



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.

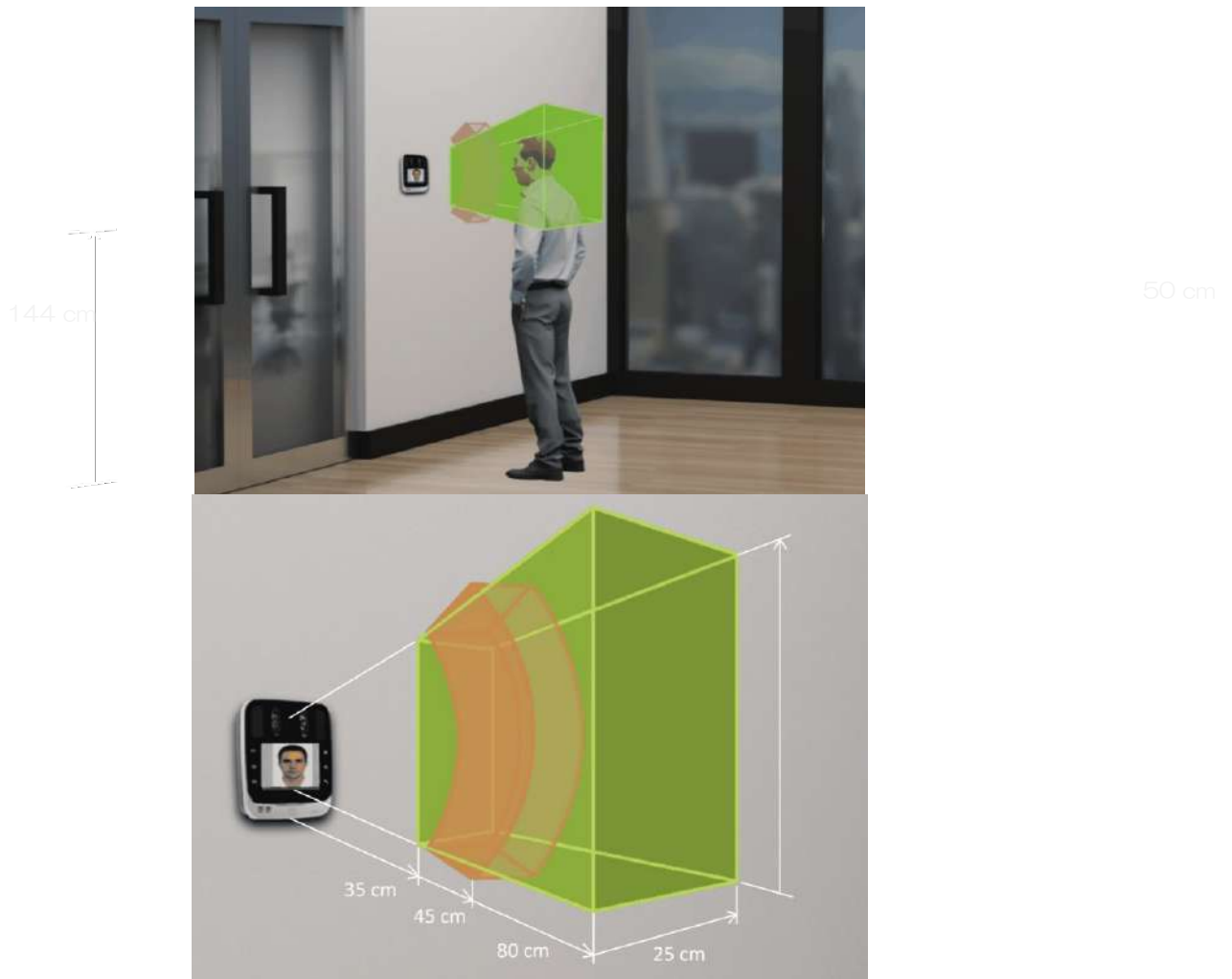
Other options include WiFi and extended on-board data base (to 40,000 users), and a smart card reader (in the AC version).

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.

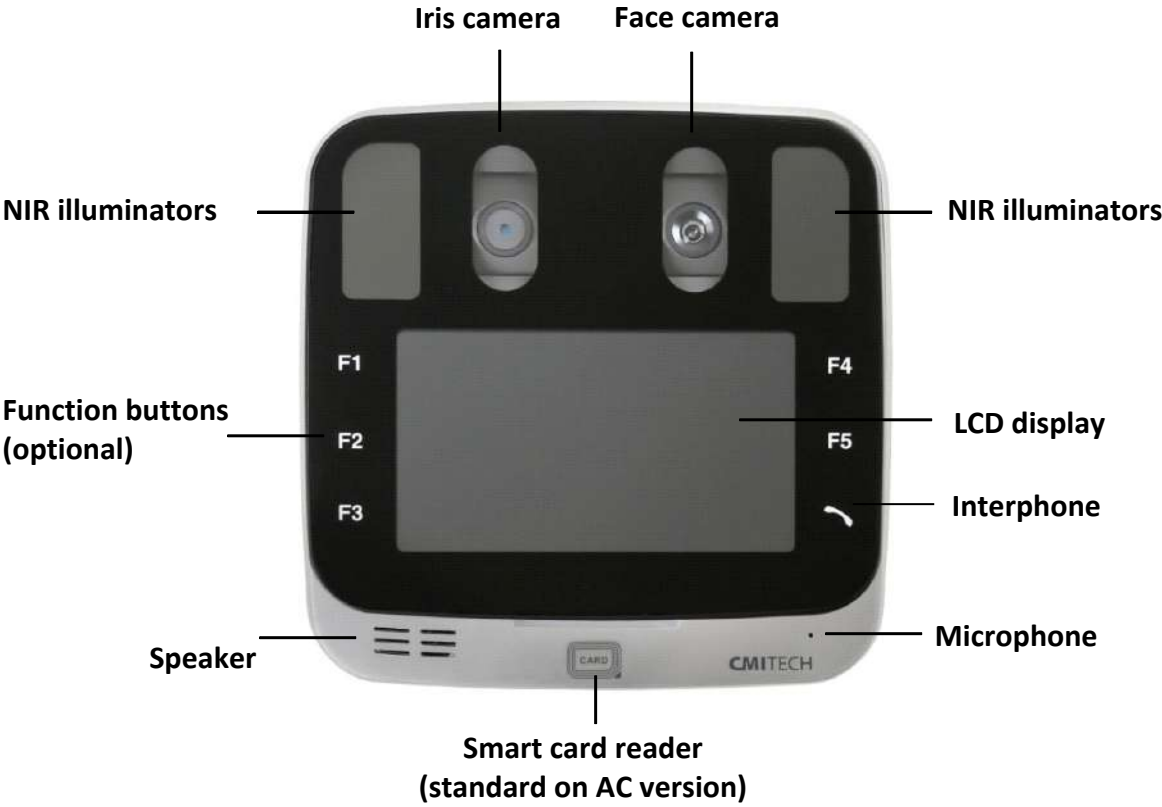
High ambient light and / or direct light into the TW-IriGoPlus should be avoided. Sunlight, halogen lamps or other strong illumination may reduce the performance of the TW-IriGoPlus and may result in increased failure-to-capture rates or failed authentication events.

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,

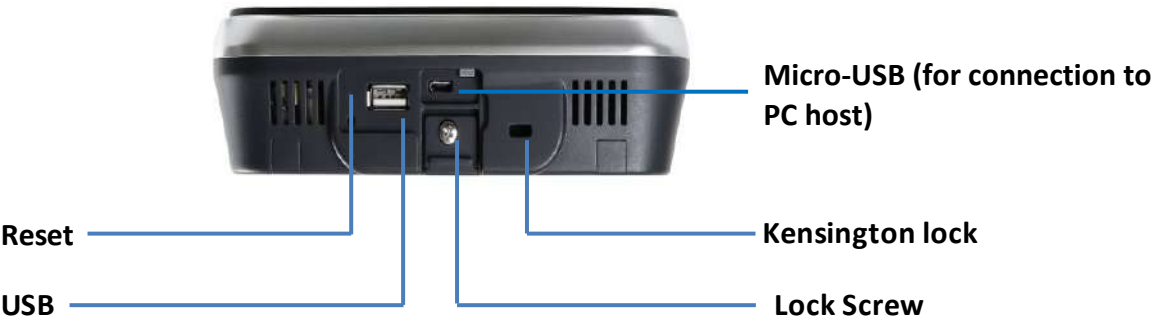
Note: Installation in extreme environments without proper protection may cause permanent damage and void warranty.

