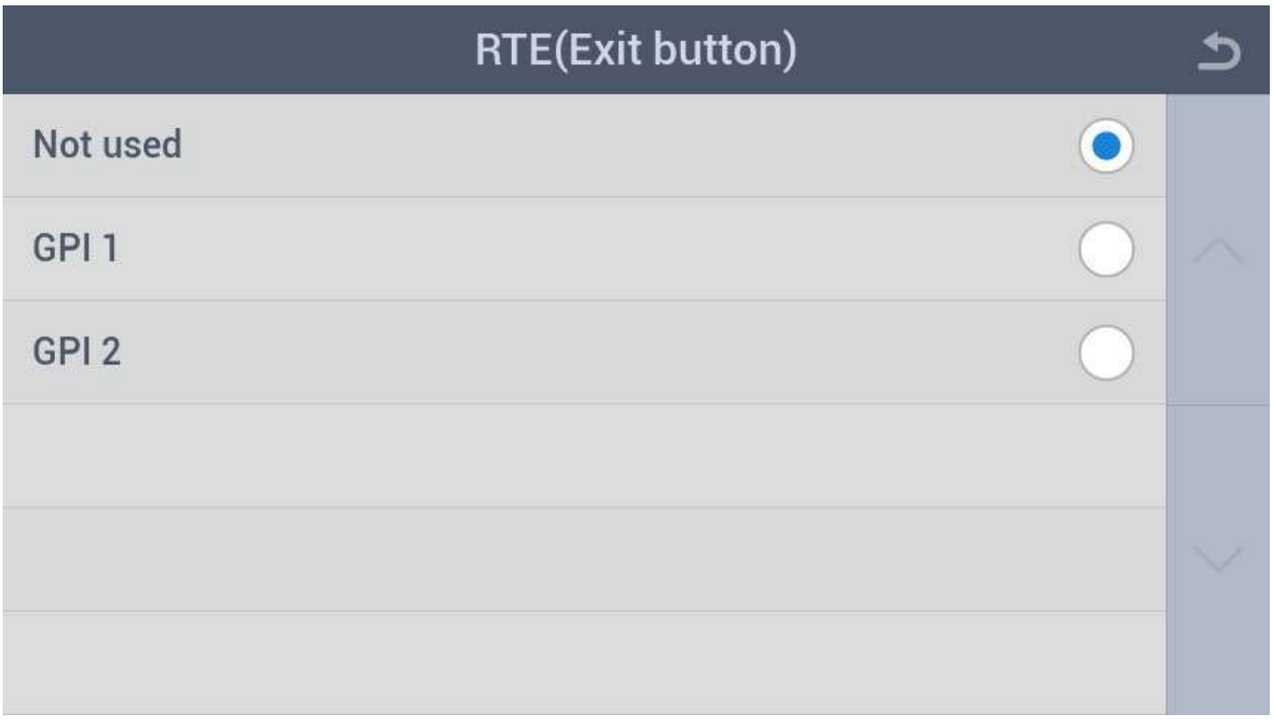
Disabled Select door open disable

1.5.4 Door → Duration (sec)



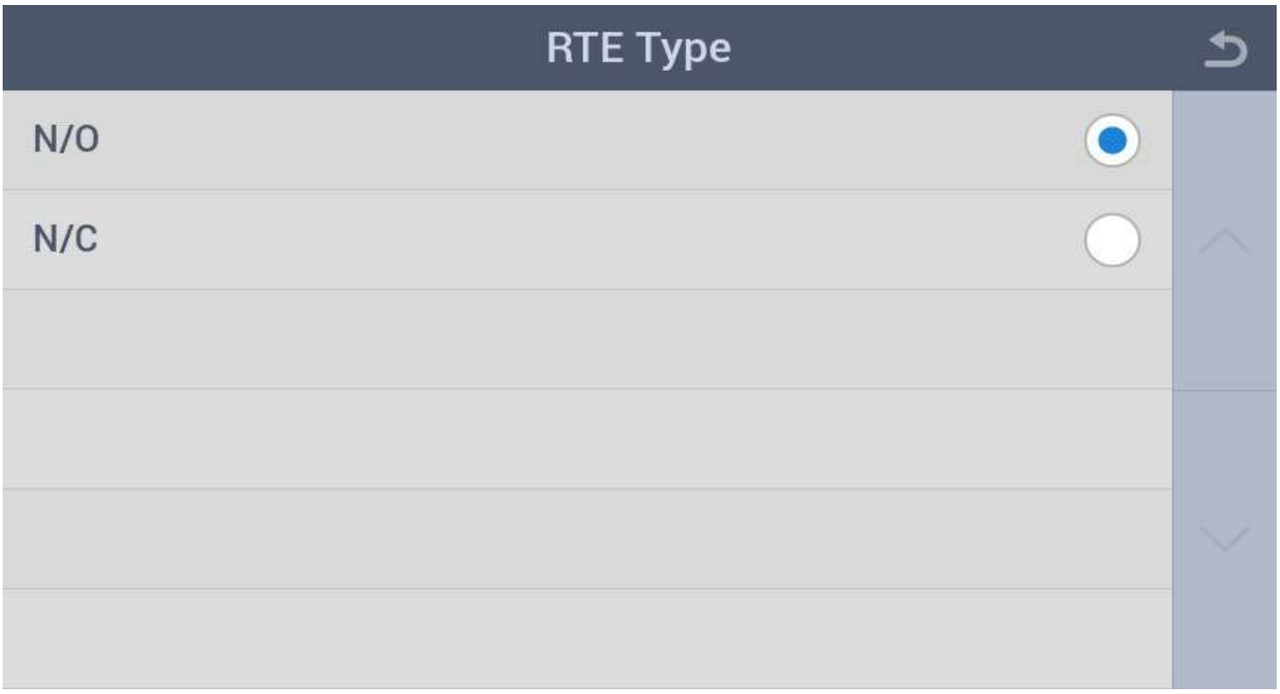
Setting the Duration time of door open function

1.5.5 Door → RTE (Exit button)



Not used	Select not to use RTE (Exit button)
GPI1	Select to use GPI1 as RTE (Exit button)
GPI2	Select to use GPI2 as RTE (Exit button)

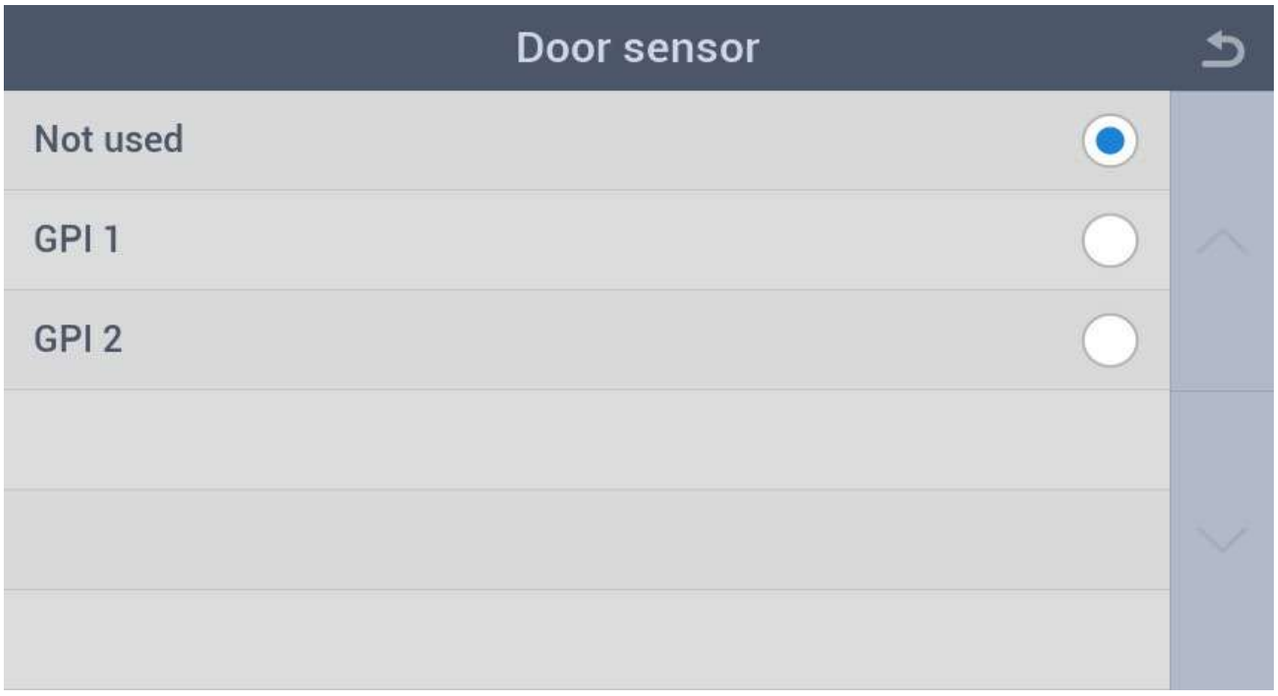
1.5.6 Door → RTE Type



Select type of door sensor

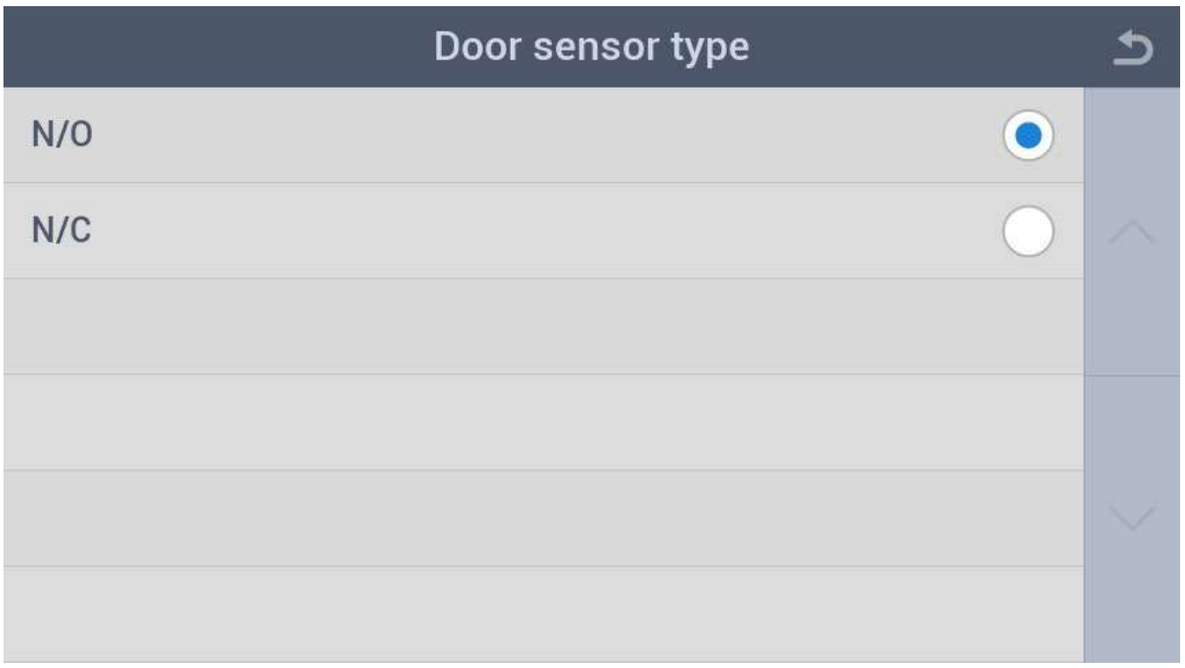
N/O	Normally Open
N/C	Normally Close

1.5.7 Door → Door Sensor



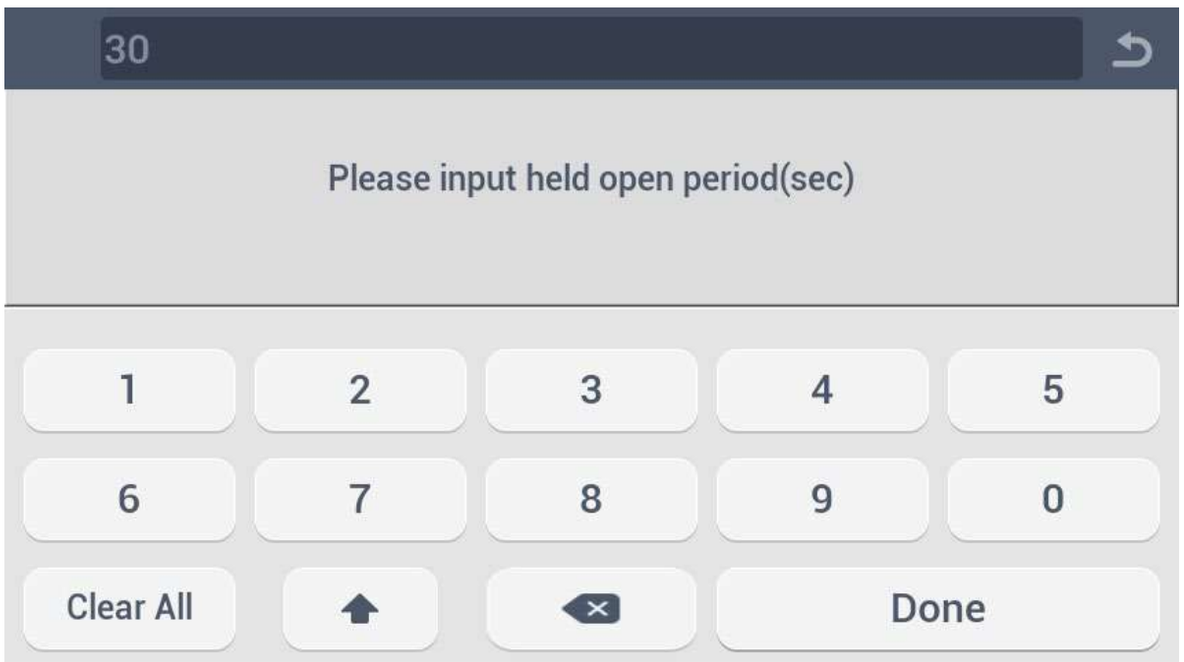
Not used	Select not to use Door sensor
GPI1	Select to use GPI1 as Door sensor
GPI2	Select to use GPI2 as Door sensor

1.5.8 Door → Door Sensor type



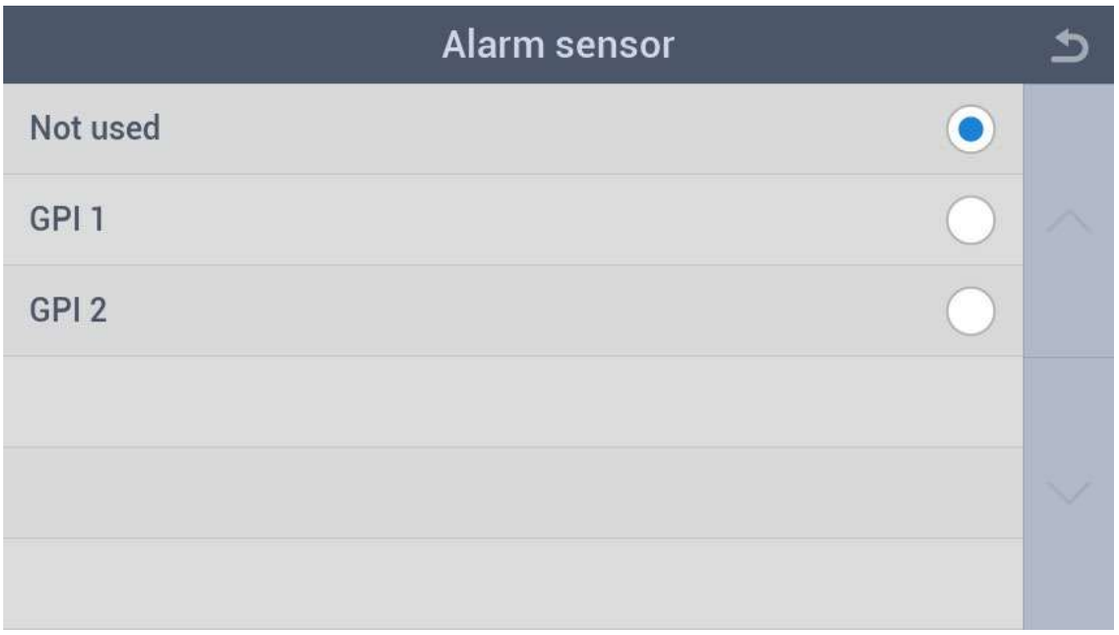
Select type of door sensor (normally open or normally closed).

1.5.9 Door → Hold open period (sec)



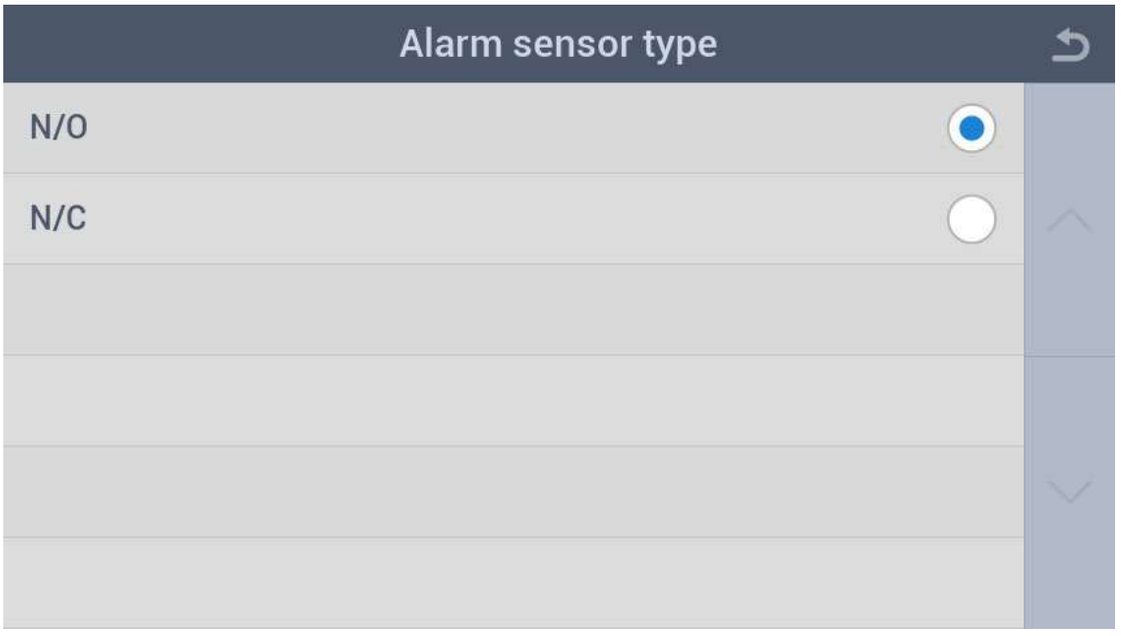
Setting the hold open period (sec) for alarm if the door is not closed.

1.5.10 Door → Alarm Sensor



Not used	Select not to use Alarm sensor
GPI1	Select to use GPI1 as Alarm sensor
GPI2	Select to use GPI2 as Alarm sensor

1.5.11 Door → Alarm Sensor type



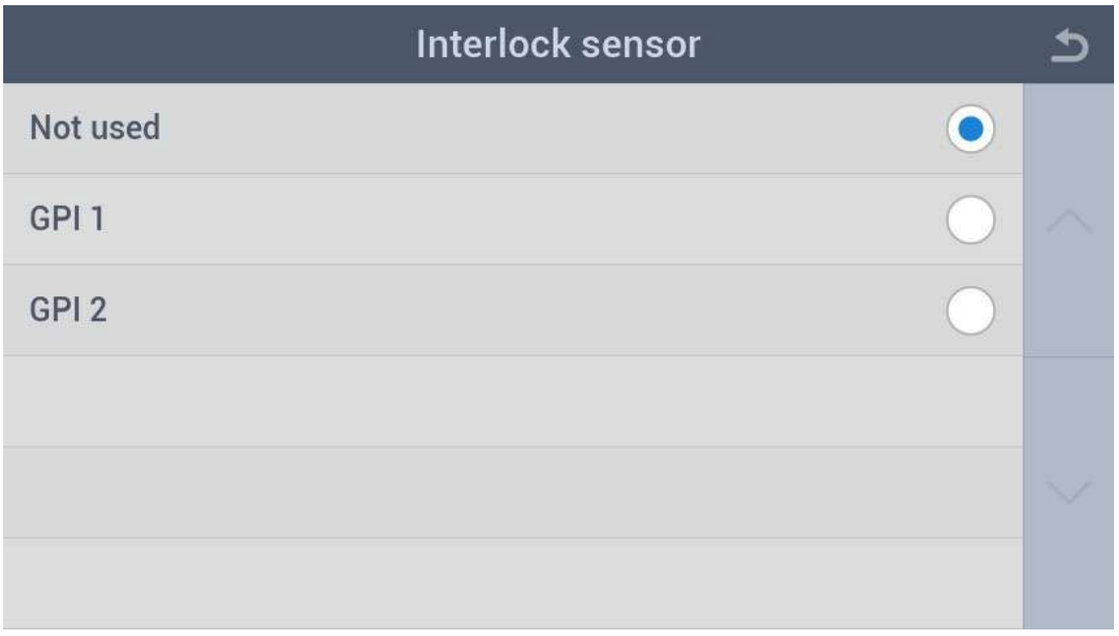
Select type of Alarm sensor

N/O	Normally Open
N/C	Normally Close

1.5.12 Door → Tamper

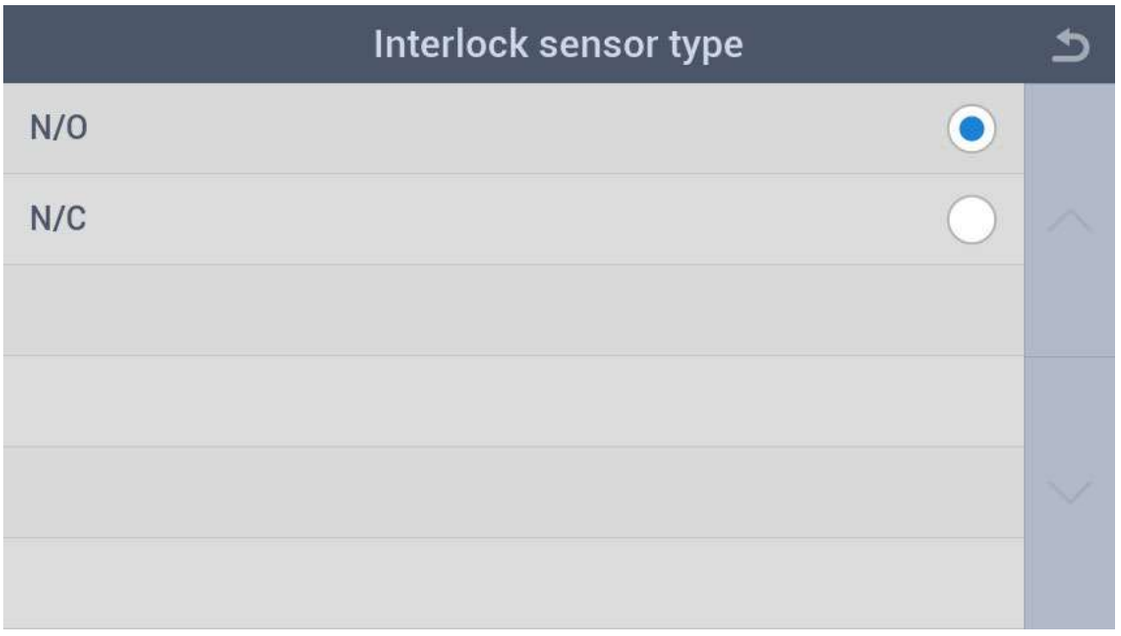
Switch to select enable / disable Tamper switch.

