# UMX-10 Next Generation
# Iris Recognition System

User Manual
(v0.1.1, July 1, 2016)


- Intuitive face display positioning
- Internal automatic motorized tilt cameras
- LAN / RS485 Support independent input and output functions
- Optional face image capture and face recognition

User graphics and screen shots in this guide may vary from actual
Some of the contents in this manual may differ from current operating library release

# Introduction to the UMX-10 Iris Recognition System

This new 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 5.0 inch 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 center of the LCD, and then moves toward the system to size his or her head to the brackets in the display 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 directions.

UMX-10 Next Generation
Iris Recognition System

And the internal automatic tilt mechanism adjusts to the user's height or vertical position over a range of 50 cm (about 20 inches), making the UMX-10 ideal for countertop, desktop, wall mount or kiosk installations.

The UMX-10 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 are made locally for fast responsiveness. For access control, there are Wiegand connections for dedicated, local communications to door controllers or panels.

For all specifications, please see Specification section.

For complete depiction of all UMX-10 on-board screens, see "UMX-10 LCD Control Screens and On-Board Demo Application" manual.

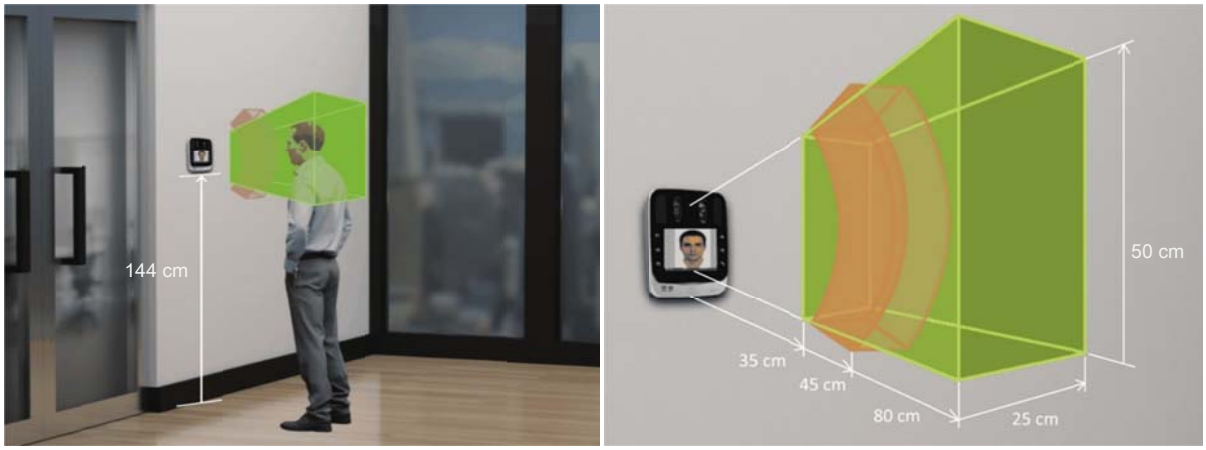
# Key Features

- Iris user interface with intuitive LCD display face positioning, like smart phone “selfie”
- Contactless iris imaging at range of 35 to 45 cm stand-off
- Internal, automatic face and iris camera tilt mechanism with nominal height range of 50 cm
- Positioning guidance vocalizations selectable on / off and delay time. English standard, all other languages 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 (authentication) or 1:N (identification) modes
- Optional Combined Face and Iris modes:
  - Face as primary modality, with face recognition rejects decisions automatically switch over to iris recognition
  - Supplemental face recognition in case of iris recognition failure-to-capture (FTC), so that face recognition follows iris recognition attempt
- 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-484 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
- Integrated Smart Card reader (choice of basic MiFare / DesFire card or HID multi-class reader)
- Meets CE mark, FCC, IEC 62471 eye safety, and RoHS standards. Iris recognition meets ISO 19794-6 2011 standard
- Design and production meet ISO 9001 2011 standard

# Accessories Kit

| Includes: | ID Management Version | Access Control and Time & Attendance Versions |
|---|---|---|
| Power supply (IEC C13 female) | Yes | Yes |
| Power cord (IEC C14 male), power side connector type by country | Yes | Yes |
| Basic MiFare / DesFire card reader (internal) | No | Yes |
| Standard back cover | Yes | Yes |
| Wall mount bracket | No | Yes |
| ID I/O cables with push in connectors for device, and pig tails for external connections<br>Includes cables for RS 485, RS 232, TTL (2), dry contact relay | Yes | No |
| AC I/O cables with push in connectors for device, and pig tails for external connections<br>Includes cables for Wiegand (2), RS 485, RS 232, TTL (2), dry contact relay | No | Yes |
| Ferrite core and diode | Yes | Yes |
| Back cover / plate screw (M4) (not security type) | Yes | Yes |

# Mounting Instructions




Recommended mounting height and UI (left), Capture Volume of UMX-10 (right)

The recommended mounting height for the UMX-10 is 144cm (57 inches) from floor to the bottom of UMX-10. The mounting height can be adjusted to accommodate the height of the average user.

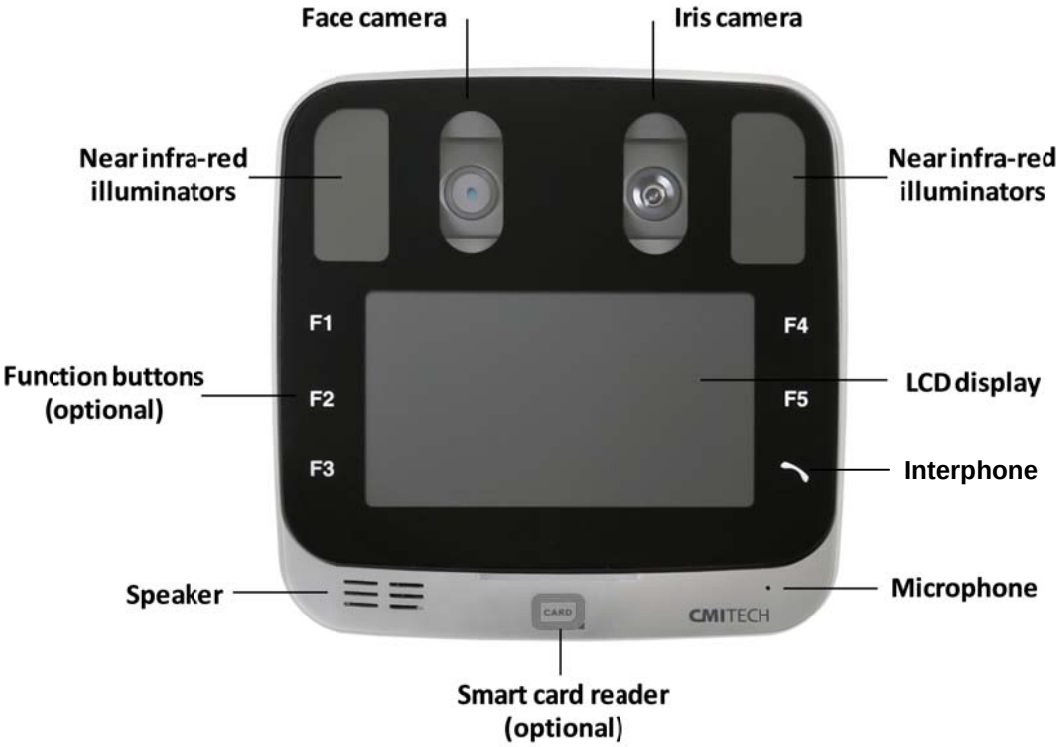
High ambient light and / or direct light into the UMX-10 should be avoided. Sunlight, halogen lamps or other strong illumination may reduce the performance of the UMX-10 and may result in increased failure-to-capture rates or failed authentication events.

The UMX-10 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 contact local sales or support@cmi-tech.com for more information.

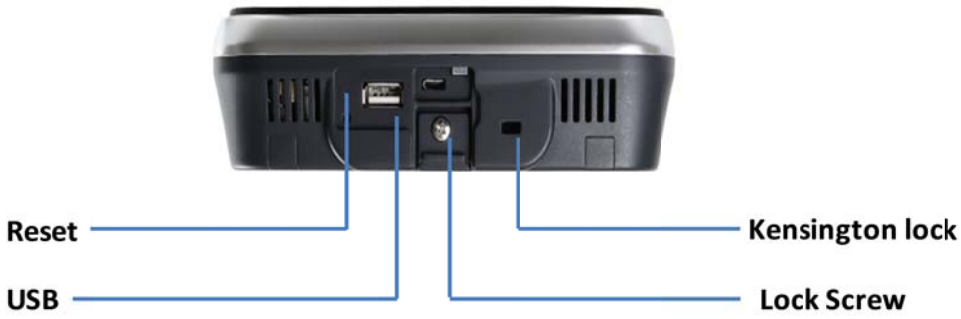
Note: Installation in extreme environments without proper protection may cause permanent damage and void warranty.

See System, Rear diagram for wall mounting instructions.

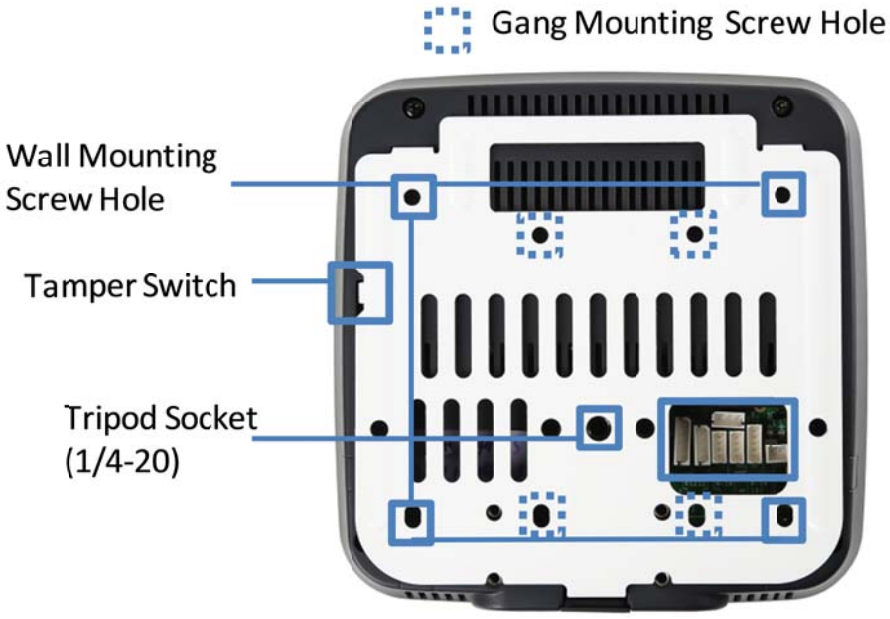
# System, Front



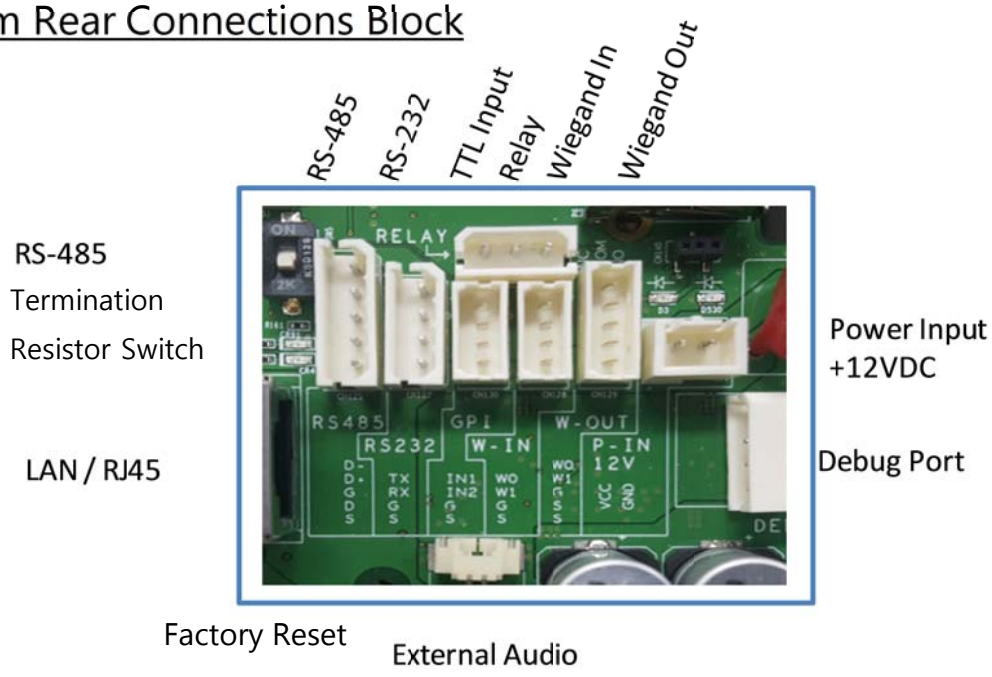

# System, Bottom



## System, Rear

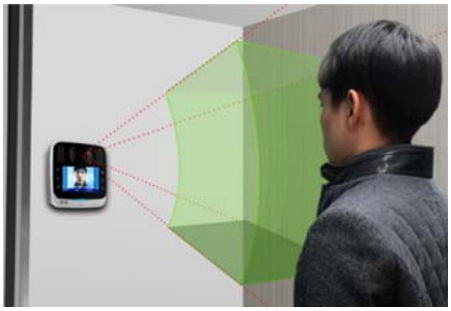



## System Rear Connections Block



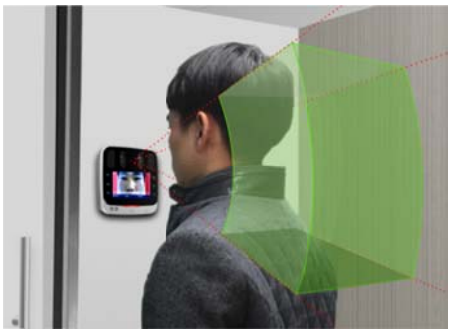
# User Interface for Iris Image Capture

- Position yourself facing straight at the LCD display. When the device detects your movement within 1.0 meter parameter, 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.



- 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.

- 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.



- UMX-10 captures the image of your face and iris automatically.

# On-board Demonstration Application

The on-board demonstration application shows the full capabilities of the UMX-10 for image capture including subject positioning with the face display user interface, enrollment, and on-board matching (authentication).

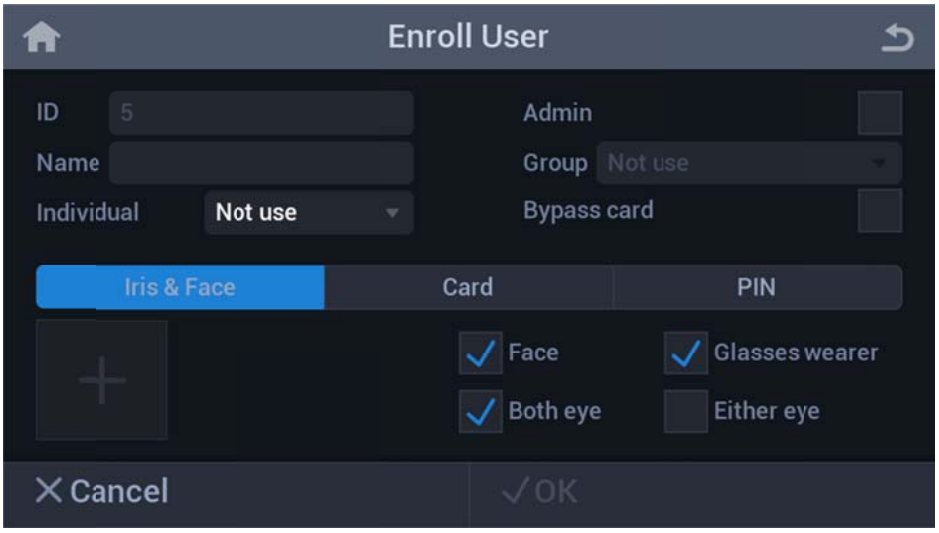
The system boots up in this demo application. It is initated by the video based motion detector that first finds the subject from about 1 meter distance, and then continues the natural iris image capture sequence for capture in recognition / authentication mode.


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:

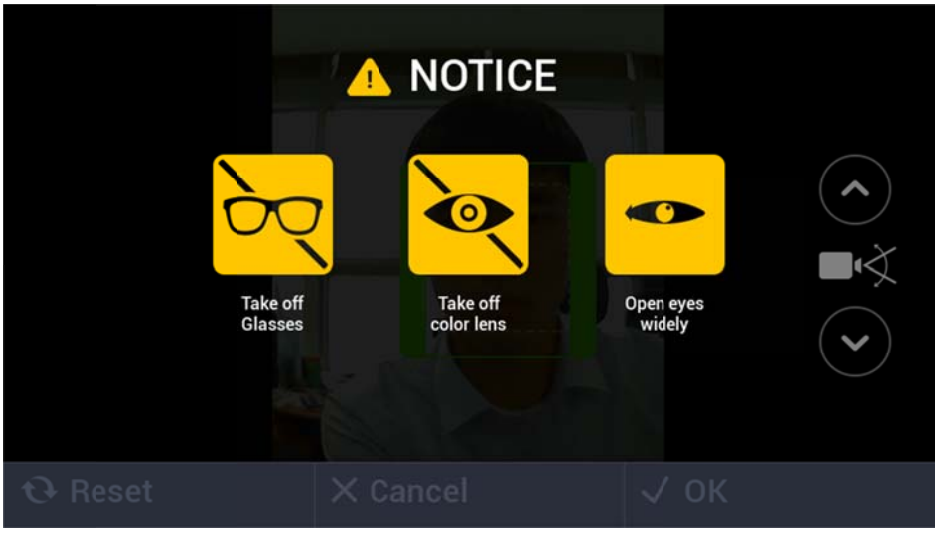

This user screen also allows simple database management. By tapping the **Delete** icon in the bottom right, one can easily delete information of enrolled users.

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

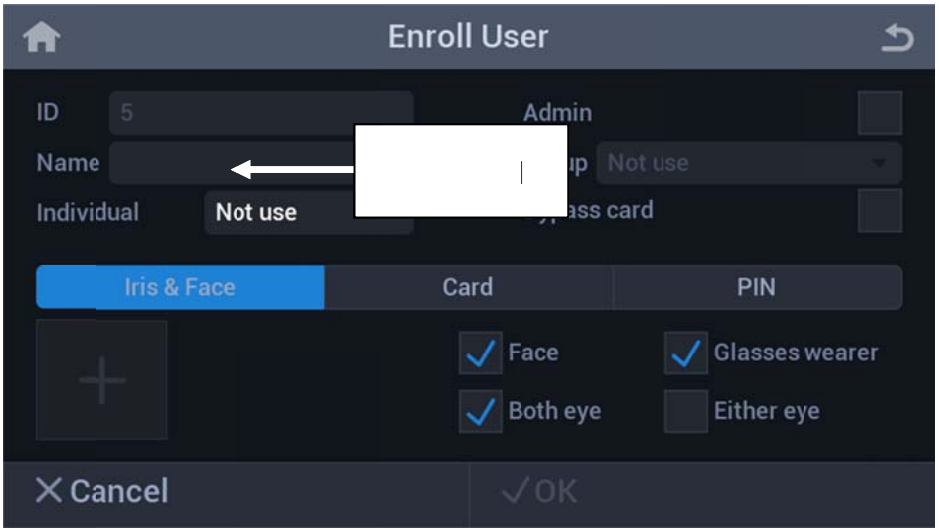



Press the plus(**+**) button in the bottom left to capture image of the new user.

An instruction screen will appear for 3 to 5 seconds, and then switch to the user interface.




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** complete enrollment.