System, Front

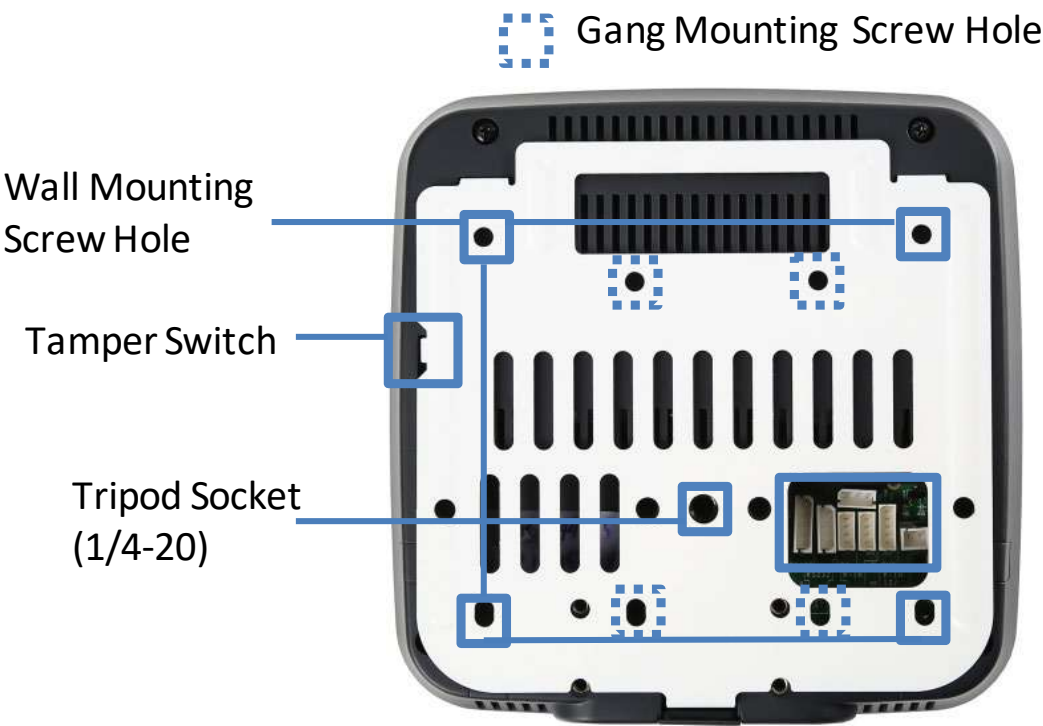
System, Front



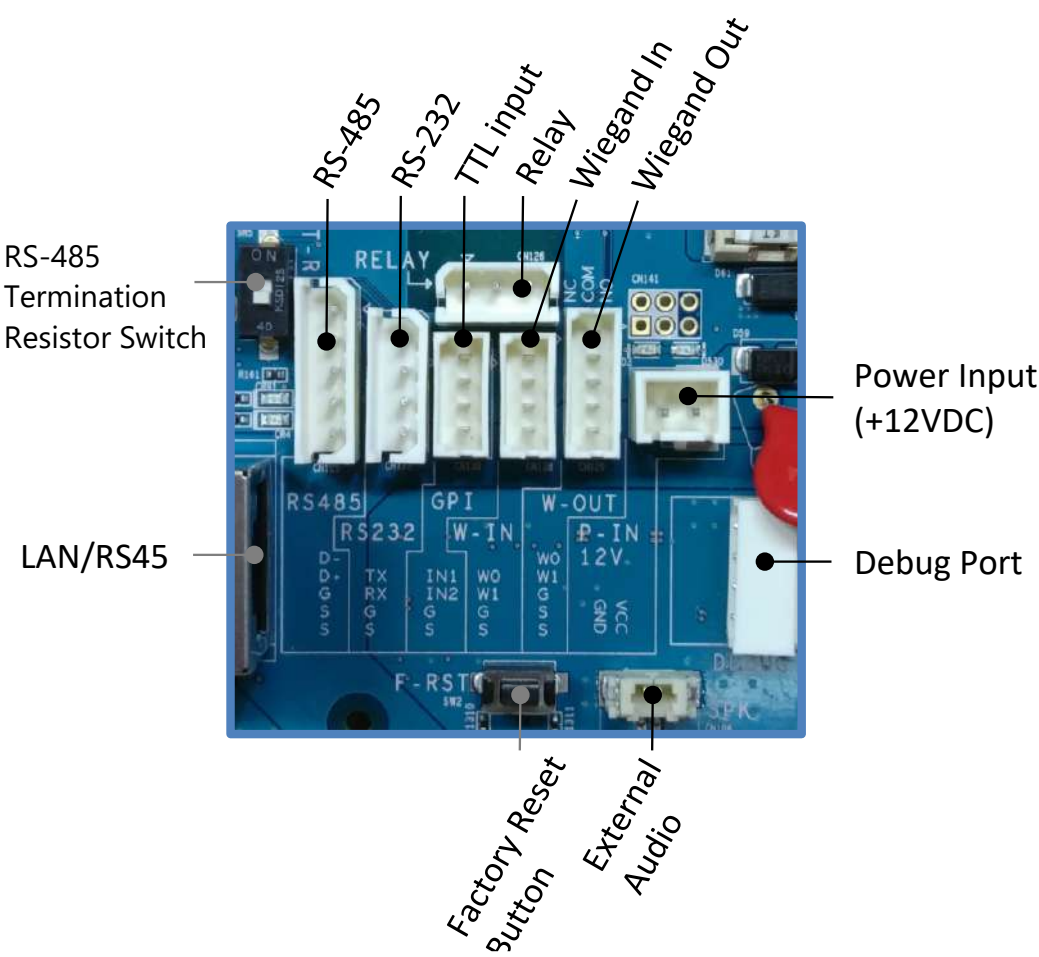
System, Bottom



System, Rear



System Rear Connections Block



User Interface for Iris Image Capture

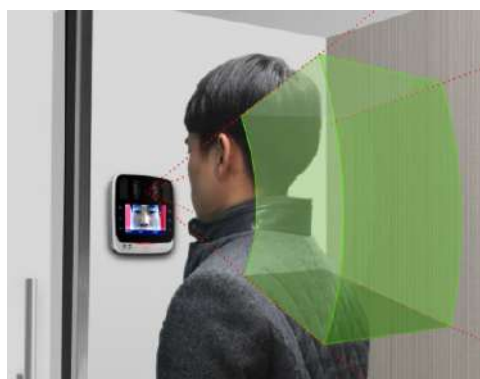
- 1) Position yourself facing straight at the LCD display. When the device detects your movement within 1.0meter range, it initiates the image capture sequence. A rectangular-shaped user guide box will appear on the screen. If it is BLUE, it means you are too far from the device. Move forward.



- 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.

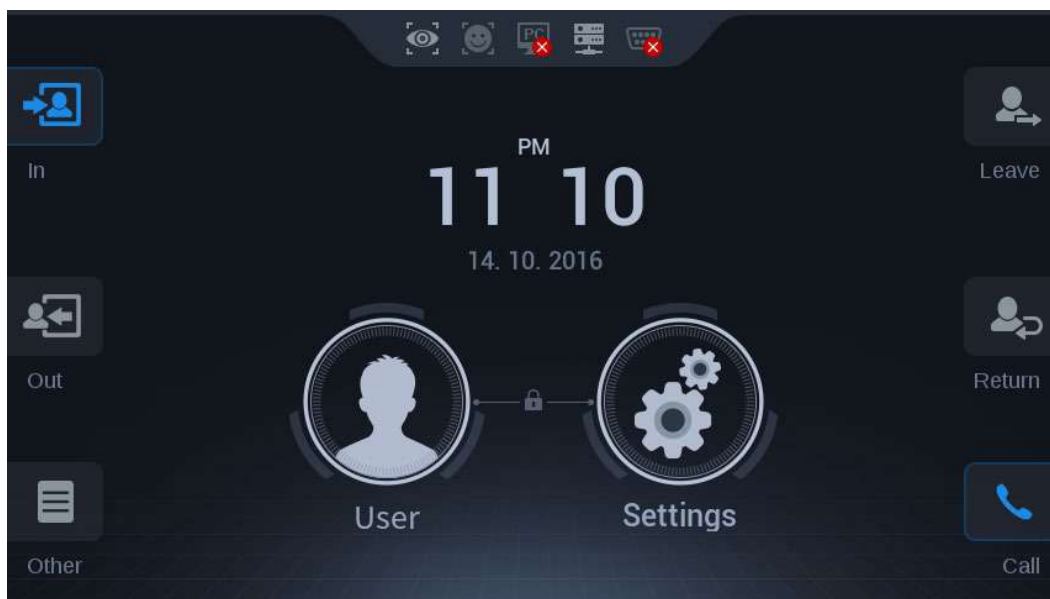


EF-45 captures the images of subject's irises and face automatically.

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 initiated 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.



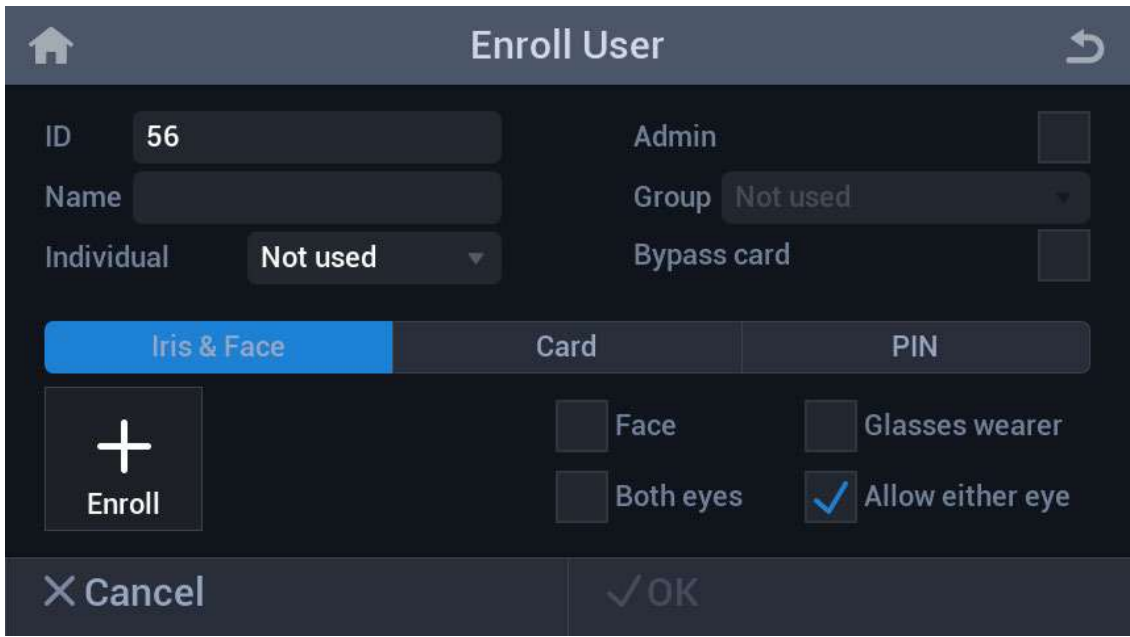
To switch to enrollment mode, press large User icon in center of main Launcher page. If the system is in image capture mode, press Home icon (🏠) on top left of active user interface display, which will stop Recognition mode and return system to Launcher page.

The following main User screen appears:



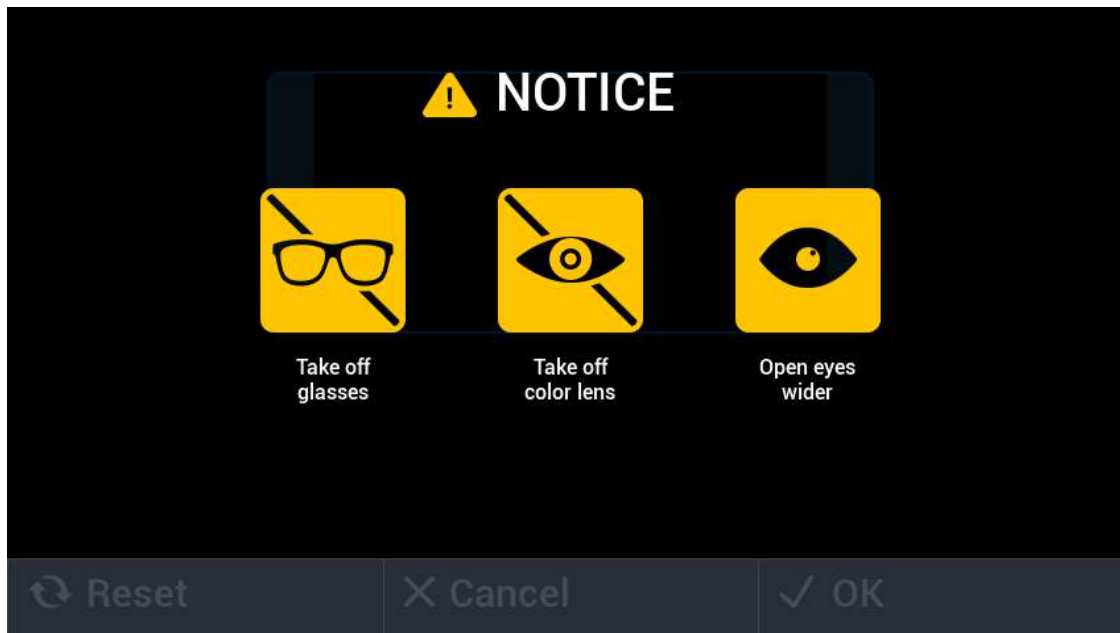
This user screen also allows simple database management. By tapping the **Delete** icon in the bottom right, one can easily delete information of enrolled users.

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

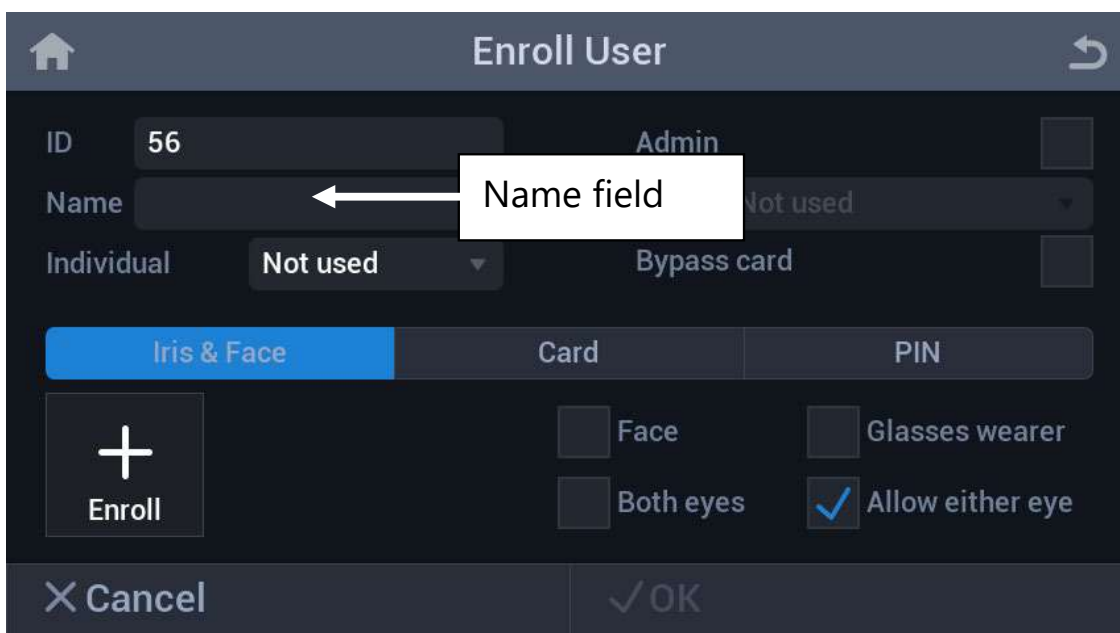


Press the plus (+) button in the bottom left to capture image of the new user.

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.

A dark-themed "Enroll User" screen. At the top is a home icon and a refresh icon. The screen contains several input fields: "ID" with the value "56", "Name" (highlighted with a white box and an arrow pointing to it with the label "Name field"), "Individual" with a dropdown menu showing "Not used", and "Bypass card". Below these are three tabs: "Iris & Face" (selected), "Card", and "PIN". Under the "Iris & Face" tab, there are checkboxes for "Face", "Both eyes", "Glasses wearer", and "Allow either eye" (which is checked). At the bottom are "Cancel" and "OK" buttons.