1.5.13 Door → Interlock Sensor



Not used	Select not to use Interlock sensor
GPI1	Select to use GPI1 as Interlock sensor
GPI2	Select to use GPI2 as Interlock sensor

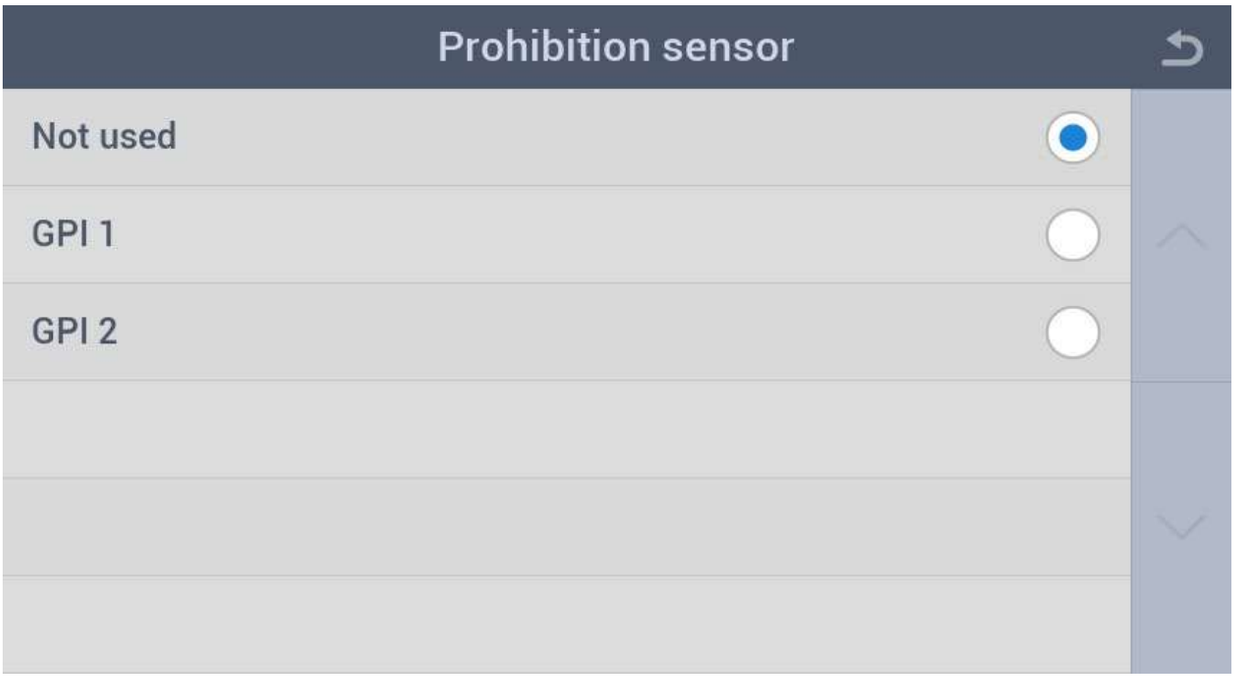
1.5.14 Door → Interlock Sensor type



Select type of Interlock sensor

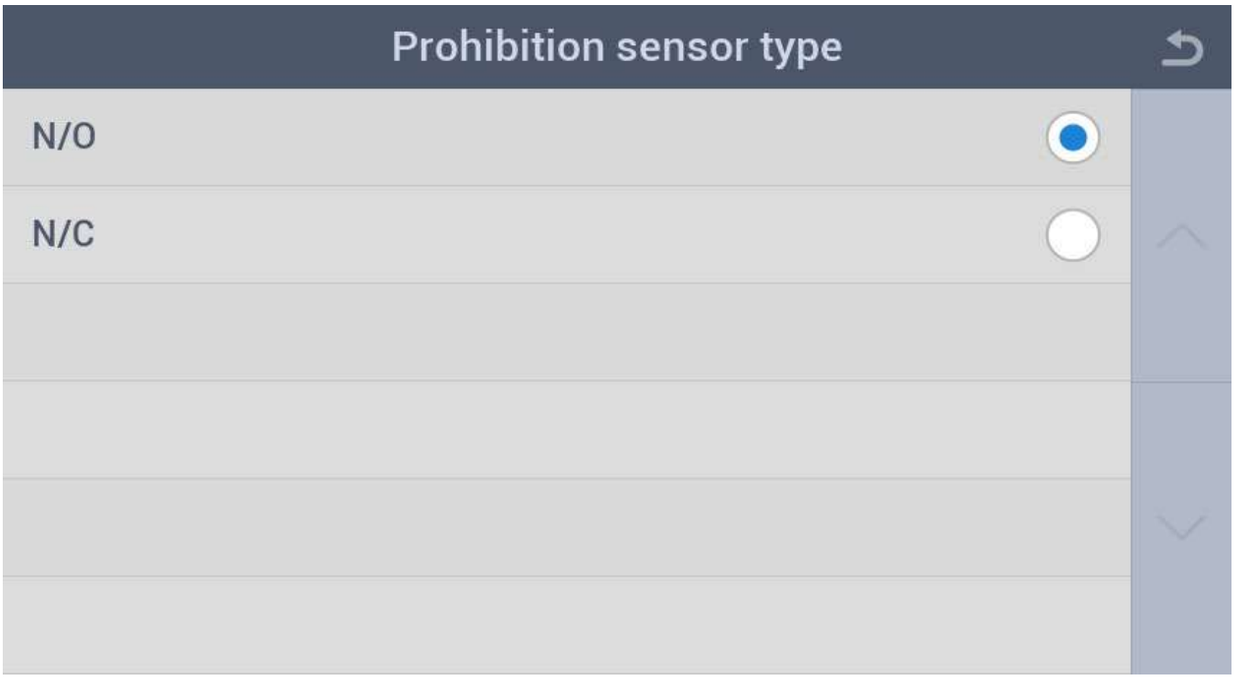
N/O	Normally Open
N/C	Normally Closed

1.5.15 Door → Prohibition Sensor



Not used	Select not to use Prohibition sensor
GPI1	Select to use GPI1 as Prohibition sensor
GPI2	Select to use GPI2 as Prohibition sensor

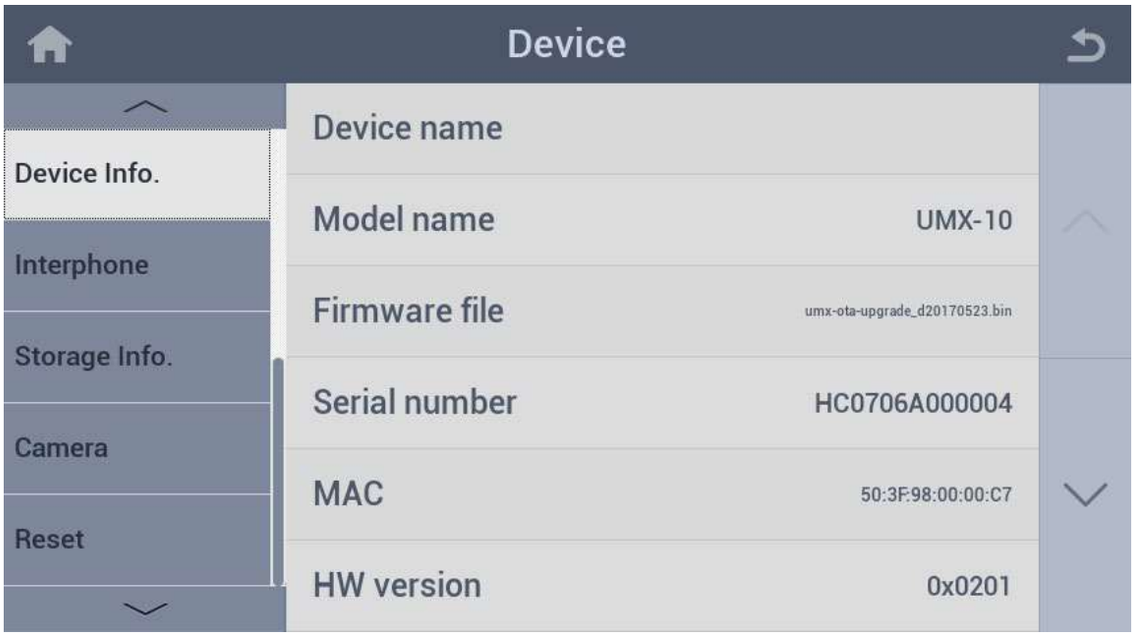
1.5.16 Door → Prohibition Sensor type

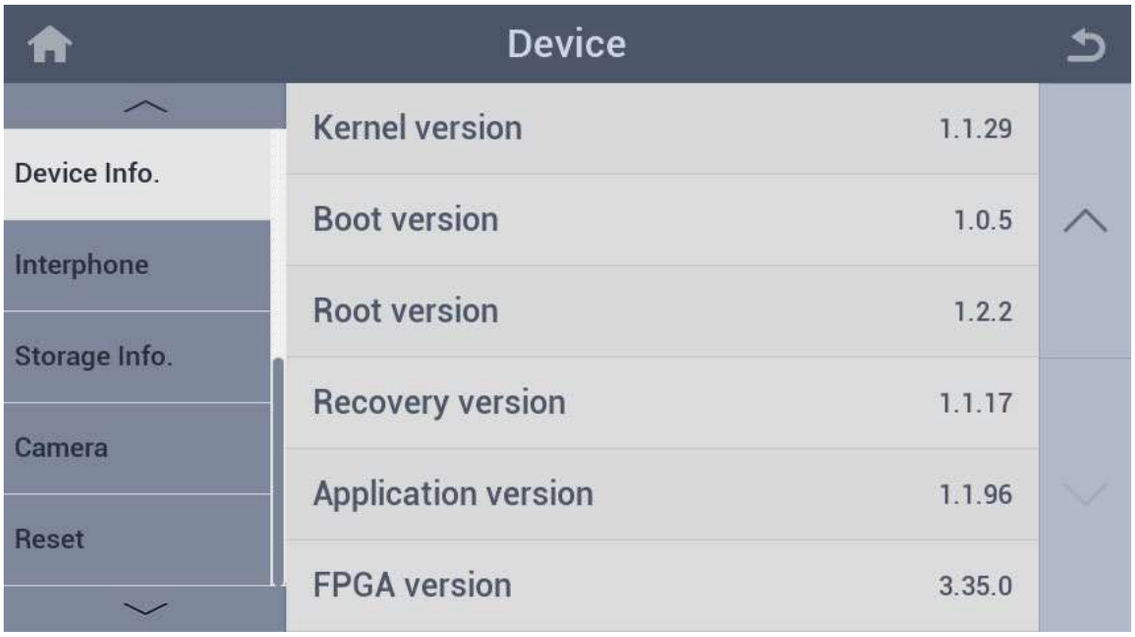


Select type of Prohibition sensor

N/O	Normally Open
N/C	Normally Closed

1.6 Device Info.





Device name Device ID

Model name Model name of this device

Firmware file Version name of installed firmware (FW) file

Serial number Identification number of this device

MAC MAC address of this device

HW version Revision number of hardware board

Kernel version Revision number of kernel

Boot version Revision number of boot loader

Root version Revision number of root file system

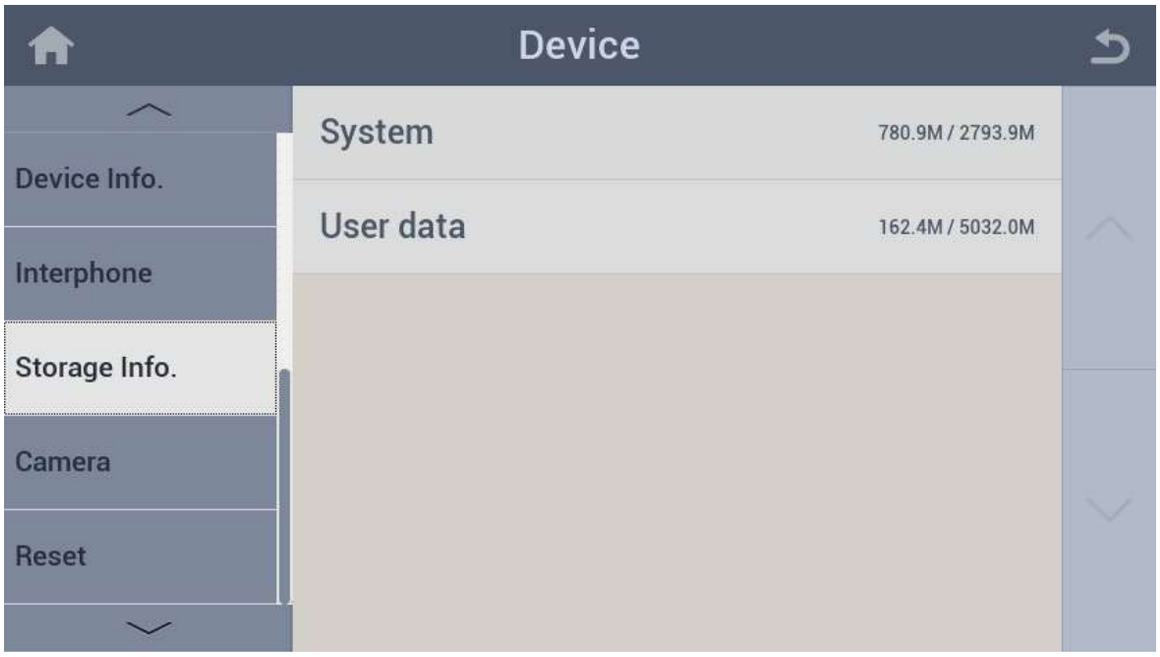
Recovery version	Revision number of recovery firmware
Application version	Revision number of Launcher application
FPGA version	Revision number of Camera FPGA firmware

1.7 Interphone

Interphone	Select enable/disable for interphone use
IP Address	IP address of PC which interphone program is installed

1.7.1 Interphone → IP Address

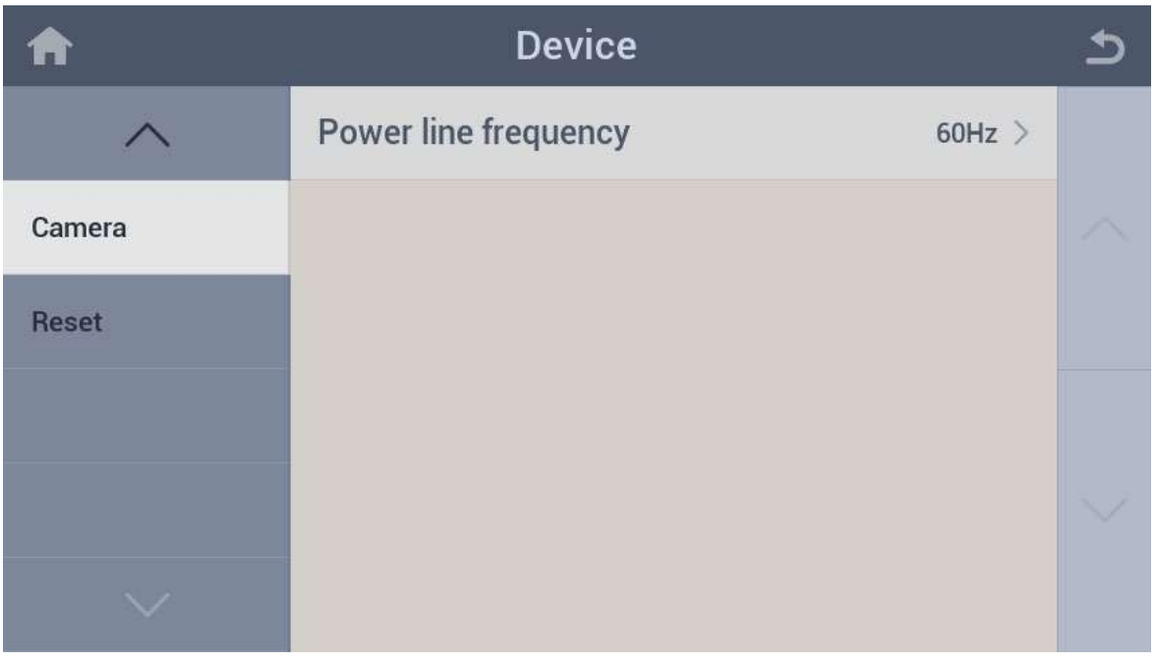
1.8 Storage Info



System Memory capacity of system area

User data Memory capacity of user area

1.9 Camera

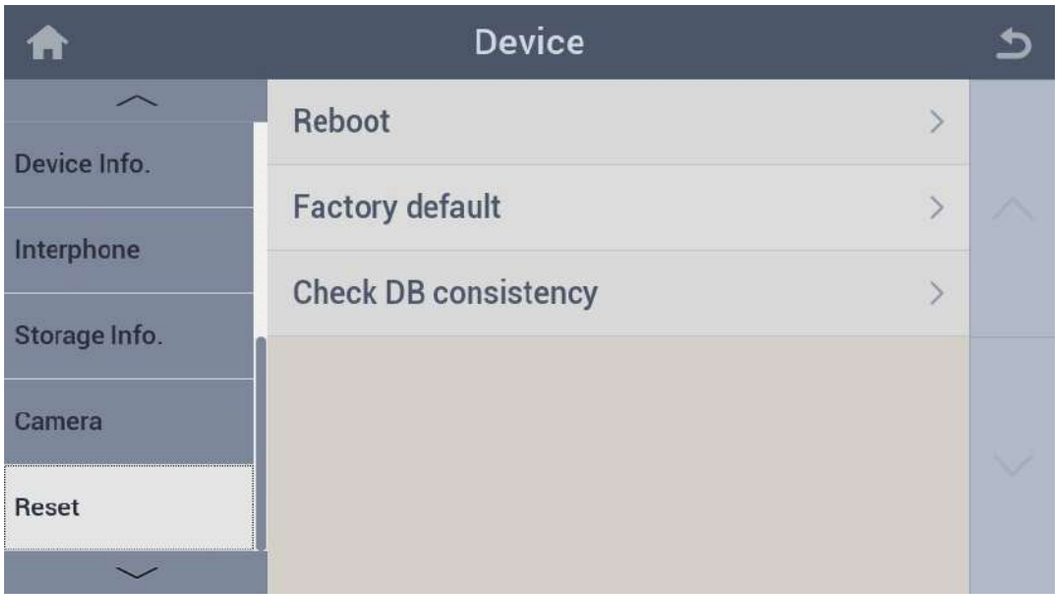


Power line frequency Select power line frequency that supplying to device

1.9.1 Camera → Power Line Frequency

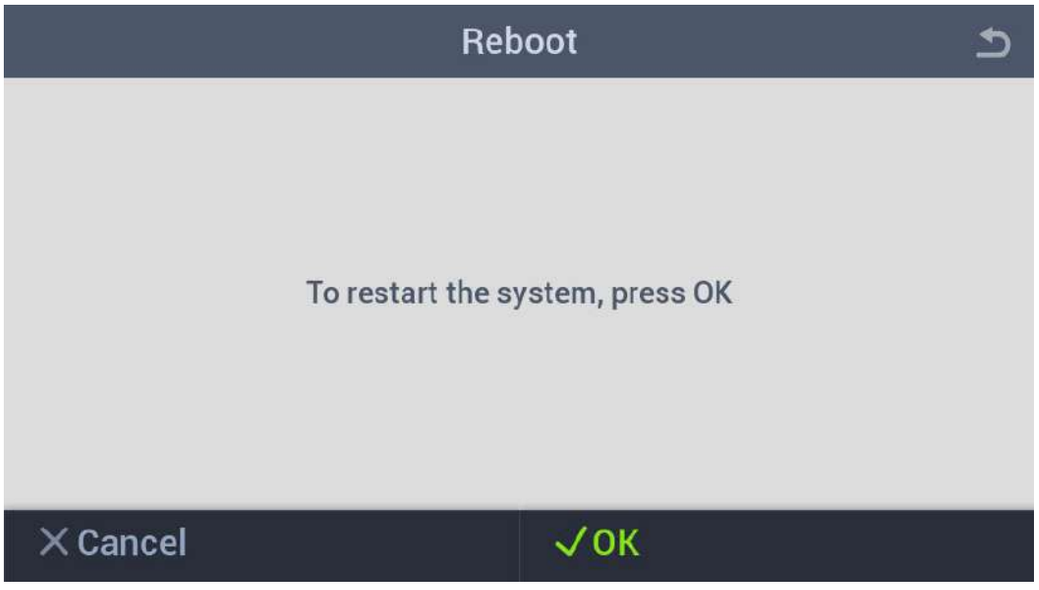
50Hz	Select power line frequency to 50Hz
60Hz	Select power line frequency to 60Hz

1.10 Reset



Reboot	Reboots device
Factory Default	Resets all configuration settings and/or deletes all user data
Check DB consistency	Checks and updates old DB for compatibility with new firmware manually

1.10.1 Reset → Reboot



The main purpose of this command is that it is replicated in the EF-45 SDK's host side application, which allows for device reboot from a management console on the network.

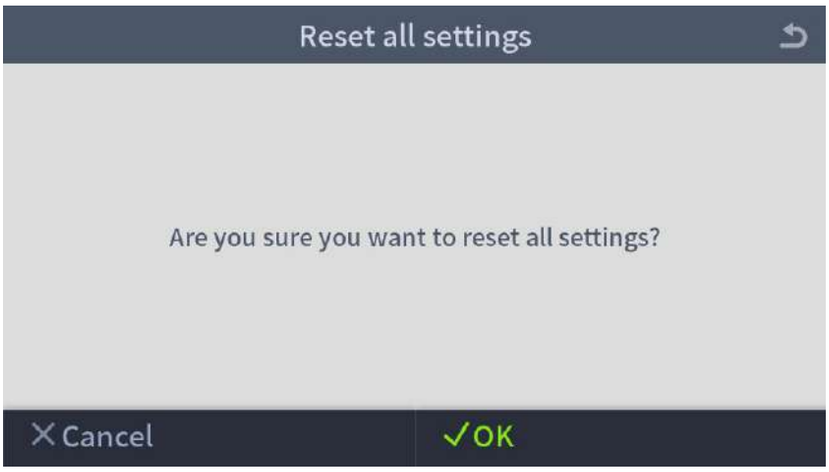
1.10.2 Reset → Factory Default

Reset all settings Reset all configuration settings

Delete all data Delete all user data

Delete all data and reset all configuration settings.
Reset all configuration settings and delete all user data

1.10.2.1 Reset → Factory Default → Reset All Settings

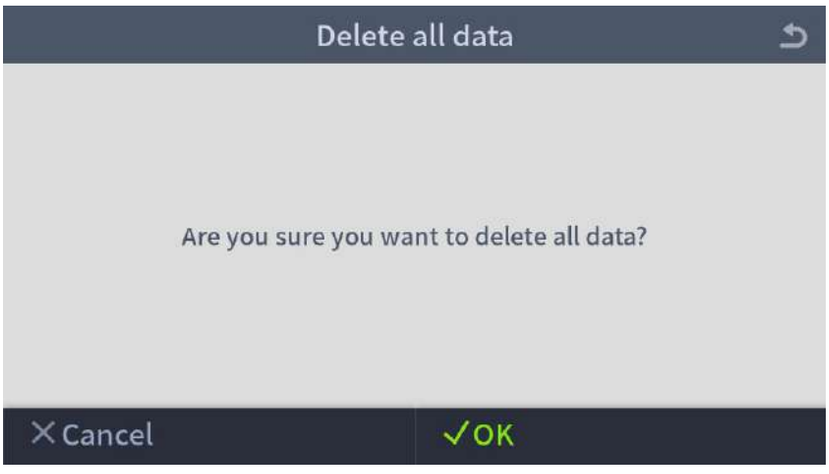


<Note> How to do the factory set by using reset button when the Settings menu is not accessible.

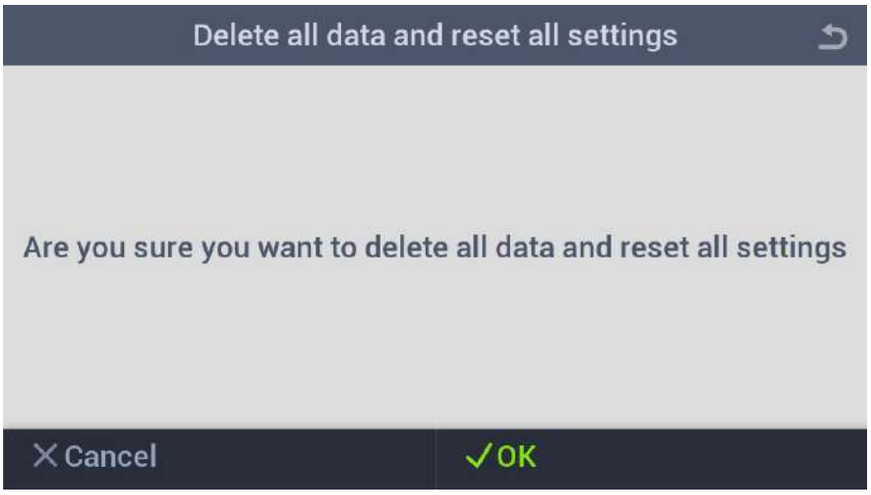
1) Find the factory reset button in the device's rear panel.

2) Press the button more than 2 secs, which will delete all the data and reset all the settings.
3) The device will reboot automatically.