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

# Summary of Specifications

## Software and Platform Technical Specifications (Tentative)

| | |
|---|---|
| Embedded CPU and OS | Freescale iMX6 Cortex A9 Quad Core ARM with Linux Yocto v1.8 OS |
| Iris on-board algorithm for encoding and matching | Optional |
| Face on-board algorithm for Combined Face and Iris encoding and matching | Optional |
| Web services configuration application (with embedded web server) | Yes, RESTful type SDK with C# and C++ versions for host side |

## Other Technical Specifications (Tentative)

| | |
|---|---|
| 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 (authentication) or 1:N (identification) modes<br>Supports dual factor authentication |
| Iris image output | Meets new ISO 19794-6 2011 standard:<br>MTF of minimum of 4.0 lp/mm @ ≥ 60% contrast, and 160 pixels across 1.0 cm iris |
| Iris image pixel resolution | 640 x 480 pixels, 8 bit depth. Supports multiple formats. |
| Iris encoding and matching algorithm | Delta ID (ISO 19794-6 compliant) |
| 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 |
| Iris positioning indicators | Face positioning within box in LCD display for X – Y<br>Face sizing to bracket (or box) within LCD display for distance (Z) positioning with simultaneous color bar display for correct distance positioning:<br>Blue: too far away<br>Green: OK<br>Red: too close<br>Supplemental voice distance feedback standard. Convertible to local language via .wav file substitution. |

## Other Technical Specifications (Tentative) (continued)

| | |
|---|---|
| Auto tilt | Yes, internal: +25 deg to -20 deg tilt |
| Iris inter-pupillary distance covered | 45 to 85 mm |
| 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) |
| Face recognition imaging | Optional on-board encoding and matching. Algorithm tbd. |
| Audio | 24 bit, 1.8 W embedded speaker<br>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 |
| Network interface | 10/100 Base-T Ethernet (RJ45 connector) |
| Other standard ports | USB host or slave (for service only) |
| 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<br>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<br>Output 12V DC, 3.5A. Provided standard with system. |

# Contact Information

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# Appendix 1

# UMX-10 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 CMID 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

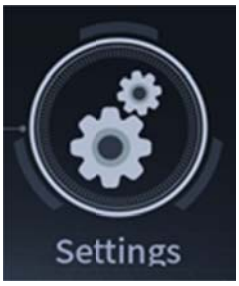
## Settings



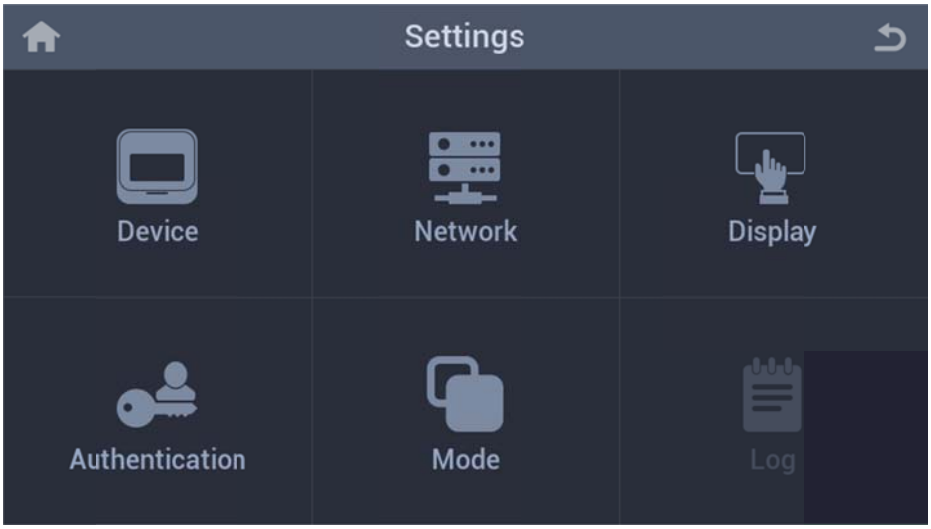


## User

# Settings

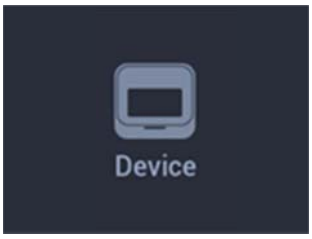



Tap the **Settings** icon in the home screen.



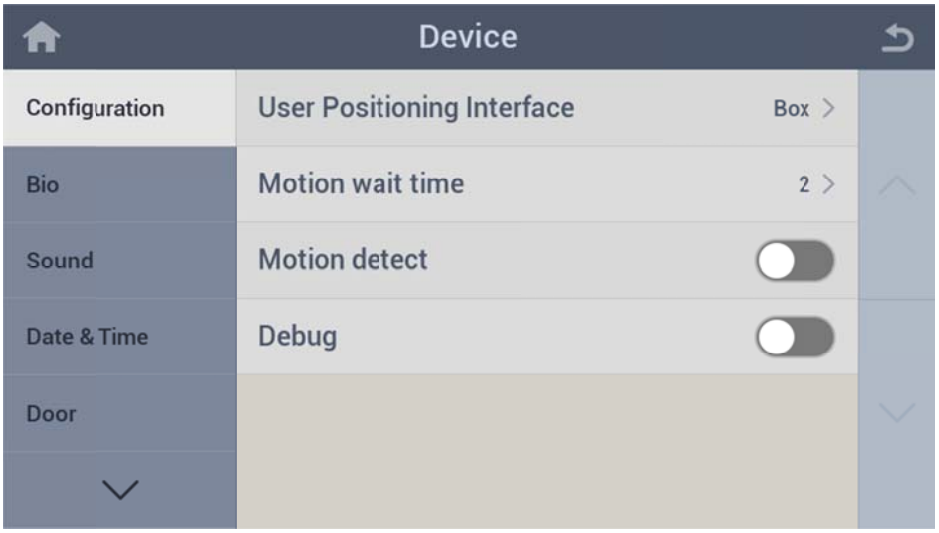

| | |
|---|---|
| **Device** | Configuration for device operating |
| **Network** | Configuration for IP & serial communication |
| **Display** | Configuration for screen display |
| **Authentication** | Configuration for authentication method and T&A |
| **Mode** | Configuration for recognition operation |
| **Log** | Information of saved log and log search viewer<br>(Note: In construction) |

# 1 Device




Configure settings for device operation.

## 1.1 Configuration



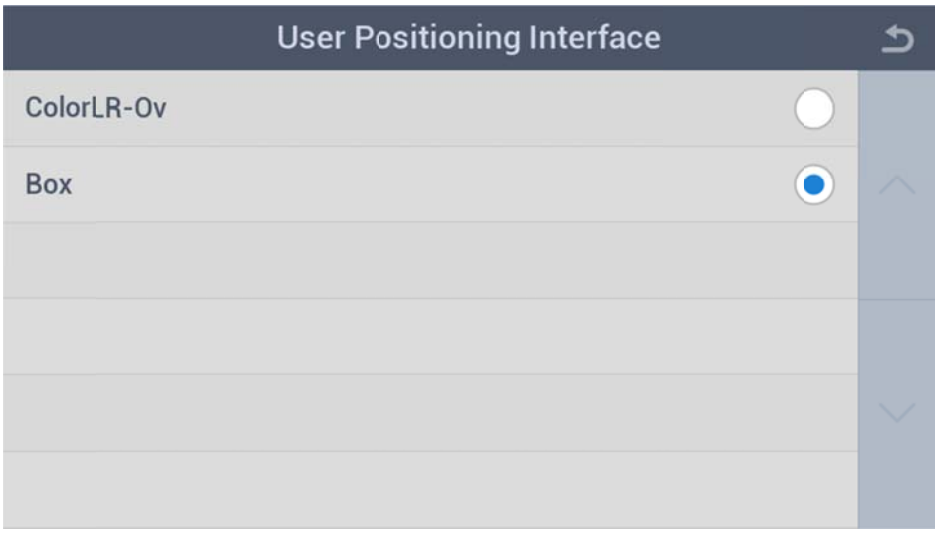

**User Positioning Interface** Select a guide display UI when enrollment and recognition

**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)

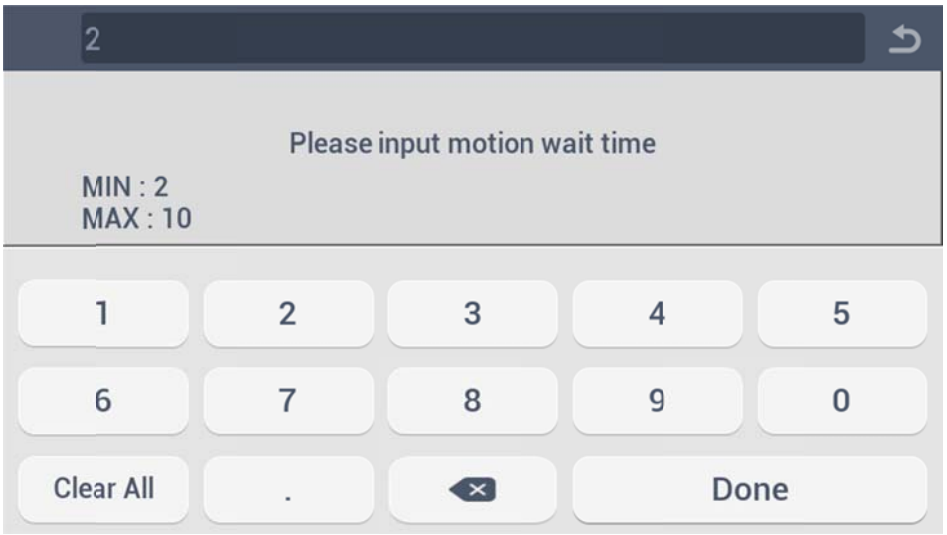
### 1.1.1 Configuration → User Positioning Interface



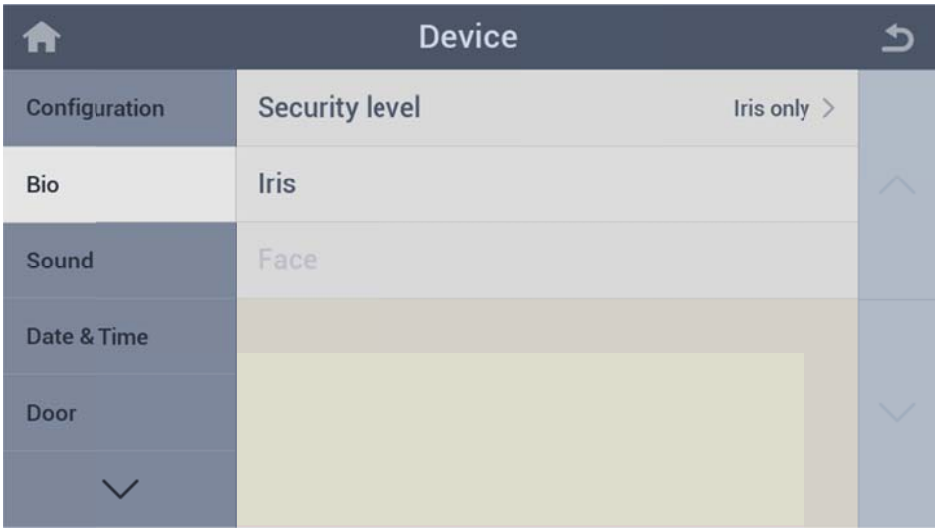

**ColorLR-Ov** Select Color overlay type guide UI display

**Box** Select tracking box type guide UI display

### 1.1.2 Configuration → Motion Wait Time



## 1.2 Bio

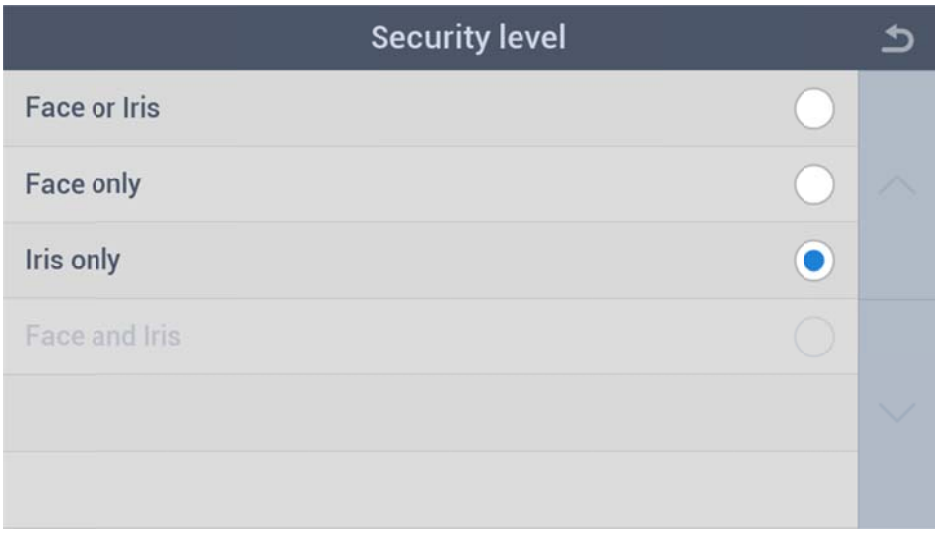



**Security Level** Select a combination mode of Face and Iris

**Iris** Additional configuration for Iris enrollment and recognition

**Face** Additional configuration for Face enrollment and recognition (note: in construction)

### 1.2.1 Bio → Security Level (Must have face recognition option)

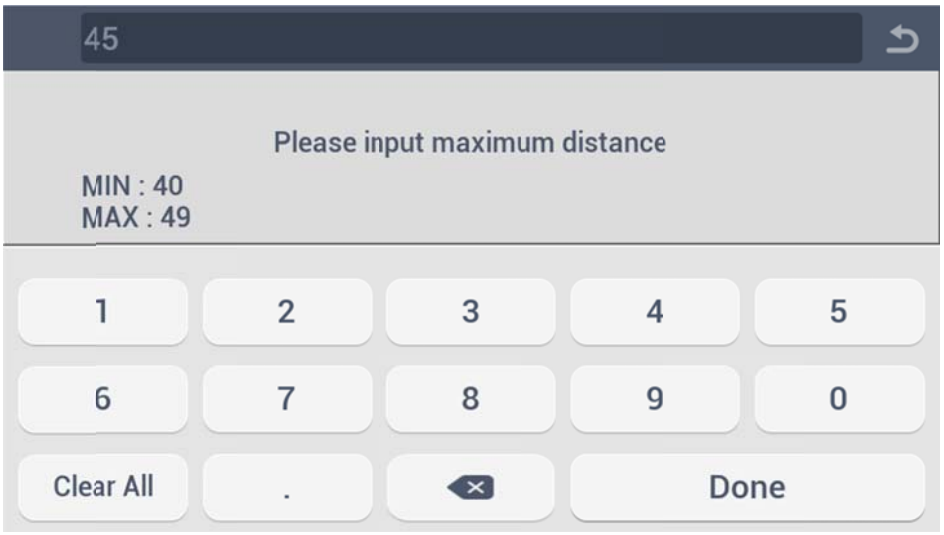


| | |
|---|---|
| **Face or Iris** | Select 2 stage Face or Iris recognition mode (Face recognition first, and then automatic switch-over to Iris upon Face recognition non-match) |
| **Face only** | Select Face only recognition mode |
| **Iris only** | Select Iris only recognition mode |
| **Face and Iris** | Select 2 stage Face and Iris recognition mode (Face recognition first, and then automatic switch-over to Iris upon multiple matches) (note: in construction) |

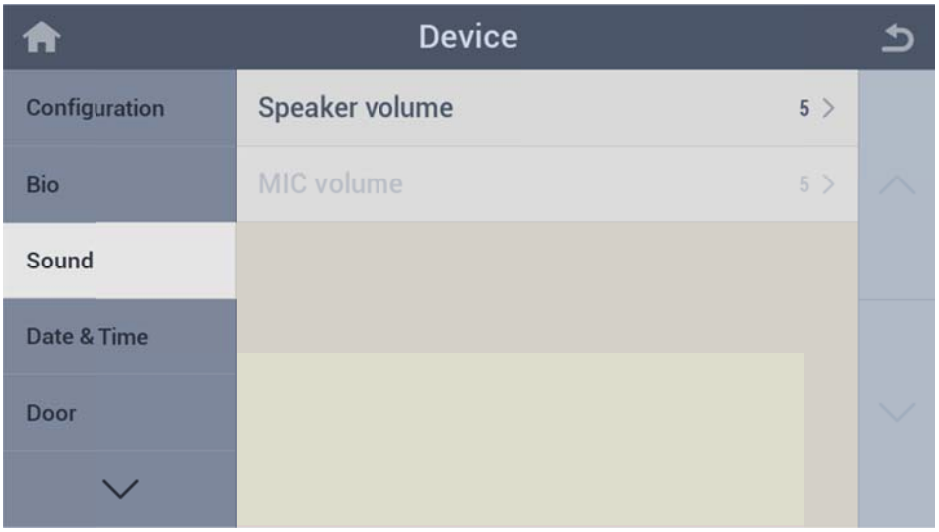
### 1.2.2 Bio → Iris


| | |
|---|---|
| **Max distance** | Set max distance for Iris recognition |
| **Recognition either eye** | Select enable/disable for either eye recognition mode |
| **Enroll either eye** | Select enable/disable for either eye enrollment mode |