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

Summary of Technical Specifications

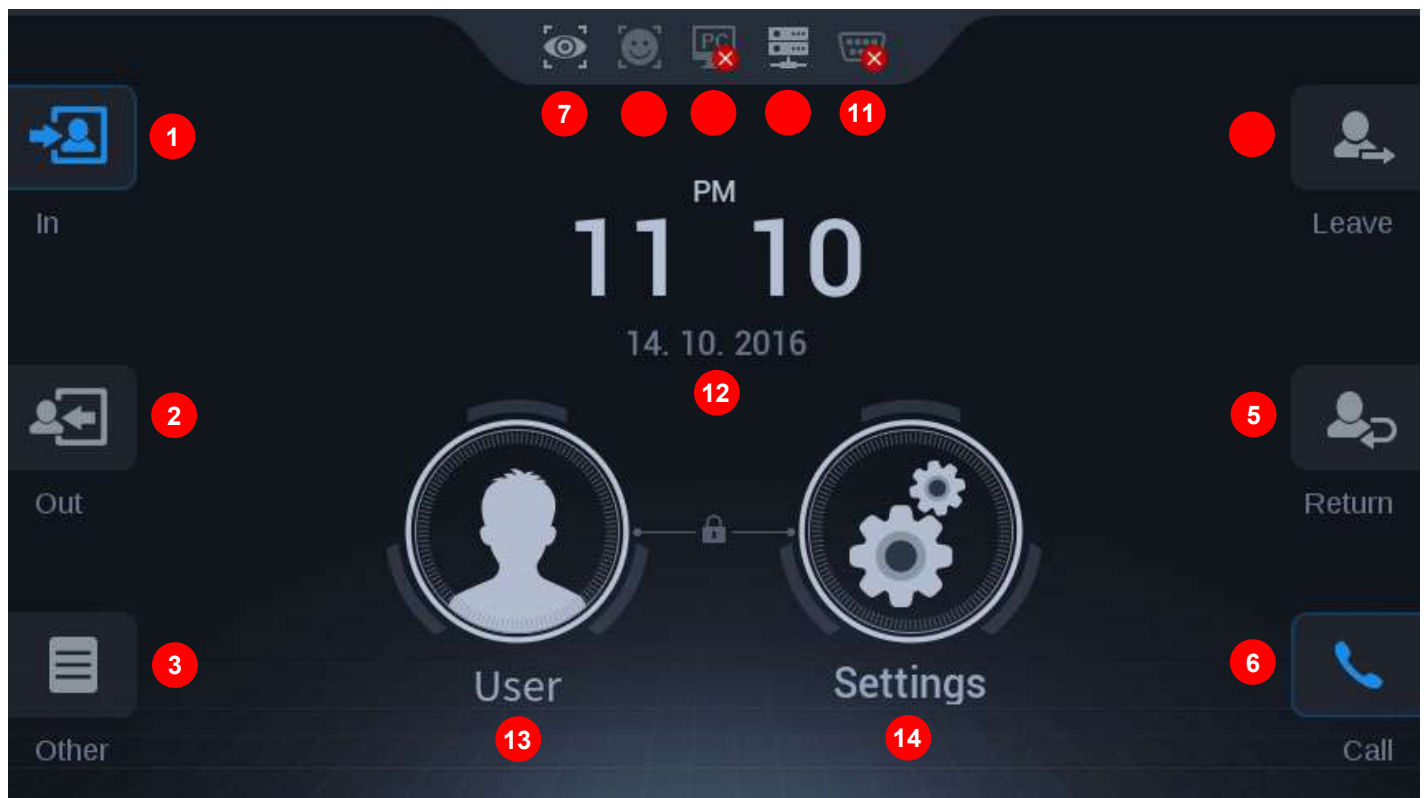
Embedded CPU	Cortex A9 Quad Core ARM
Iris on-board algorithm for encoding and matching	Standard in AC version.
Face on-board algorithm for face encoding and matching	Standard in AC version.
Web services configuration application (with embedded web server)	RESTful type SDK with C# and C++ versions for 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: <div> Blue: too far away Green: OK Red: too close </div> 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) | ⑧ Notice Icon of Face mode is operating |
| ② Leave Work (F2 Key) | ⑨ Notice Icon of manager is connected |
| ③ Supplement T&A (F3 Key) | ⑩ Notice Icon of IP network is connected |
| ④ Go Out (F4 Key) | ⑪ Notice Icon of Serial Communication is connected |
| ⑤ Return Button (same as F5 Key) | ⑫ Clock display |
| ⑥ Interphone Call Button (same as F6 Key) | ⑬ User Button for registration, search, modification and deletion |
| ⑦ Notice Icon of Iris mode is operating | ⑭ Settings Button for system configuration |

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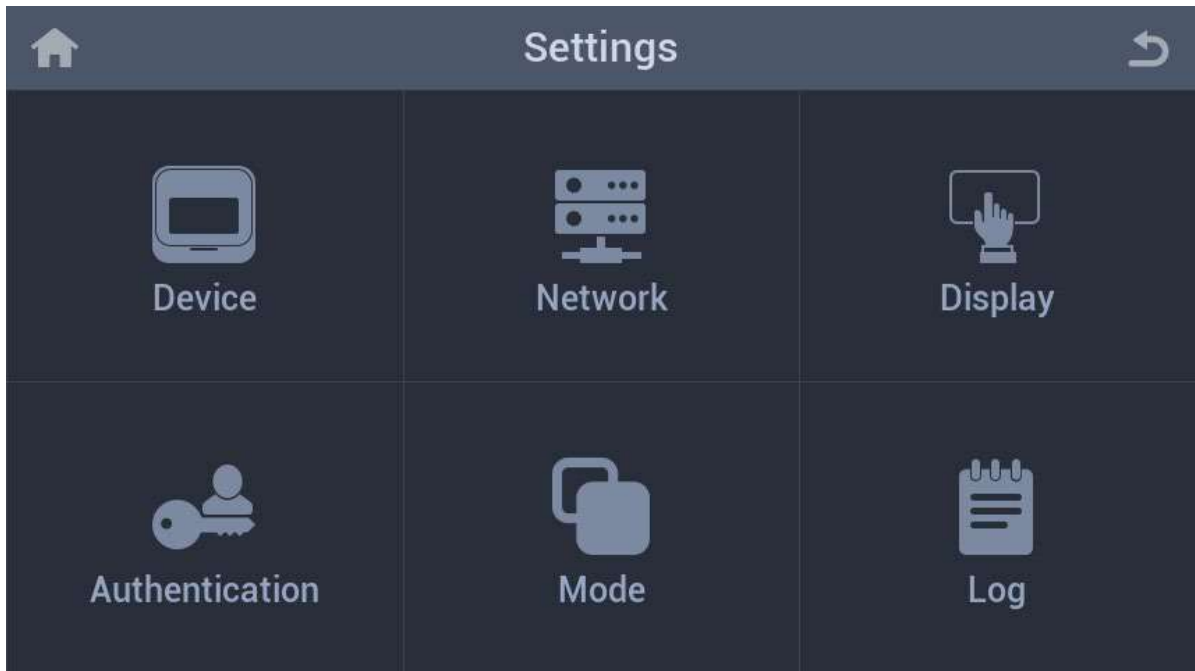
3 Capacity Info

4 Delete

Settings



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



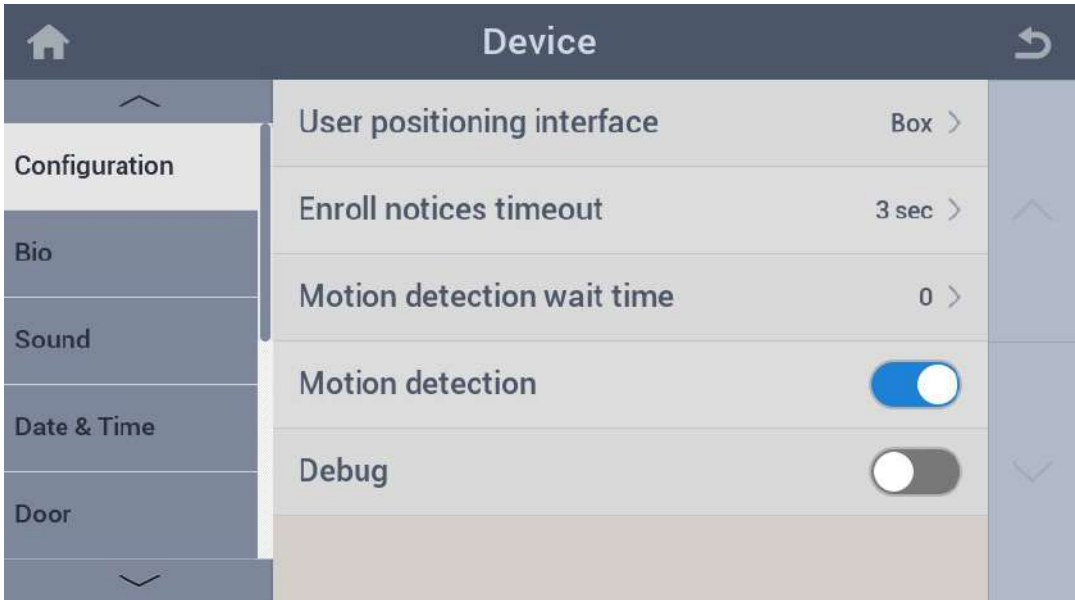
Device	Configuration for device operating
Network	Configuration for IP & serial communication
Display	Configuration for screen display
Authentication	Configuration for authentication method and T&A
Mode	Configuration for recognition operation
Log	Information of saved log and log search viewer

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

User positioning interface

Color overlay

Box

Box + Large notices

- 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

Enroll notices timeout

0 sec

1 sec

2 sec

3 sec

4 sec

5 sec

Default timeout is set to 3 sec.

1.1.3 Configuration → Motion Wait Time

0

Please input motion detection wait time

MIN : 0
MAX : 10

1

2

3

4

5

6

7

8

9

0

Clear All

.

⬅️✕

Done

1.2 Bio (for Biometrics Selection)

⌂

Device

↶

Configuration

Bio

Sound

Date & Time

Door

Security level

Iris

Face

Cover glass IR transmission(%)

Iris only >

100 >

- 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

0

↶

Please input motion detection wait time

MIN : 0
MAX : 10

1

2

3

4

5

6

7

8

9

0

Clear All

.

⌫

Done

1.2 Bio (for Biometrics Selection)

⌂

Device

↶

Configuration

Bio

Sound

Date & Time

Door

Security level

Iris

Face

Cover glass IR transmission(%)

100

Iris only >

>

>

- 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

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

Iris		
Enroll iris usable area (%)	60 >	
Recog false accept rate	10E-8 >	^
Fast recog mode	<input checked="" type="checkbox"/>	
Recognition: allow either eye	<input checked="" type="checkbox"/>	
Enroll: allow either eye	<input checked="" type="checkbox"/>	v
Min distance	35 >	

- 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 (%)

Enroll iris usable area (%)




012345678910

MinMax

Default set to 60%.

1.2.2.2 Bio → Iris → Recog false accept rate

Recog false accept rate



-5-6-7-8-9-10-11-12-13-14

MinMax

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

1.2.2.3 Bio → Iris → Min distance

35

↶

Please input minimum distance(cm)

MIN : 30
MAX : 35

1

2

3

4

5

6

7

8

9

0

Clear All

⬆

⬅✕

Done

Default set at 30 cm.

1.2.3 Bio → Face

🏠

Face

↶

Fake face

⬆

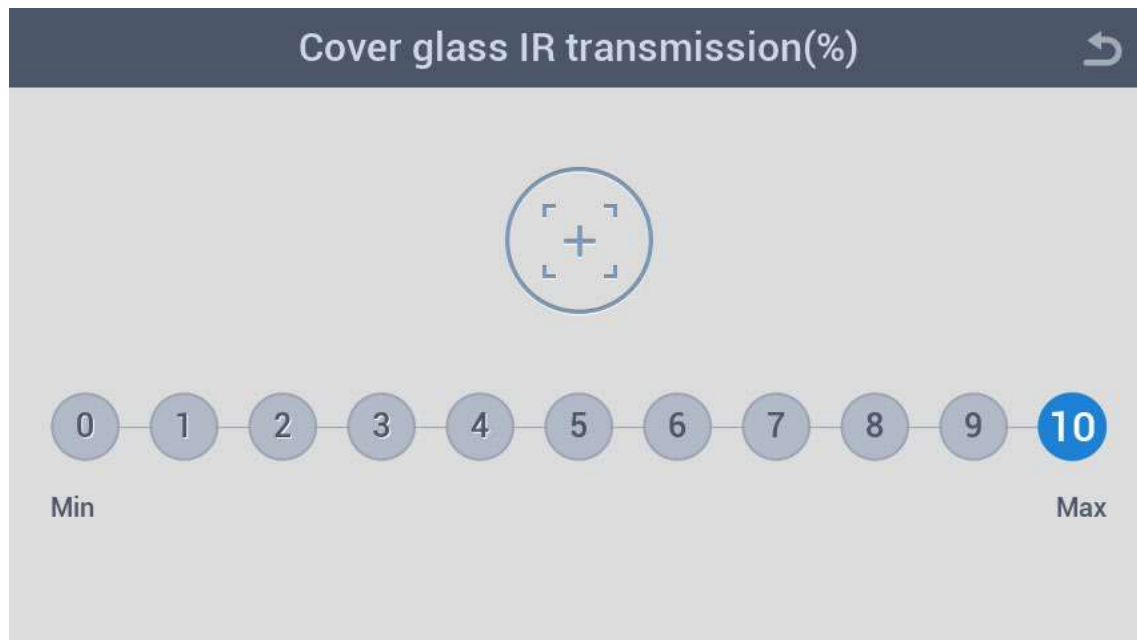
⬇

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 (%)

Cover glass IR transmission(%)



The interface for adjusting cover glass IR transmission. It features a central circular target with a crosshair. Below the target is a horizontal row of 11 circular buttons labeled 0 through 10. The button labeled '10' is highlighted in blue. Below the row of buttons, the word 'Min' is on the left and 'Max' is on the right.