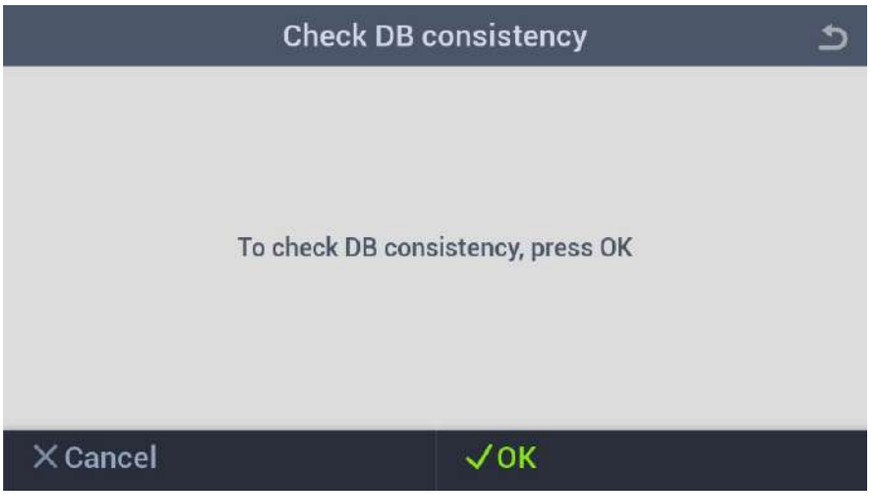
1.10.2.2 Reset → Factory Default → Delete All Data



1.10.2.3 Reset → Factory Default → Delete All Data and Reset All Settings



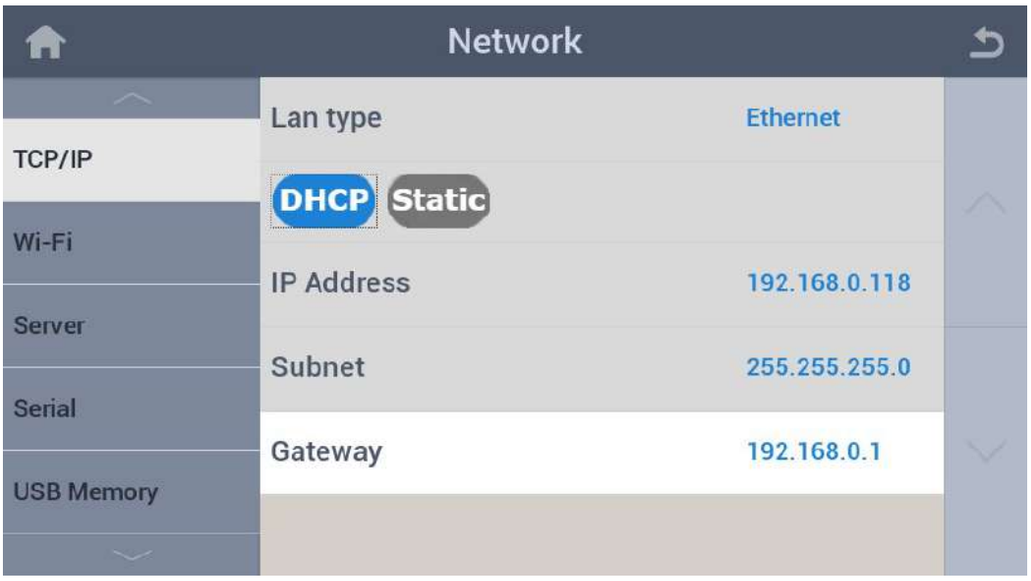
1.10.3 Reset → Check DB consistency



2. Network

Configure settings for IP and serial communication.

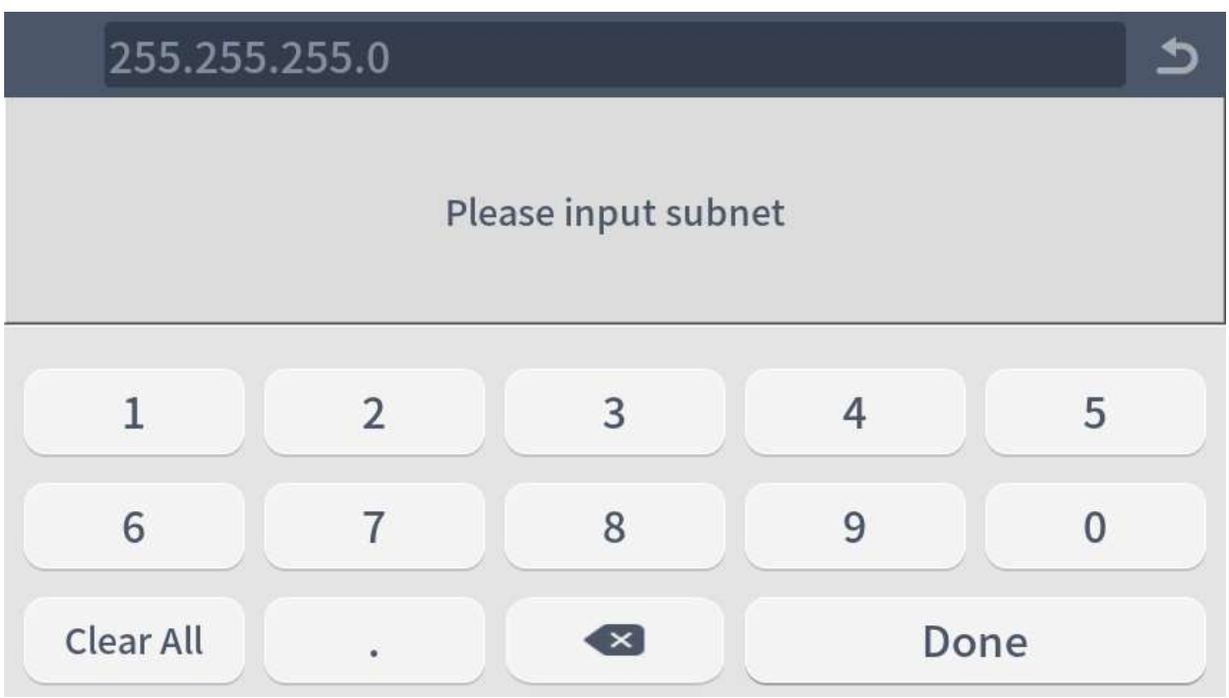
2.1 TCP/IP



LAN type	Show the LAN type
DHCP/Static	Select enable/disable DHCP mode <Note> When you will use Static mode, you should enter all necessary information: IP Address, Subnet, Gateway
IP Address	Set static IP address
Subnet	Set static subnet mask
Gateway	Set static gateway IP address

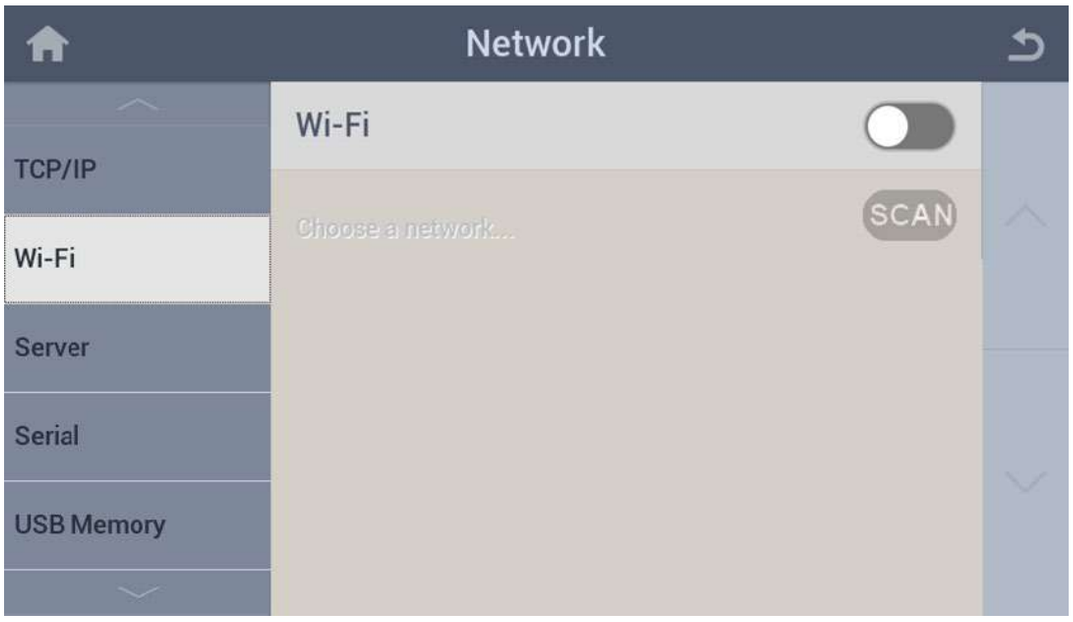
2.1.1 TCP/IP → IP Address

2.1.2 TCP/IP → Subnet



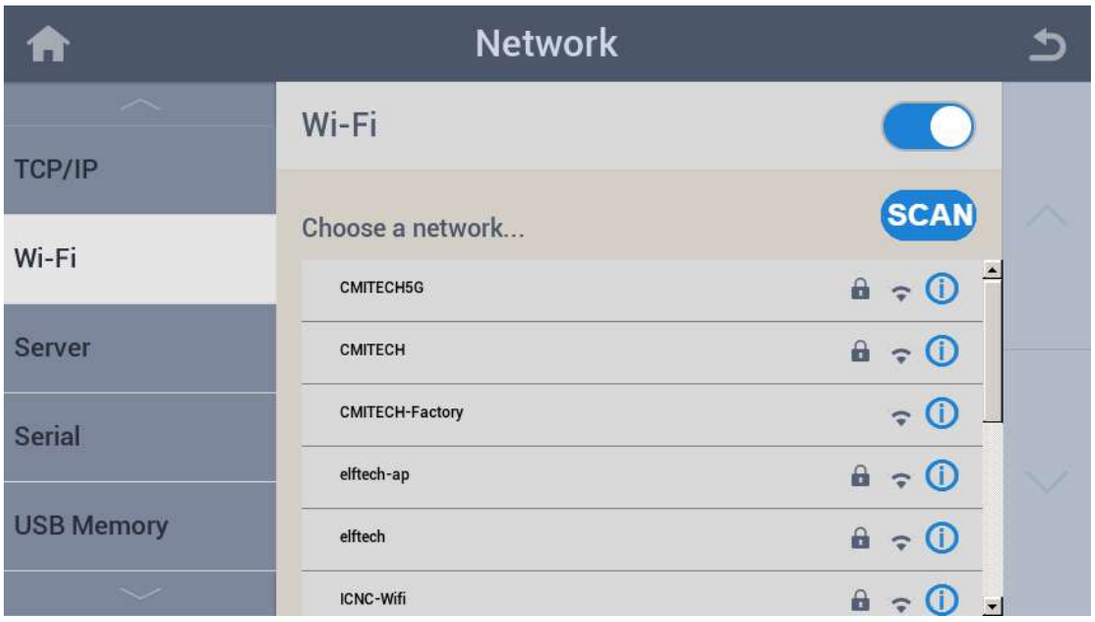
2.1.4 TCP/IP → Gateway

2.2 Wi-Fi



To enable WiFi function after plugging in USB WiFi adapter. Requires reboot of the system. (Note: only factory supported WiFi dongles are compatible.

2.2.1 Wi-Fi → WiFi Scanning

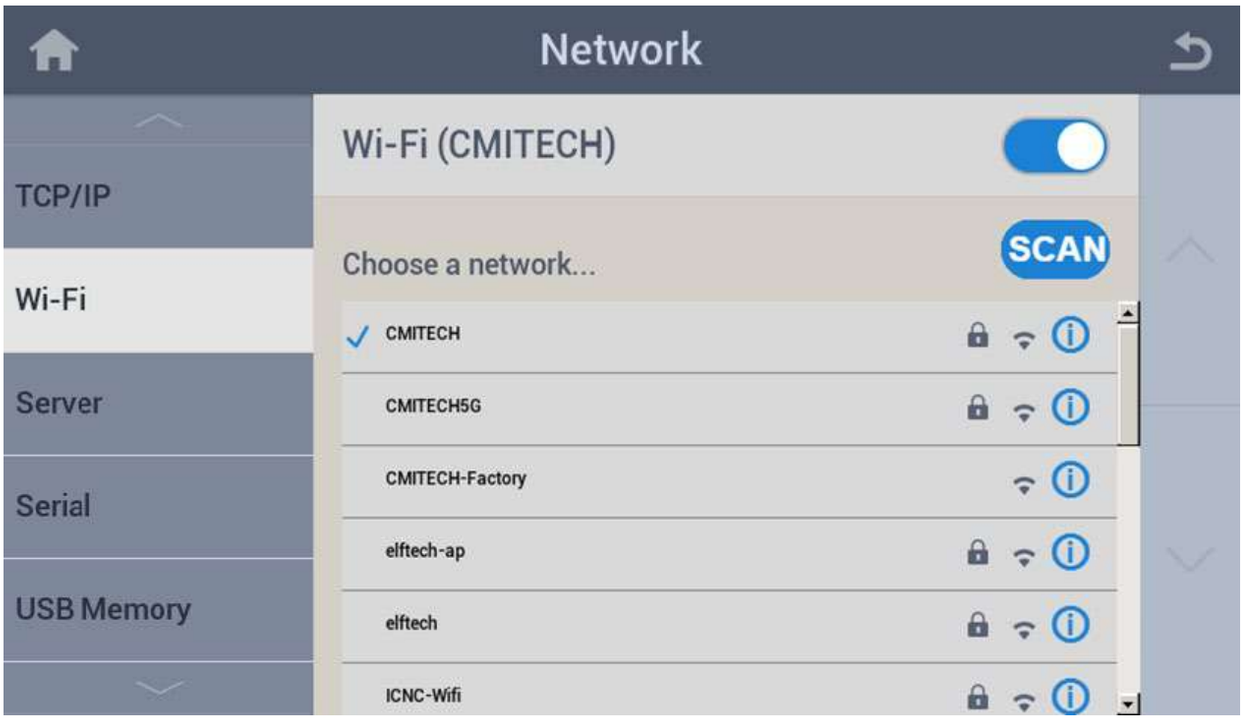


After Wi-Fi is enabled, system will search all Wi-Fi networks to present selections.

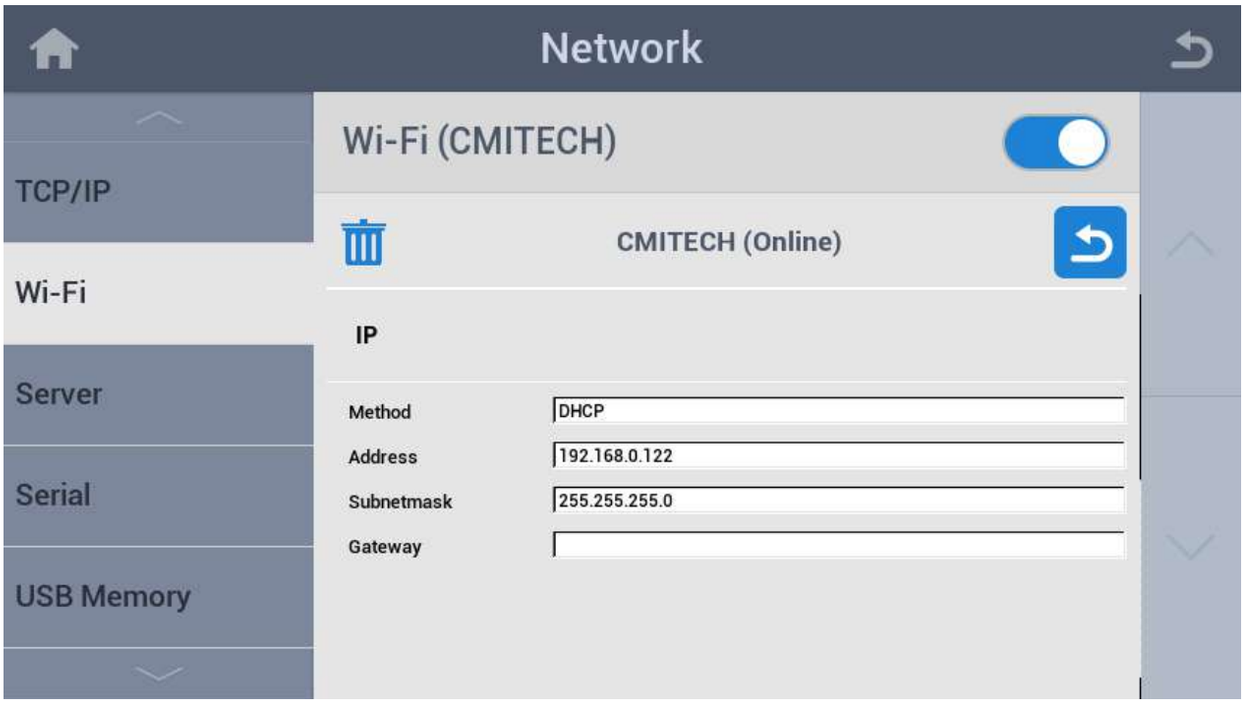
2.2.2 Wi-Fi → Enter the password

Enter the selected Wi-Fi password to connect. (It does not support all characters.)

2.2.3 Wi-Fi → Wi-Fi Selected

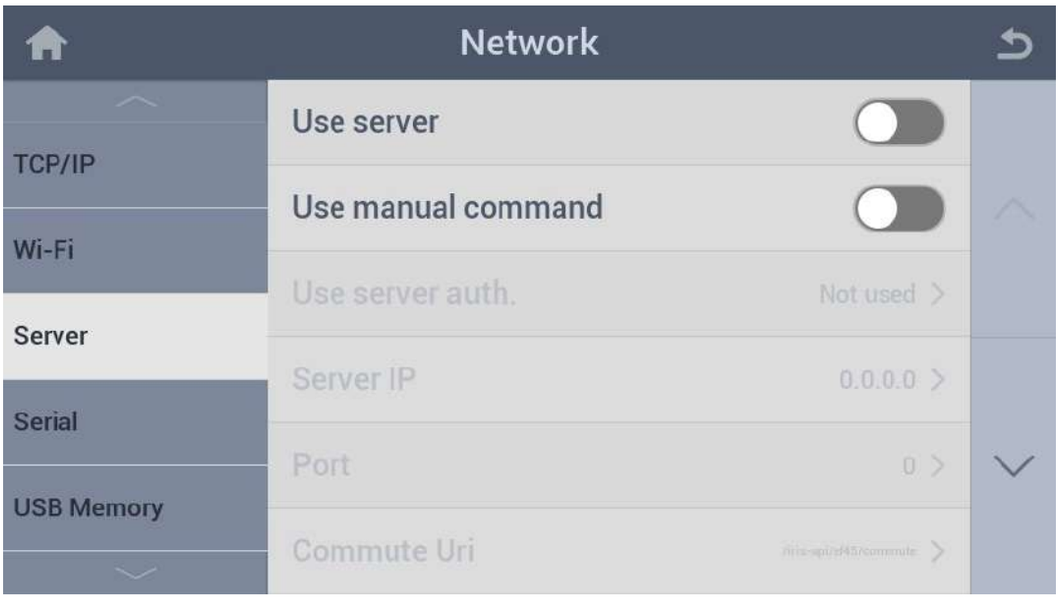


2.2.4 Wi-Fi → Selected Information



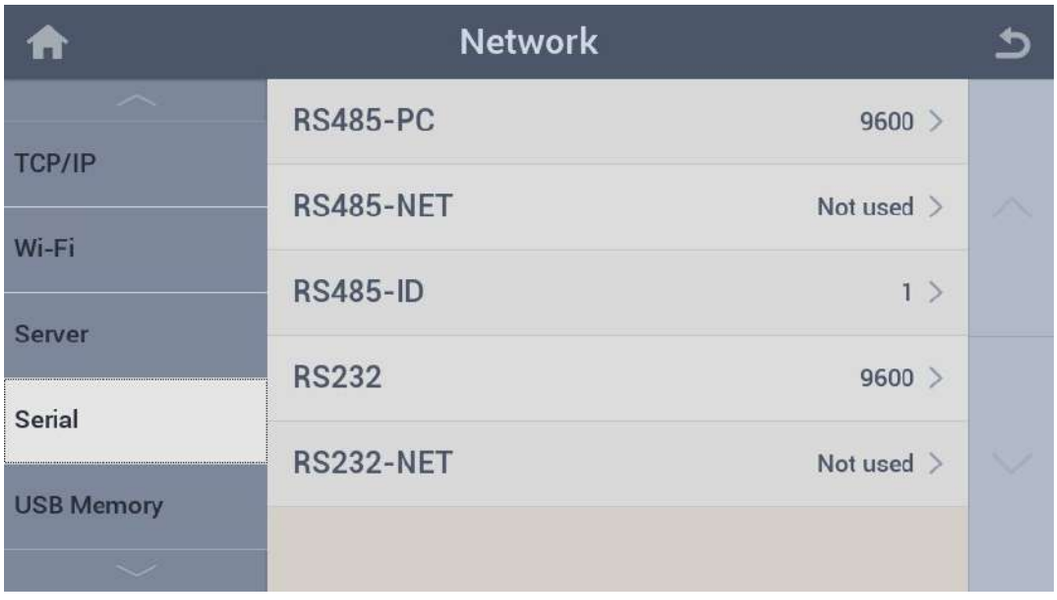
Connection information for selected Wi-Fi.

2.3 Server



Set the server configuration for push dedicated data (e.g. event/log, image/template for server match) to network.

2.4 Serial



RS485-PC Select a baud rate for RS485 (optional, on demand)

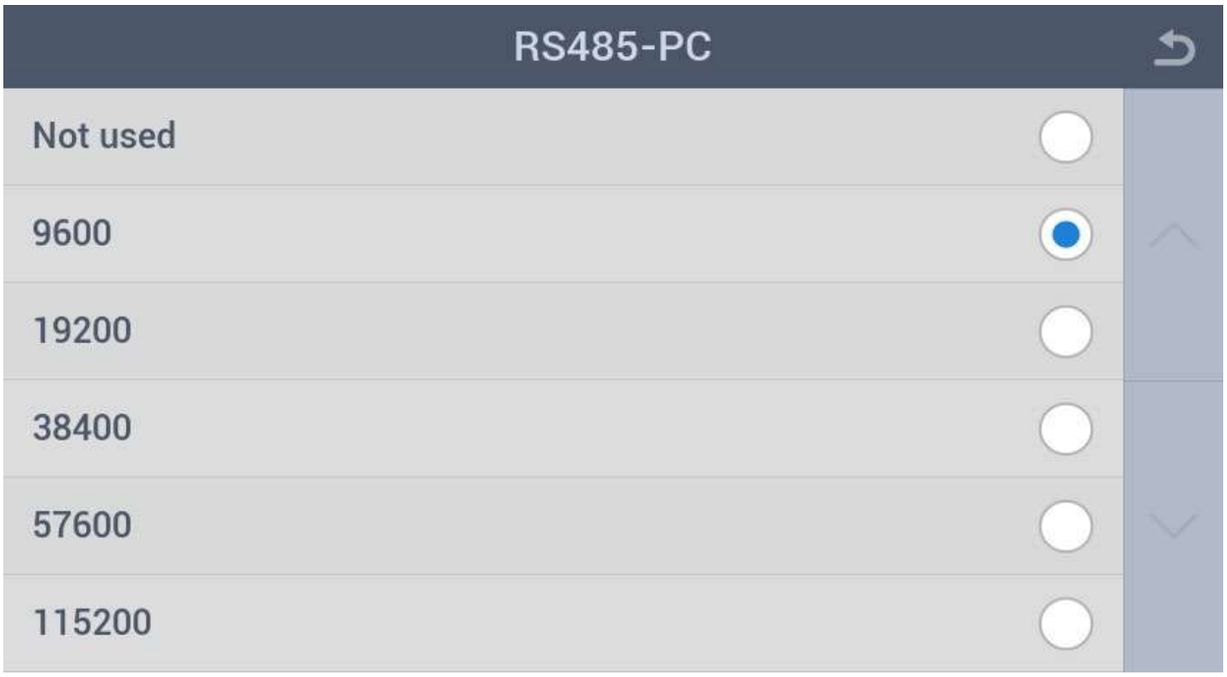
RS485-NET Select an operating mode for RS485 (optional, on demand)

RS485-ID Select device ID when the operating mode is SLAVE

RS232 Select a baud rate for RS232 (optional, on demand)

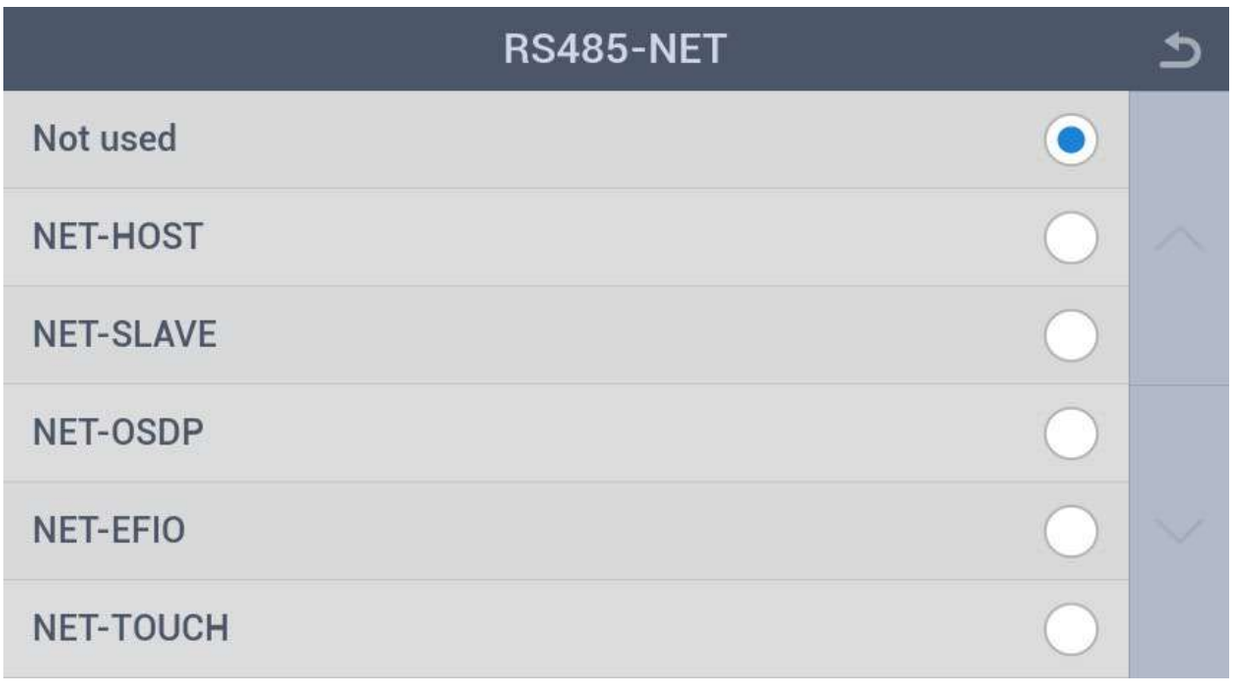
RS232-NET Select an operating mode for RS232 (optional, on demand)