### 1.2.2.1 Bio → Iris → Max Distance



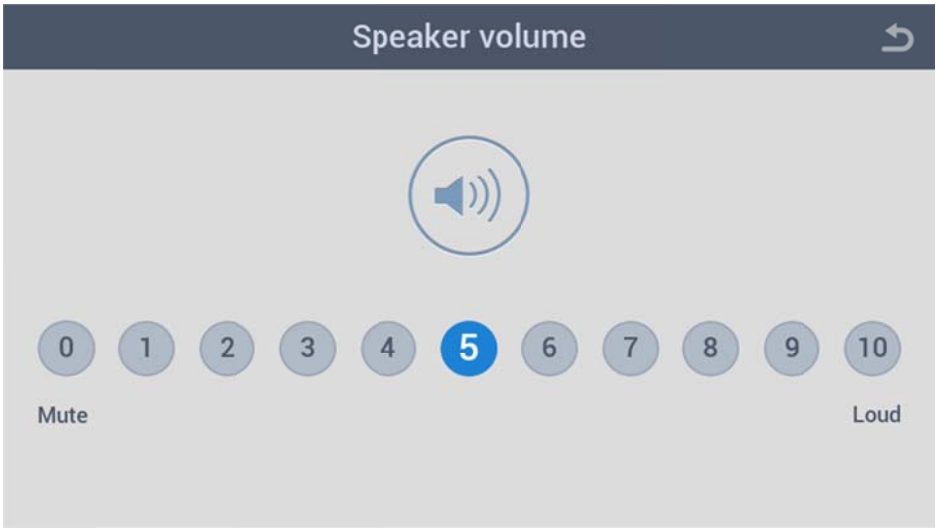
## 1.3 Sound




**Speaker volume** Set speaker volume for instruction sound and interphone voice

**MIC volume** Set microphone volume for interphone voice (note: in construction)

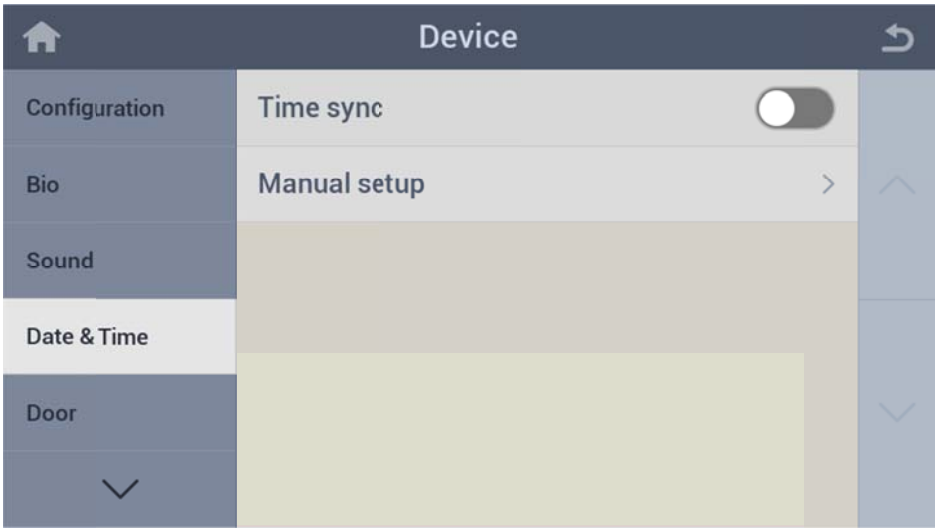
### 1.3.1 Sound → Speaker Volume




### 1.3.2 Sound → MIC Volume

Identical to settings for speaker volume

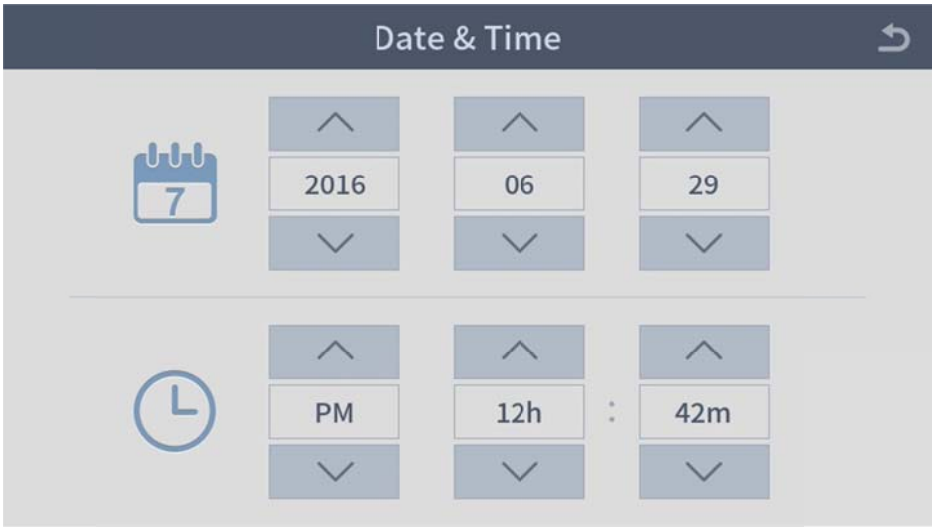
## 1.4 Date & Time



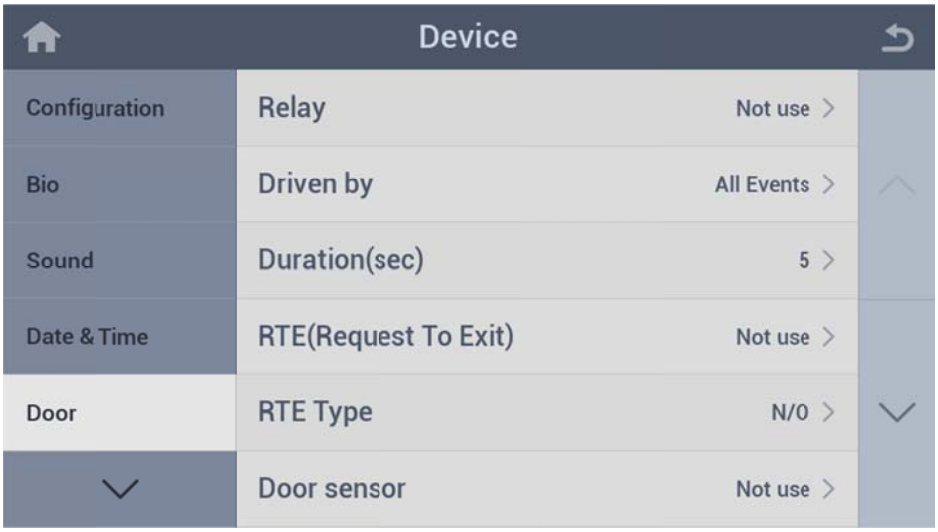

**Time sync** Select enable/disable for time sync with CMID manager

**Manual setup** Set date and time manually

### 1.4.1 Date & Time → Manual Setup



## 1.5 Door




**Relay** Select a door open relay

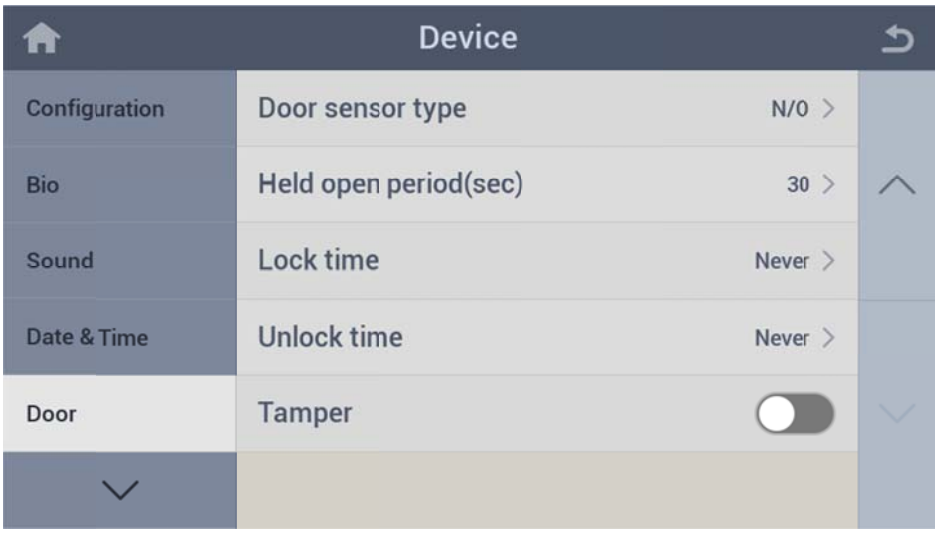
**Driven by** Select an event mode for door open relay

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

**RTE (Request to Exit)** Select a door exit button (Note: in construction)

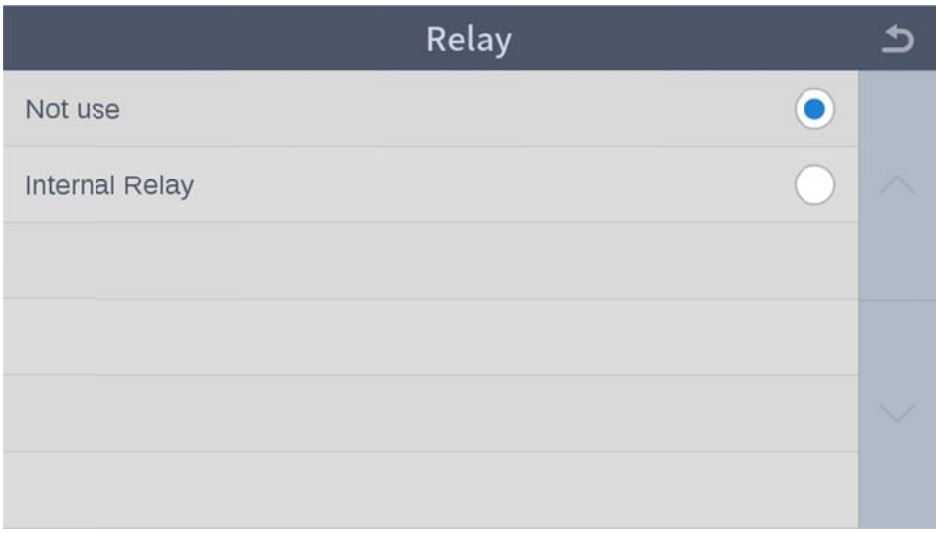
**RTE Type** Select a door exit button operating type (Note: in construction)

**Door sensor** Select a door sensor (Note: in construction)



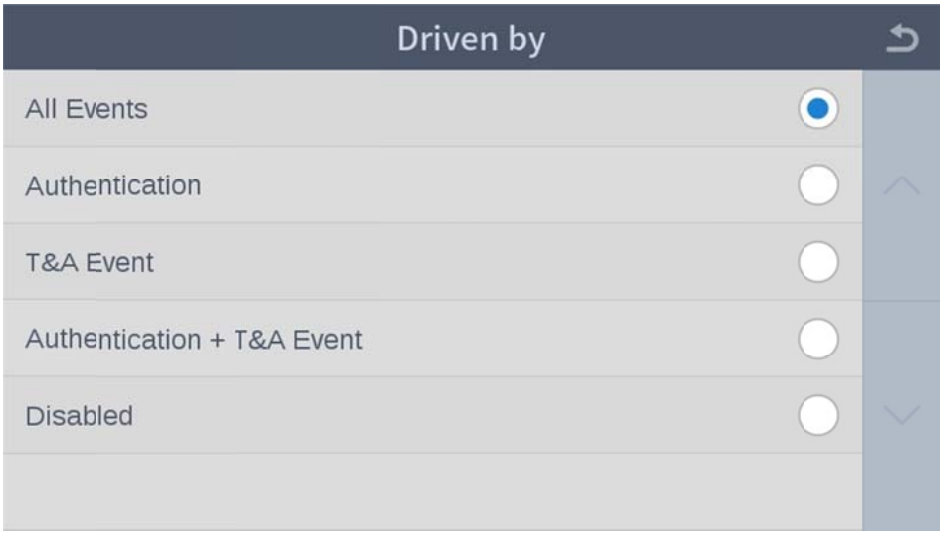
| | |
|---|---|
| **Door sensor type** | Select door sensor operating type (note: in construction) |
| **Held open period (sec)** | Set time duration for door open operation (note: in construction) |
| **Lock time** | Set door lock time (note: in construction) |
| **Unlock time** | Set door unlock time (note: in construction) |
| **Tamper** | Select enable/disable for tamper (off the wall detection) operation |

### 1.5.1 Door → Relay



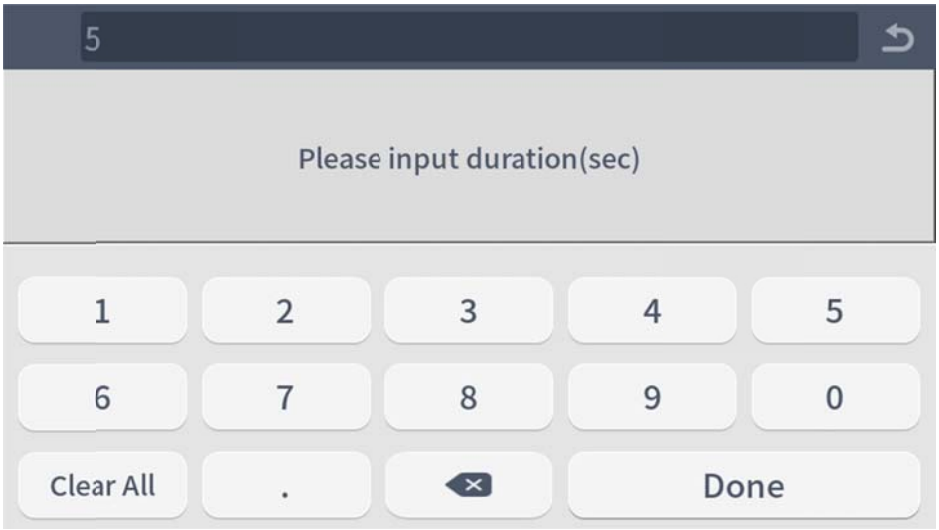

| | |
|---|---|
| **Not use** | Select not use |
| **Internal Relay** | Select internal relay |

### 1.5.2 Door → Driven by

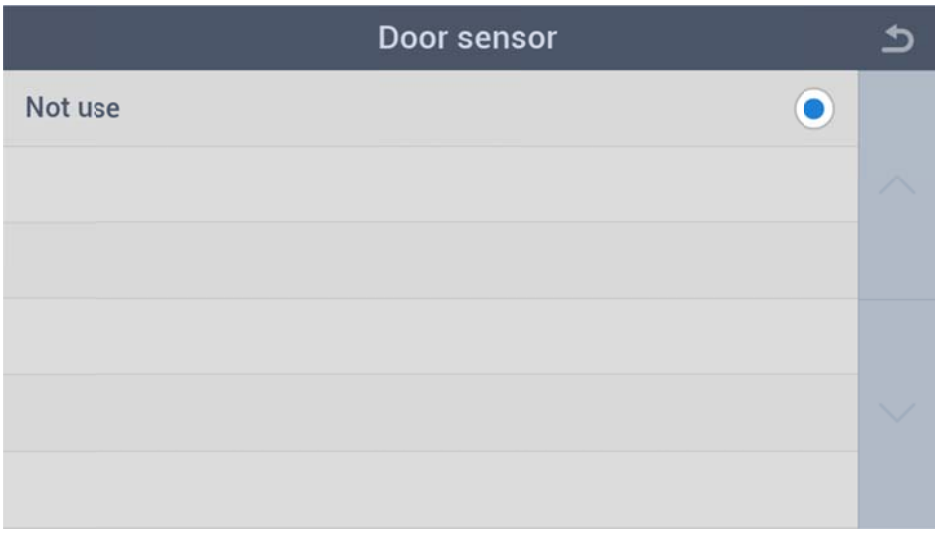



| | |
|---|---|
| **All Events** | Select door open for all events |
| **Authentication** | Select door open for authentication event |
| **T&A Event** | Select door open for T&A event |
| **Authentication + T&A Event** | Select door open for authentication plus T&A event |
| **Disabled** | Select door open disable |

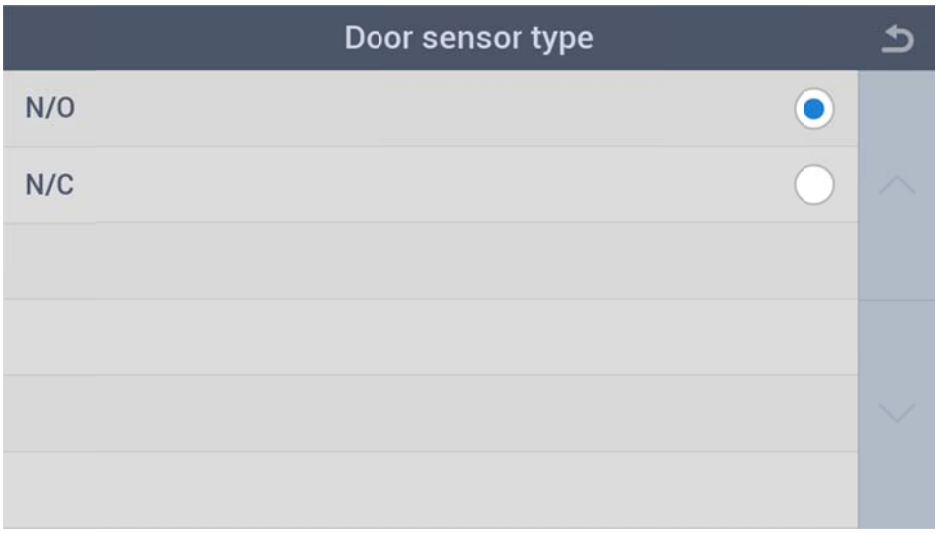
### 1.5.3 Door → Duration (sec)



### 1.5.4 Door → Door Sensor



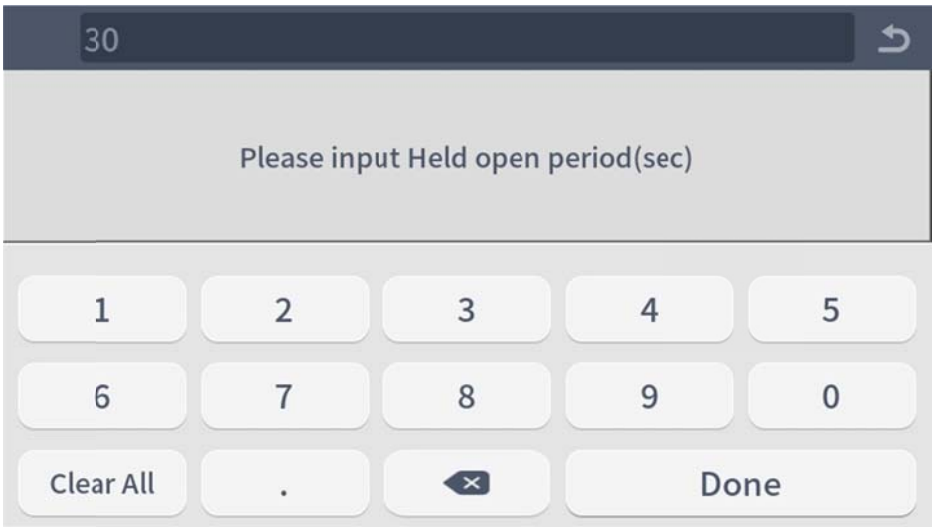

### 1.5.5 Door → Door Sensor Type



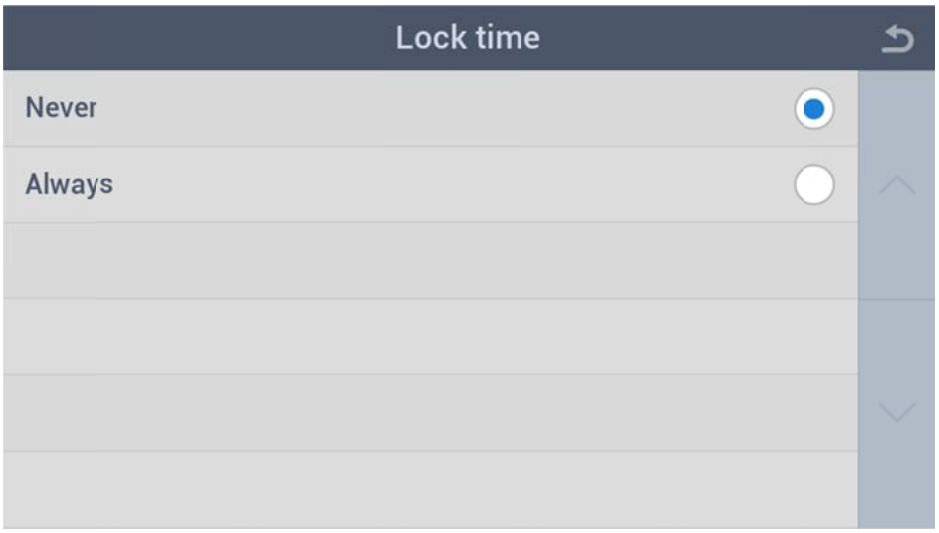

**N/O** Select door exit button sensor as Normal Open type

**N/C** Select door exit button sensor as Normal Close type

### 1.5.6 Door → Held Open Period (sec)



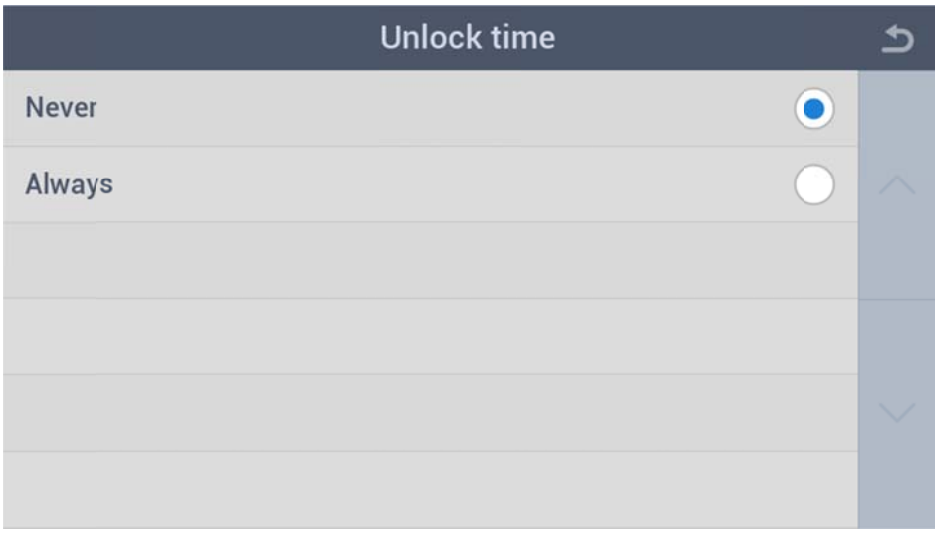

### 1.5.7 Door → Lock Time




**Never** Select door lock time -- never

**Always** Select door lock time -- always

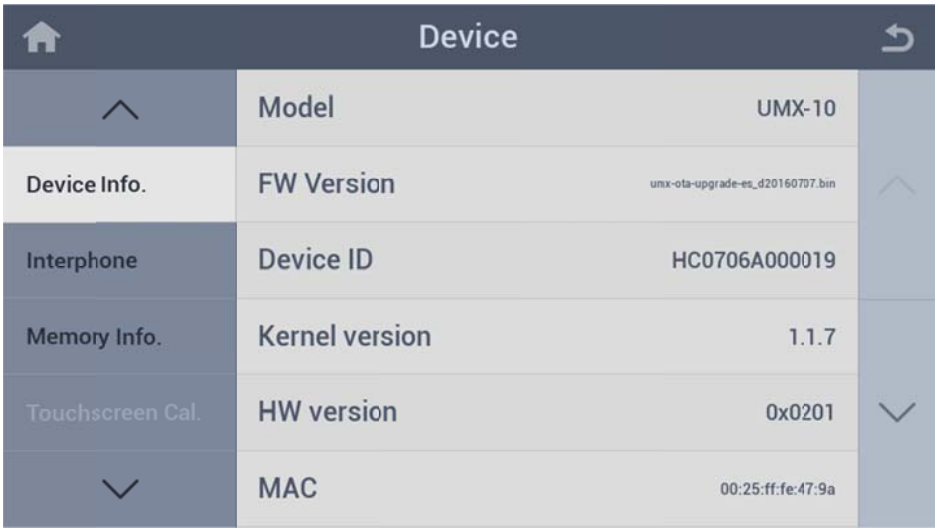
### 1.5.8 Door → Unlock Time




**Never** Select door unlock time -- never

**Always** Select door unlock time -- always

## 1.6 Device Info




**Model** Model name of this device

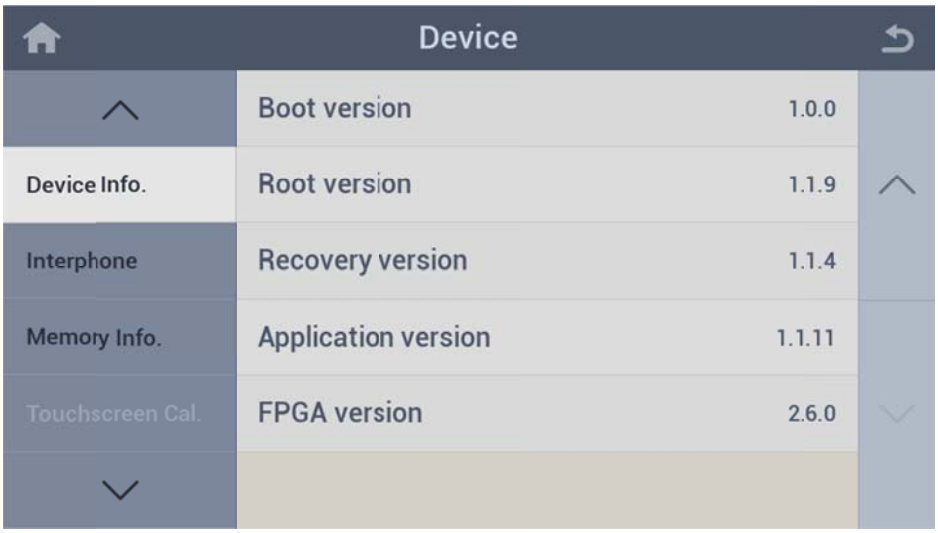
**FW Version** Version name of released firmware (F/W) file