1.3 Sound

Device

Configuration

Bio

Sound

Date & Time

Door

Speaker volume

MIC volume

Speaker volume

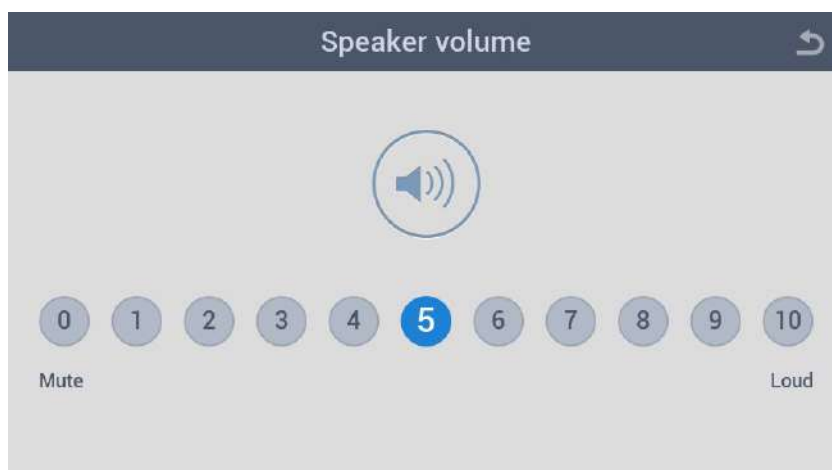
Set speaker volume for instruction sound and interphone voice

MIC volume

Set microphone volume for interphone voice

1.3.1 Sound → Speaker Volume

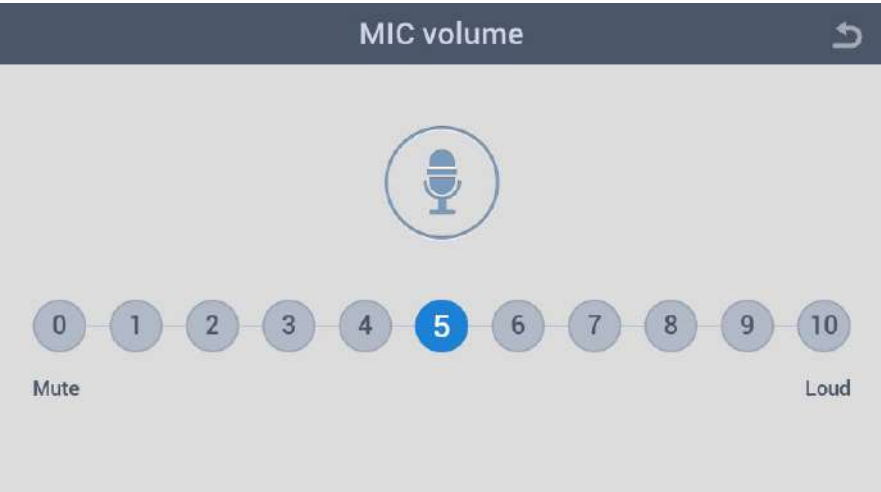
Speaker volume



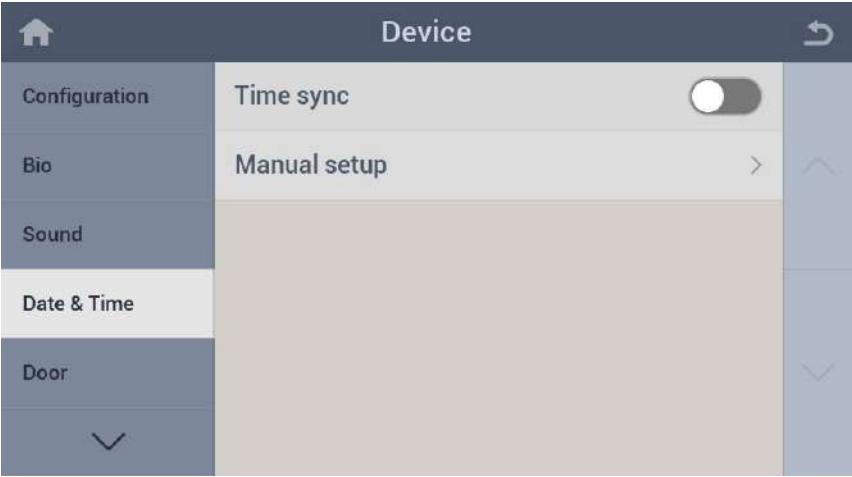
The interface for adjusting speaker volume. It features a central circular target with a speaker icon. Below the target is a horizontal row of 11 circular buttons labeled 0 through 10. The button labeled '5' is highlighted in blue. Below the row of buttons, the word 'Mute' is on the left and 'Loud' is on the right.

1.3.2 Sound → MIC Volume

Identical to settings for speaker volume



1.4 Date & Time

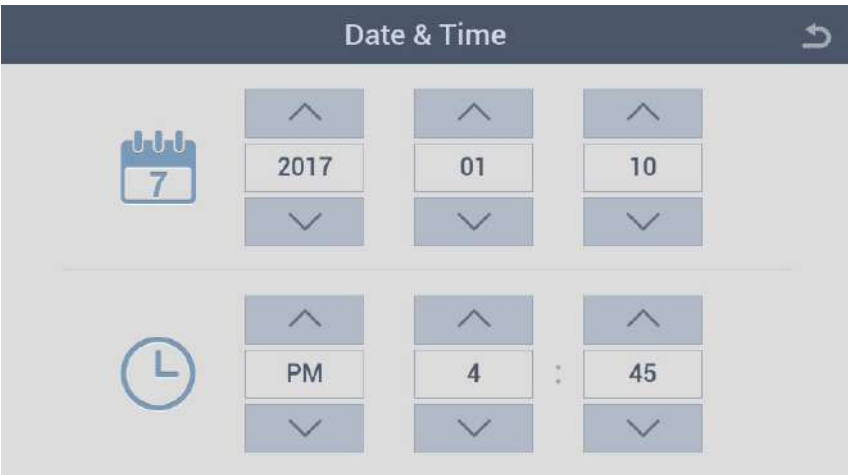


- Time sync**

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

Home

Configuration

Bio

Sound

Date & Time

Door

Device

Relay

Relay ID

Driven by

Duration(sec)

RTE(Exit button)

RTE Type

Not used

All Events

5

Not used

N/O

Up

Down

Home

Configuration

Bio

Sound

Date & Time

Door

Device

Door sensor

Door sensor type

Held open period(sec)

Alarm sensor

Alarm sensor type

Tamper

Not used

N/O

30

Not used

N/O

☐

Up

Down

Home

Configuration

Bio

Sound

Date & Time

Door

Device

Interlock sensor

Interlock sensor type

Prohibition sensor

Prohibition sensor type

Not used

N/O

Not used

N/O

Up

Down

- Relay

Relay ID

Driven by

Duration (sec)
- Select a door open relay

Relay ID when relay is used

Select an event mode for door open relay

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

Relay

Not used

☒

Internal Relay

☐

Smart Relay

☐

Common 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 relay ID

1

2

3

4

5

6

7

8

9

0

Clear All

↑

⌫

Done

Please input the ID when using Smart Relay

1.5.3 Door → Driven by

Driven by

All Events

Authentication

T&A Event

Authentication + T&A Event

Disabled

☒

☐

☐

☐

☐

↑

↓

- 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)

5

↶

Please input duration(sec)

1

2

3

4

5

6

7

8

9

0

Clear All

↑

⌫

Done

Setting the Duration time of door open function

1.5.5 Door → RTE (Exit button)

RTE(Exit button)↶

Not used	<input checked="" type="radio"/>
GPI 1	<input type="radio"/>
GPI 2	<input type="radio"/>

⌮

- 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

RTE Type		↶
N/O	<input checked="" type="radio"/>	↑
N/C	<input type="radio"/>	
		↓

Select type of door sensor

- N/O**
- Normally Open
- N/C**
- Normally Close

1.5.7 Door → Door Sensor

Door sensor		↶
Not used	<input checked="" type="radio"/>	↑
GPI 1	<input type="radio"/>	
GPI 2	<input type="radio"/>	↓

- 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

Door sensor type

N/O

☒

N/C

☐

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

1.5.9 Door → Hold open period (sec)

30

Please input held open period(sec)

1

2

3

4

5

6

7

8

9

0

Clear All

Done

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

1.5.10 Door → Alarm Sensor

Alarm sensor

Not used

☒

GPI 1

☐

GPI 2

☐

- 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

Alarm sensor type

N/O

☒

N/C

☐

- 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

Interlock sensor

Not used

☒

GPI 1

☐

GPI 2

☐

- 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

Interlock sensor type

N/O

☒

N/C

☐

- Select type of Interlock sensor
- N/O

Normally Open
- N/C

Normally Closed

1.5.15 Door → Prohibition Sensor

Prohibition sensor

Not used

☒

GPI 1

☐

GPI 2

☐

- 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

Prohibition sensor type

N/O

☒

N/C

☐

- Select type of Prohibition sensor
- N/O

Normally Open
- N/C

Normally Closed

1.6 Device Info.

Device		
<div><div>Device Info.</div><div>Interphone</div><div>Storage Info.</div><div>Camera</div><div>Reset</div></div>	Device name	
	Model name	UMX-10
	Firmware file	umx-ota-upgrade_d20170523.bin
	Serial number	HC0706A000004
	MAC	50:3F:98:00:00:C7
	HW version	0x0201
<div><div>Device Info.</div><div>Interphone</div><div>Storage Info.</div><div>Camera</div><div>Reset</div></div>	Kernel version	1.1.29
	Boot version	1.0.5
	Root version	1.2.2
	Recovery version	1.1.17
	Application version	1.1.96
	FPGA version	3.35.0

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

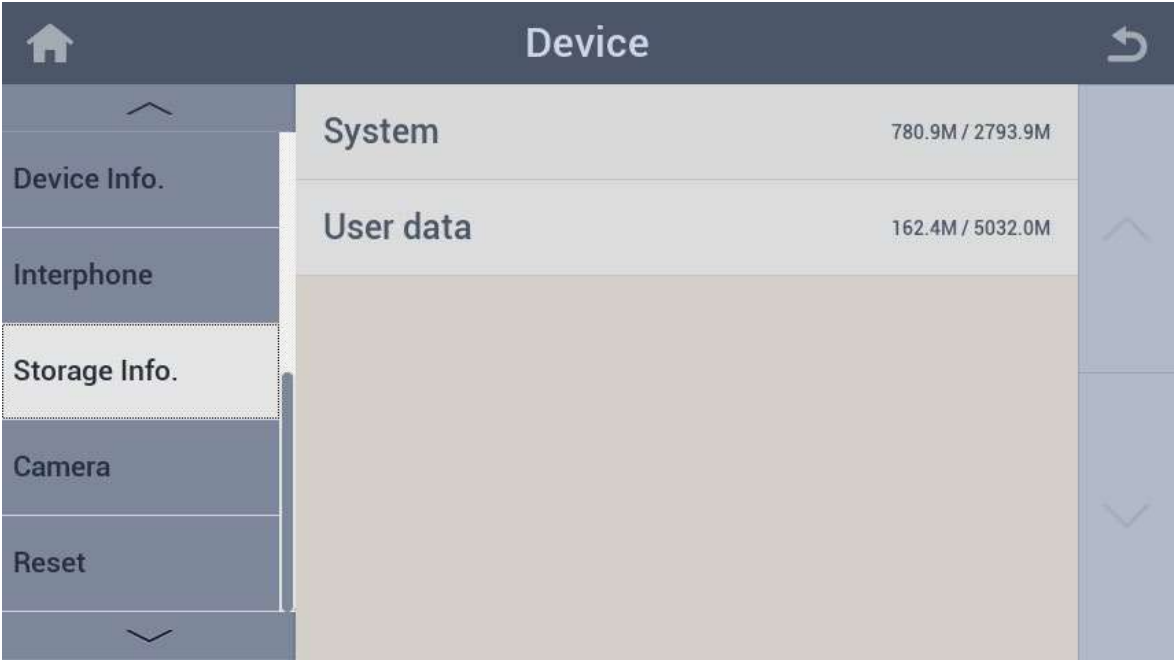


Interphone	Select enable/disable for interphone use
IP Address	IP address of PC which interphone program is installed