2.4.1 Serial → RS485-PC



Select Serial Baud rate if you want to use RS485

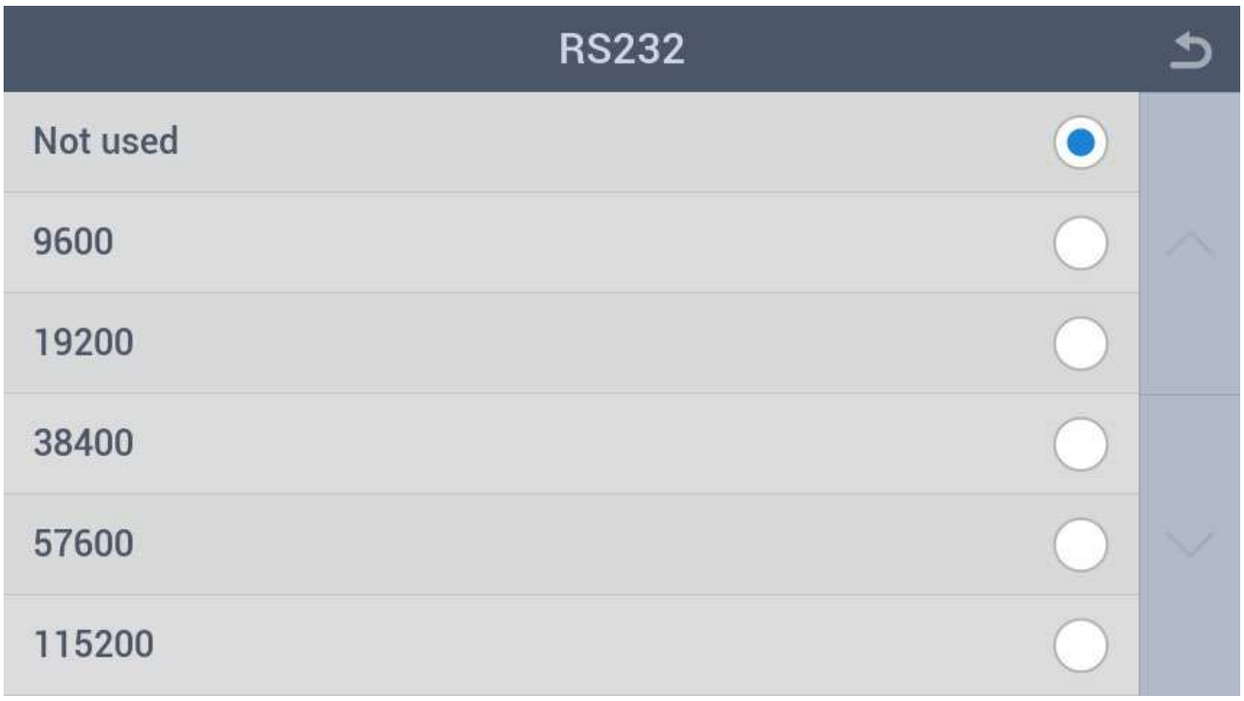
2.4.2 Serial → RS485-NET



Not use	Disable RS485
NET-HOST	Set RS485 operating mode as host
NET-SLAVE	Set RS485 operating mode as slave
NET-OSDP	
NET-EFIO	Select a device type connected to RS485
NET-TOUCH	

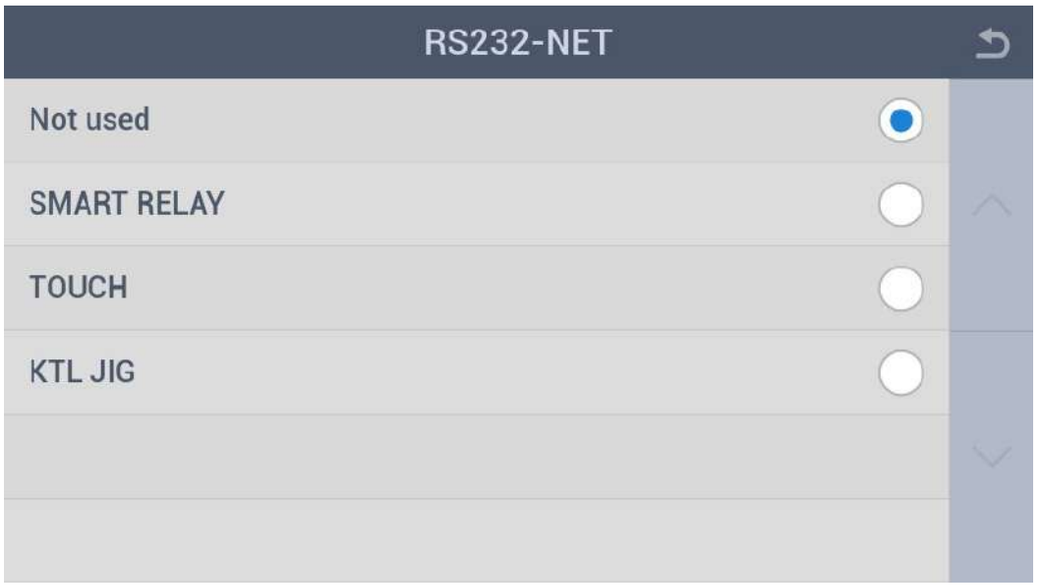
2.4.3 Serial → RS485-ID

2.4.4 Serial → RS232



Select Baud rate if you want to use RS232.

2.4.5 Serial → RS232-NET



Select a device type connected to RS232

2.5 USB Memory

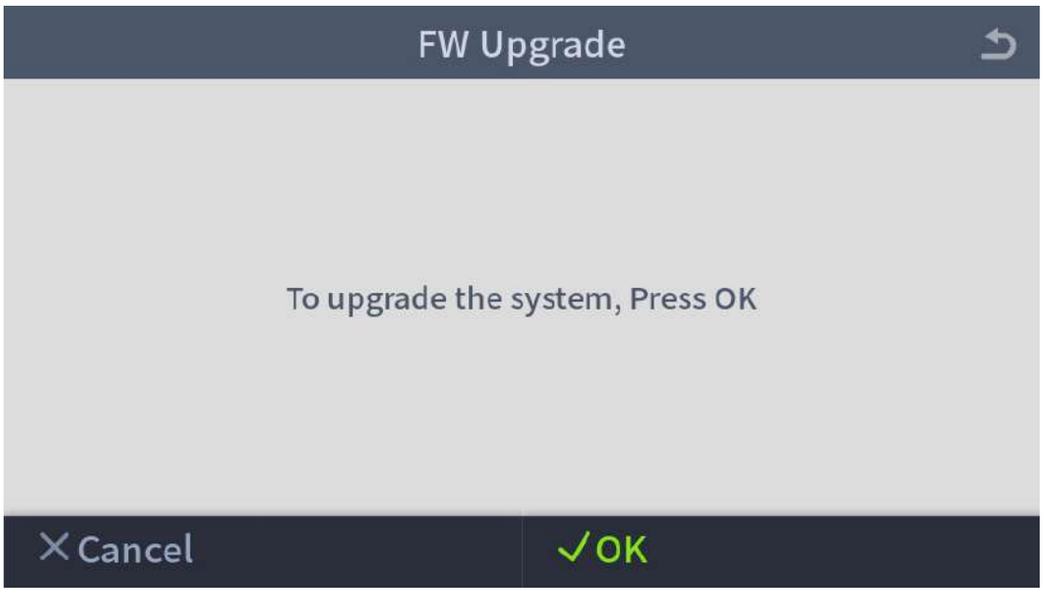
USB enable Select enable/disable for USB memory use

FW Upgrade Enable firmware (F/W) upgrade from USB memory

Import Backup data (user & log data) with restore from USB memory

Export Backup data (user & log data) by saving to USB memory

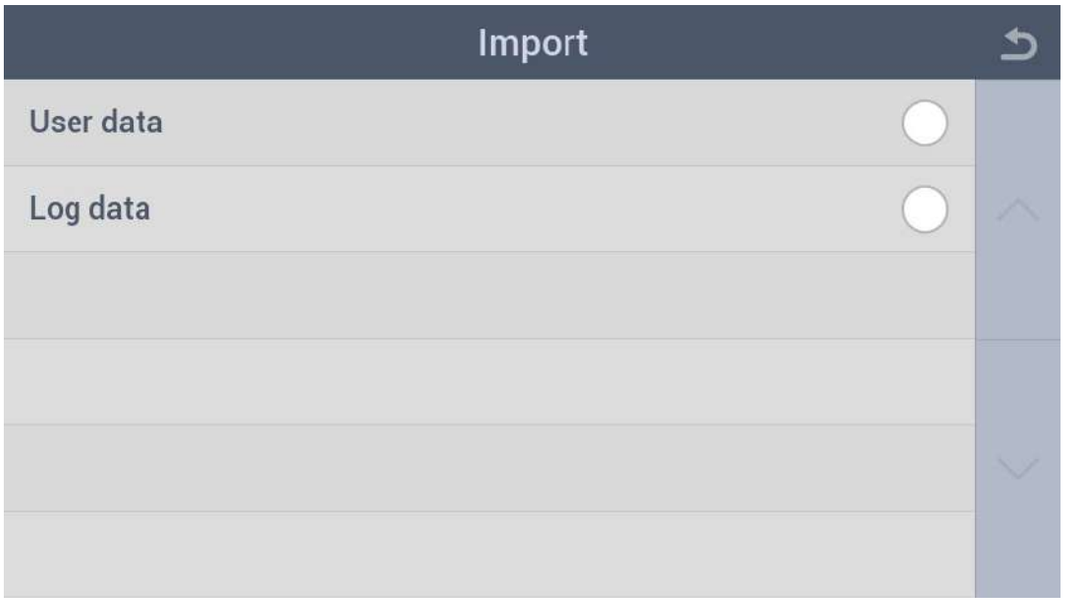
2.5.1 USB Memory → FW Upgrade



Initiate FW Upgrade by tapping on **√ OK** button on bottom right.

If the FW file (new firmware / operating libraries) does not exist in USB memory drive, or FW file is same or older version than what is on system, a message will appear as shown below.

2.5.2 USB Memory → Import



User data Restore user enroll data from USB memory

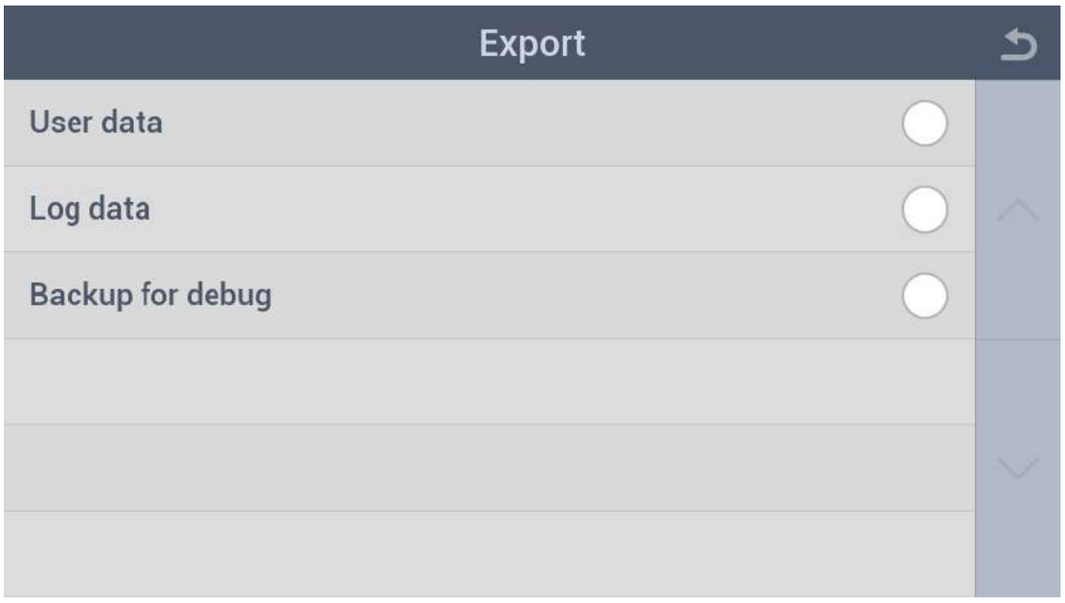
Log data Restore log data from USB memory

2.5.3 USB Memory → Export

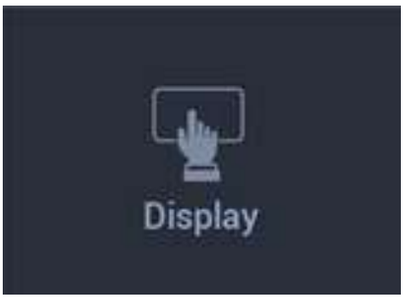
User data Backup user enroll data to USB memory

Log data Backup log data and copies Debug files to USB memory

Backup for debug Backup Debug files to USB memory

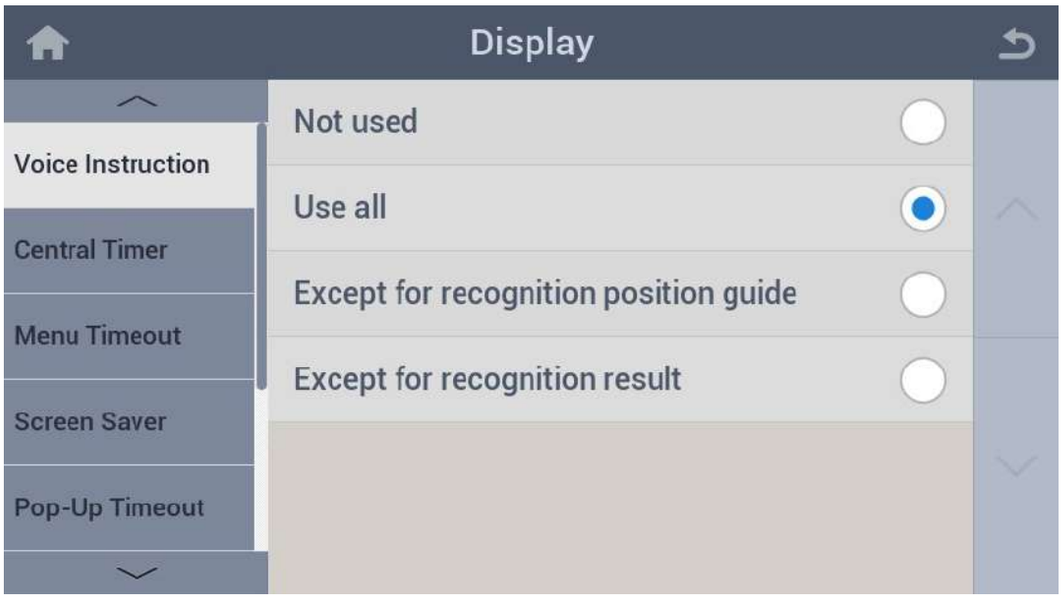


3. Display



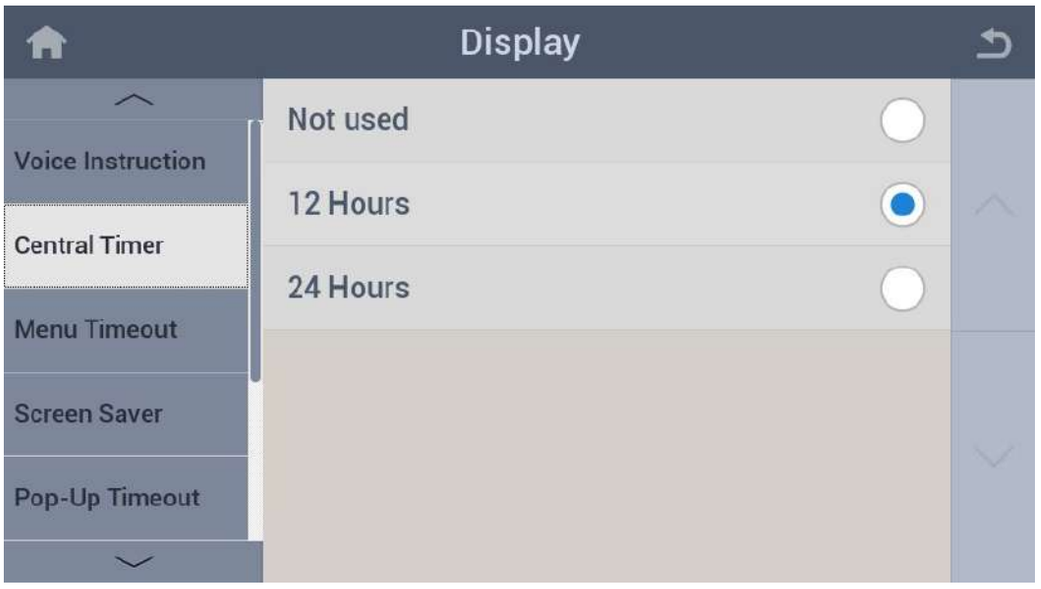
Configure settings for screen display.

3.1 Voice Instructions



Not used	Select to disable all voice instructions
Use all	Select to enable all voice instructions
Except for recognition position guide	Select to disable voice position guide for recognition only
Except for recognition result	Select to disable recognition result voice only

3.2 Central Timer



Not Used Select to disable Central Timer

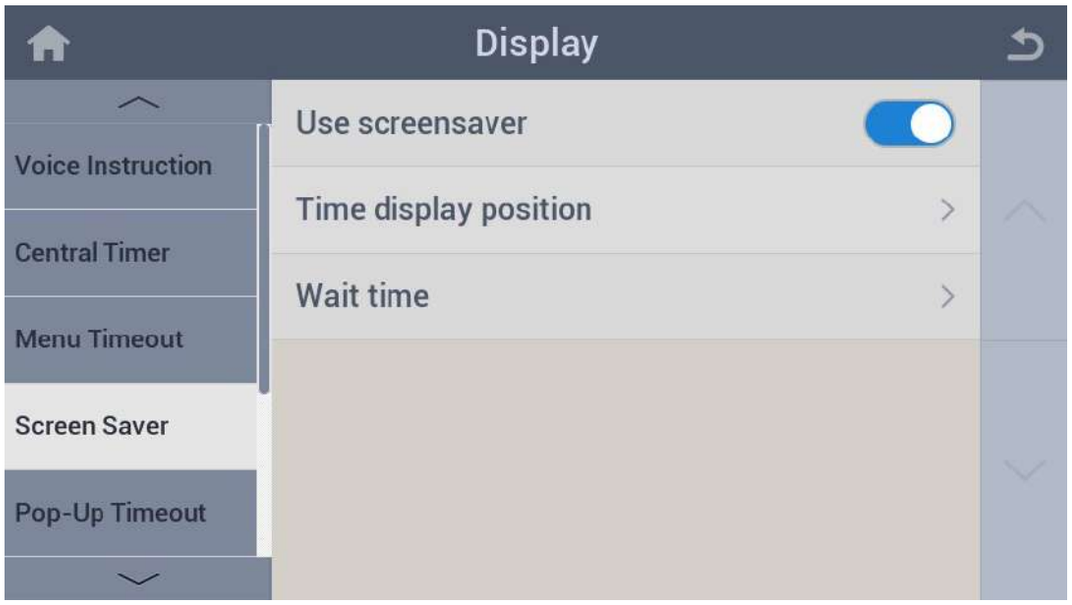
12 Hours Select to enable Central Timer as 12-hour clock format

24 Hours Select to enable Central Timer as 24-hour clock format

3.3 Menu Timeout

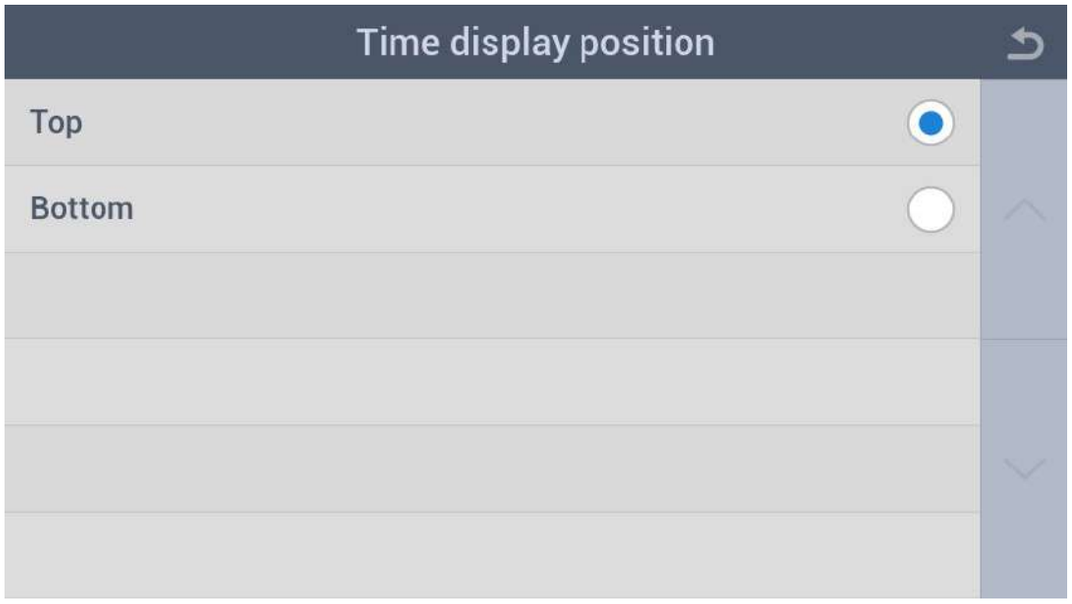
Menu Timeout Set timeout for auto exit from menu display after leaving it untouched

3.4 Screensaver

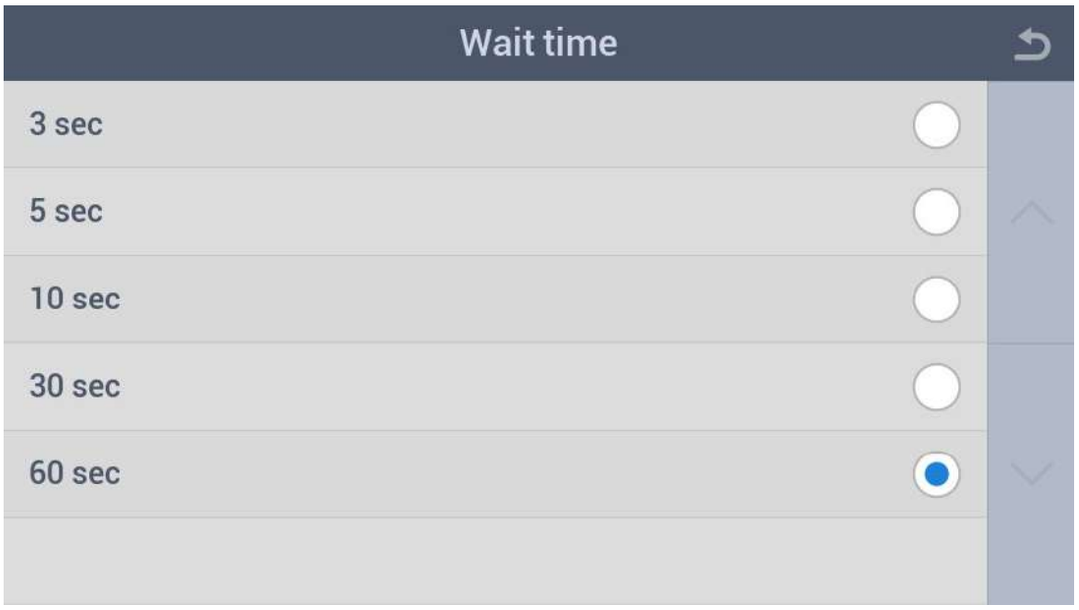


User screensaver	Enable/Disable screensaver
Time display position	Select Time display position in the screensaver
Wait time	Set the amount of idle time that must elapse before the screensaver is activated