**Device ID** Identification number of this device

**Kernel version** Revision number of kernel

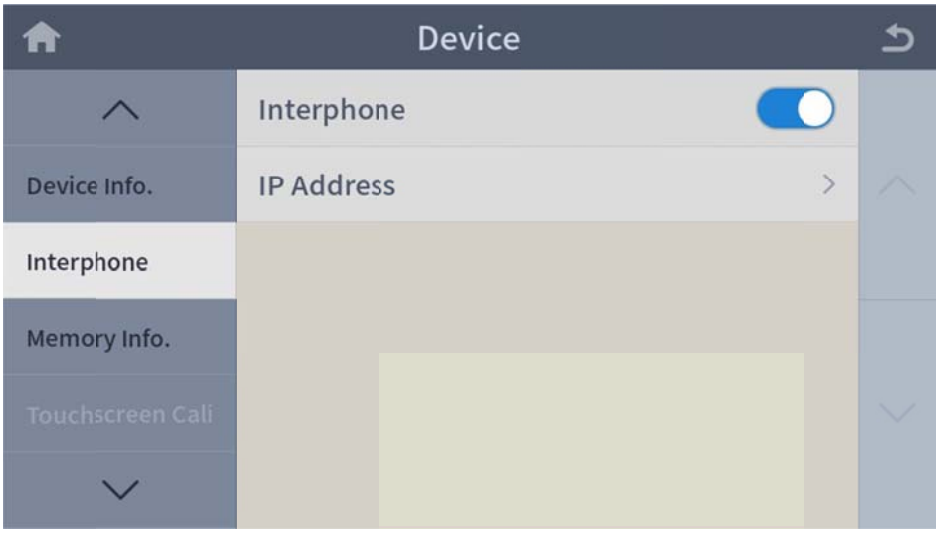
**HW version** Revision number of hardware board

**MAC** MAC address of this device



| | |
|---|---|
| **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

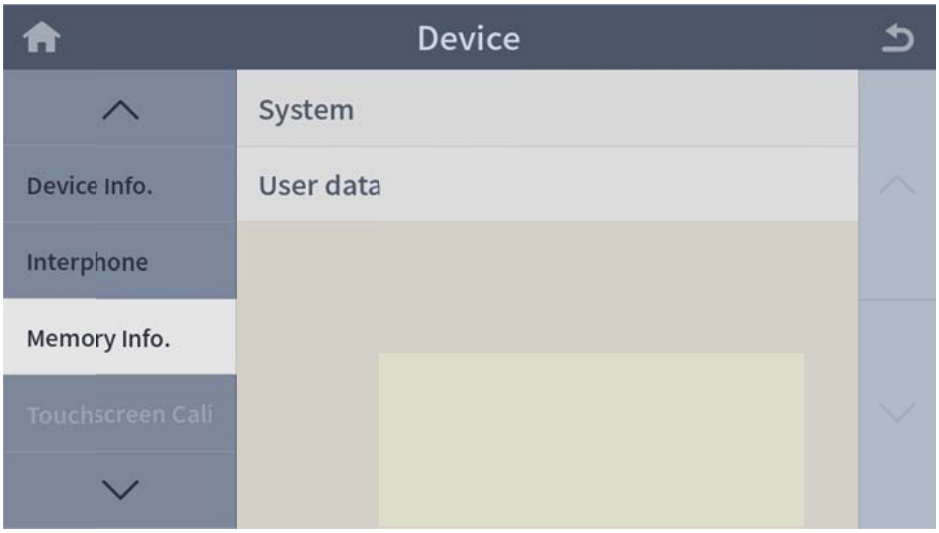



**Interphone** Select enable/disable for interphone use (note: in construction)

**IP Address** IP address of PC which interphone program is installed (note: in construction)

### 1.7.1 Interphone → IP Address

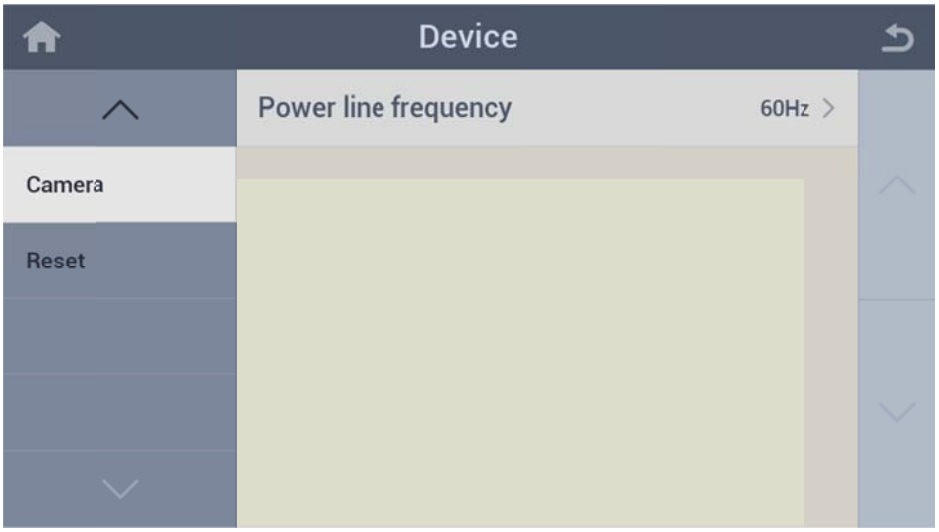
## 1.8 Memory Info




**System** Memory capacity of system area (note: in construction)

**User data** Memory capacity of user area (note: in construction)

## 1.9 Camera



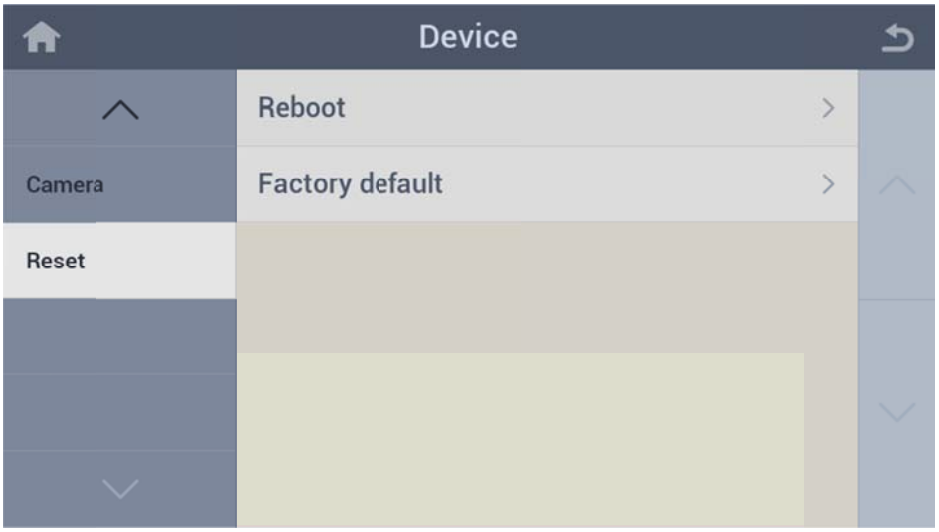

**Power line frequency** Select power line frequency that supplying to device

### 1.9.1 Camera → Power Line Frequency


**50Hz** Select power line frequency to 50Hz

**60Hz** Select power line frequency to 60Hz

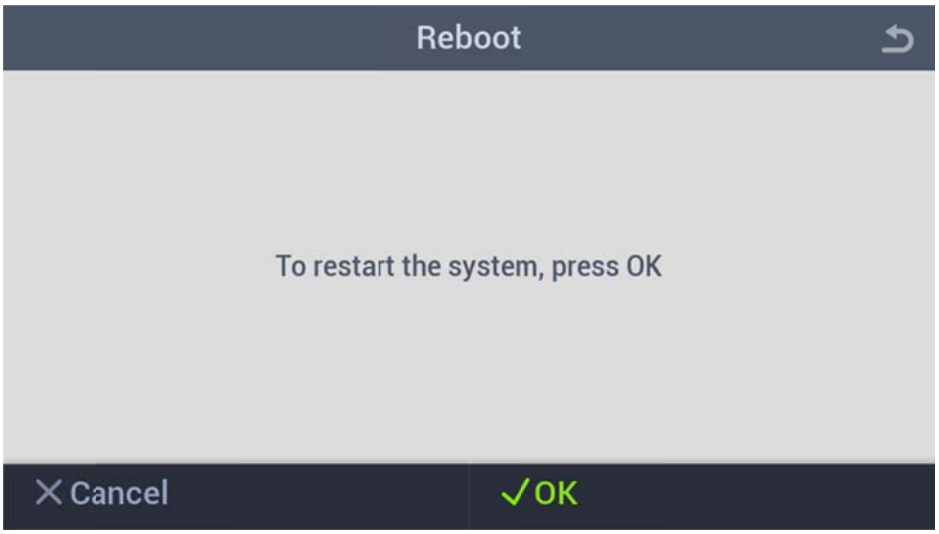
## 1.10 Reset




**Reboot** Reboot device

**Factory Default** Reset all configuration settings and/or delete all user data

### 1.10.1 Reset → Reboot



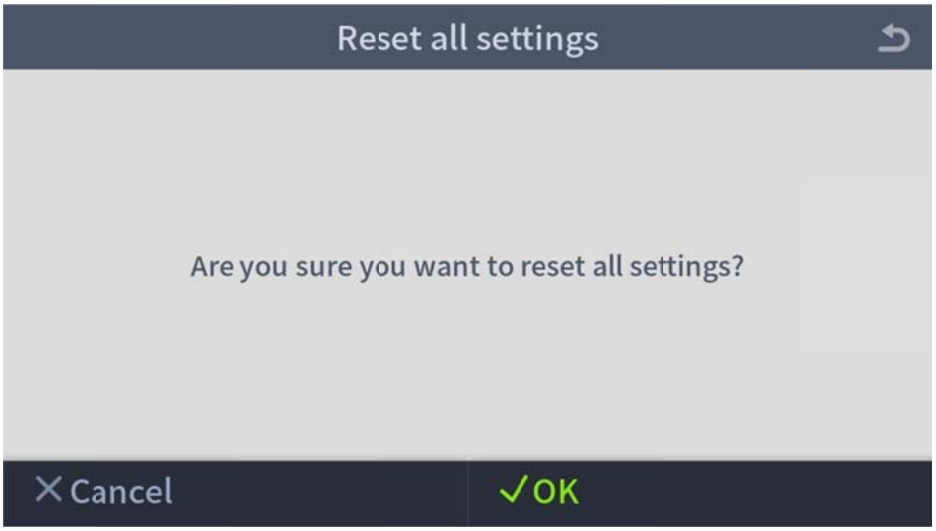
### 1.10.2 Reset → Factory Default


**Reset all settings** Reset all configuration settings

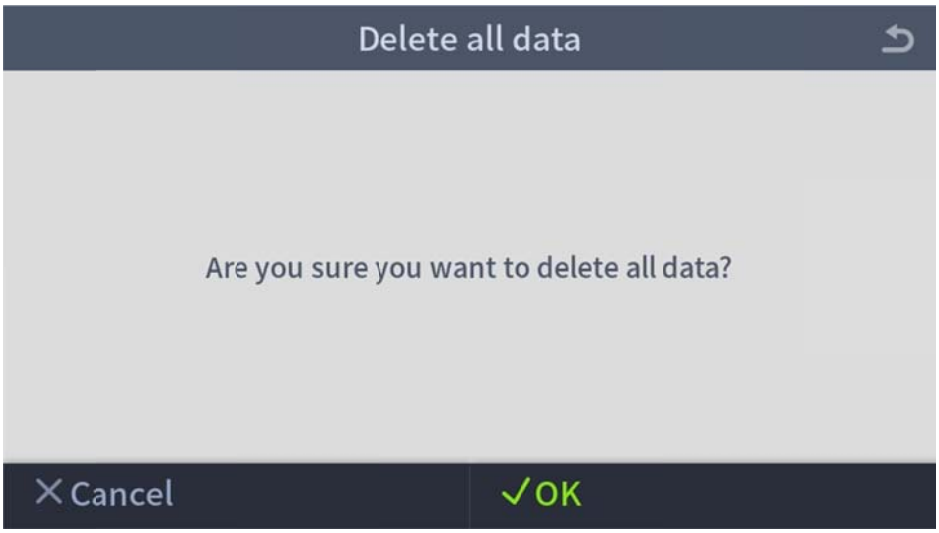
**Delete all data** Delete all user data

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

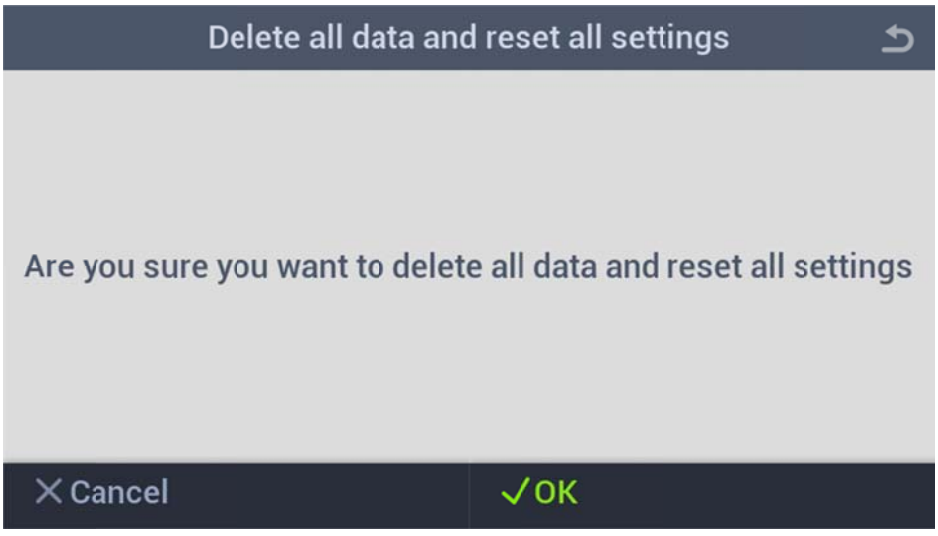
### 1.10.2.1 Reset → Factory Default → Reset All Settings



### 1.10.2.2 Reset → Factory Default → Delete All Data



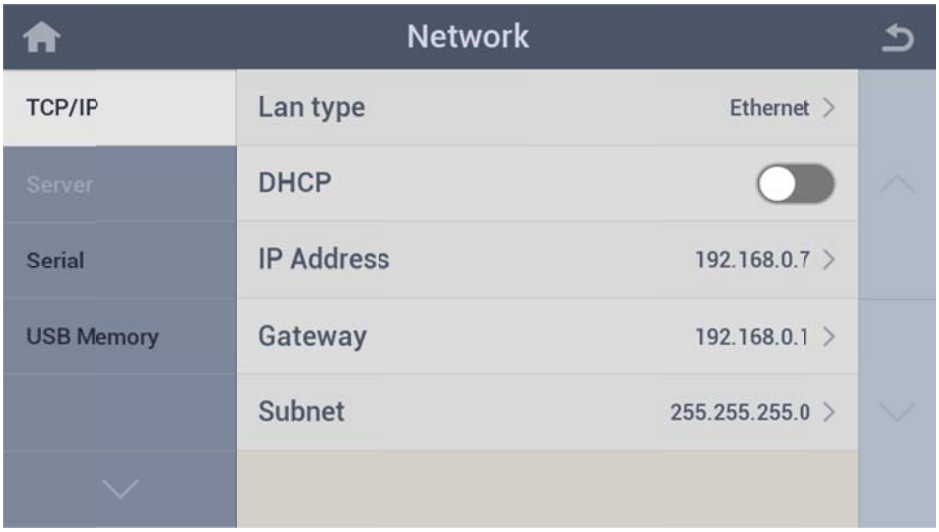

### 1.10.2.3 Reset → Factory Default → Delete All Data and Reset All Settings



# 2 Network


Configure settings for IP and serial communication.