1.7.1 Interphone → IP Address



1.8 Storage Info



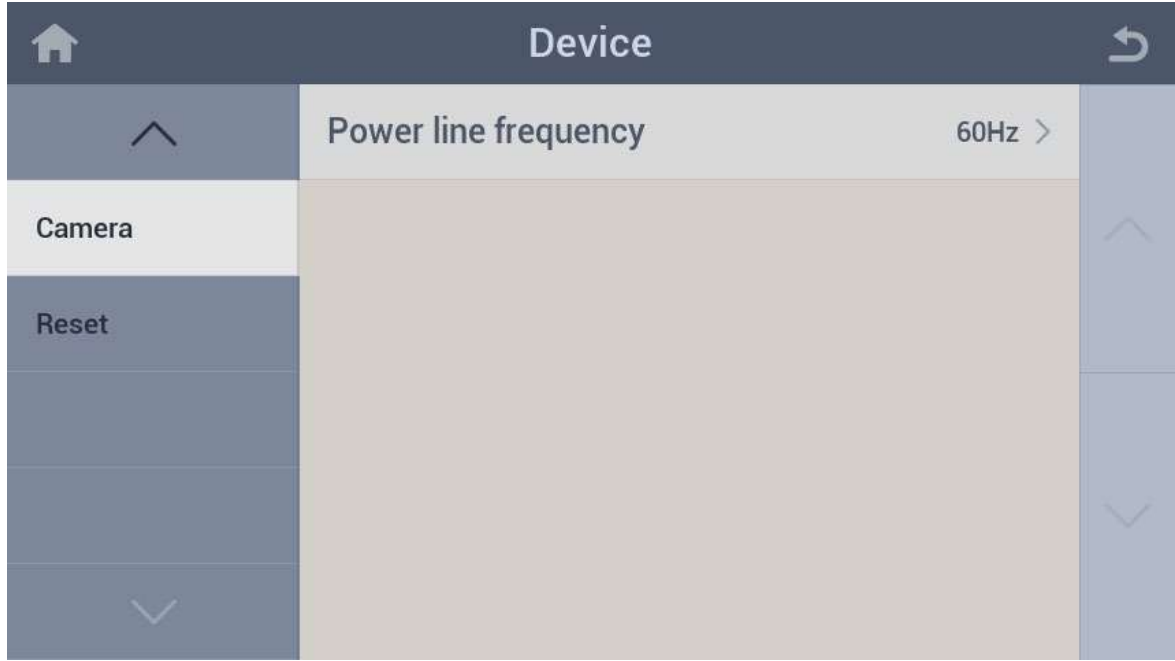
System

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

Power line frequency

50Hz

60Hz

- 50Hz

Select power line frequency to 50Hz
- 60Hz

Select power line frequency to 60Hz

1.10 Reset

Device

Reboot

Factory default

Check DB consistency

Device Info.

Interphone

Storage Info.

Camera

Reset

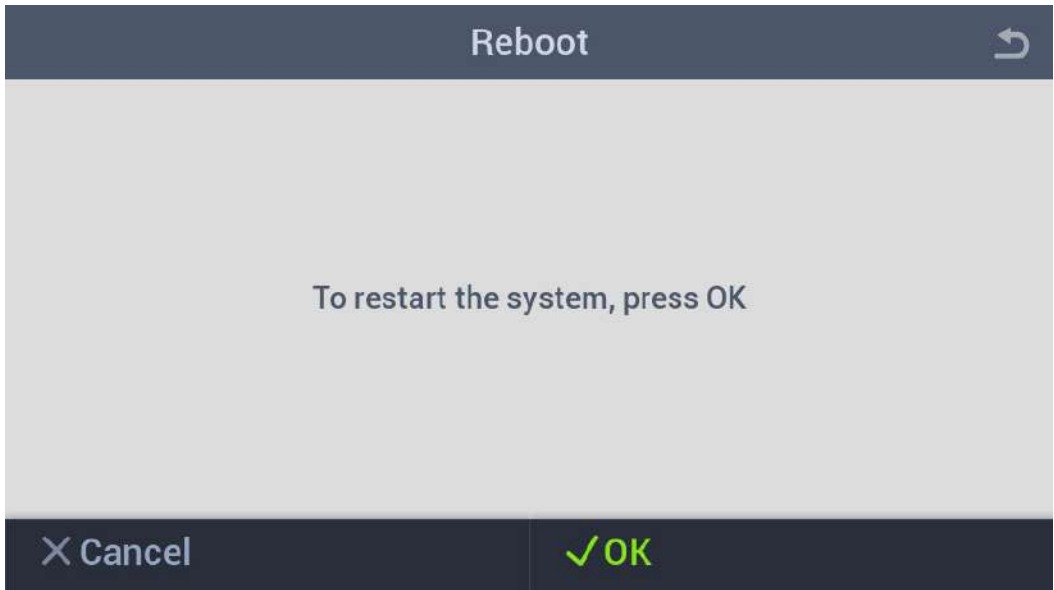
- Reboot

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

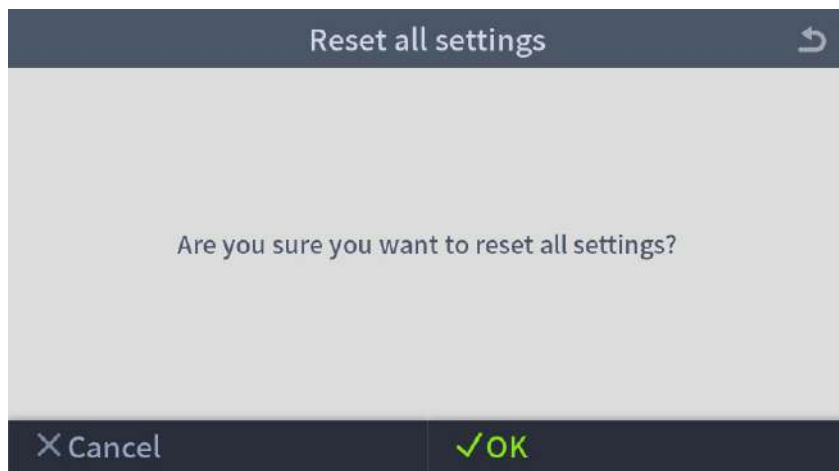
Delete all data

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



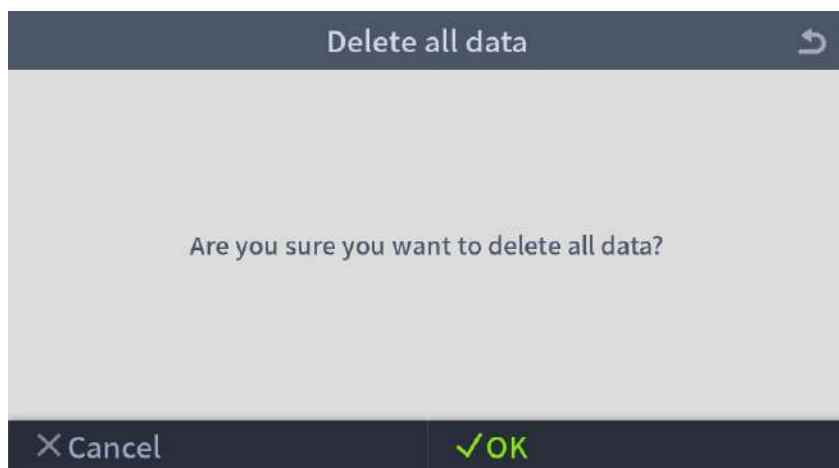
<Note> How to do the factory set by using reset button when the Settings menu is not accessible.

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

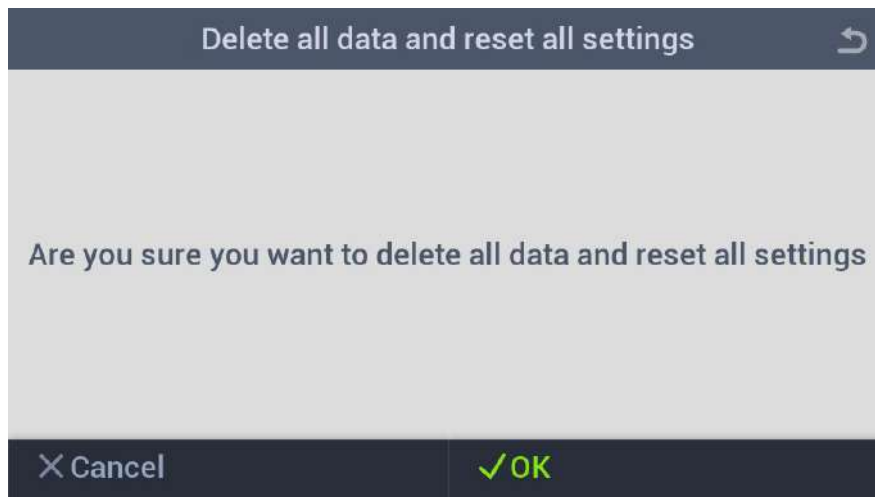


- 2) Press the button more than 2 secs, which will delete all the data and reset all the settings.
- 3) The device will reboot automatically.

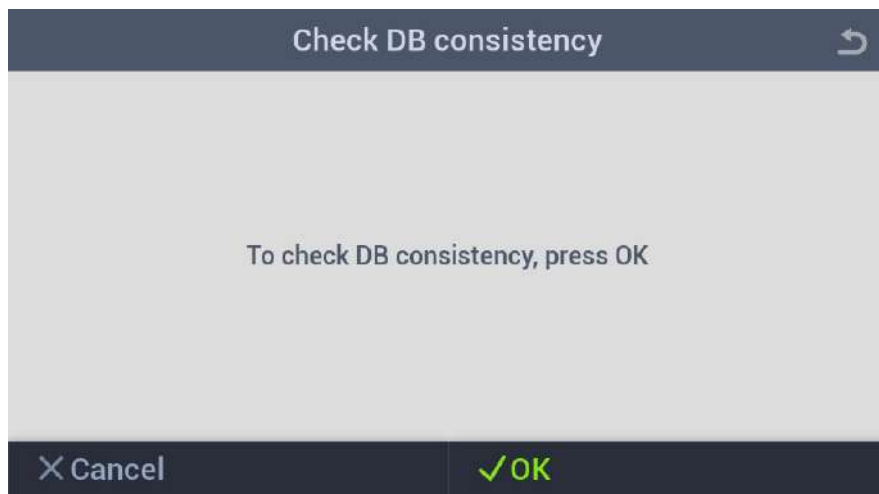
1.10.2.2 Reset → Factory Default → Delete All Data