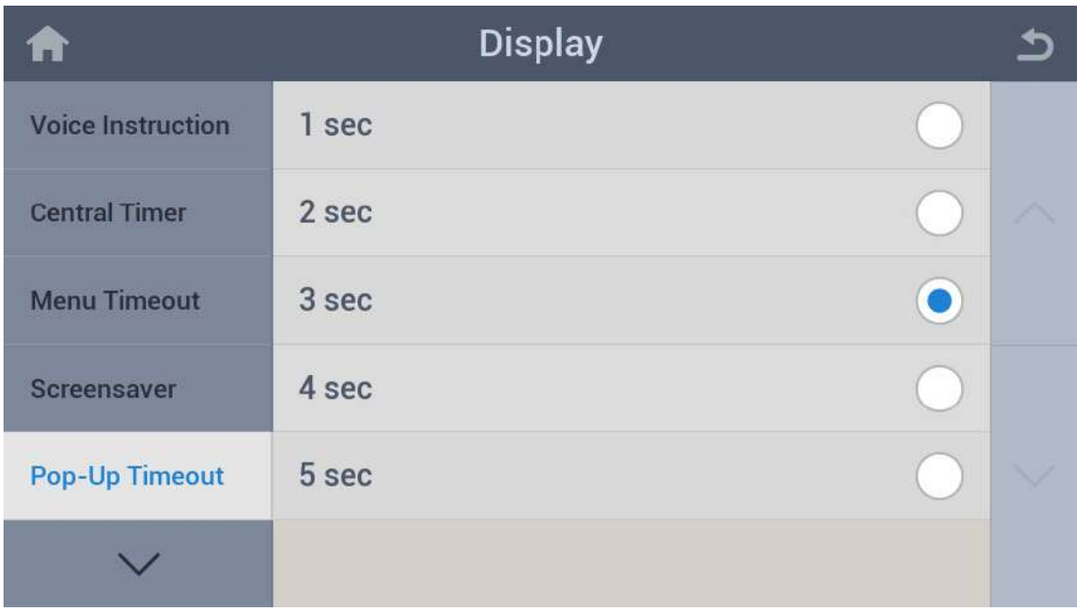
3.4.1 Screensaver → Time display position



3.4.2 Screensaver → Wait time

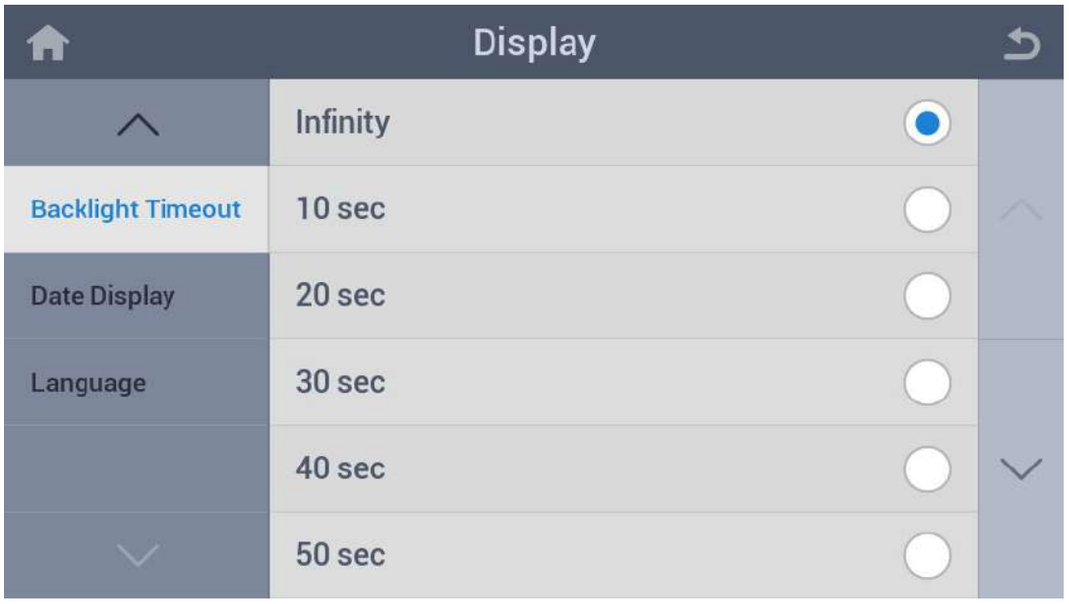


3.5 Pop-Up Timeout



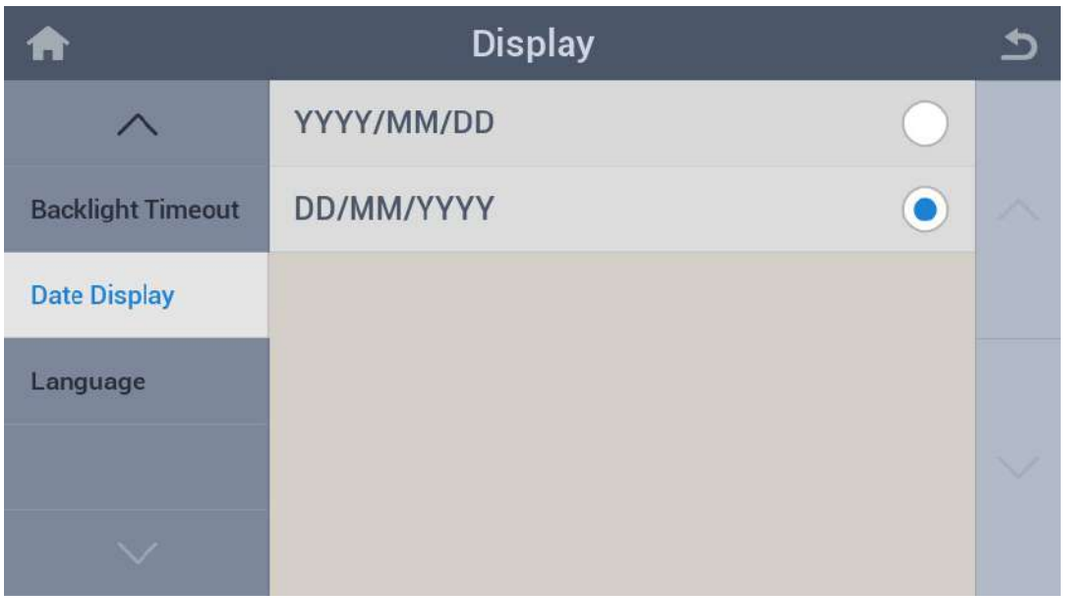
Pop-Up Timeout Set pop-up message window (recognition complete etc.) display duration

3.6 Backlight Timeout



Backlight Timeout Set timeout for auto off LCD backlight after leaving unused

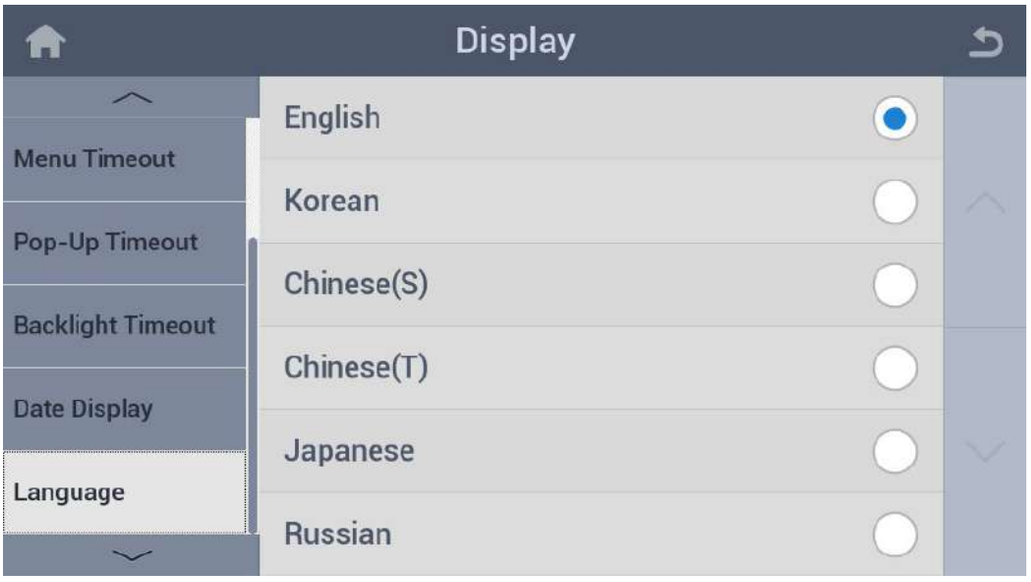
3.7 Date Display

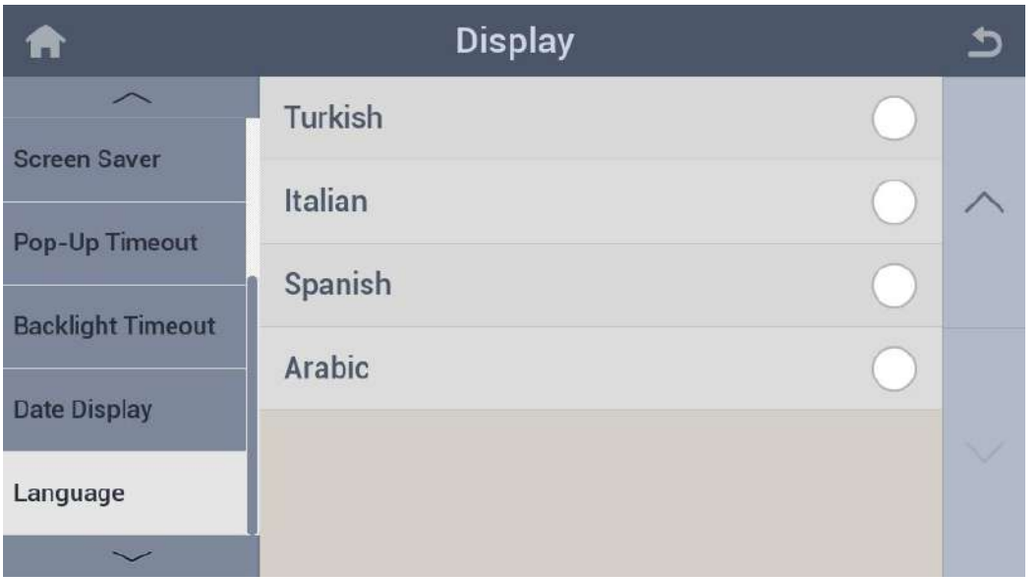


YYYY/MM/DD Select year/month/day display mode

DD/MM/YYYY Select day/month/year display mode

3.8 Language





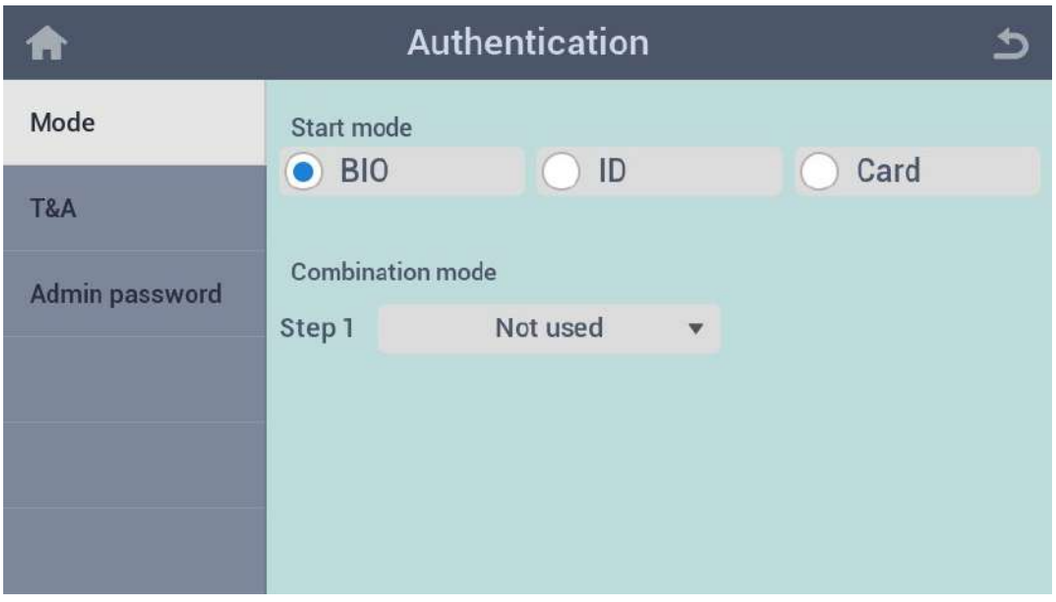
Language Select a language to use

(English, Korean, Chinese(S), Chinese(T), Japanese, Russian, Turkish, Spanish, Italian, Arabic)

4. Authentication

Configure settings for authentication method and Time & Attendance mode.

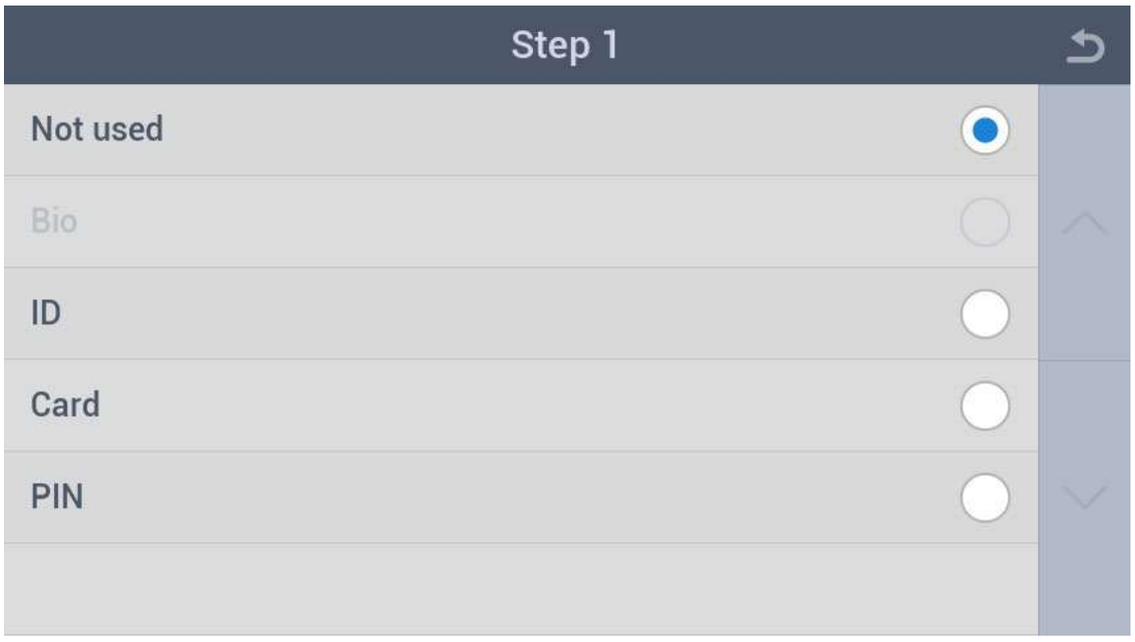
4.1 Mode



Start mode Select the initial (basic) recognition method

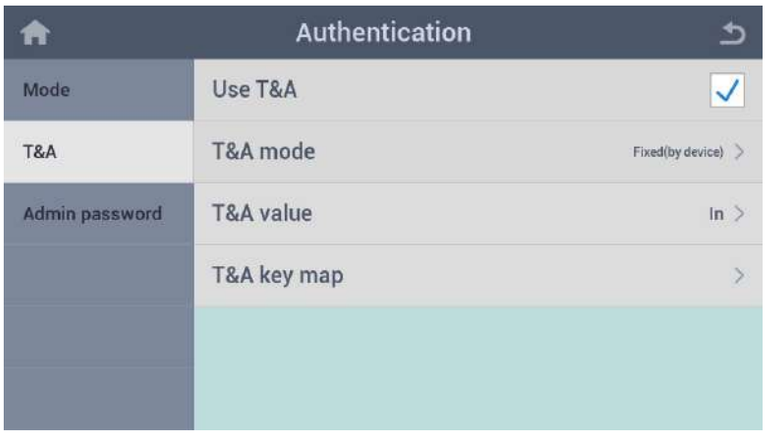
Combination mode Select a combination (additional) recognition method if necessary

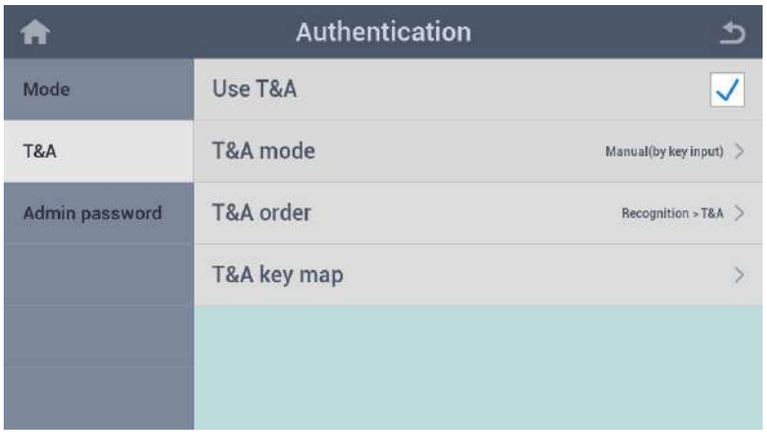
4.1.1 Mode → Combination Mode (Step 1)



Select a combination (additional) recognition method.

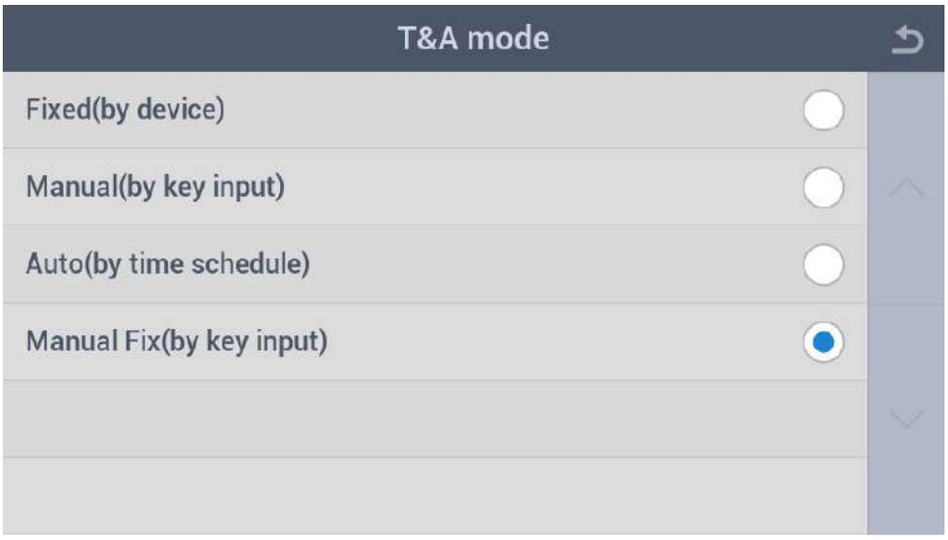
4.2 T&A





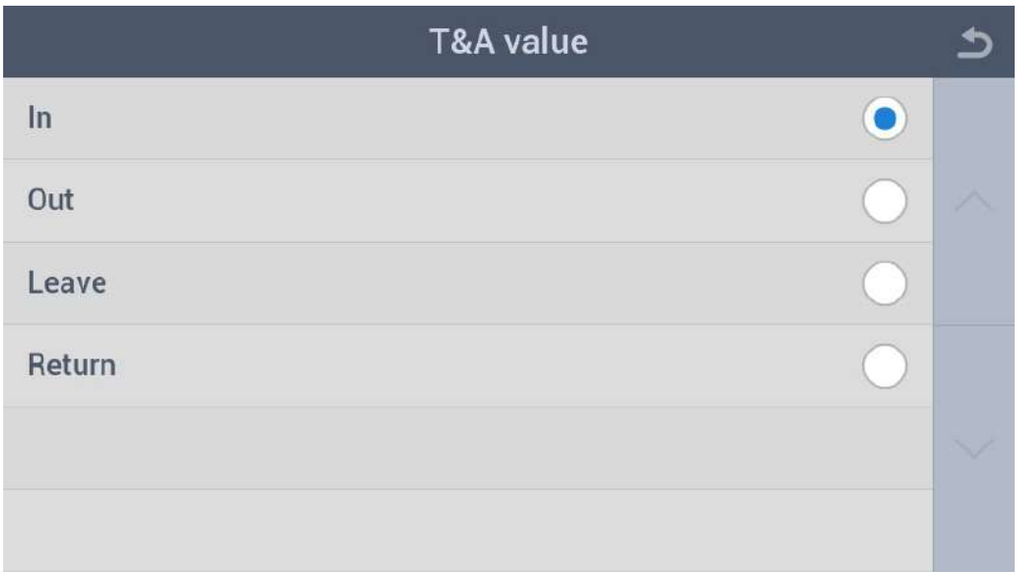
Use T&A	Select enable/disable for T&A usage mode
T&A mode	Select T&A mode (Attendance etc.)
T&A value	(Enabled on “Fixed (by device)”, “Manual Fix (by key input)” T&A mode) Select a T&A value: In, Out, Leave, Return
T&A order	(Enabled on “Manual (by key input)” T&A mode) Select when to do T&A check
T&A key map	Select a T&A value for each Function key

4.2.1 T&A → T&A Mode



Fixed (by device)	When selected, authentication is available only with the fixed T&A event. You can define a fixed T&A event in T&A value menu.
Manual (by key input)	When selected, you can press a Function key that is assigned to a T&A event you want. The selected T&A event is released after authentication.
Auto (by time schedule)	When selected, the pre-defined T&A event will be automatically applied according to the specified time period which is set within device. *<Note> This function is under development.*
Manual Fix (by key input)	[Manual Fix] works like [Manual]. However, in [Manual Fix] mode, once a T&A event is selected, the event is kept until another T&A event is selected.

4.2.2 T&A → T&A value

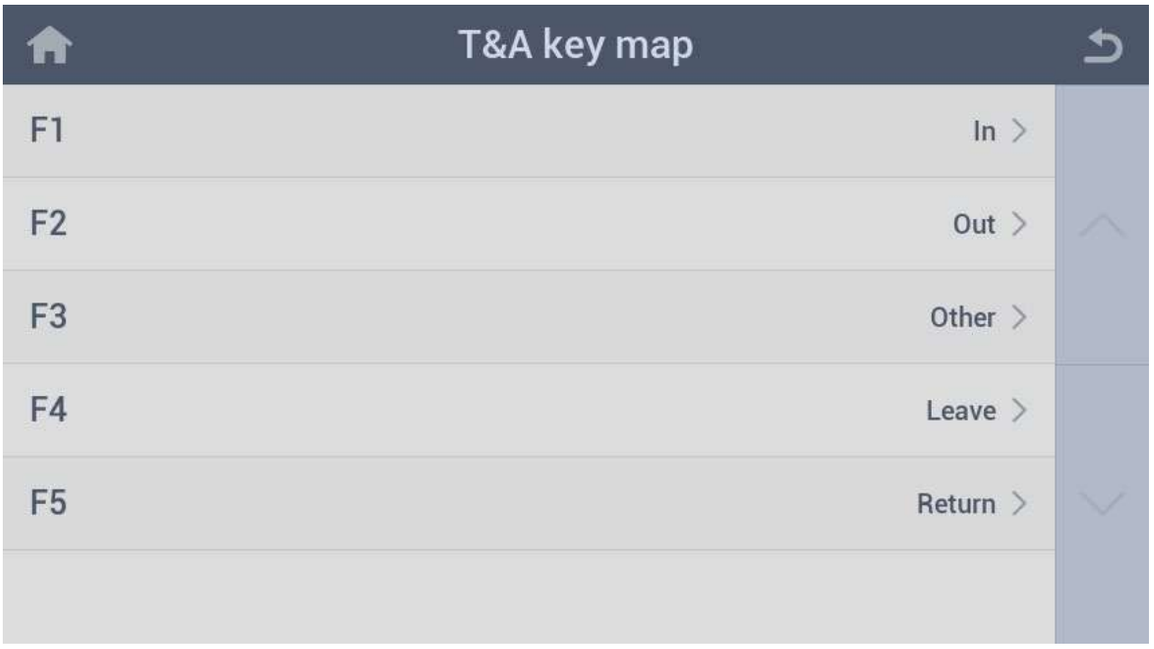


The T&A value menu appears when you select “Fixed (by device)” or “Manual Fix (by key input)” as a T&A mode.

4.2.3 T&A → T&A order

The T&A order menu appears when you select “Manual (by key input)” as a T&A mode.