## 2.1 TCP/IP




**LAN type** Select a type of LAN

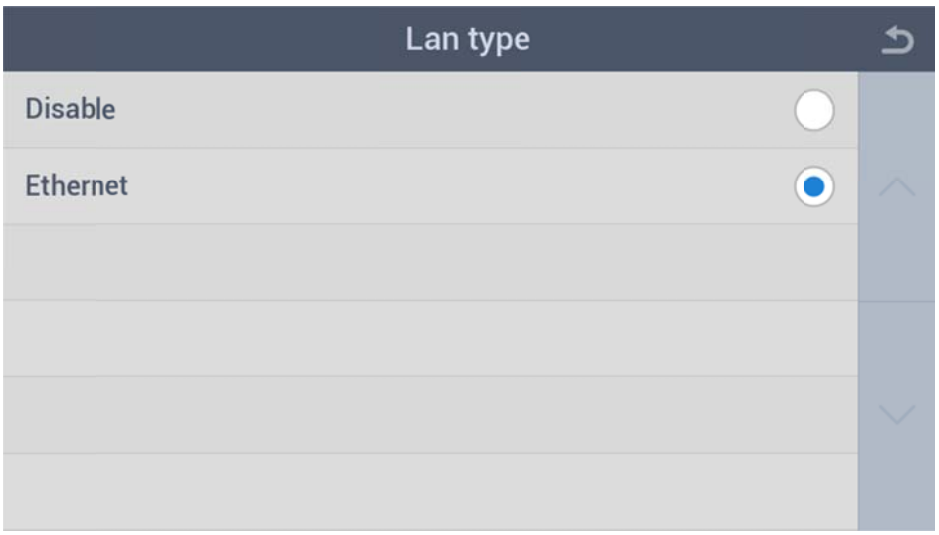
**DHCP** Select enable/disable DHCP mode

**IP Address** Set static IP address

**Gateway** Set static gateway IP address

**Subnet** Set static subnet mask

### 2.1.1 TCP/IP → LAN Type



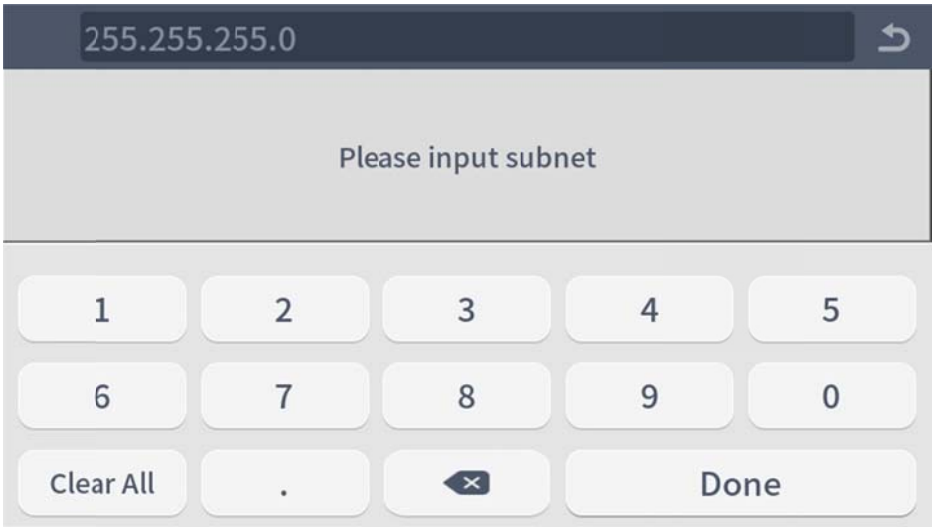

**Disable** Disable LAN use

**Ethernet** Select Ethernet for LAN use

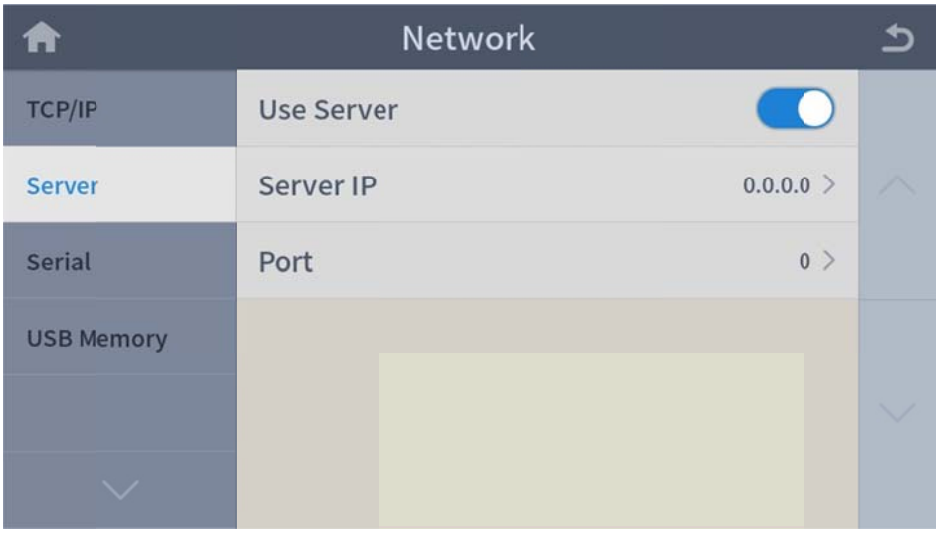
### 2.1.2 TCP/IP → IP Address

### 2.1.3 TCP/IP → Gateway


### 2.1.4 TCP/IP → Subnet



## 2.2 Server




(Currently settled server is CMID PC for time sync)

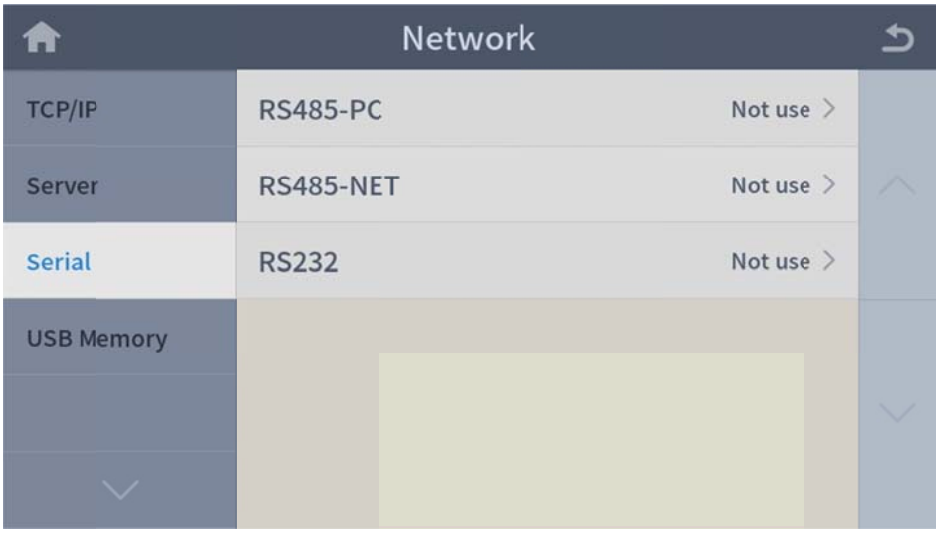
**Use Server** Select enable/disable for server use (Note: In construction)

**Server IP** Set IP address of server (Note: In construction)

**Port** (Note: To be eliminated)

### 2.2.1 Server → Server IP

## 2.3 Serial

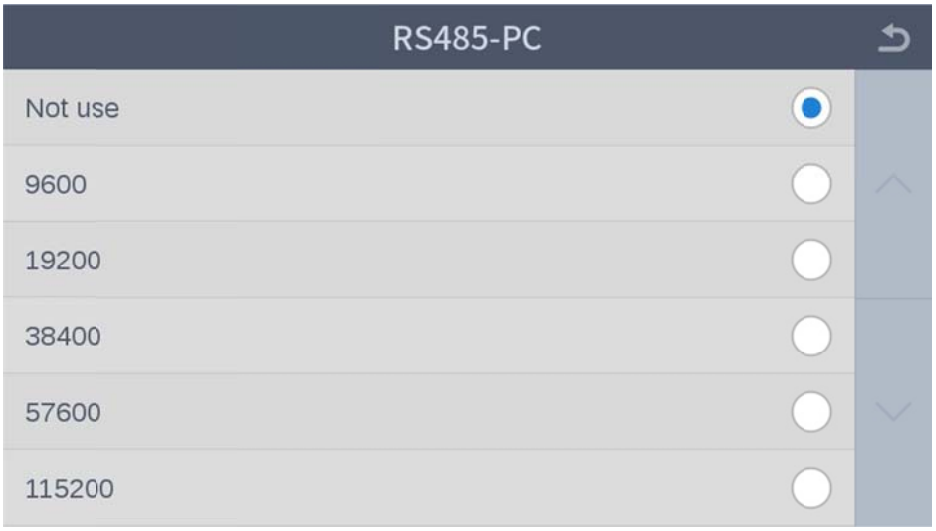



**RS485-PC** Select a baud rate for RS485 (note: in construction)

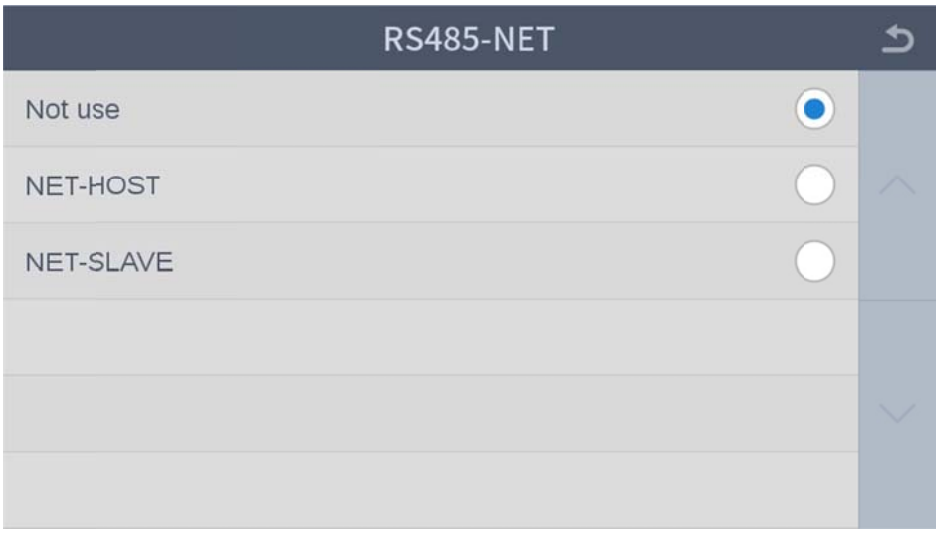
**RS485-NET** Select an operating mode for RS485 (note: in construction)

**RS232** Select a baud rate for RS232 (note: in construction)

### 2.3.1 Serial → RS485-PC

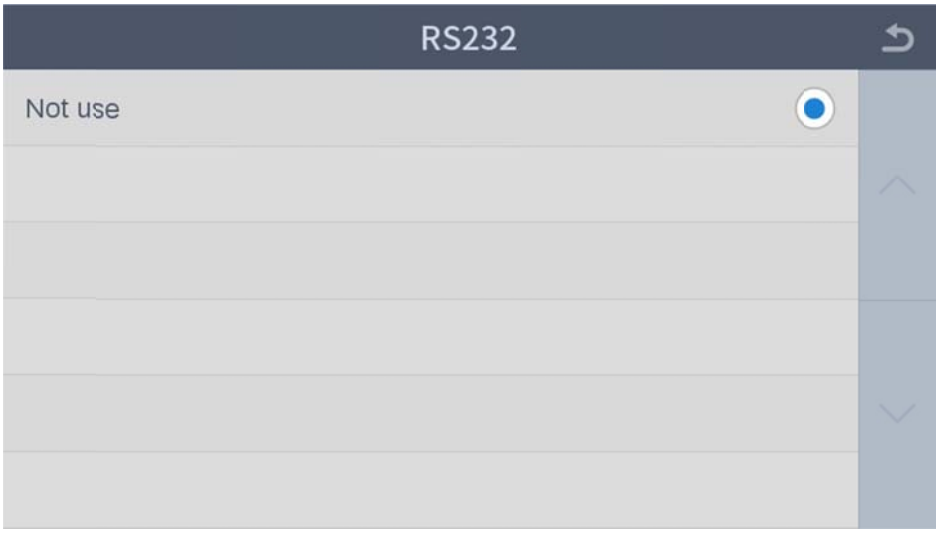


### 2.3.2 Serial → RS485-NET

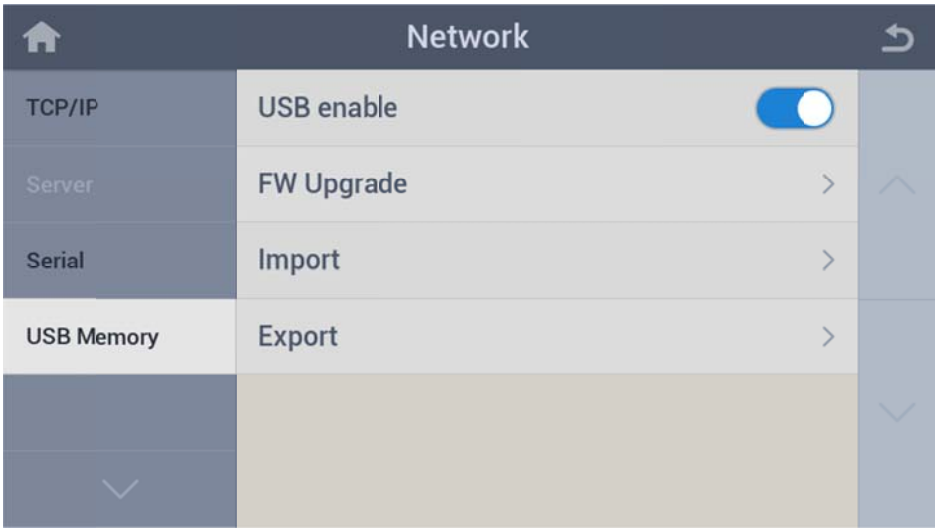



| | |
|---|---|
| **Not use** | Disable RS485 |
| **NET-HOST** | Set RS485 operating mode as host |
| **NET-SLAVE** | Set RS485 operating mode as slave |

### 2.3.3 Serial → RS232



## 2.4 USB Memory



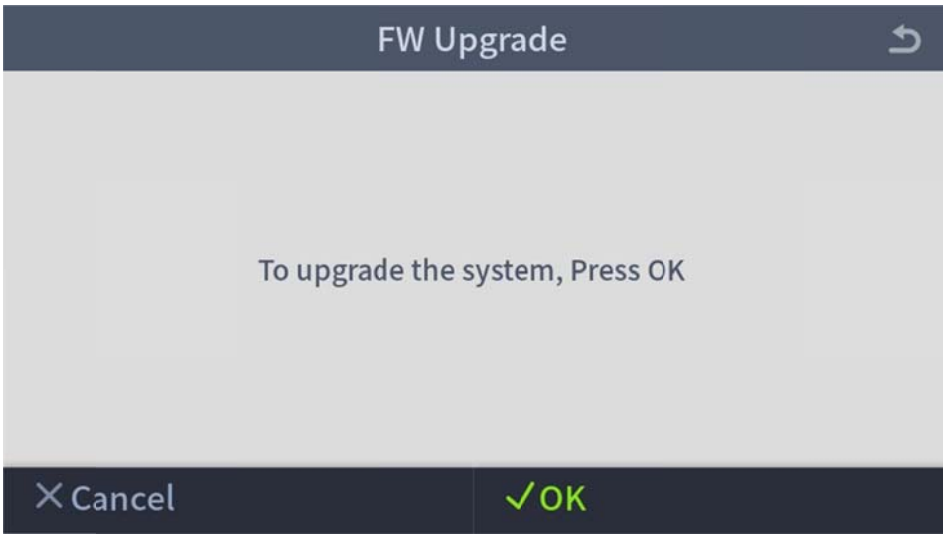

**USB enable** Select enable/disable for USB memory use

**FW Upgrade** Go into firmware (F/W) upgrade from USB memory

**Import** Go into backup data (user & log data) restore from USB memory

**Export** Go into backup data (user & log data) save to USB memory

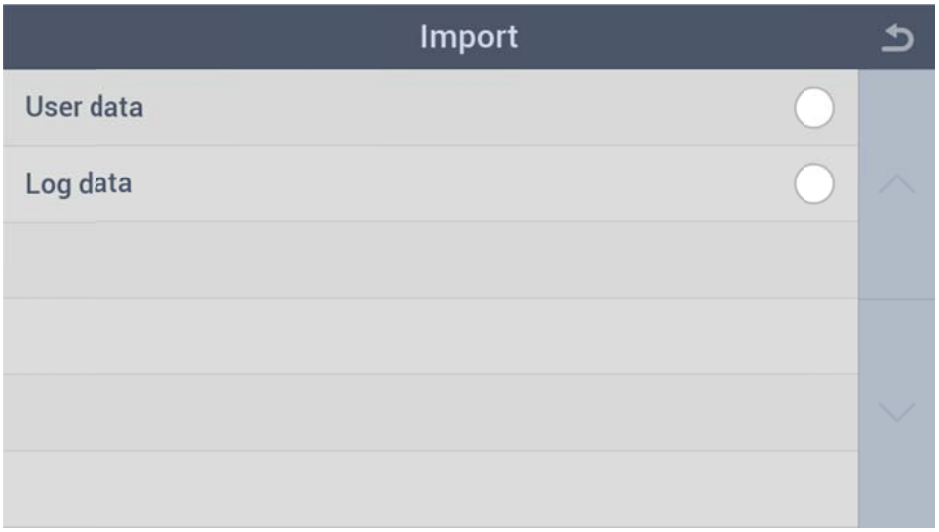
### 2.4.1 USB Memory → FW Upgrade



Upgrade F/W by tapping on √ OK button on the bottom right.

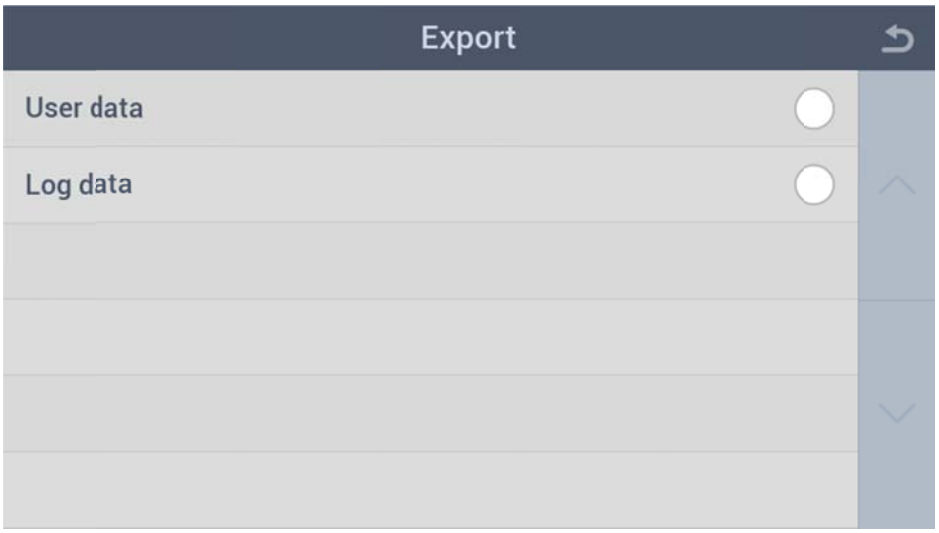

If the FW file (new firmware and operating library) does not exist in USB, message appears as shown above.

### 2.4.2 USB Memory → Import




| | |
|---|---|
| **User data** | Restore user enroll data from USB memory |
| **Log data** | Restore log data from USB memory |

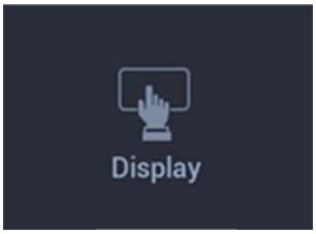
### 2.4.3 USB Memory → Export




**User data** Backup user enroll data to USB memory

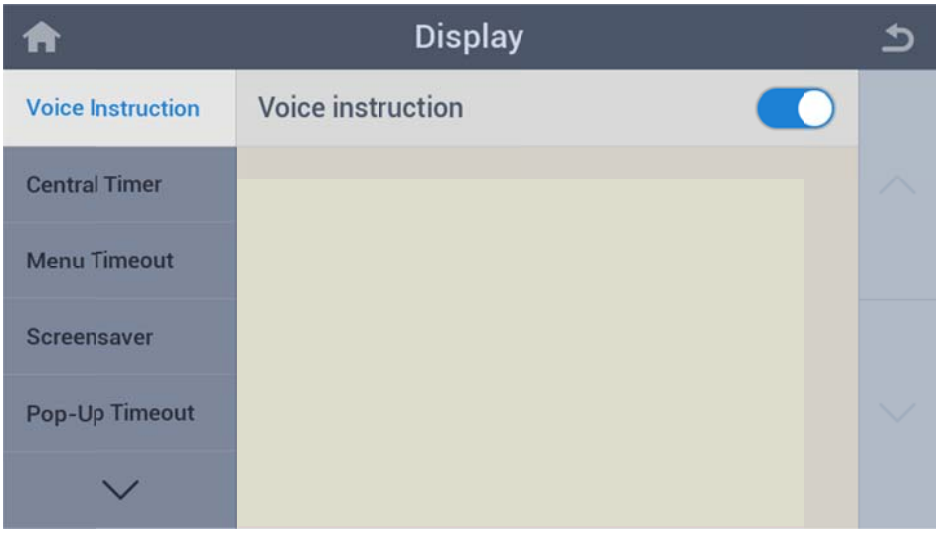
**Log data** Backup log data to USB memory

# 3 Display




Configure settings for screen display.