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



1.10.3 Reset → Check DB consistency

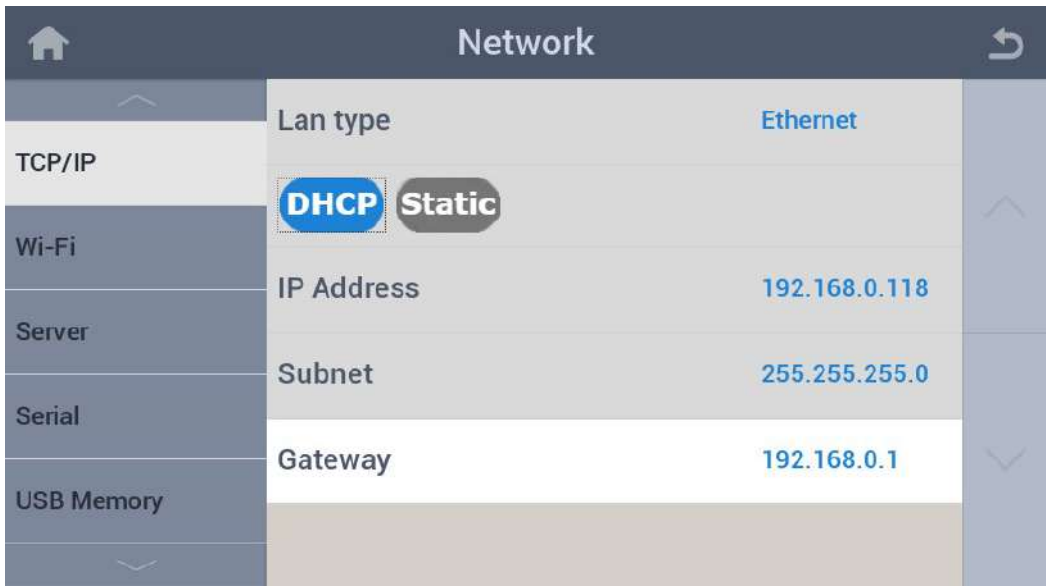


2. Network



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

Please input IP address

1	2	3	4	5
6	7	8	9	0
Clear All	.	⬅️✕	Done	

2.1.2 TCP/IP → Subnet

Please input subnet

1	2	3	4	5
6	7	8	9	0
Clear All	.	⬅️✕	Done	

2.1.4 TCP/IP → Gateway



192.168.0.1 ↩

Please input gateway

1	2	3	4	5
6	7	8	9	0
Clear All	.	⌫	Done	

2.2 Wi-Fi



⌂ Network ↩

⌵	Wi-Fi	<input type="checkbox"/>	⌵ ⌴
TCP/IP	Choose a network...	SCAN	
Wi-Fi			
Server			
Serial			
USB Memory			
⌵			

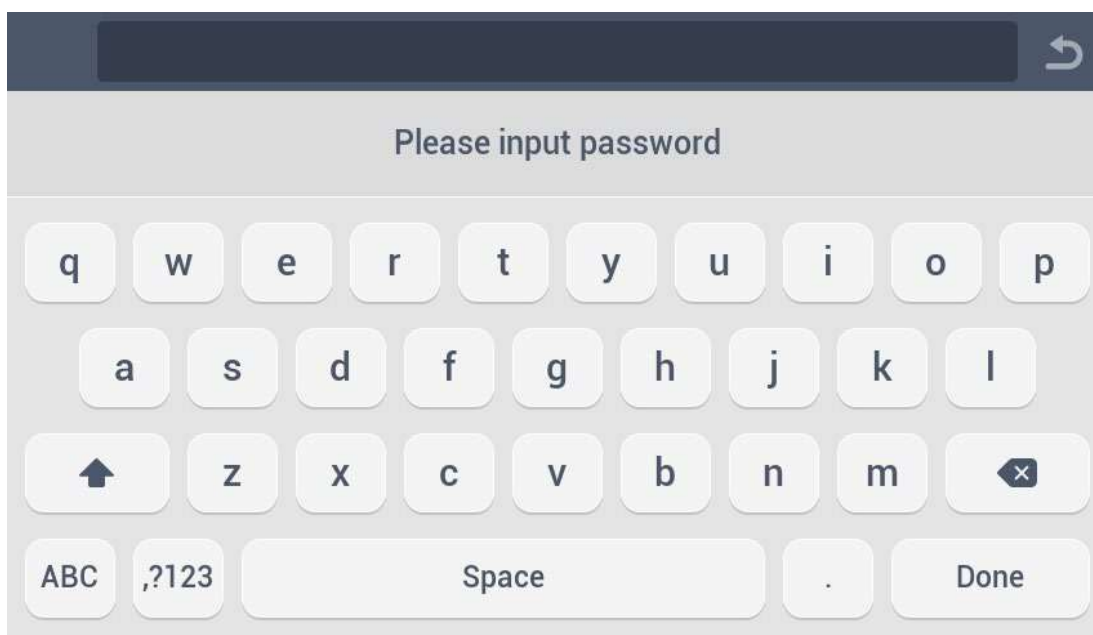
To enable WiFi function after plugging in USB WiFi adapter. Requires reboot of the system. (Note: only factory supported WiFi dongles are compatible.)

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

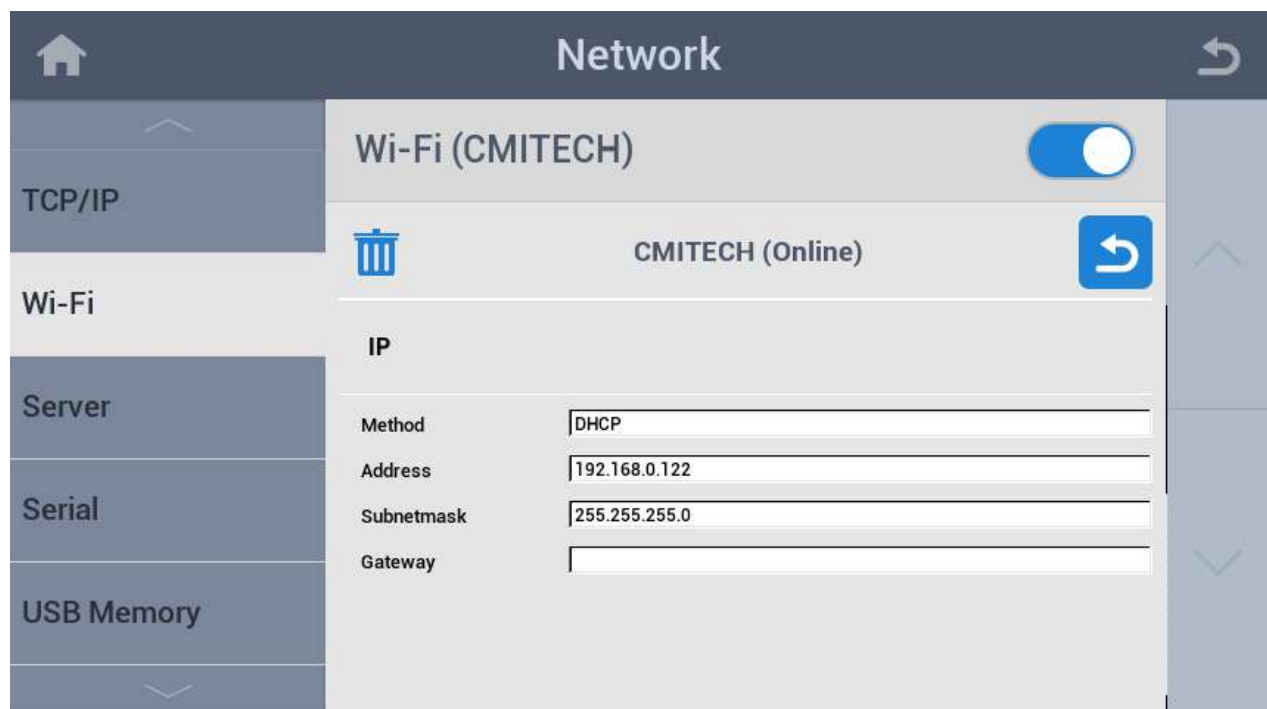


Enter the selected Wi-Fi password to connect. (It does not support all characters.)

2.2.3 Wi-Fi → Wi-Fi Selected



2.2.4 Wi-Fi → Selected Information



Connection information for selected Wi-Fi.

2.3 Server

Home

Network

Refresh

TCP/IP

Wi-Fi

Server

Serial

USB Memory

Use server

Use manual command

Use server auth.

Server IP

Port

Commute Uri

Toggle

Toggle

Not used >

0.0.0.0 >

0 >

http-splz945/commute >

Up

Down

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

2.4 Serial

Home

Network

Refresh

TCP/IP

Wi-Fi

Server

Serial

USB Memory

RS485-PC

RS485-NET

RS485-ID

RS232

RS232-NET

9600 >

Not used >

1 >

9600 >

Not used >

Up

Down

- 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

RS485-PC

Not used	<input type="radio"/>	↑
9600	<input checked="" type="radio"/>	
19200	<input type="radio"/>	
38400	<input type="radio"/>	↓
57600	<input type="radio"/>	
115200	<input type="radio"/>	

Select Serial Baud rate if you want to use RS485

2.4.2 Serial → RS485-NET

RS485-NET

Not used	<input checked="" type="radio"/>	↑
NET-HOST	<input type="radio"/>	
NET-SLAVE	<input type="radio"/>	
NET-OSDP	<input type="radio"/>	↓
NET-EFIO	<input type="radio"/>	
NET-TOUCH	<input type="radio"/>	

- 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

1

↶

Please input RS485-ID(MAX:8)

1

2

3

4

5

6

7

8

9

0

Clear All

↑

⬅️✕

Done

2.4.4 Serial → RS232

RS232		↶
Not used	<input checked="" type="radio"/>	↑
9600	<input type="radio"/>	
19200	<input type="radio"/>	
38400	<input type="radio"/>	↓
57600	<input type="radio"/>	
115200	<input type="radio"/>	

Select Baud rate if you want to use RS232.

2.4.5 Serial → RS232-NET

RS232-NET

Not used	<input checked="" type="radio"/>	
SMART RELAY	<input type="radio"/>	^
TOUCH	<input type="radio"/>	
KTL JIG	<input type="radio"/>	
		v

Select a device type connected to RS232

2.5 USB Memory

Home

Network

TCP/IP	USB enable	<input checked="" type="checkbox"/>	
Server	FW Upgrade	>	^
Serial	Import	>	
USB Memory	Export	>	
			v

- USB enable

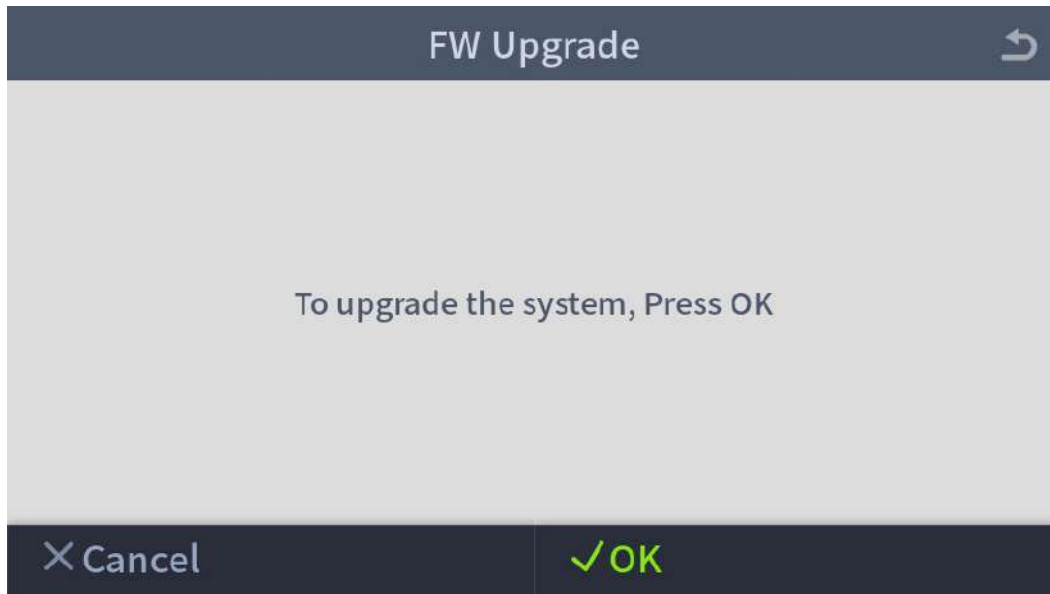
Select enable/disable for USB memory use
- FW Upgrade