4.2.4 T&A → T&A key map

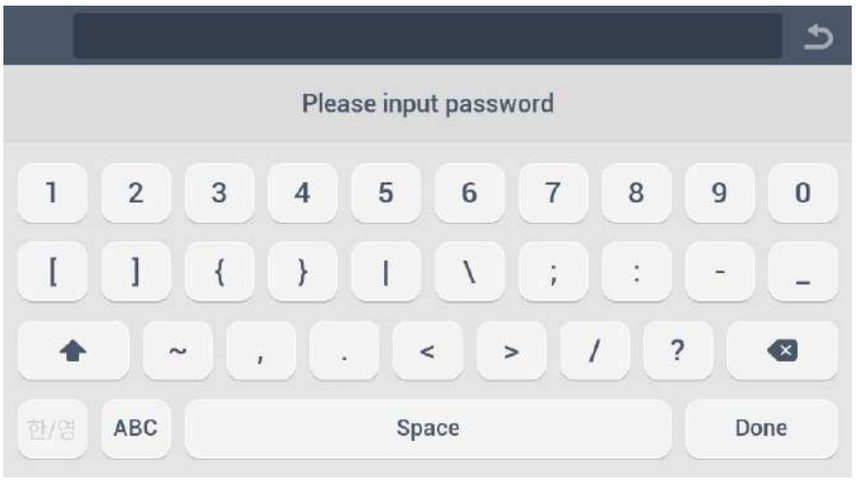


4.3 Admin password

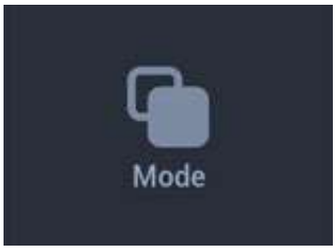
Use admin password Enable/Disable admin password usage

Password Set admin password

4.3.1 Admin password → Password

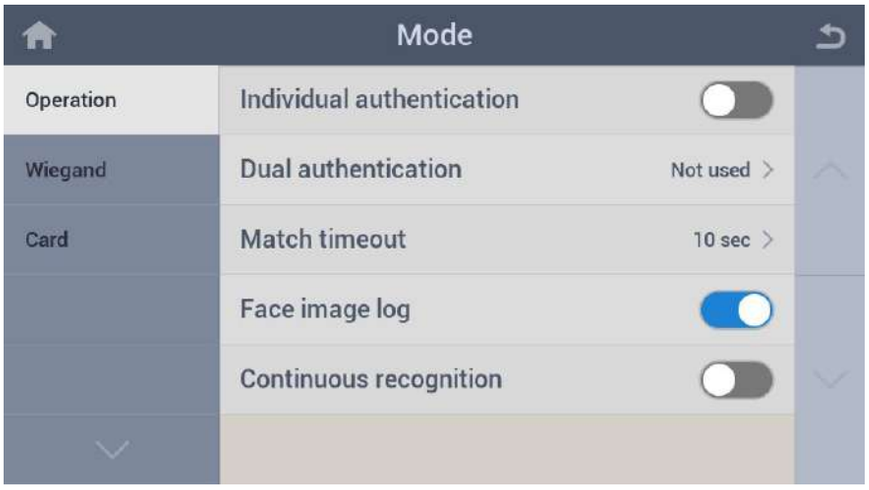


5. Mode



Configure settings for recognition operations

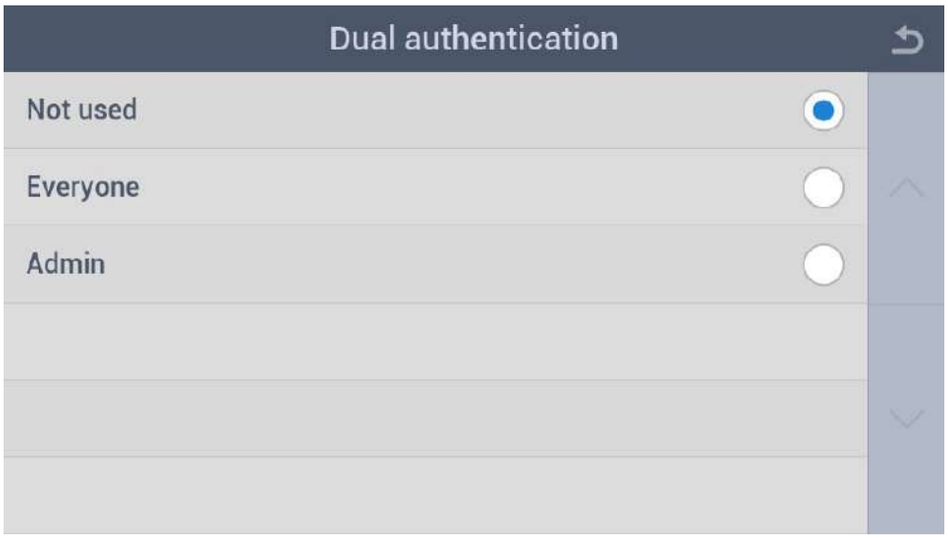
5.1 Operation



Individual authentication	Enable/disable for permission of individual authentication *<Note>If enabled, the authentication mode of the user will be determined by Individual mode selection in the **User** setting* *If disabled, the authentication mode will be determined by the global authentication mode settings at **Settings** > **Authentication** > **Mode**.*
Dual authentication	Select a dual authentication (simultaneous 2 persons) method *<Note> Currently, it works only when "Everyone" selected.*
Match timeout	Set a recognition trying timeout
Face image log	Select to include face image file in the log. *<Note> With this option disabled, user's face is not displayed on recognition result screen.*

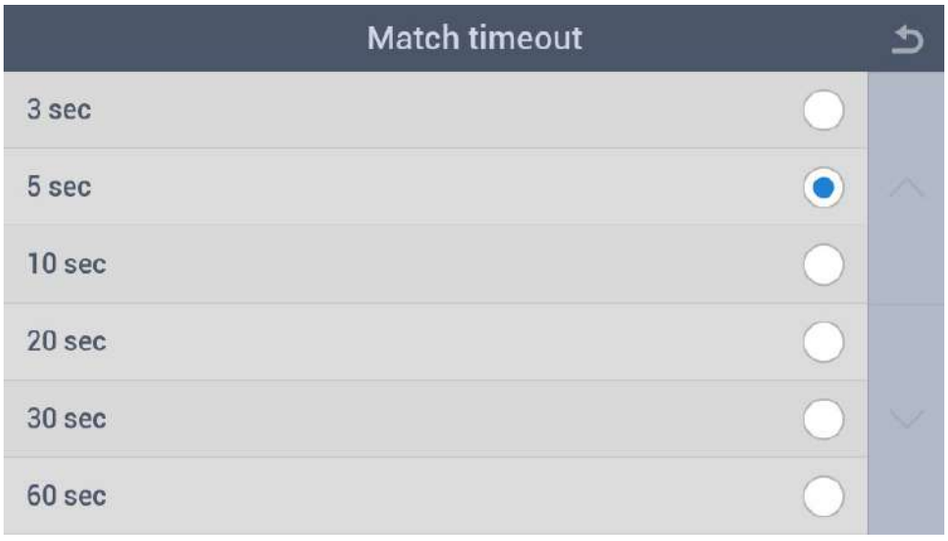
Continuous recognition Enable/Disable continuous recognition mode (When enabled, the system does not return to the home screen after each recognition.).

5.1.1 Operation → Dual Authentication



<Note> When selected, Dual authentication will apply to “Everyone”. “Admin” option is under development.

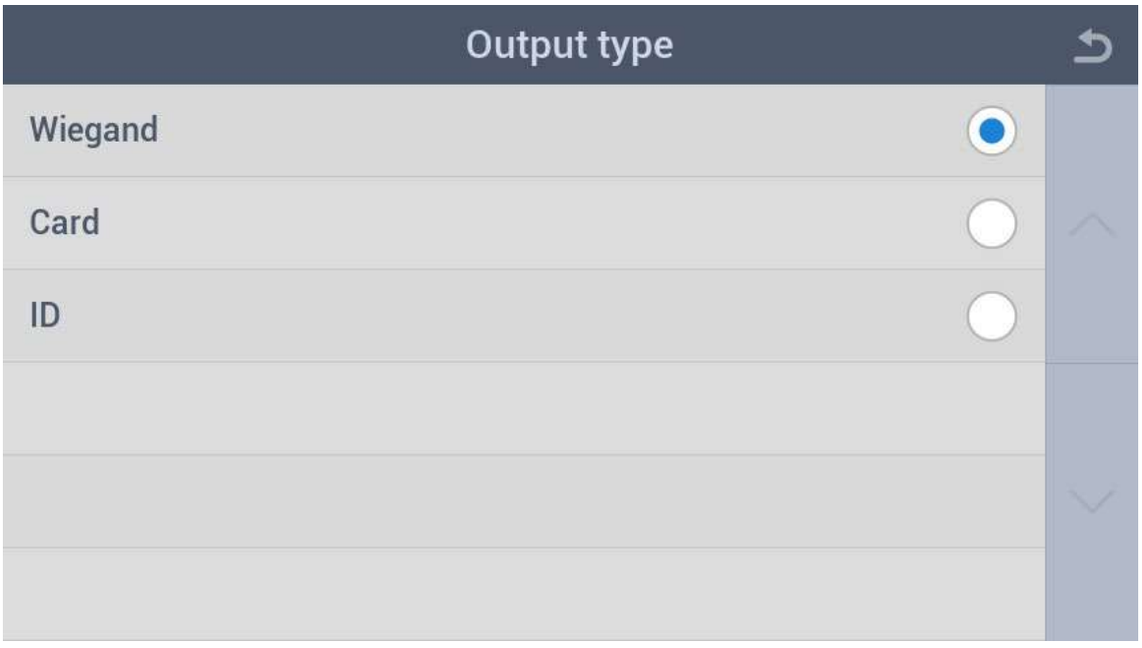
5.1.2 Operation → Match Timeout



5.2 Wiegand

Output type Select Wiegand Output type

5.2.1 Wiegand → Output type



Wiegand Send customized Wiegand data out

Card Send Card data out

ID Send User ID out

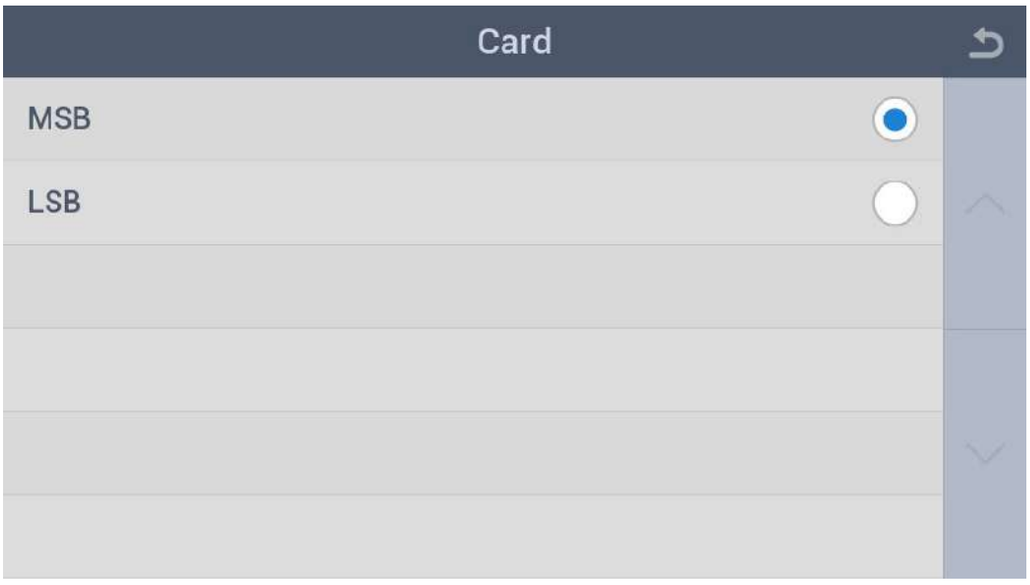
5.3 Card

Use CSN Enable to read card CSN

Disable to read card memory data written by user

CSN order Select Card CSN read order

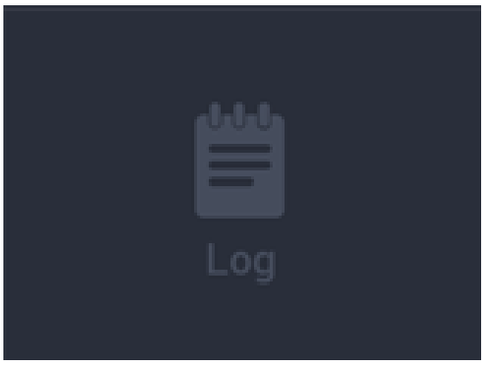
5.3.1 Card → CSN order



MSB Select to read CSN's most significant bit first (Reverse)

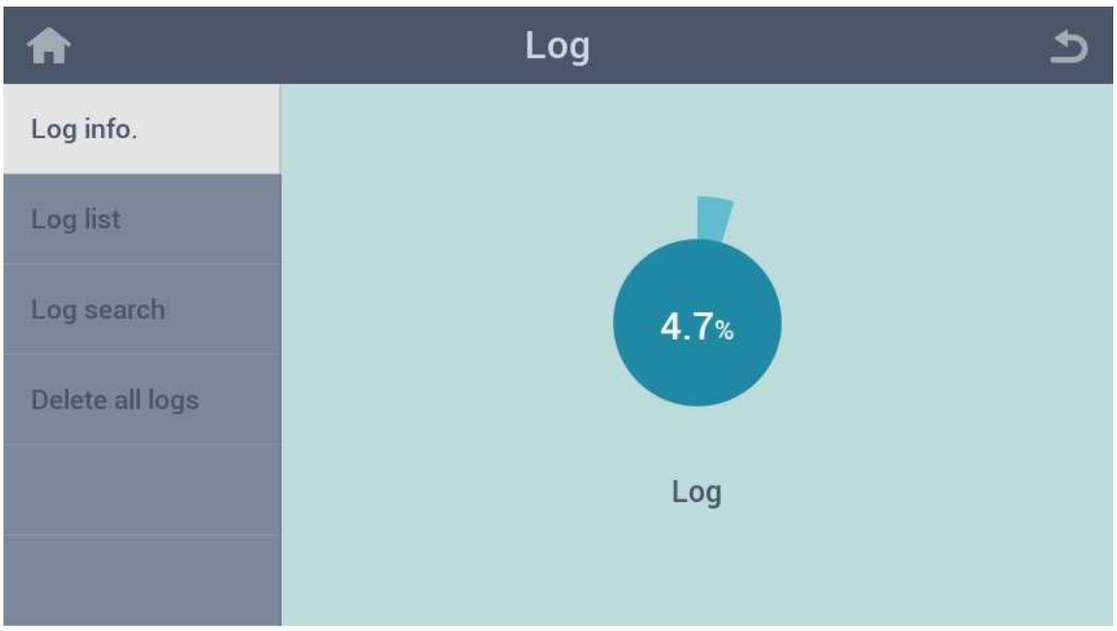
LSB Select to read CSN's least significant bit first (Forward)

6. Log

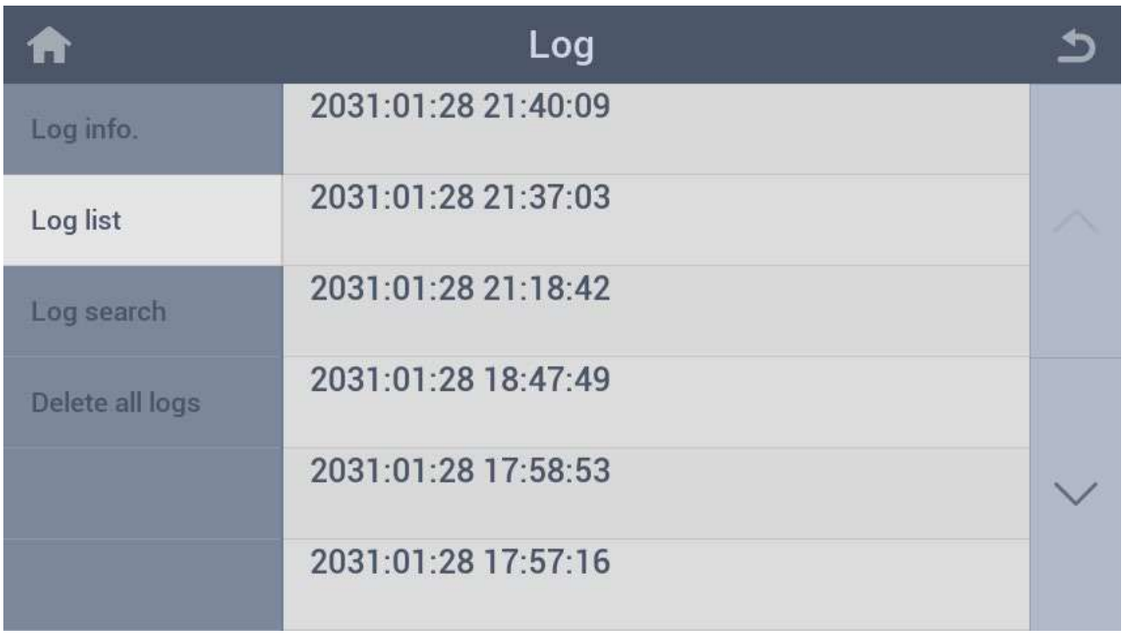


View information of saved log and log search viewer.

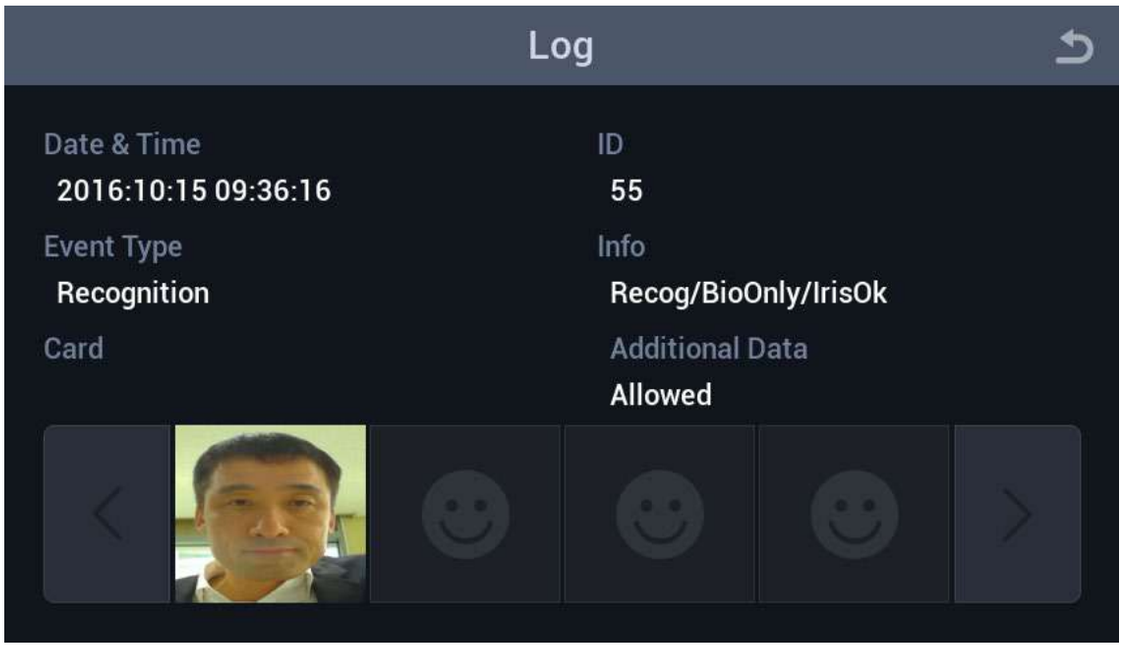
6.1 Log Info



6.2 Log list

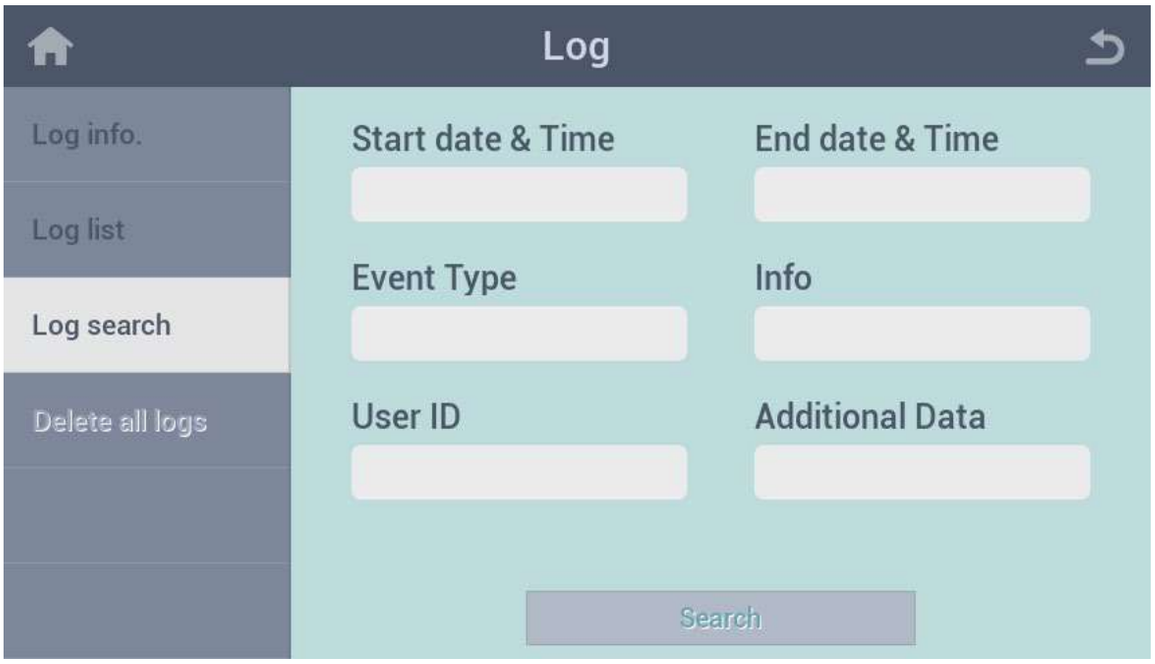


6.2.1 Log list information

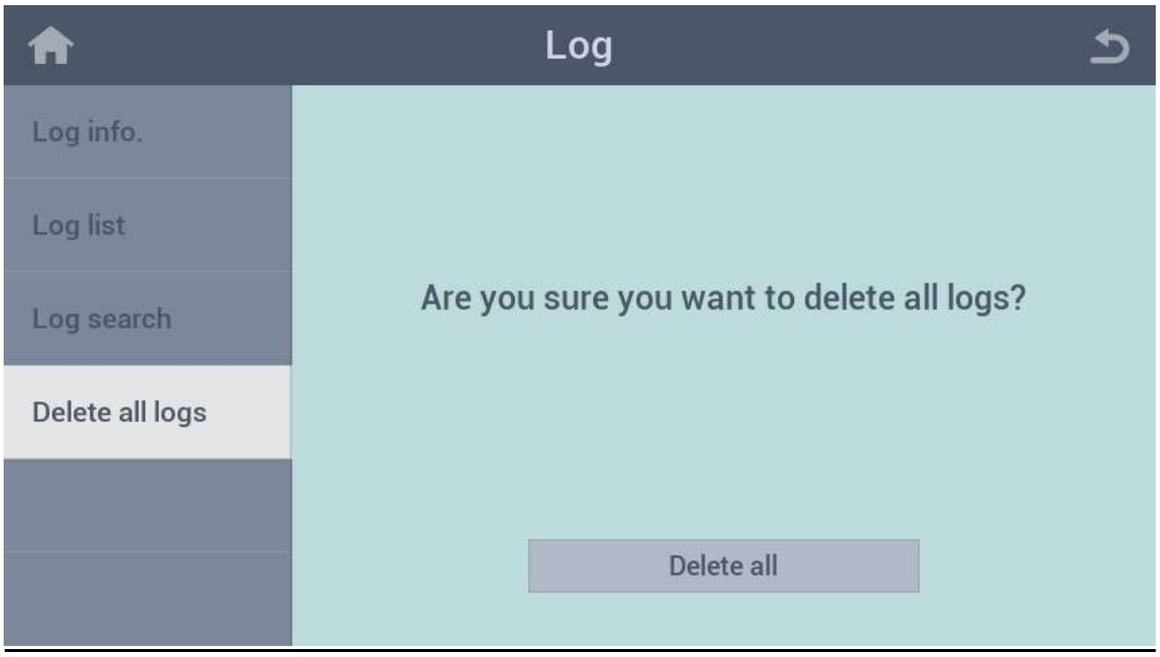


If you select the log list, you can find information like above.

6.2.2 Log Search

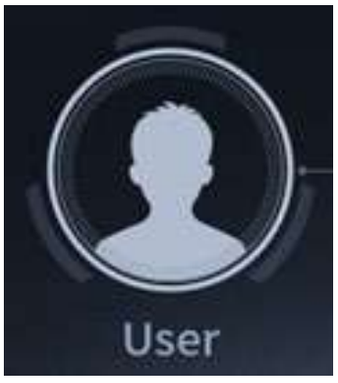


6.2.3 Delete all logs



If you want to delete all the logs then select Delete all tab.

User

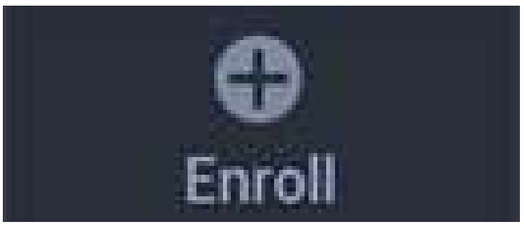


Tap the **User** icon in Home screen.