## 3.1 Voice Instructions

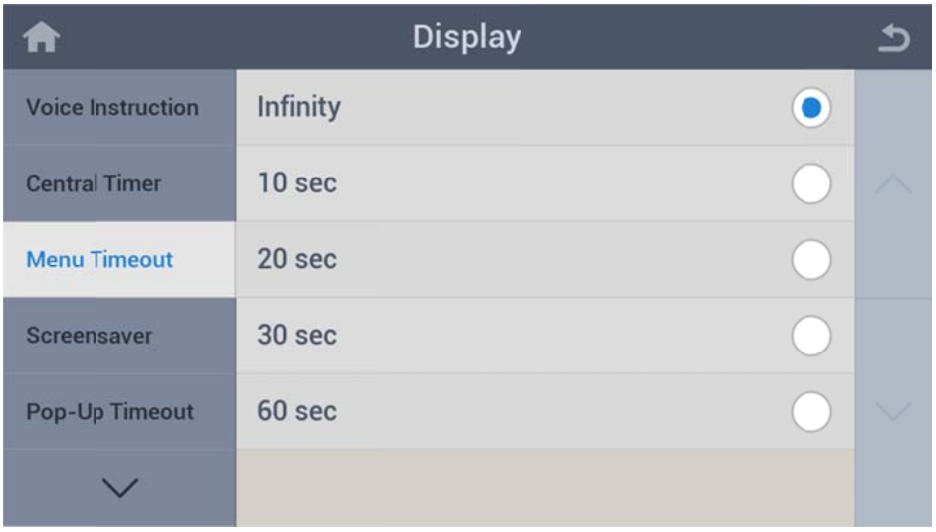



**Voice Instruction** Select enable/disable for voice guide positioning / instructions

## 3.2 Central Timer


**Central Timer** Select enable/disable for clock display on the center of Launcher application

## 3.3 Menu Timeout



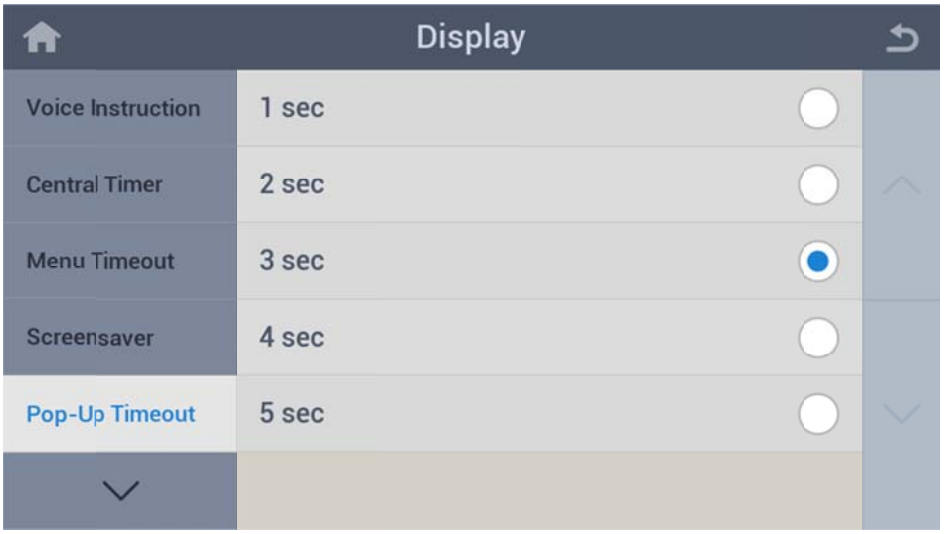

**Menu Timeout** Set timeout for auto exit from menu display after leaving untouched

## 3.4 Screensaver


**Logo** Select logo display as screensaver

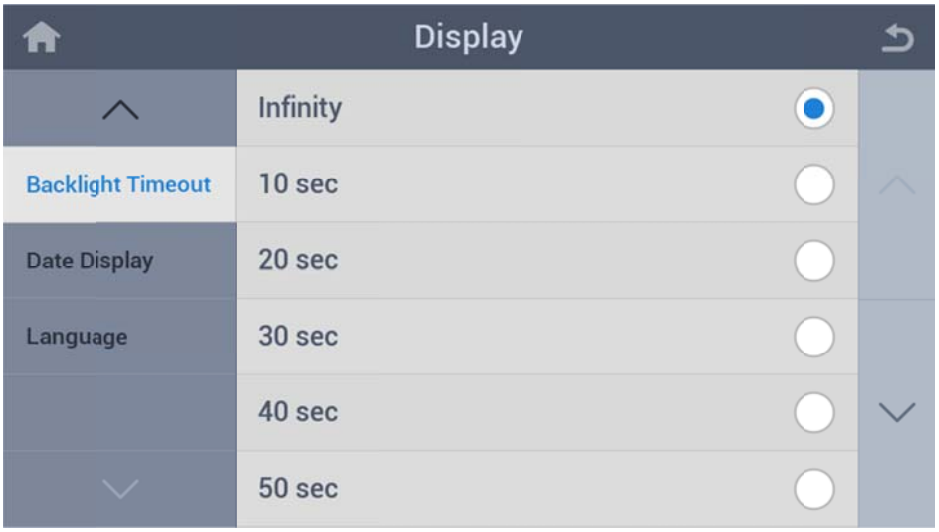
**Time** Select clock display as screensaver

## 3.5 Pop-Up Timeout



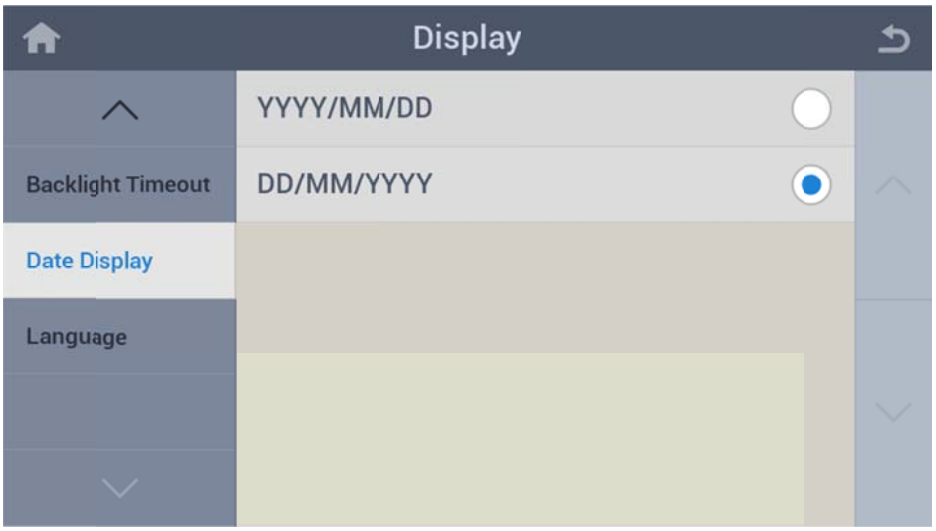

**Pop-Up Timeout** Set pop-up message window (recognition complete etc.) display duration

## 3.6 Backlight Timeout




**Pop-Up Timeout** Set timeout for auto off of LCD backlight after leaving unused

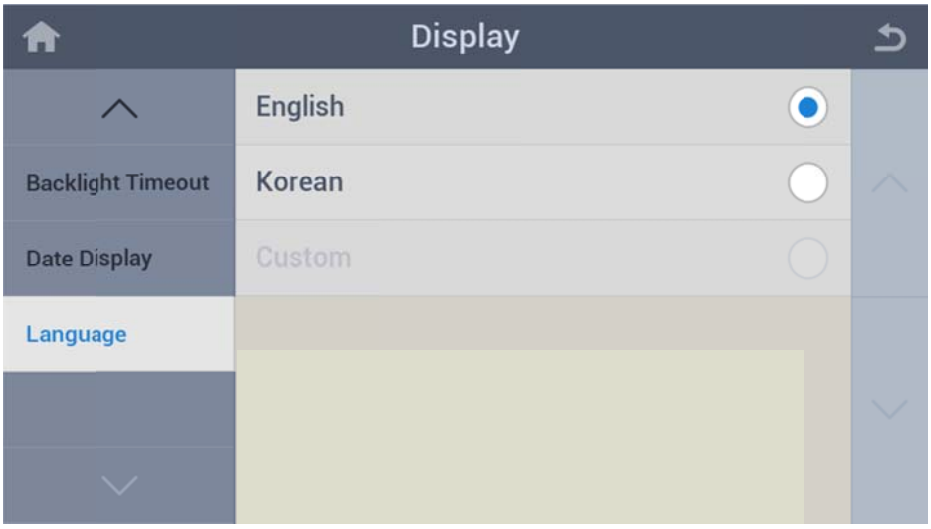
## 3.7 Date Display




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

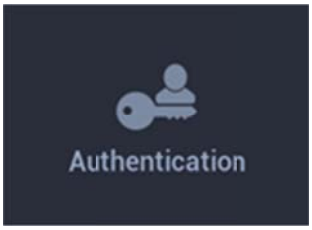
**DD/MM/YYYY** Select day/month/year display mode

## 3.8 Language



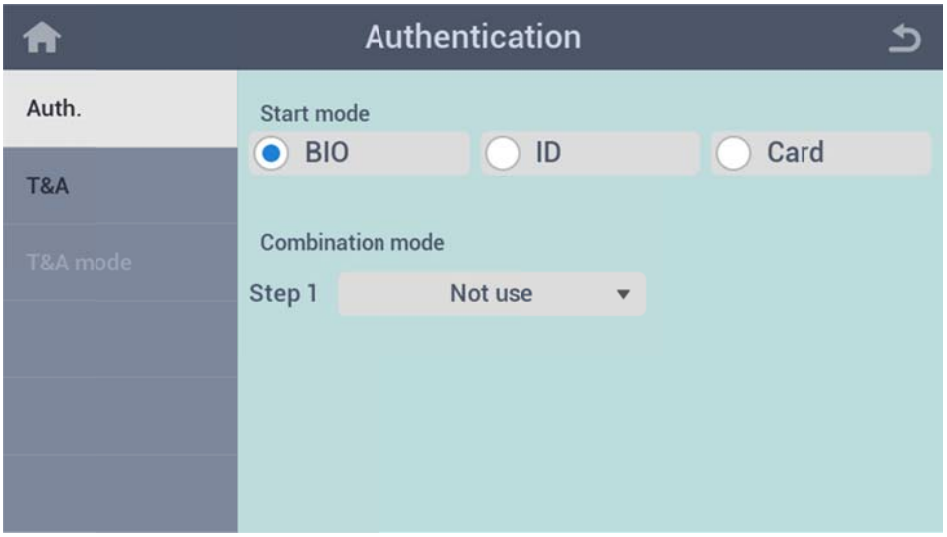

**Language** Select a language to use (Note: In construction)

# 4 Authentication




Configure settings for authentication method and T&A.

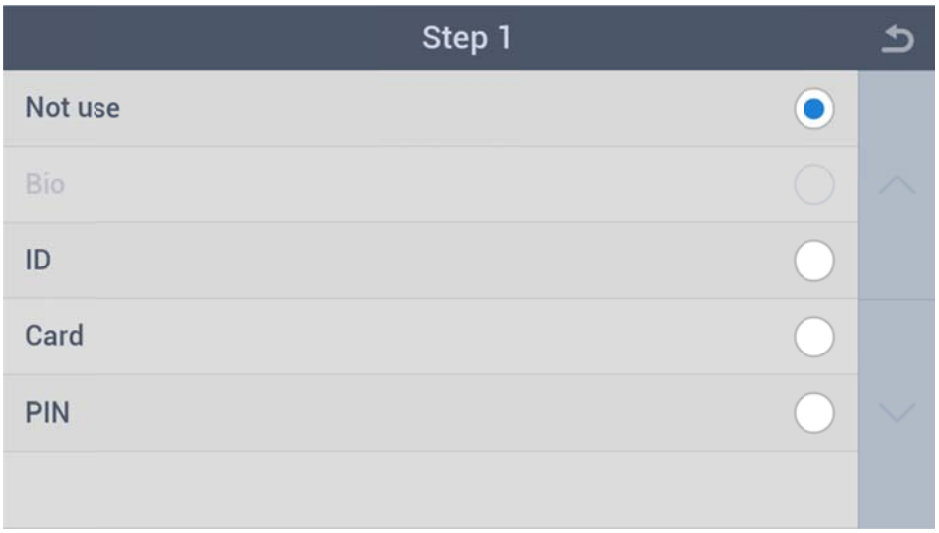
## 4.1 Auth.




**Start mode** Select a basic (first) recognition method

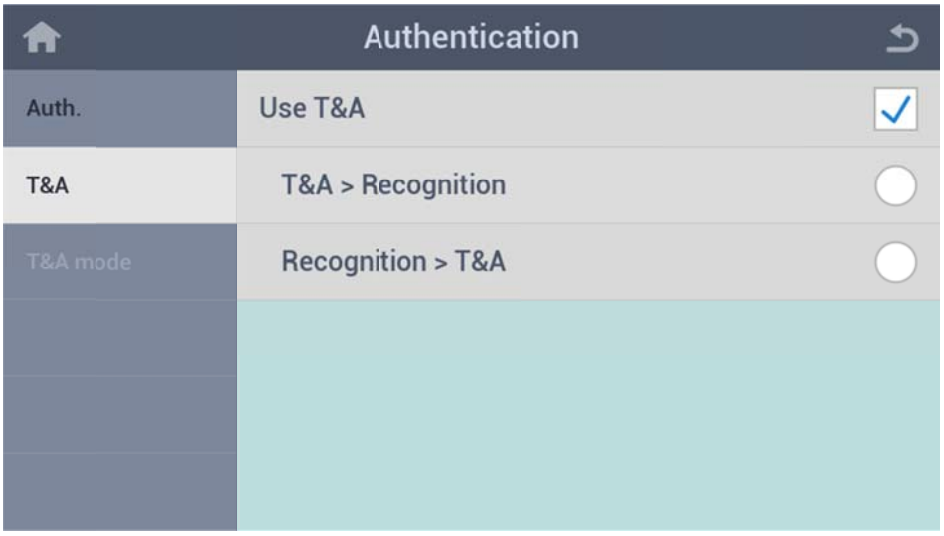
**Combination mode** Select a combination (additional) recognition method if necessary

### 4.1.1 Auth. → 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 (note: in construction)

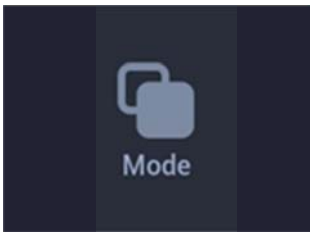
**T&A >Recognition** Select T&A mode (Attendance etc.) first, then recognition

**Recognition > T&A** After recognition, then input T&A mode (Attendance etc.)

## 4.3 T&A Mode

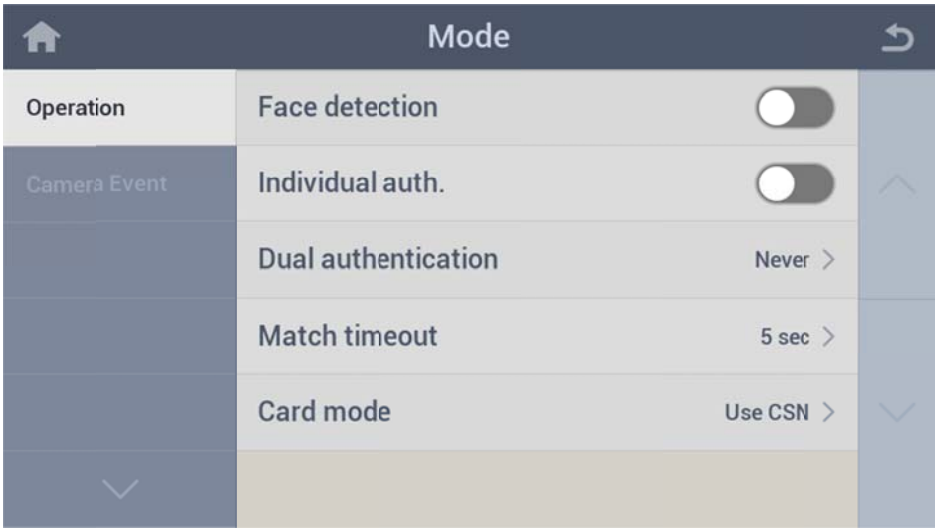
(Note: In construction)

# 5 Mode




Configure settings for recognition operation.

## 5.1 Operation




**Face detection** Select enable/disable for face image saving at recognition (note: to be eliminated)

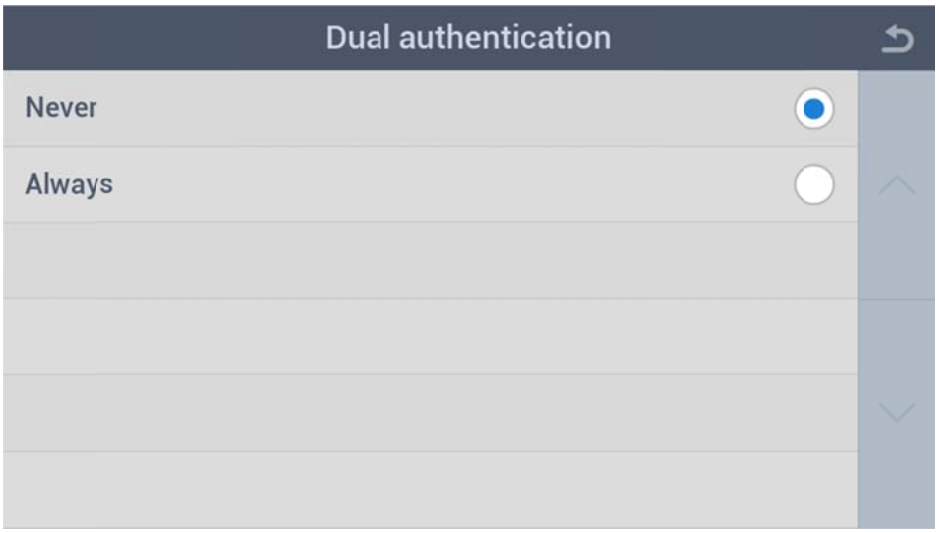
**Individual auth.** Select enable/disable for permission of individual authentication

**Dual authentication** Select a dual authentication (simultaneous 2 persons) method (note: in construction)

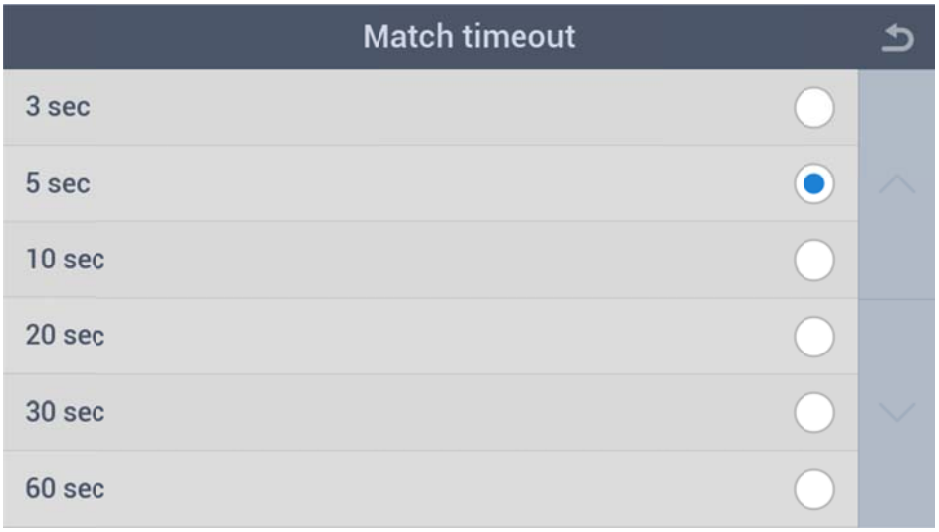
**Match timeout** Set a recognition trying timeout

**Card mode** Select use or not for CSN in RFID card (note: in construction)

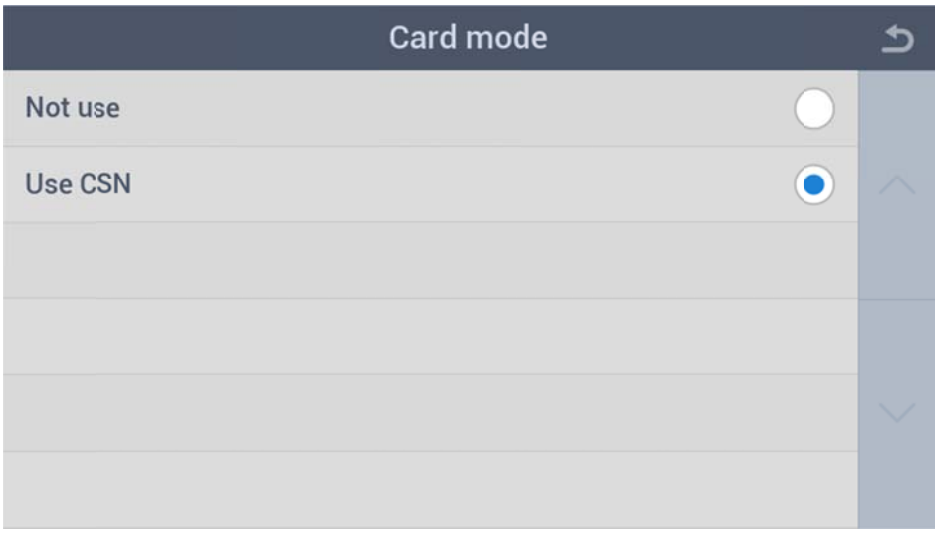
### 5.1.1 Operation → Dual Authentication



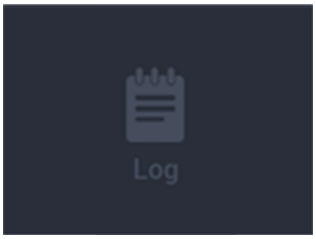

### 5.1.2 Operation → Match Timeout



### 5.1.3 Operation → Card Mode



# 6 Log

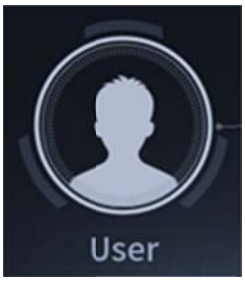



View information of saved log and log search viewer.