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

Import

User data

Log data

- 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

Export

User data

Log data

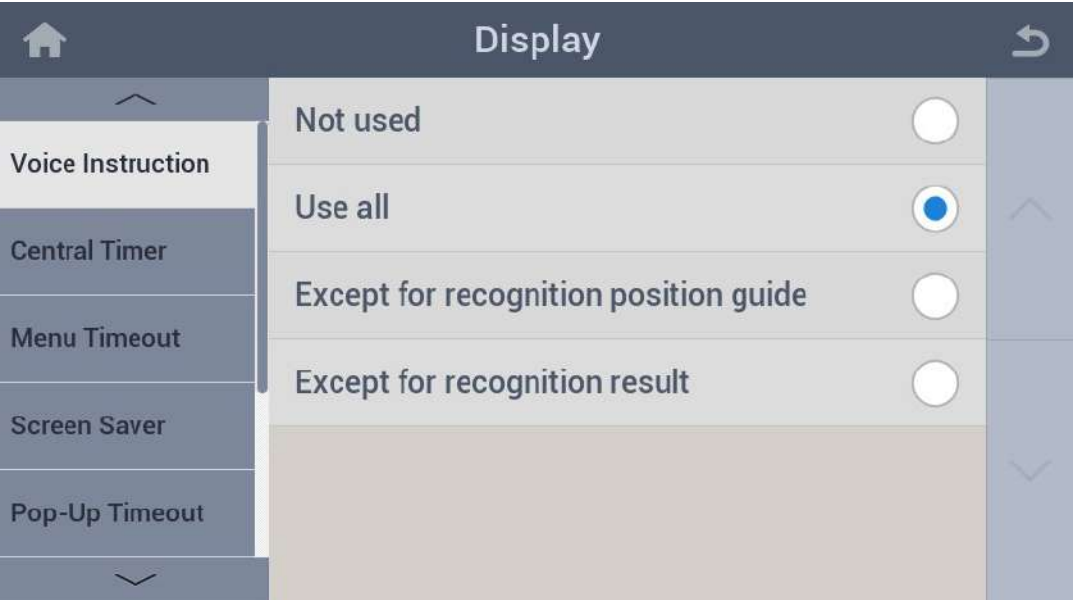
Backup for debug

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**
12 Hours
24 Hours
- Select to disable Central Timer
Select to enable Central Timer as 12-hour clock format
Select to enable Central Timer as 24-hour clock format

3.3 Menu Timeout



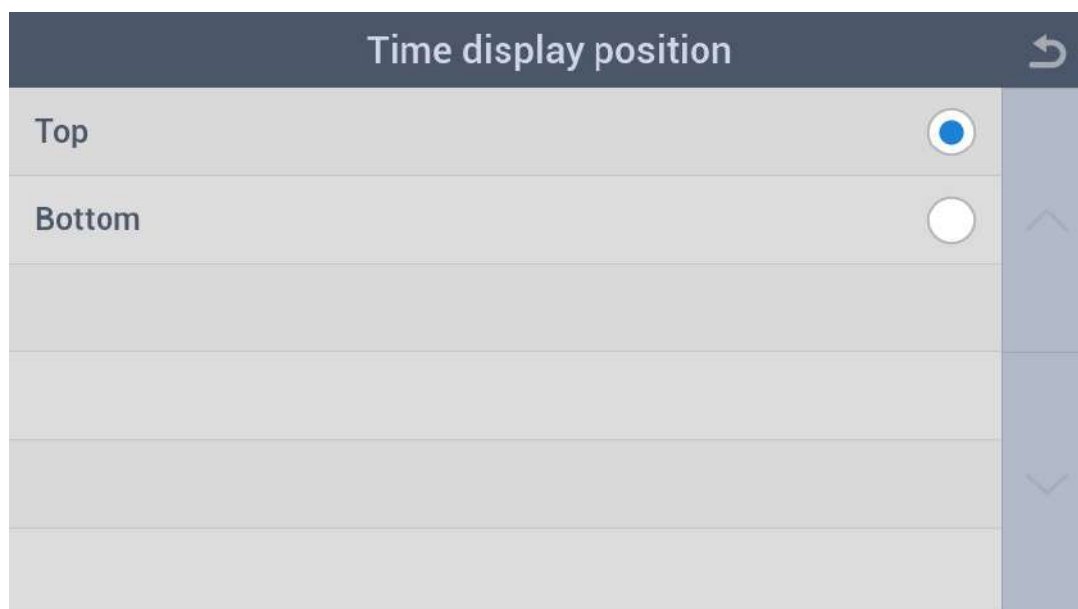
- Menu Timeout**
- Set timeout for auto exit from menu display after leaving it untouched

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


Wait time






3 sec	<input type="radio"/>	
5 sec	<input type="radio"/>	
10 sec	<input type="radio"/>	
30 sec	<input type="radio"/>	
60 sec	<input checked="" type="radio"/>	

3.5 Pop-Up Timeout

Display




Voice Instruction	1 sec	<input type="radio"/>	
Central Timer	2 sec	<input type="radio"/>	
Menu Timeout	3 sec	<input checked="" type="radio"/>	
Screensaver	4 sec	<input type="radio"/>	
Pop-Up Timeout	5 sec	<input type="radio"/>	
			


Pop-Up Timeout





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

3.6 Backlight Timeout




Display




	Infinity	<input checked="" type="radio"/>	
Backlight Timeout	10 sec	<input type="radio"/>	
Date Display	20 sec	<input type="radio"/>	
Language	30 sec	<input type="radio"/>	
	40 sec	<input type="radio"/>	
	50 sec	<input type="radio"/>	





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

3.7 Date Display



Display

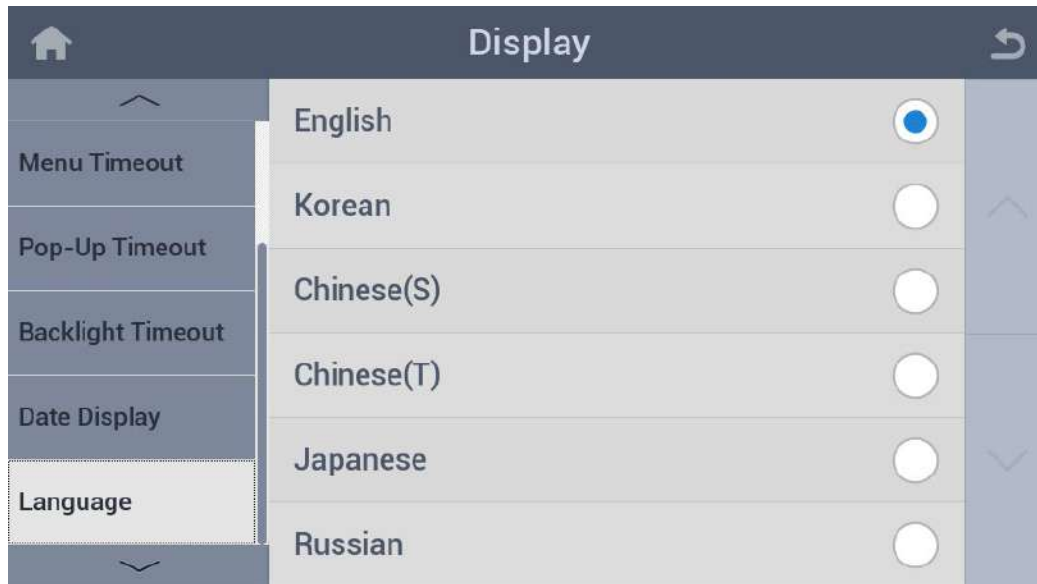


	YYYY/MM/DD	<input type="radio"/>	
Backlight Timeout	DD/MM/YYYY	<input checked="" type="radio"/>	
Date Display			
Language			
			

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



Authentication



Mode

T&A

Admin password

Start mode

☒ BIO

☐ ID

☐ Card

Combination mode

Step 1

Not used

- 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)

Step 1

Not used

☒

Bio

☐

ID

☐

Card

☐

PIN

☐

Select a combination (additional) recognition method.

4.2 T&A

Authentication

Mode

Use T&A

☒

T&A

T&A mode

Fixed(by device) >

Admin password

T&A value

In >

T&A key map

>

Authentication

Mode

Use T&A

☒

T&A

T&A mode

Manual(by key input) >

Admin password

T&A order

Recognition > T&A >

T&A key map

>

- 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

T&A mode

Fixed(by device)

Manual(by key input)

Auto(by time schedule)

Manual Fix(by key input)

- 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

T&A value

In

☒

Out

☐

Leave

☐

Return

☐

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

T&A order

Recognition > T&A

☒

T&A > Recognition





☐

T&A anytime


☐

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

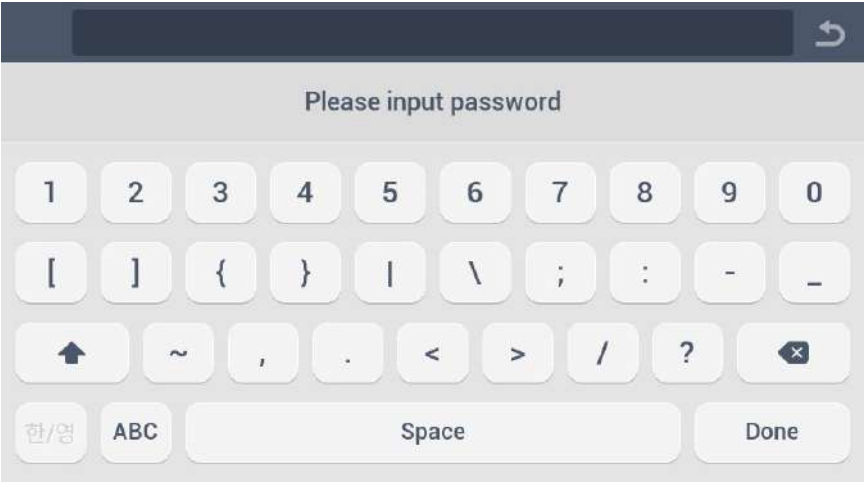
	T&A key map	
F1	In >	
F2	Out >	
F3	Other >	
F4	Leave >	
F5	Return >	

4.3 Admin password

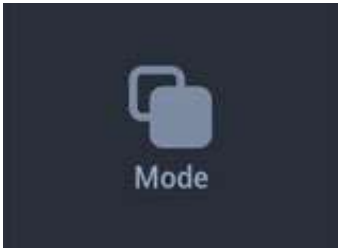
	Authentication	
Auth.	Use admin password 	
T&A	Password >	
Admin password		
		

- 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

Dual authentication

Not used

Everyone

Admin

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

5.1.2 Operation → Match Timeout

Match timeout

3 sec

5 sec


10 sec

20 sec


30 sec



60 sec

5.2 Wiegand



Mode






Operation	Output type	Wiegand >
Wiegand		
Card		
		

Output type Select Wiegand Output type

5.2.1 Wiegand → Output type

Output type



Wiegand	<input checked="" type="radio"/>	
Card	<input type="radio"/>	
ID	<input type="radio"/>	
		

- Wiegand**

Send customized Wiegand data out
- Card**

Send Card data out
- ID**

Send User ID out

5.3 Card



Mode



Operation	Use CSN	<input checked="" type="checkbox"/>	
Wiegand	CSN order	MSB >	
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

Card



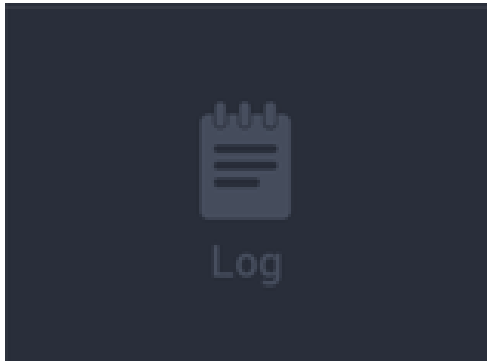
MSB	<input checked="" type="radio"/>	
LSB	<input type="radio"/>	

- 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

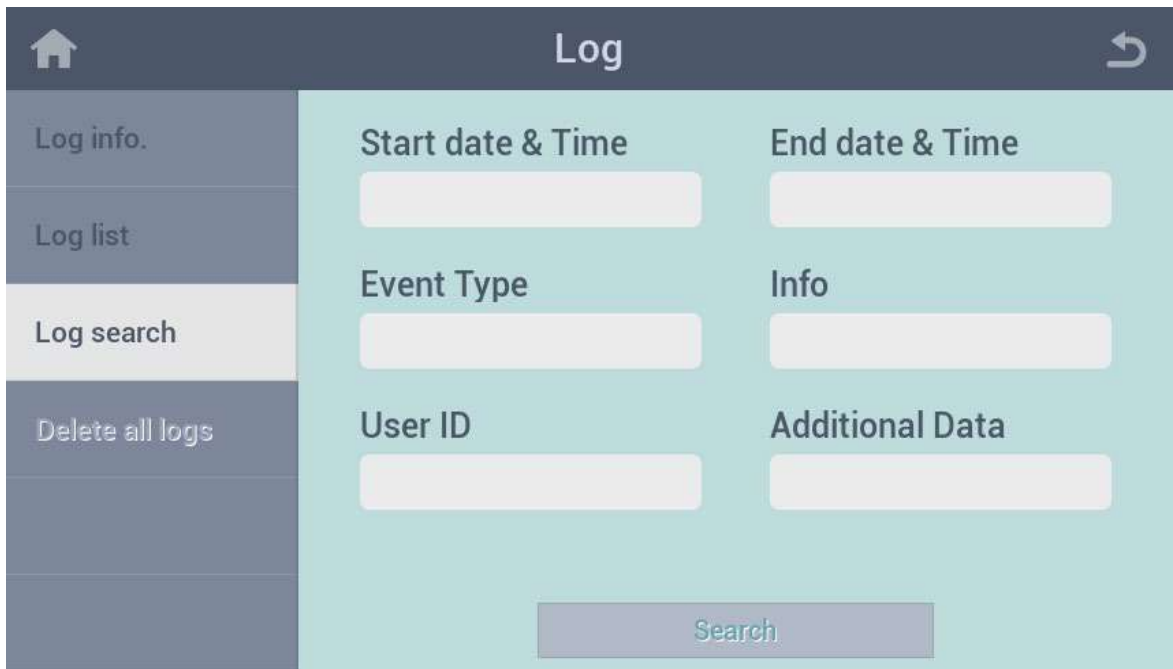
Log		
Log info.	2031:01:28 21:40:09	
Log list	2031:01:28 21:37:03	^
Log search	2031:01:28 21:18:42	
Delete all logs	2031:01:28 18:47:49	
	2031:01:28 17:58:53	v
	2031:01:28 17:57:16	