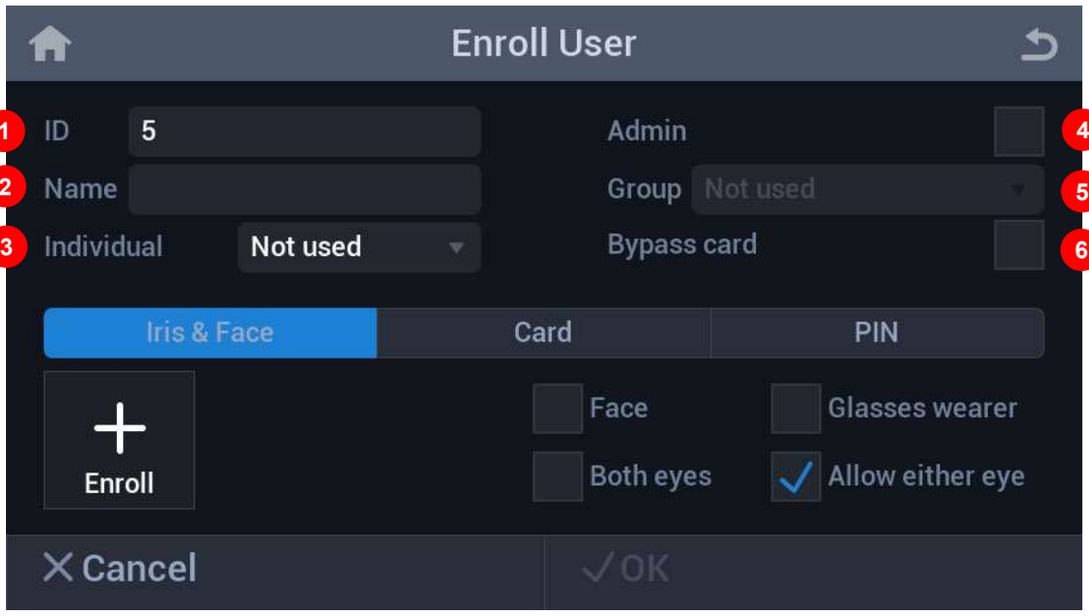
Displays the registered user lists in All and Group 1, 2, 3, 4

Enroll button	Switch to enroll process
Search button	Switch to search process
Capacity Info button	Shows the used memory percentage
Delete button	Switch to delete process

1. Enroll User



Tap the **Enroll** button to enroll a new user.



Enroll User Page

① ID: Created a user ID number automatically or input manually

② Name: Input user name manually

③ Individual: Set user individual authentication mode if necessary

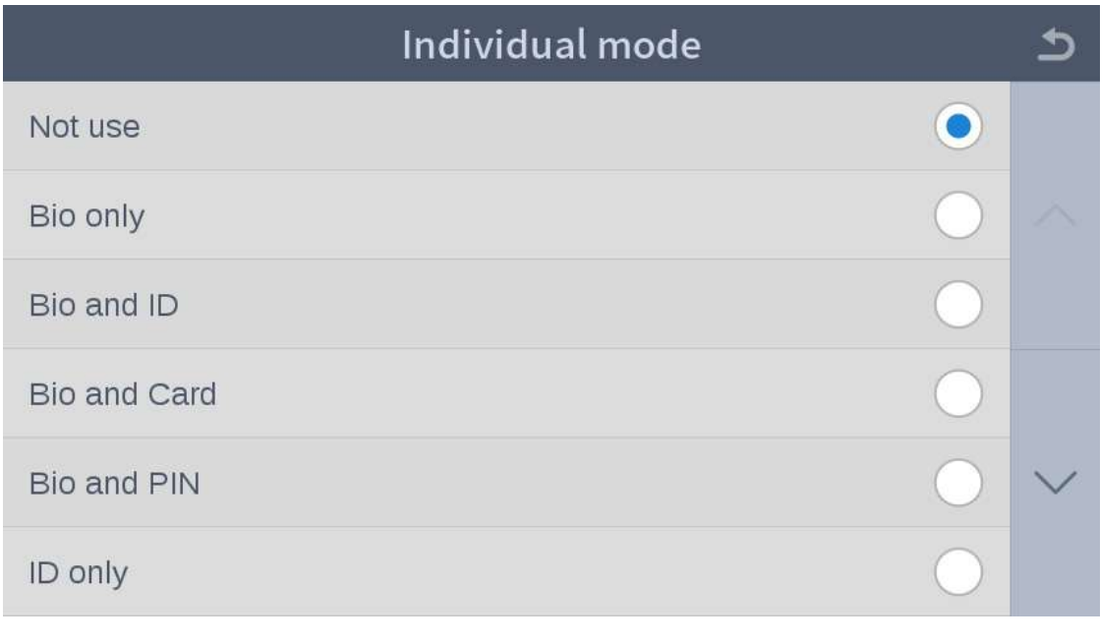
④ Admin: Can make a user administrator or not

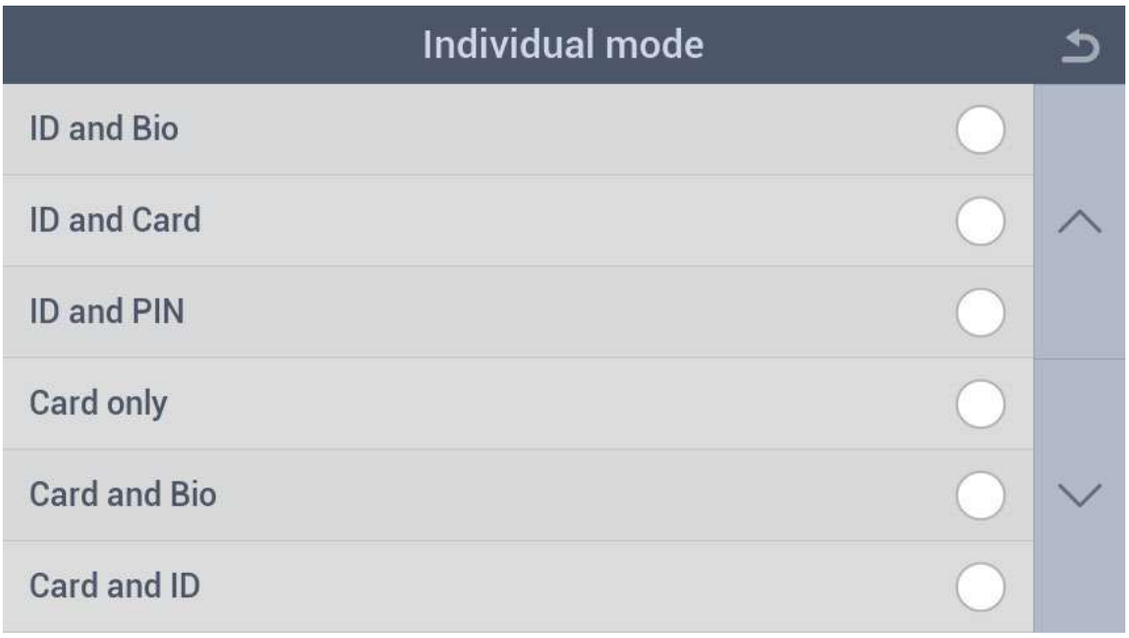
⑤ Group: Can make a user belong to a group

⑥ Bypass Card: Can register a user who holding bypass card (highest priority card)

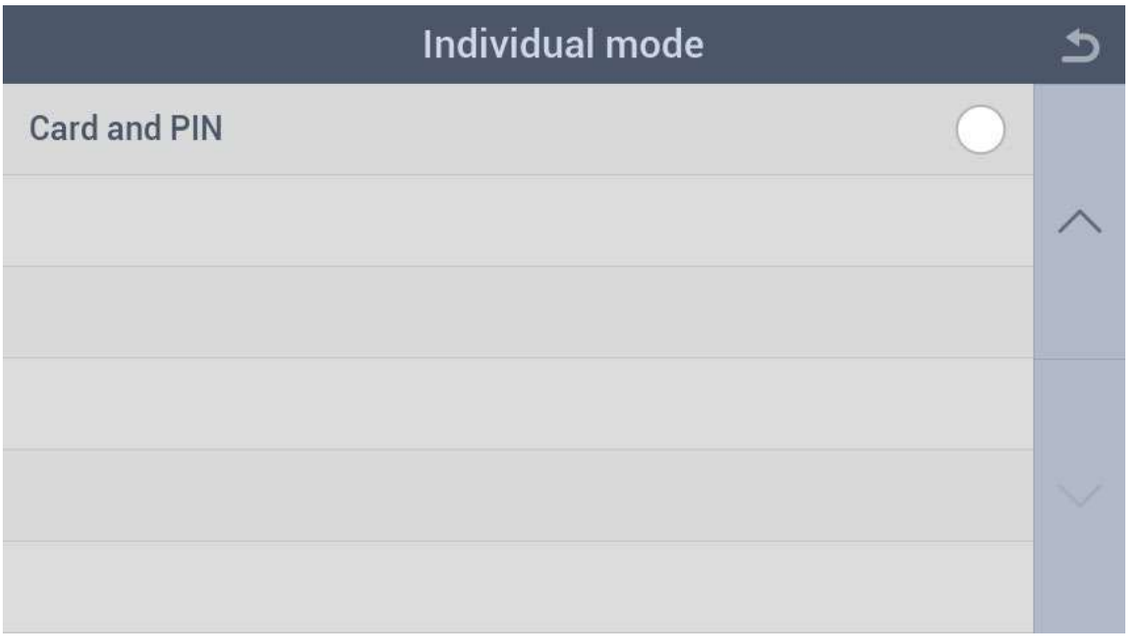
1.1 Name

1.2 Individual





Select an individual authentication mode.



Select an individual authentication mode.

1.3 Admin

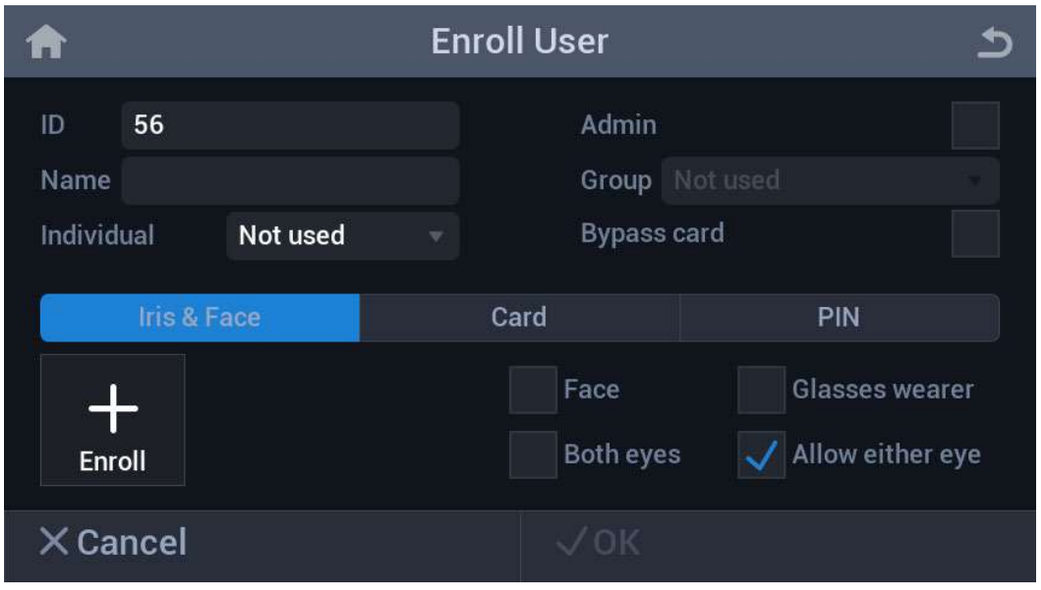
Set this user to be main Administrator to login the Settings and User.

Note: After setting main Administrator login, only this Administrator can access the Settings and User functions.

1.4 Group

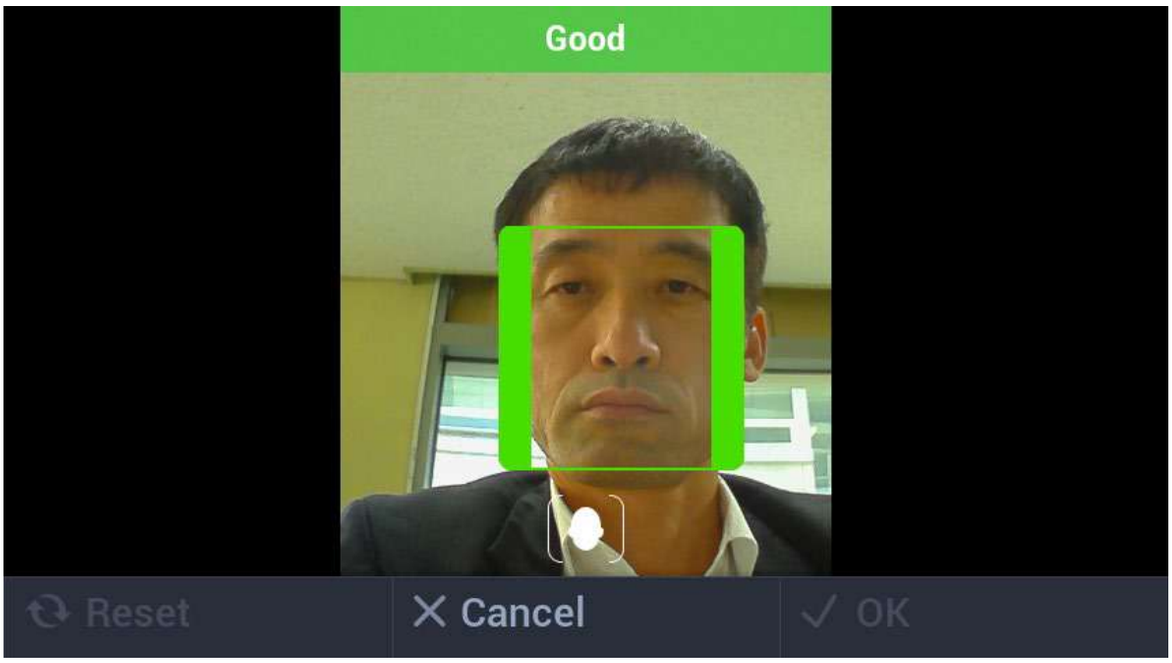
Note: This function is under development.

1.4 Iris & Face Enrollment Process



Iris & Face tab	Selection changes tab to blue color
	Bio select check boxes are shown
Face	Select box for face image capture
Glasses wearer	Select box to change enrollment process, instructing users to take glasses off
Both eyes	Select box for “both eyes” Iris mode
Either eye	Select box for “either eye” Iris mode
Enroll (+) button	Switch to enroll process

1.4.1 Iris & Face Capture Process → Face Capture (far face)



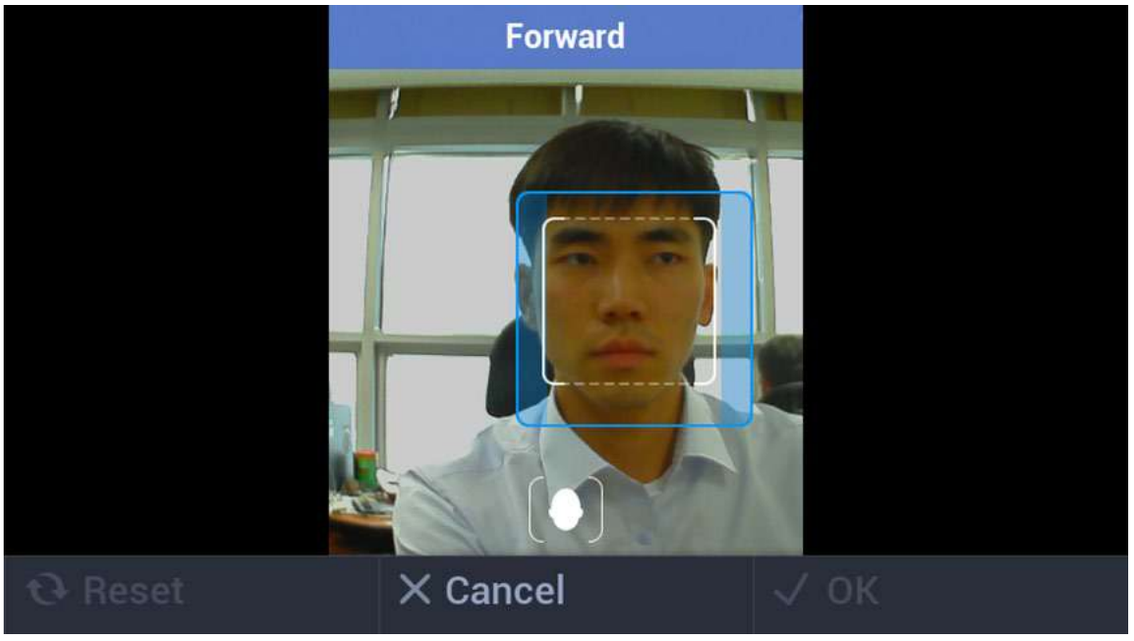
※ Note: Only operational if "Combined Face and Iris" mode is active

Color Overlay

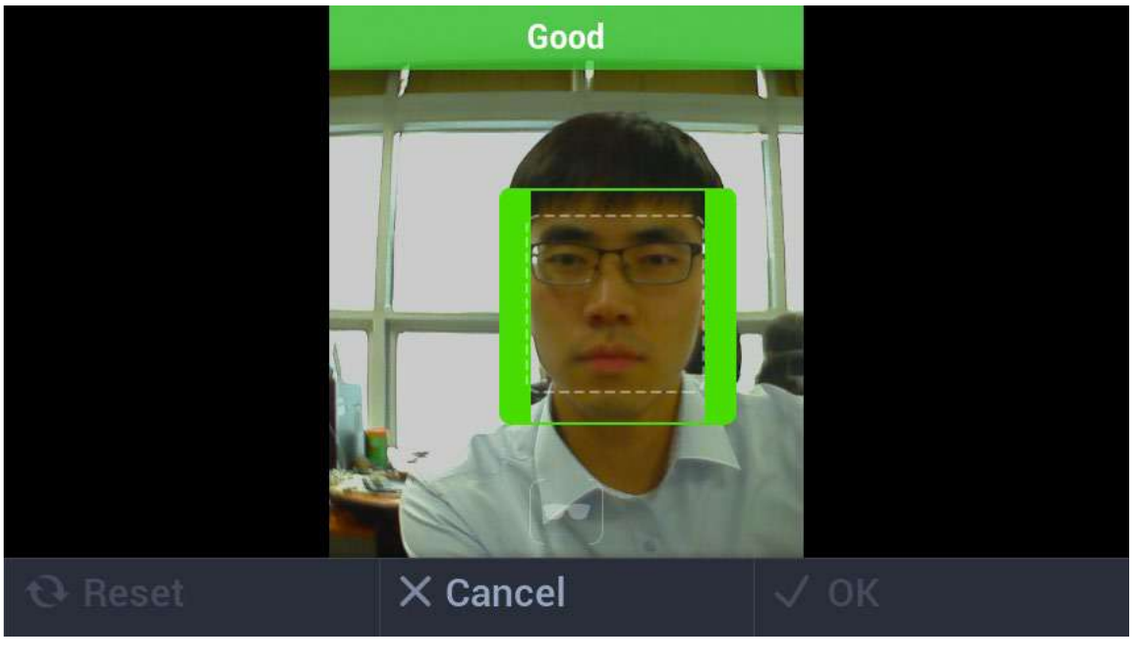
BLUE means too far
GREEN means OK
RED means too close.

Switch to Iris Capture stage after good face image acquisition

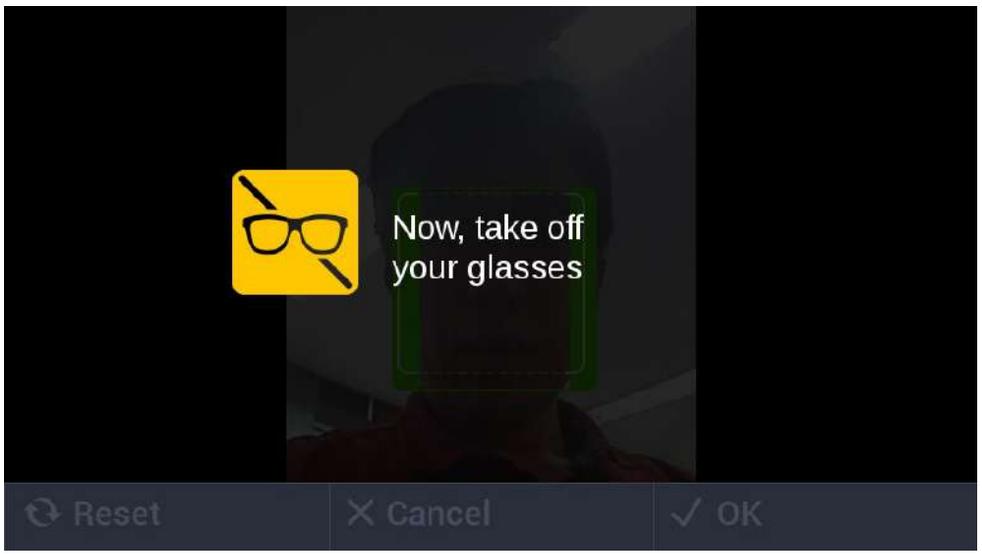
1.4.1.1 Iris & Face Process → Face Capture → Tracking Guide Box UI



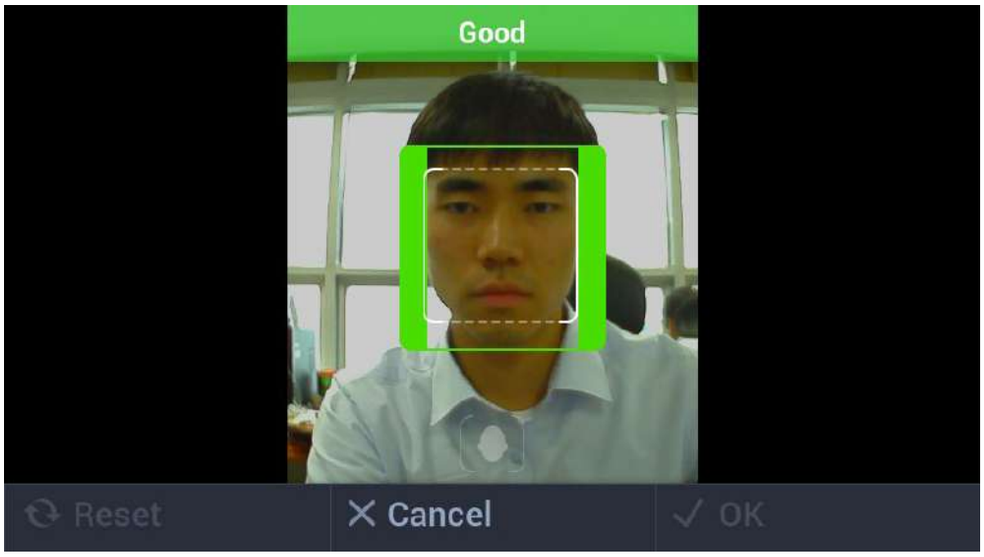
Positioning box appears in order to guide subject.



Capture normal face images.

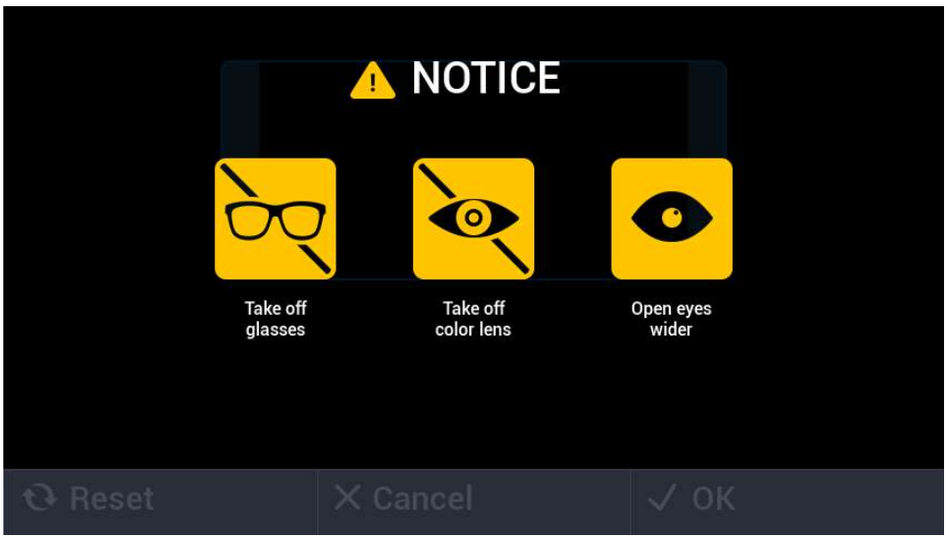


In case of selection of Glasses wearer check box, will be active for about 3 to 5 seconds.