## 6.1 Log Info


(Note: In construction)

# User

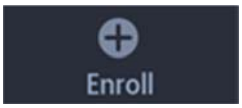



Tap the **User** icon in Home screen.

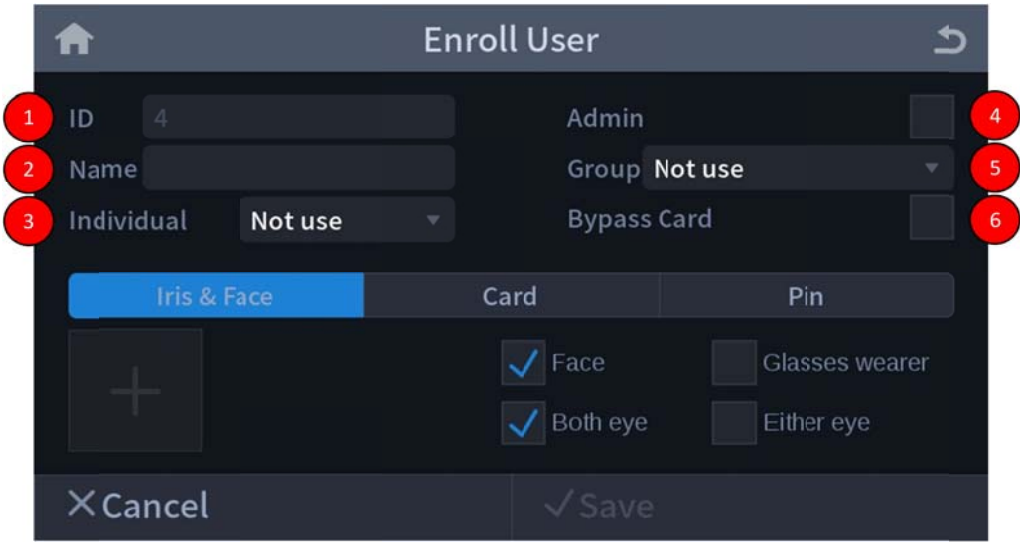

**Displays the registered user lists in All and Group 1, 2, 3, 4**

| | |
|---|---|
| **Enroll button** | Switch to enroll process |
| **Search button** | Switch to search process |
| **Capacity Info button** | Show 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

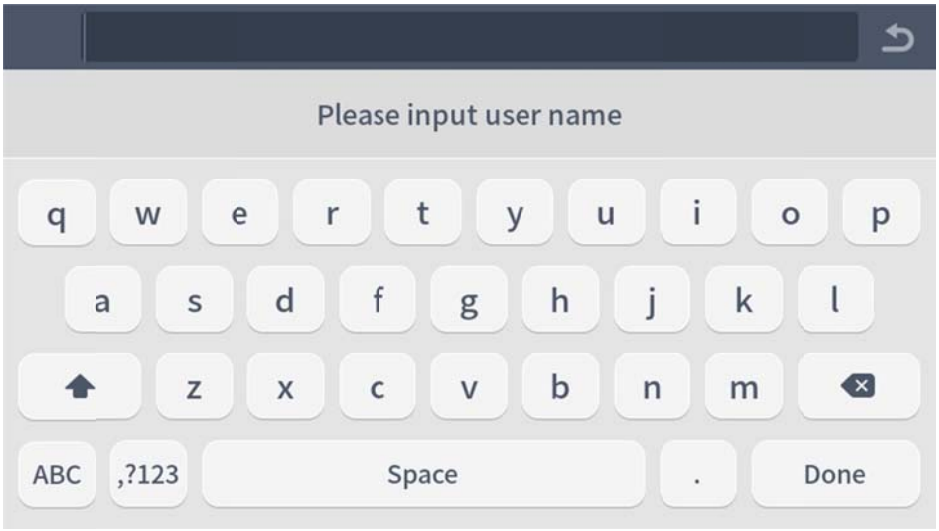
③ Individual: Set user individual authentication mode if necessary

④ Admin: Can make a user administrator or not

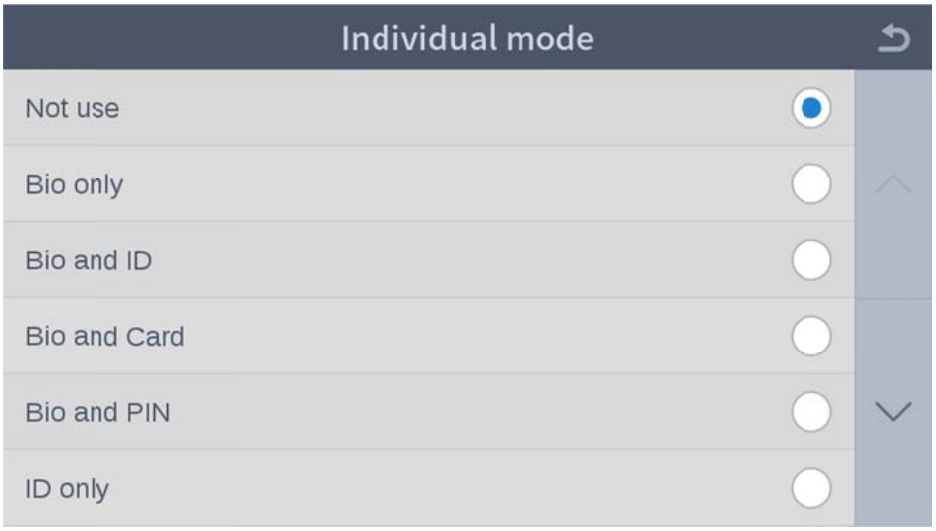
⑤ Group: Can make a user belong to a group

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

### 1.1 Name

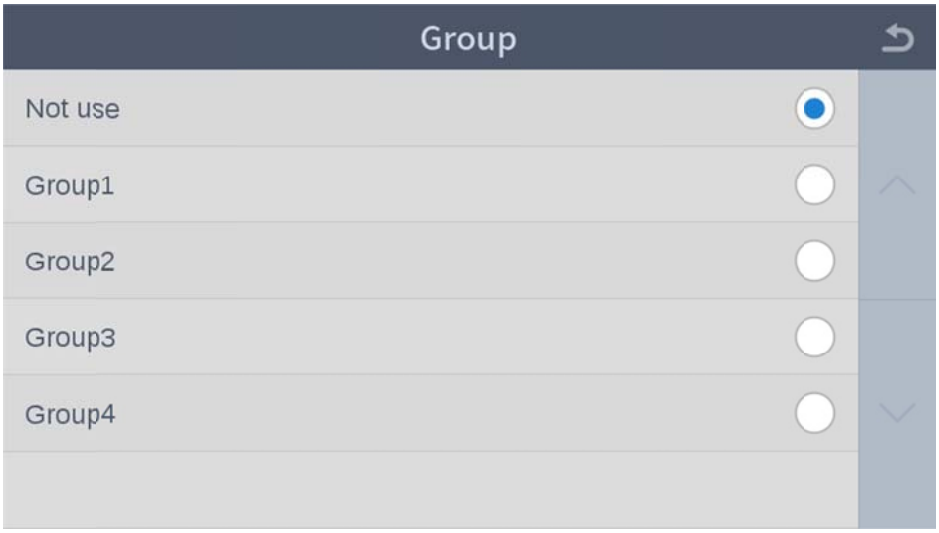



### 1.2 Individual

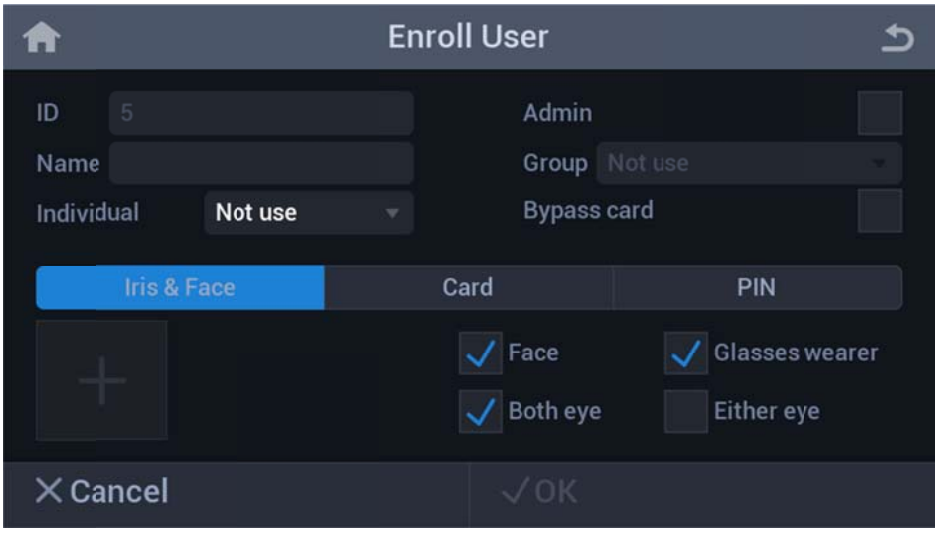



Select an individual authentication mode.

## 1.3 Group



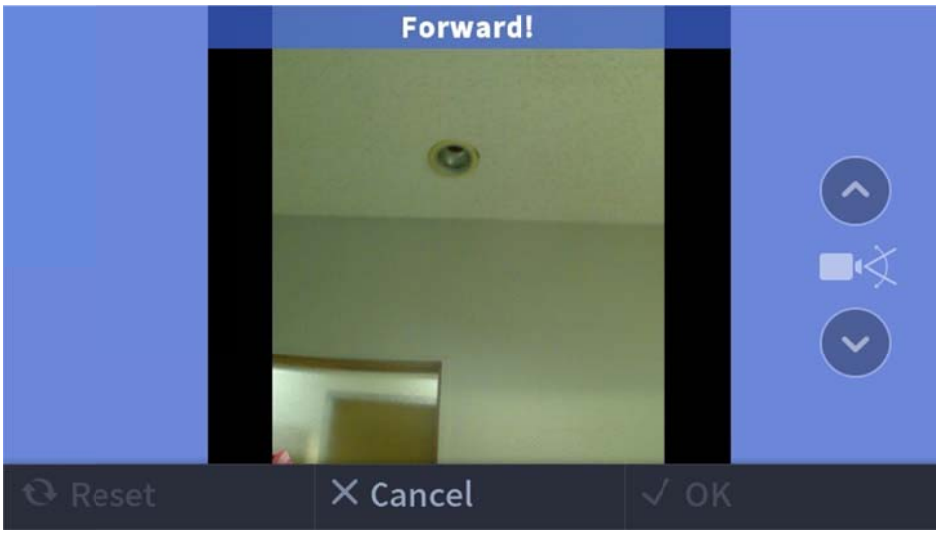

## 1.4 Iris & Face Process




| | |
|---|---|
| **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 for face taking off glasses additionally if necessary |

| | |
|---|---|
| **Both eye** | Select box for “both eye” Iris mode |
| **Either eye** | Select box for “either eye” Iris mode |
| **Start(+) button** | Switch to enroll process |

### 1.4.1 Iris & Face Process → Face Capture

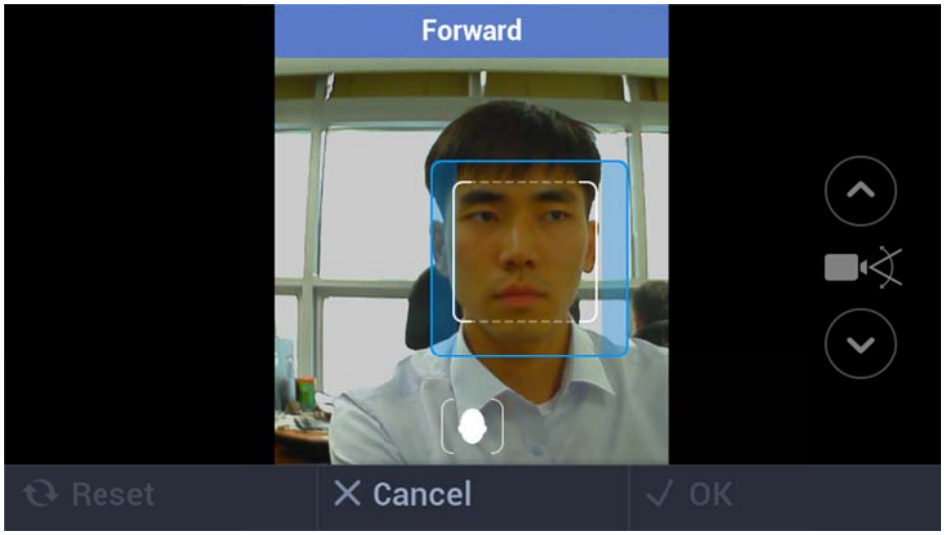



**※ Note: Only operational if “Combined Face and Iris” mode is active**

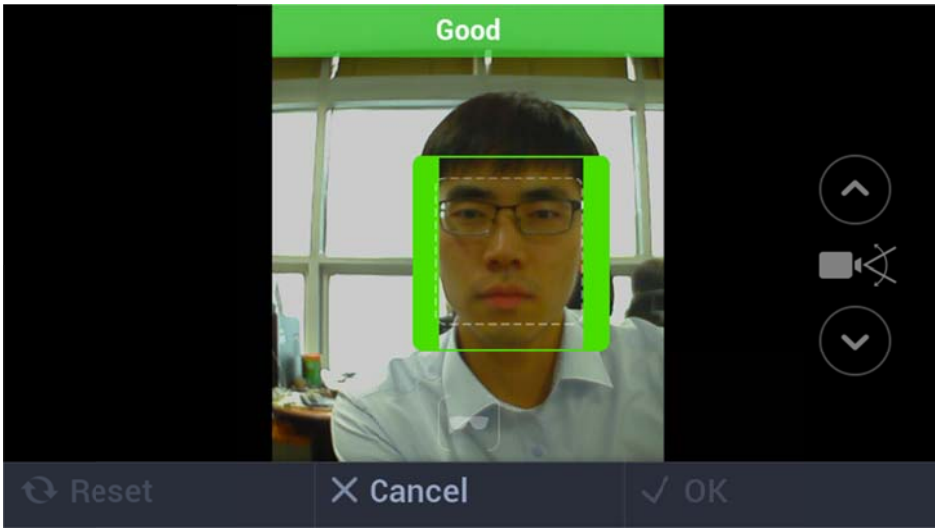
| | |
|---|---|
| **Color Overlay** | BLUE means too far<br>GREEN means OK<br>RED means too close. |
| **Up/Down Arrow** | Can tilt camera manually if necessary (note: to be eliminated) |

**Switch to Iris Capture stage after good face image acquisition**

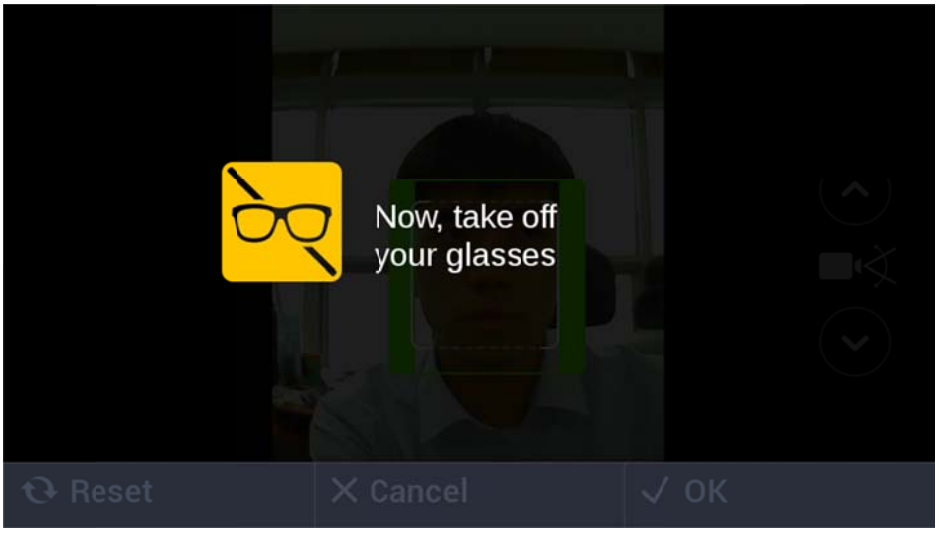
### 1.4.1.1 Iris & Face Process → Face Capture → Tracking Guide Box UI



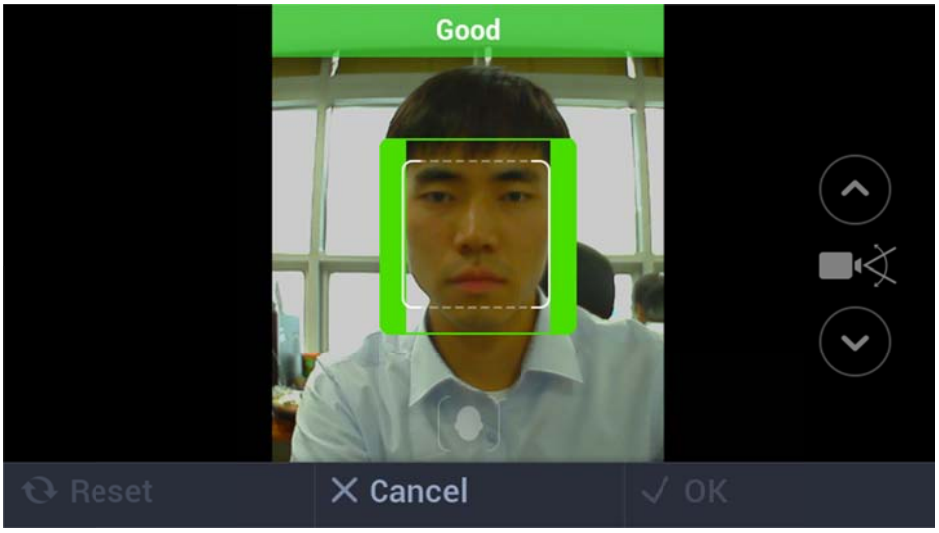

Positioning box appears in order to guide subject.




Capture normal face images.

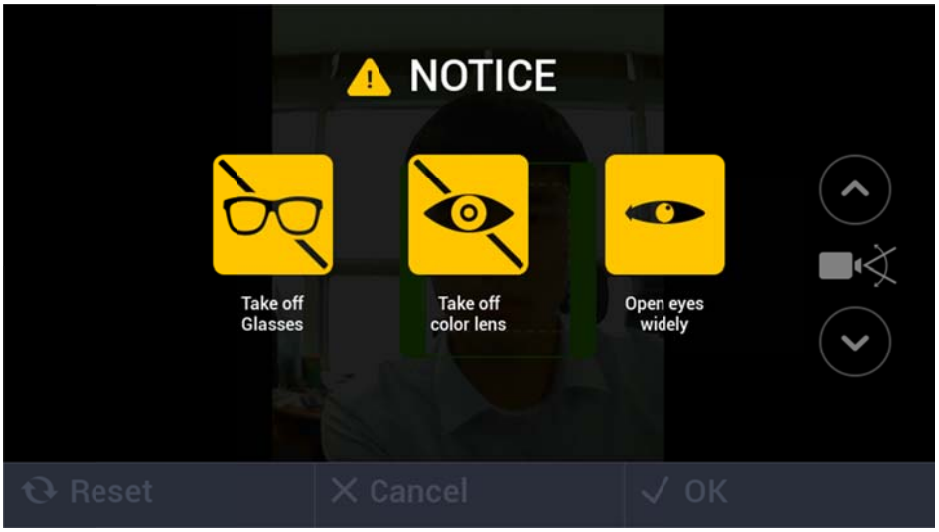



In case of selection of Glasses wearer check box, will be active for about 3 to 5 seconds.