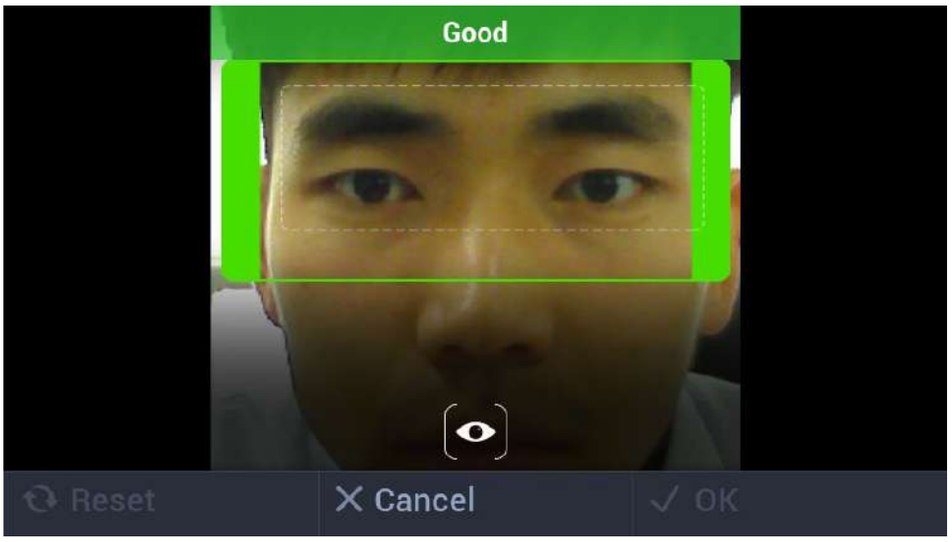
Capture additional face images with glasses off.

1.4.2 Iris & Face Process → Iris Capture



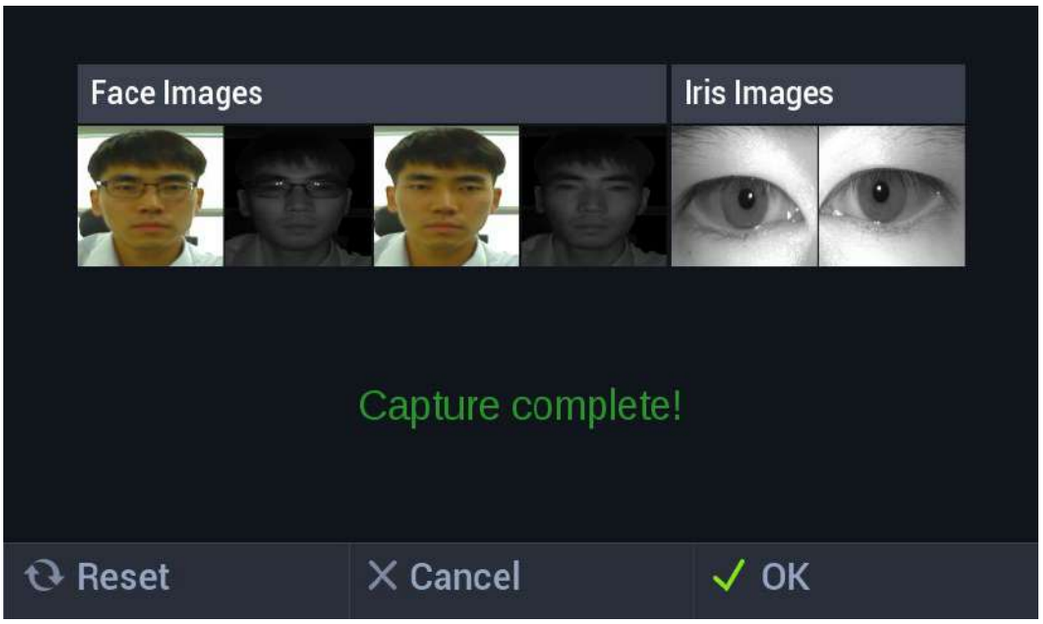
In case of Tracking Guide Box UI mode, display will be active for about 3 to 5 seconds.

1.4.2.1 Iris & Face Process → Iris Capture → Tracking Guide Box UI



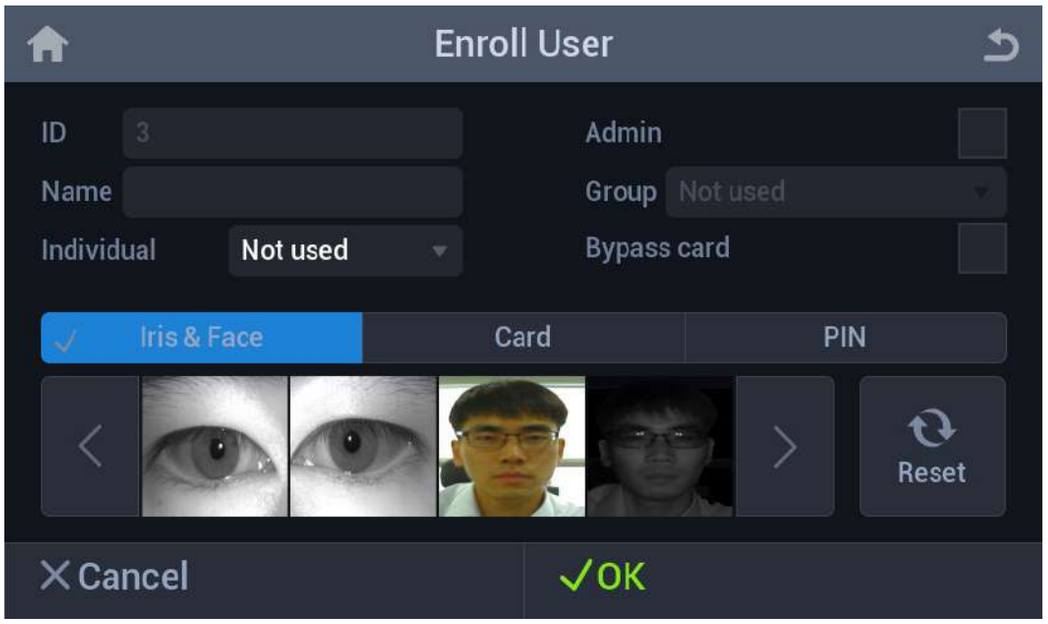
Accepted capture of iris images.

1.4.3 Iris & Face Process → Save Data / Complete Enrollment



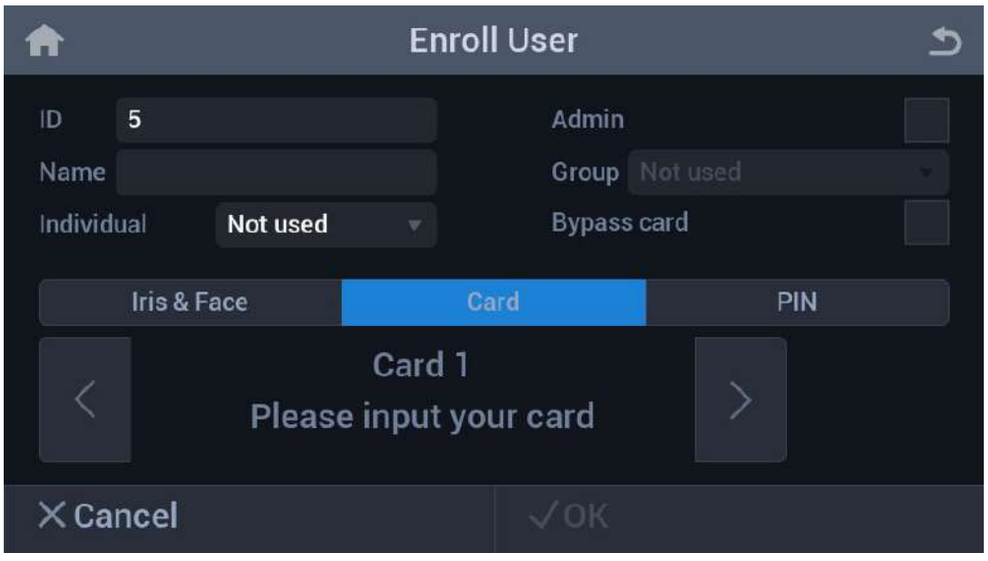
Reset	Return to face capture stage
Cancel	Return to Enroll User screen
OK	Move to next screen to complete enrollment

1.4.4 Iris & Face Process → Complete Enrollment



Cancel	Return to User Main screen
OK	Save user data to complete biometrics enrollment, then return to User Main screen

1.5 Card

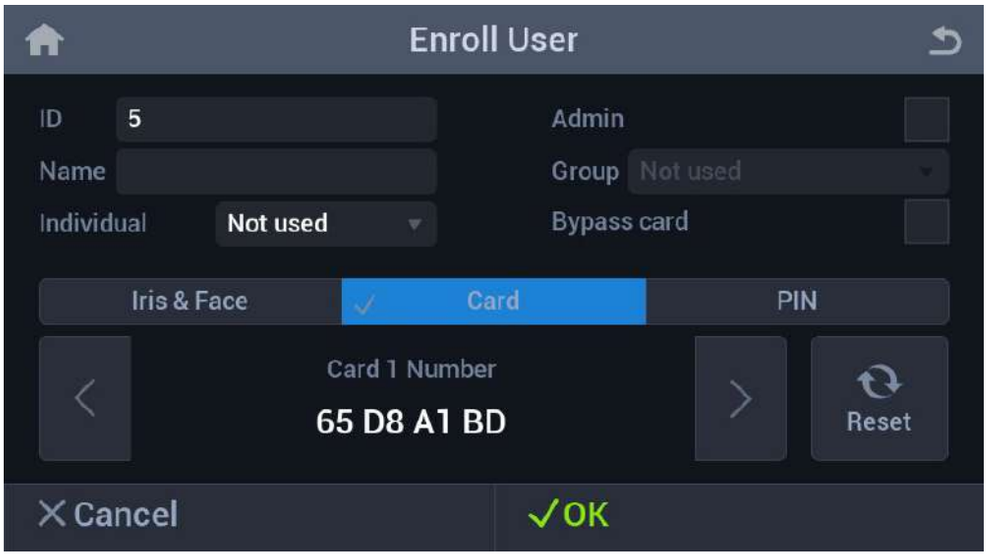


Card tab Selection changes tab to blue color

When “Please place your card” message appears, touch front-bottom part of device with user card.

<Note> Multiple card registration is supported (max. eight cards per user).

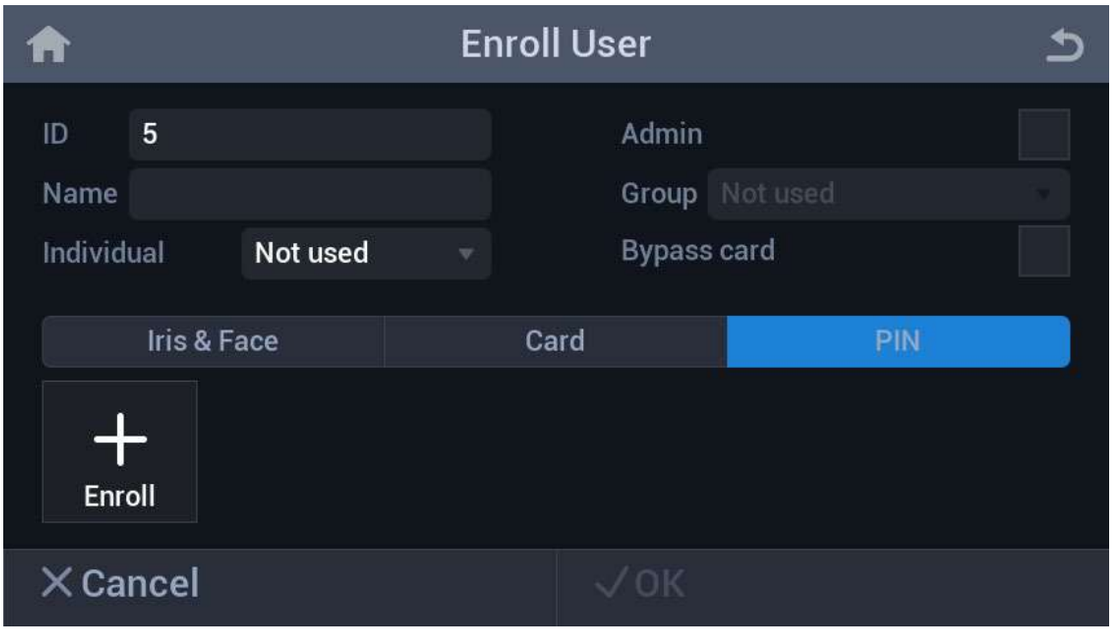
1.5.1 Card → Save Data



Card number is shown on tagging a card

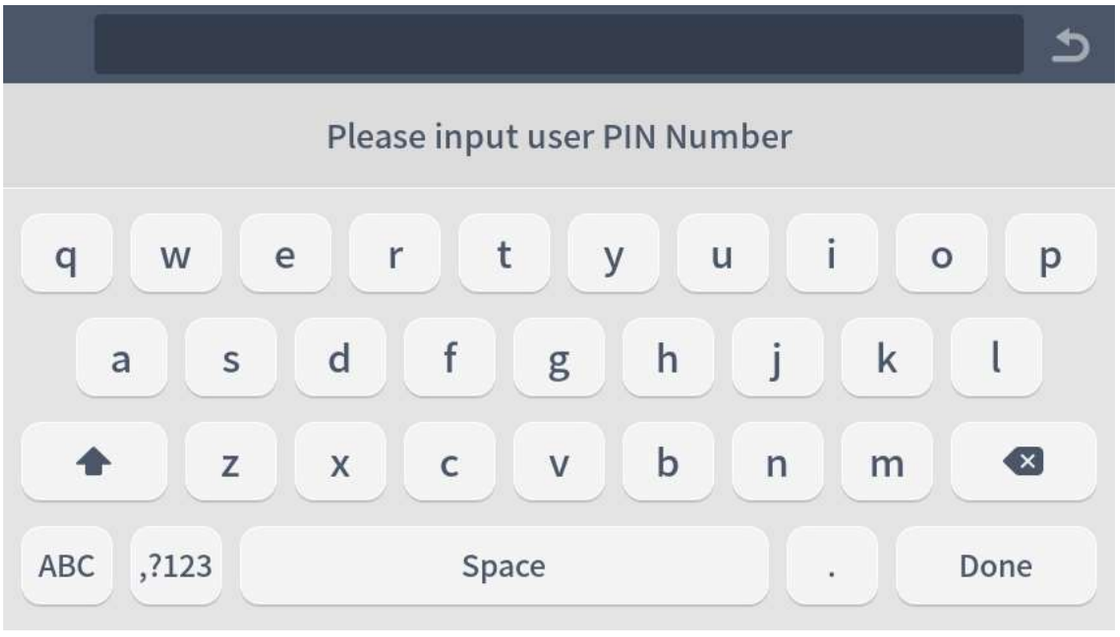
Reset	Clear card number and "Please tag your card" message is shown
Cancel	Return to User Main screen
OK	Save user data and return to User Main screen

1.6 Pin

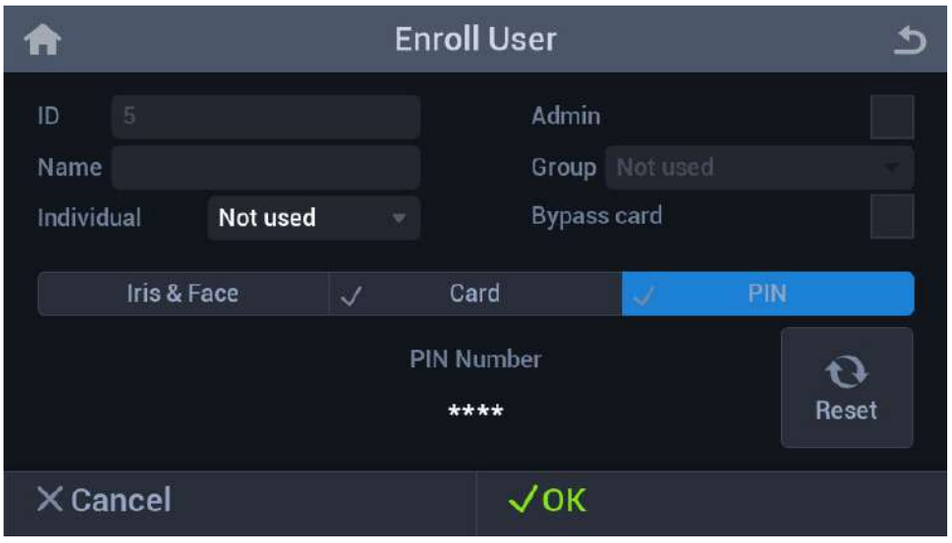


PIN tab	Selection changes tab to blue color
Enroll (+) button	Switch to input screen

1.6.1 Pin → Input



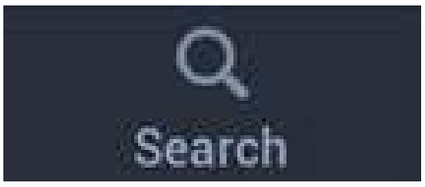
1.6.2 Pin → Save Data



Pin number is shown as "*" character.

Reset	Clear pin number and (+) button is shown
Cancel	Return to User Main screen
OK	Save user data to complete PIN enrollment / return to User Main screen

2. Search



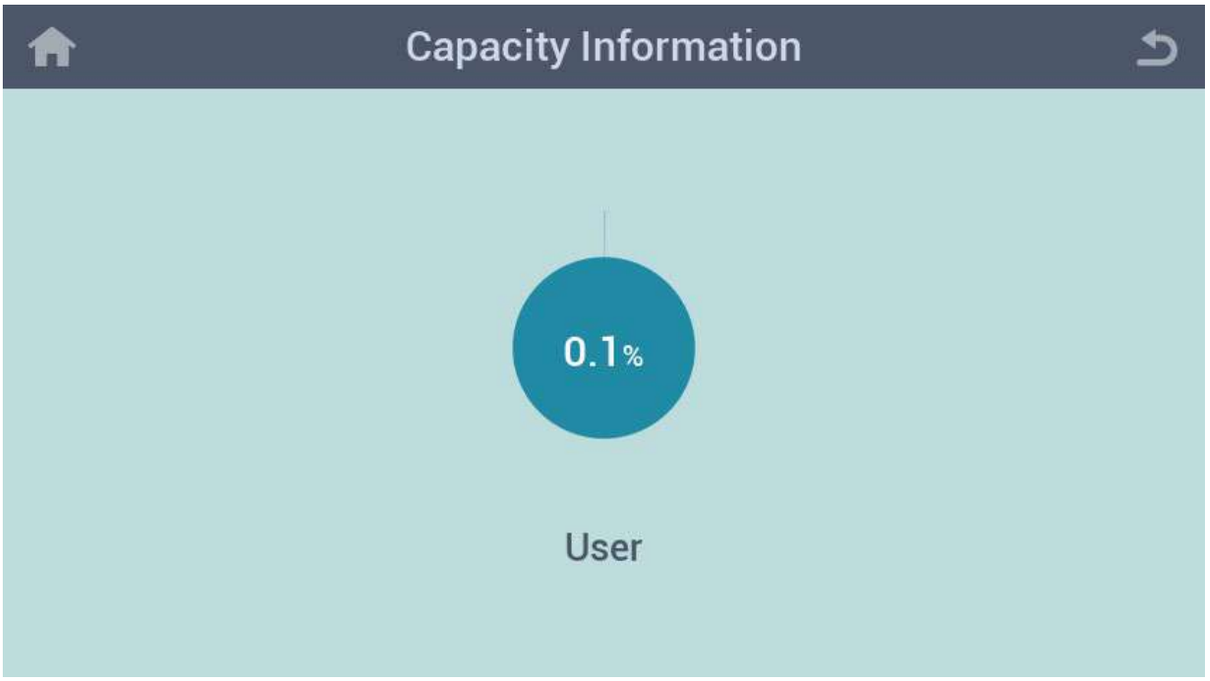
Tap the **Search** icon to browse list of enrolled users.

2.1 Search → ID

2.2 Search → Name

3. Capacity Info

Tap the **Capacity Info** icon to check storage space.

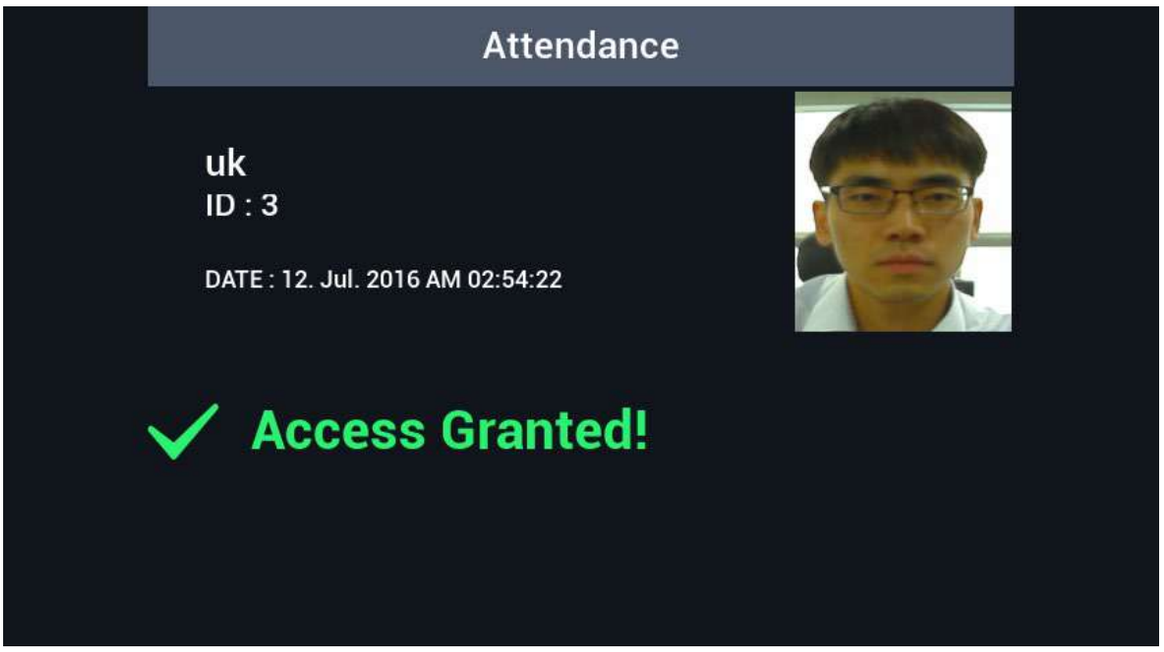


5. Recognition Process

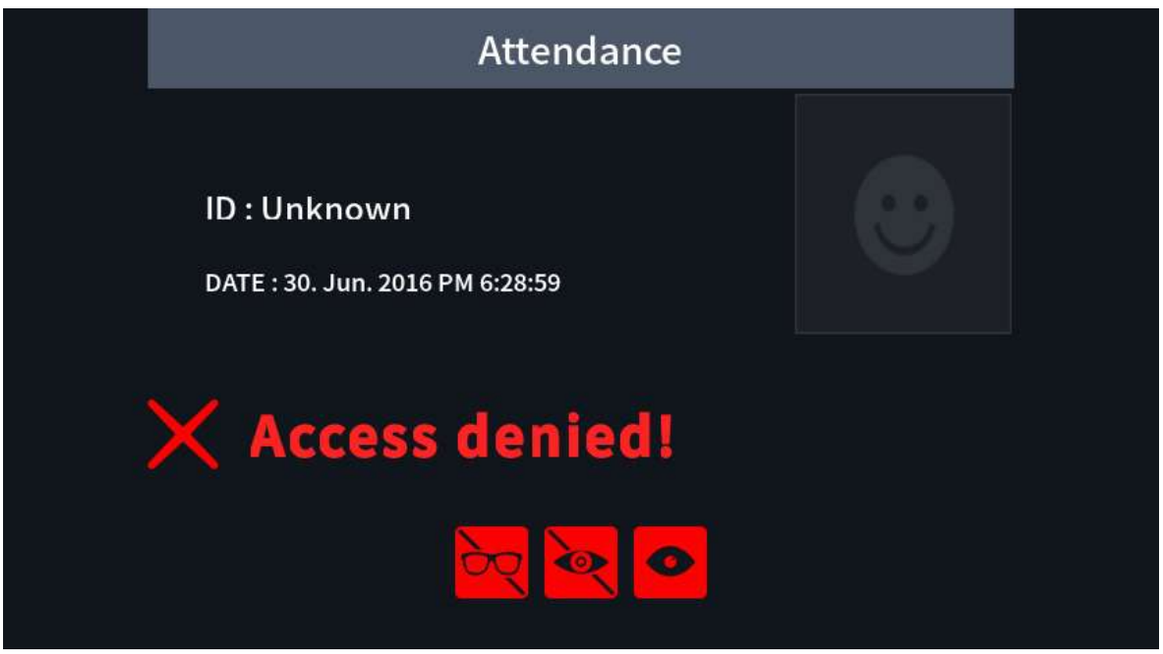
5.1 Recognition Process

Recognition process is identical to the enrollment process.

5.2 Recognition / Authentication Success



5.3 Recognition / Authentication Failure



When access is denied, warning icons can appear on the screen.

- Glasses: Device detects occlusion by glasses.
- Color Lens: Device detects colored lenses.
- Small Eye: Device cannot fully detect iris due to eyelid.