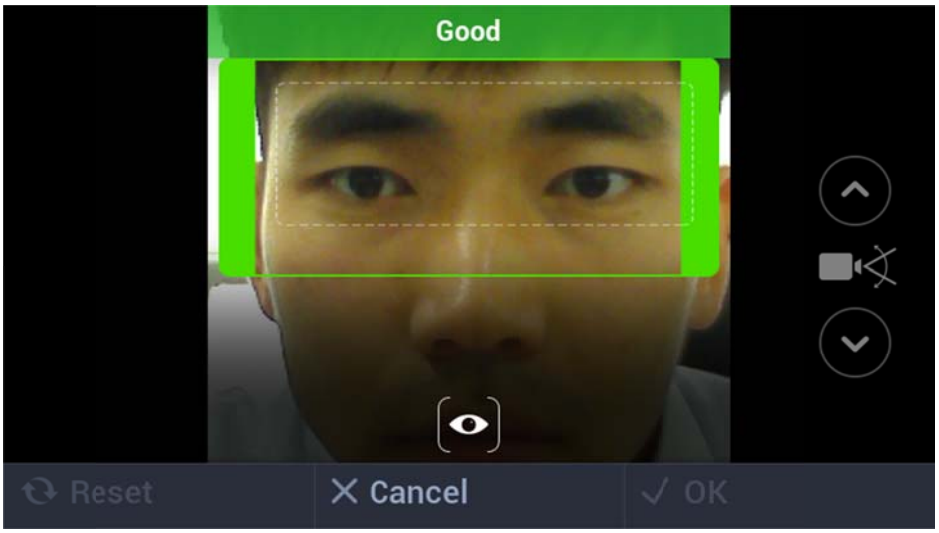

Capture additional face images taken off glasses.

### 1.4.2 Iris & Face Process → Iris Capture



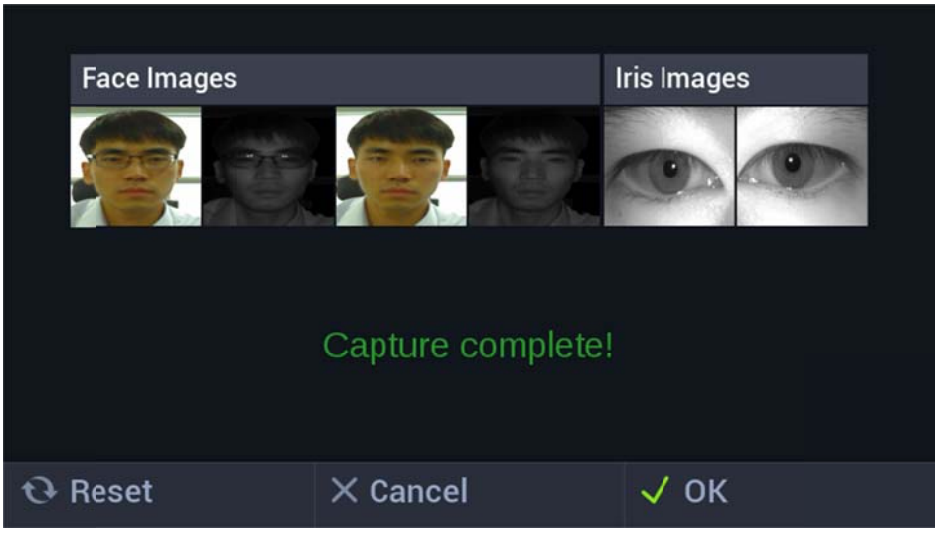

In case of Tracking Guide Box UI mode, display will be active for about 3 to 5 seconds.

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



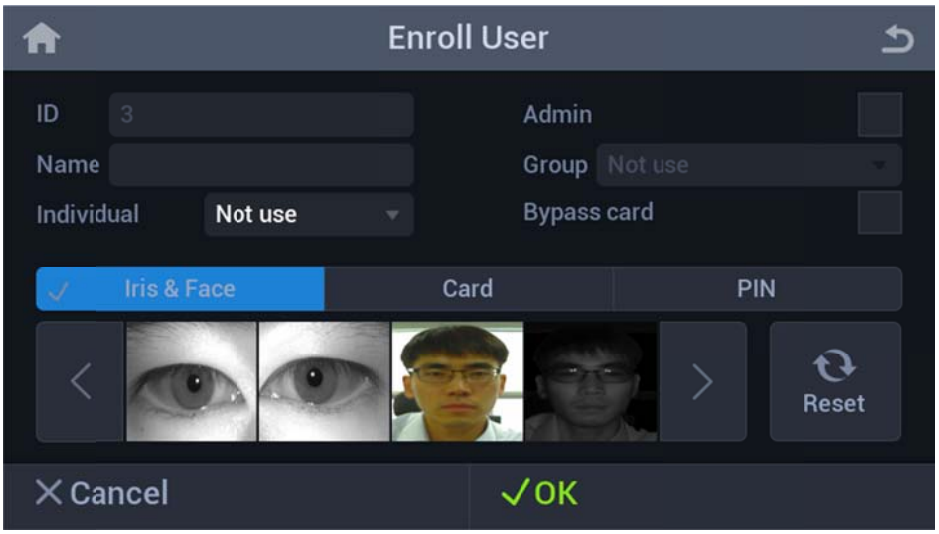

Capture iris images.

### 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 |

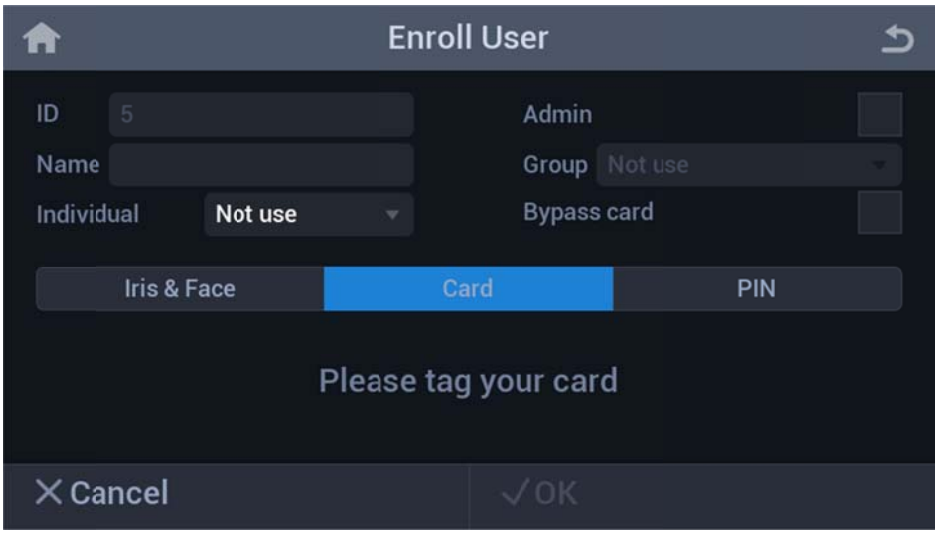
### 1.4.4 Iris & Face Process → Complete Enrollment




| | |
|---|---|
| **Cancel** | Return to User Main screen |

**OK** Save user data to complete biometrics Enrollment, then return to User Main screen

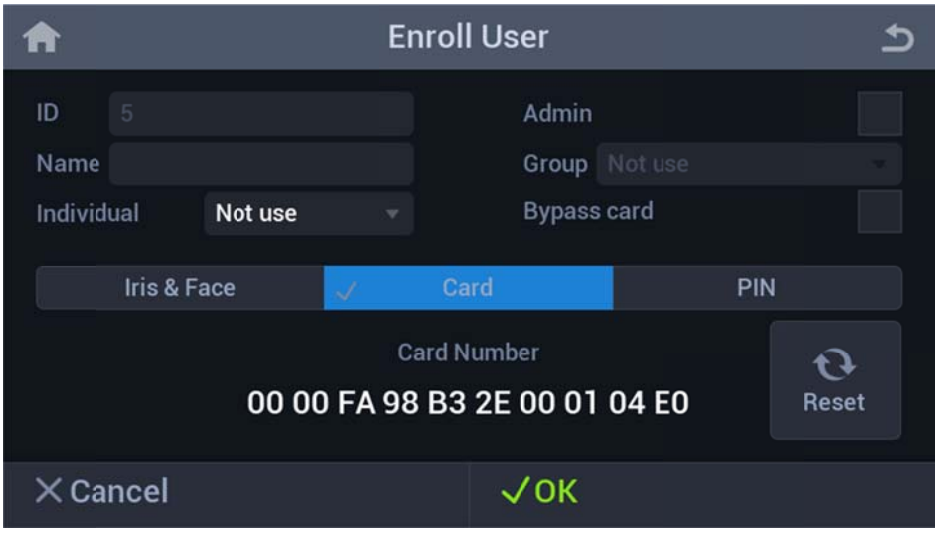
### 1.5 Card




**Card tab** Selection changes tab to blue color

If "Please tag your card" message appears, touch front-bottom part of device with user card.

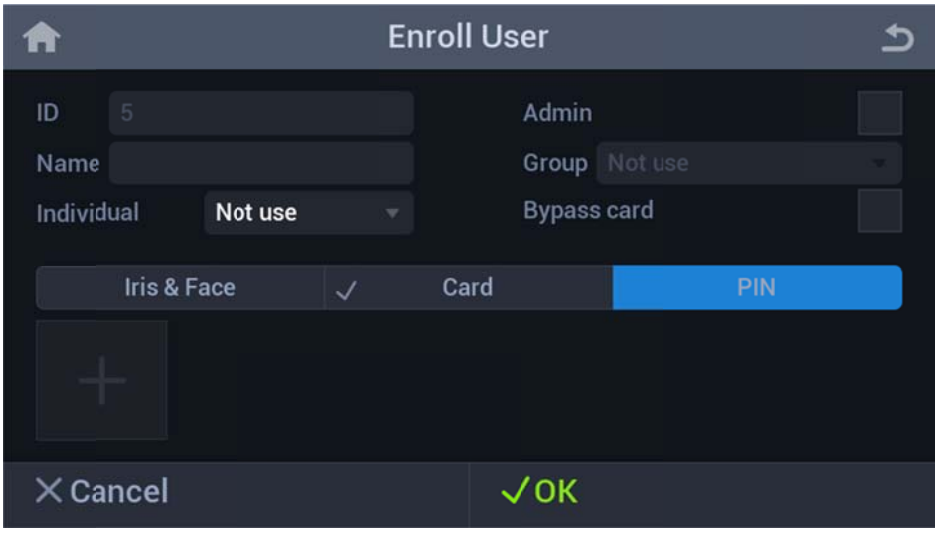
#### 1.5.1 Card → Save Data



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 |

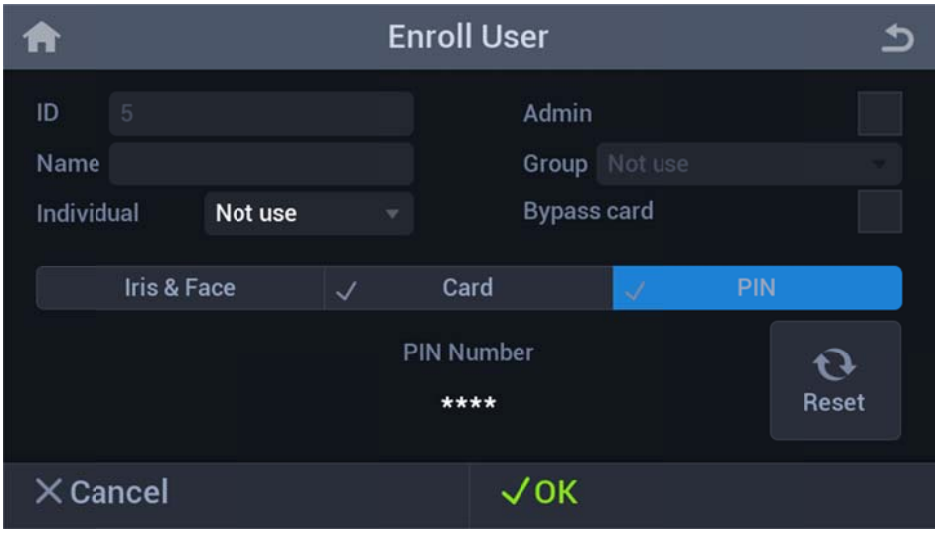
### 1.6 Pin




| | |
|---|---|
| **PIN tab** | Selection changes tab to blue color |
| **Start (+) button** | Switch to input screen |

### 1.6.1 Pin → Input

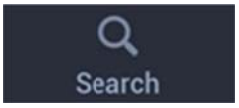

### 1.6.2 Pin → Save Data




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

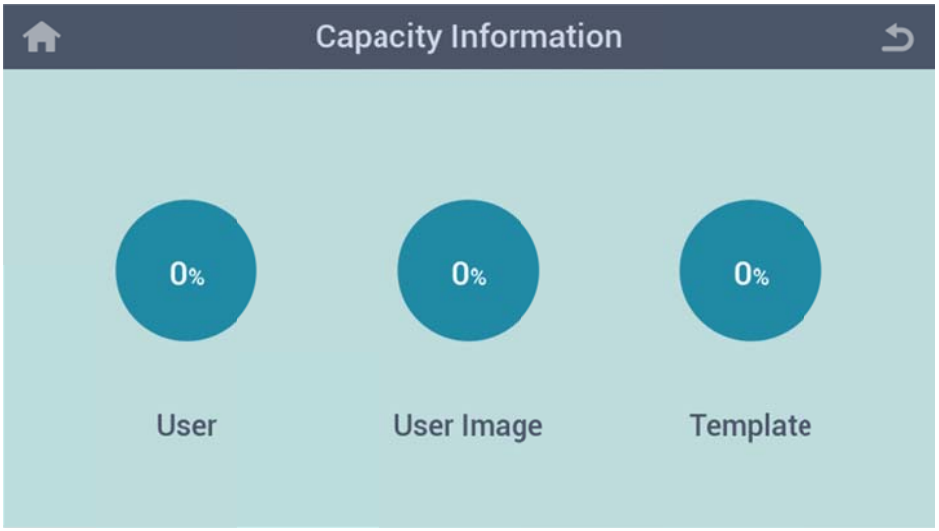



Tap the **Search** icon to browse list of enrolled users.


(Note: In construction)

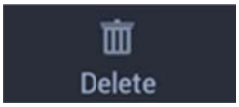
# 3 Capacity Info


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

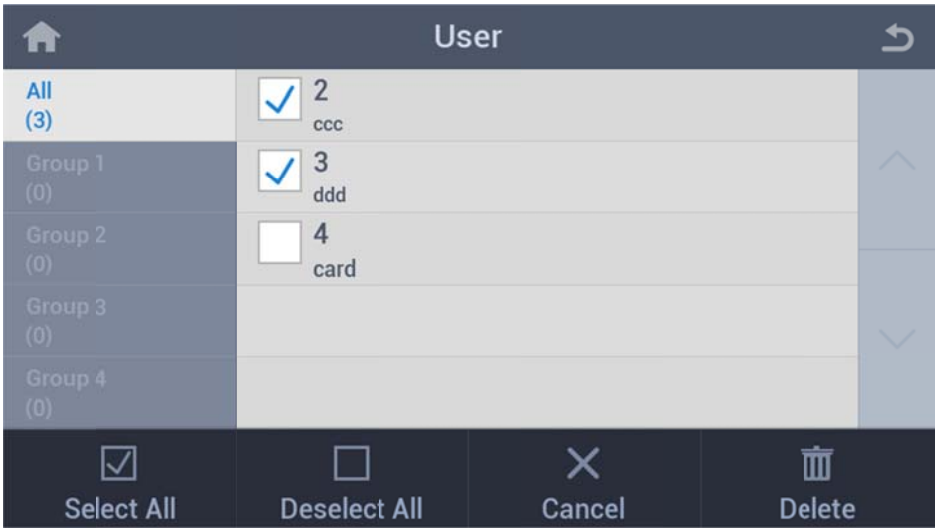



(Note: In construction)

# 4 Delete




Delete information of enrolled user.



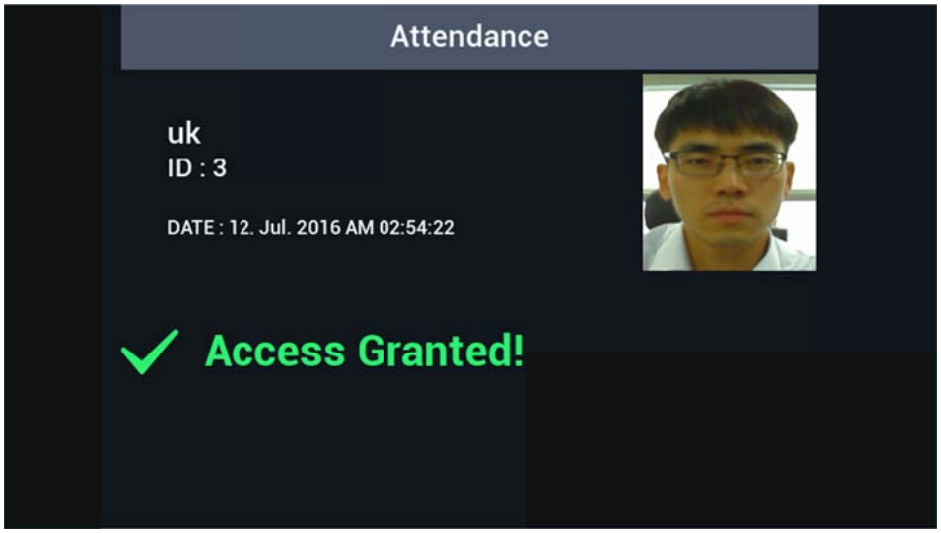

| | |
|---|---|
| **Select All** | Select all users |
| **Deselect All** | Deselect all users |
| **Cancel** | Return to User Main screen |
| **Delete** | Delete selected user(s) |

# Recognition Process

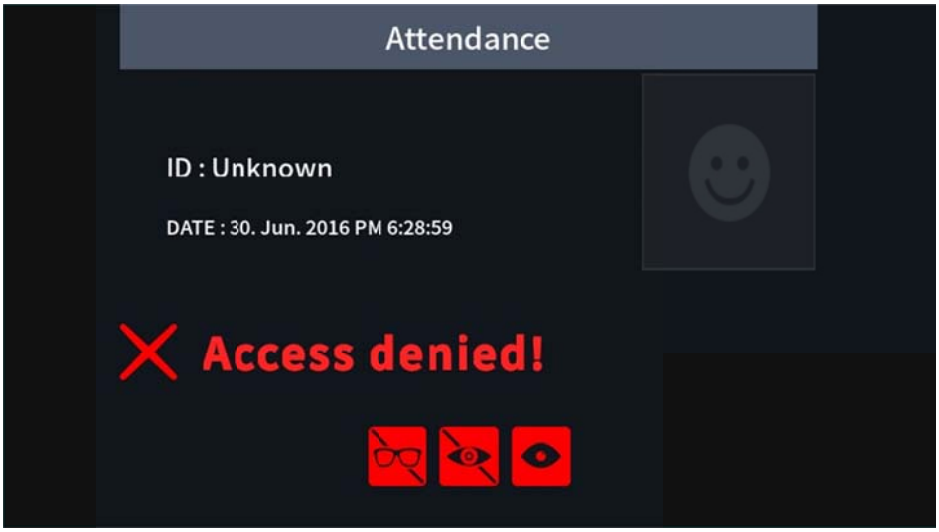
## 1.1 Recognition Process

Recognition process is identical to the enrollment process.

## 1.2 Recognition / Authentication Success




## 1.3 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.

FCC REQUIREMENTS PART 15

Caution: Any changes or modifications in construction of this device which are not expressly approved by the responsible for compliance could void the user's authority to operate the equipment.

NOTE: This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions;

1. This device may not cause harmful interface, and

2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to this equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be

determined by turning the radio or television off and on, the user is encouraged to try to correct interference by one or more of the following measures.

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on another circuit.
4. Consult the dealer or an experienced radio/TV technician for help.