6.2.1 Log list information

Log		
Date & Time	ID	
2016:10:15 09:36:16	55	
Event Type	Info	
Recognition	Recog/BioOnly/IrisOk	
Card	Additional Data	
	Allowed	
<div><div><</div><div></div><div></div><div></div><div></div><div>></div></div>		

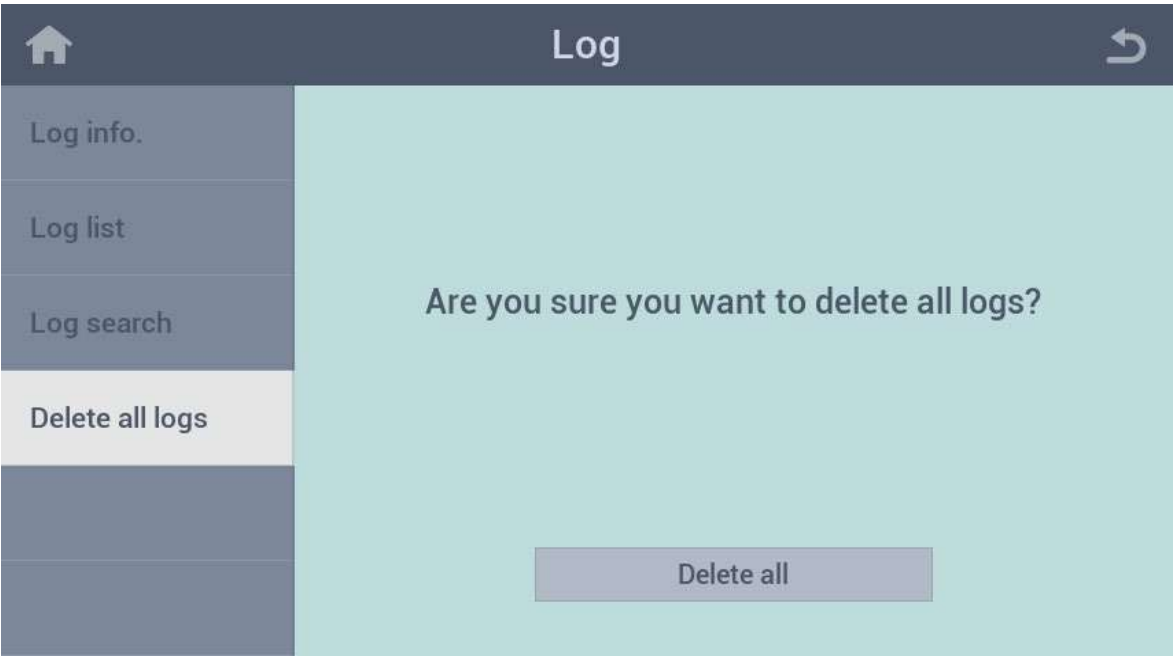
If you select the log list, you can find information like above.

6.2.2 Log Search



The screenshot shows the 'Log' section of the application. On the left is a sidebar with a home icon and a list of options: 'Log info.', 'Log list', 'Log search' (which is highlighted), and 'Delete all logs'. The main area has a title 'Log' and a refresh icon. It contains four input fields arranged in a 2x2 grid: 'Start date & Time', 'End date & Time', 'Event Type', and 'Info'. Below these is another 2x2 grid with 'User ID' and 'Additional Data'. A 'Search' button is located at the bottom center of the main area.

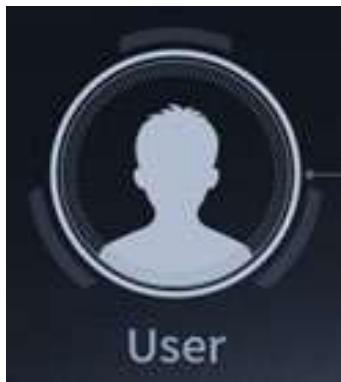
6.2.3 Delete all logs



The screenshot shows the 'Log' section of the application. The sidebar is the same as in the previous screenshot, but 'Delete all logs' is now highlighted. The main area has a title 'Log' and a refresh icon. It displays a confirmation message: 'Are you sure you want to delete all logs?'. At the bottom center of the main area is a 'Delete all' button.

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

User



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

User		
All (3)	2 ccc	
Group 1 (0)	3 ddd	^
Group 2 (0)	4 card	
Group 3 (0)		
Group 4 (0)		
+		
Enroll		
🔍		
Search		
📊		
Capacity Info		
🗑️		
Delete		

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

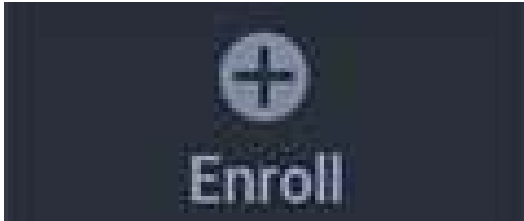
Enroll button Switch to enroll process

Search button Switch to search process

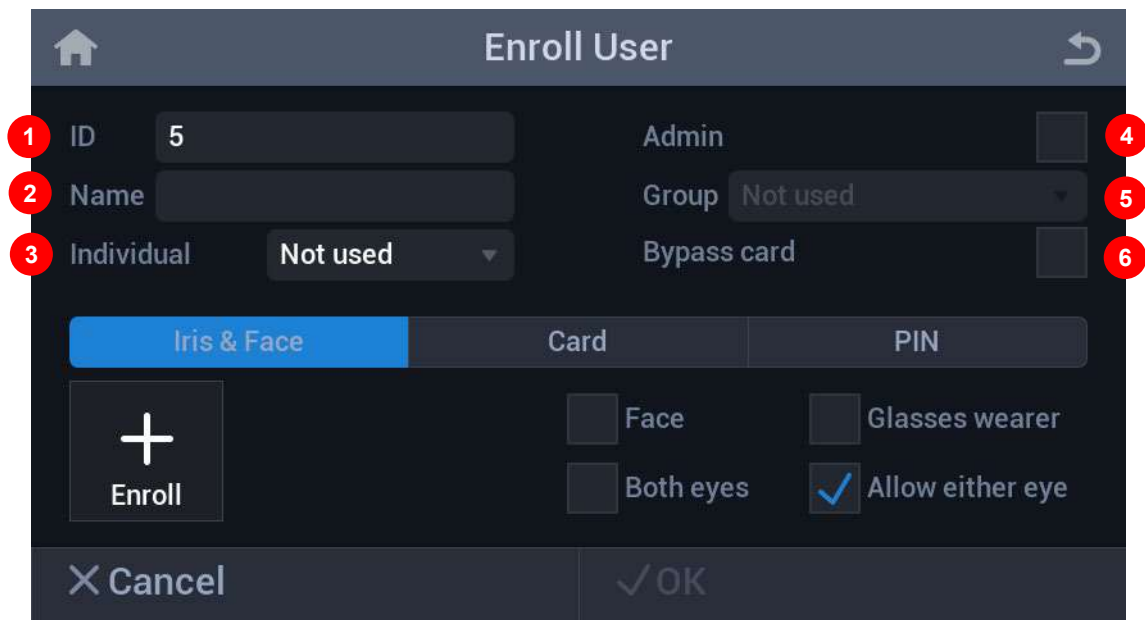
Capacity Info button Shows the used memory percentage

Delete button Switch to delete process

1. Enroll User



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

A screenshot of the "Enroll User" page. The page has a dark background with white text. At the top, there is a header bar with a home icon, the title "Enroll User", and a back arrow. Below the header, there are several input fields and checkboxes. On the left side, there are three red circles with numbers 1, 2, and 3. On the right side, there are three red circles with numbers 4, 5, and 6. The input fields are: ID (with the value "5"), Name, Individual (with a dropdown menu showing "Not used"), Admin (checkbox), Group (dropdown menu showing "Not used"), and Bypass card (checkbox). Below these fields, there are three tabs: "Iris & Face" (selected), "Card", and "PIN". Under the "Iris & Face" tab, there is a large plus sign icon and the word "Enroll". To the right of this, there are two rows of checkboxes: "Face" and "Both eyes" in the first row, and "Glasses wearer" and "Allow either eye" (checked) in the second row. At the bottom, there are two buttons: "Cancel" and "OK".

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

Please input user name

q

w

e

r

t

y

u

i

o

p

a

s

d

f

g

h

j

k

l

↑

z

x

c

v

b

n

m

✕

ABC

,?123

Space

.

Done

1.2 Individual

Individual mode

Not use

☒

Bio only

☐

Bio and ID

☐

Bio and Card

☐

Bio and PIN

☐


ID only



☐

^

∨


Individual mode





ID and Bio	<input type="radio"/>	
ID and Card	<input type="radio"/>	
ID and PIN	<input type="radio"/>	
Card only	<input type="radio"/>	
Card and Bio	<input type="radio"/>	
Card and ID	<input type="radio"/>	

Select an individual authentication mode.

Individual mode



Card and PIN	<input type="radio"/>	
		

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



Enroll User



ID56

Admin

☐

Name

Group

Not used

Individual

Not used


Bypass card

☐

Iris & Face

Card

PIN



Enroll

☐Face

☐Glasses wearer

☐Both eyes

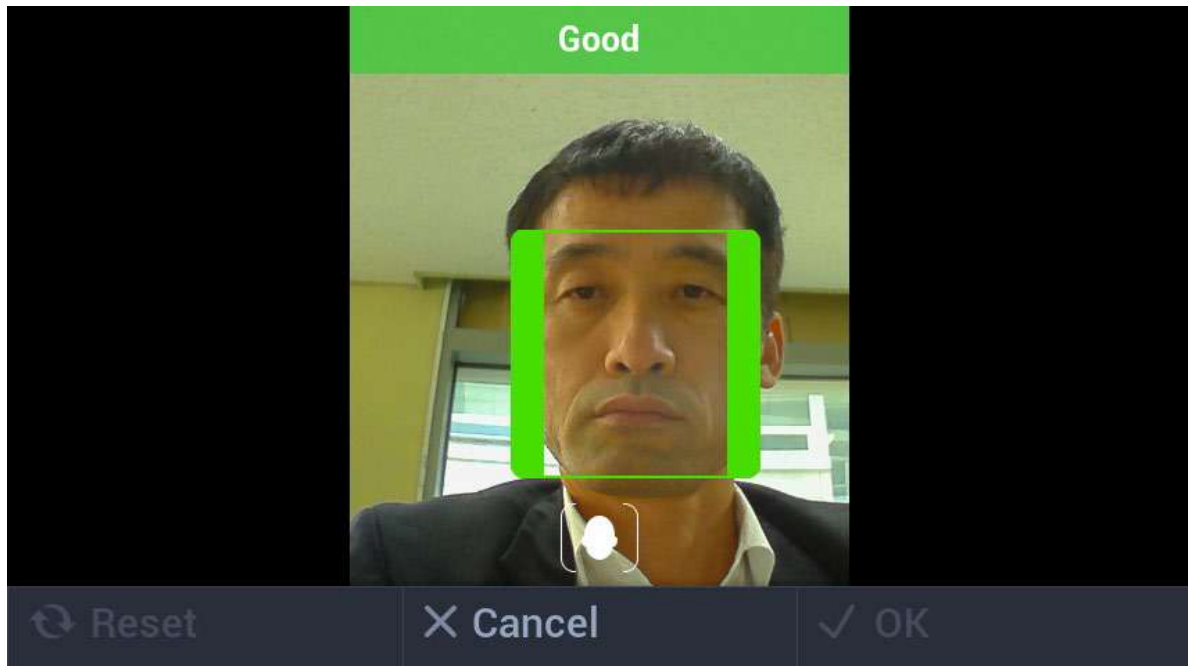
☒Allow either eye

✕Cancel

✓OK

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

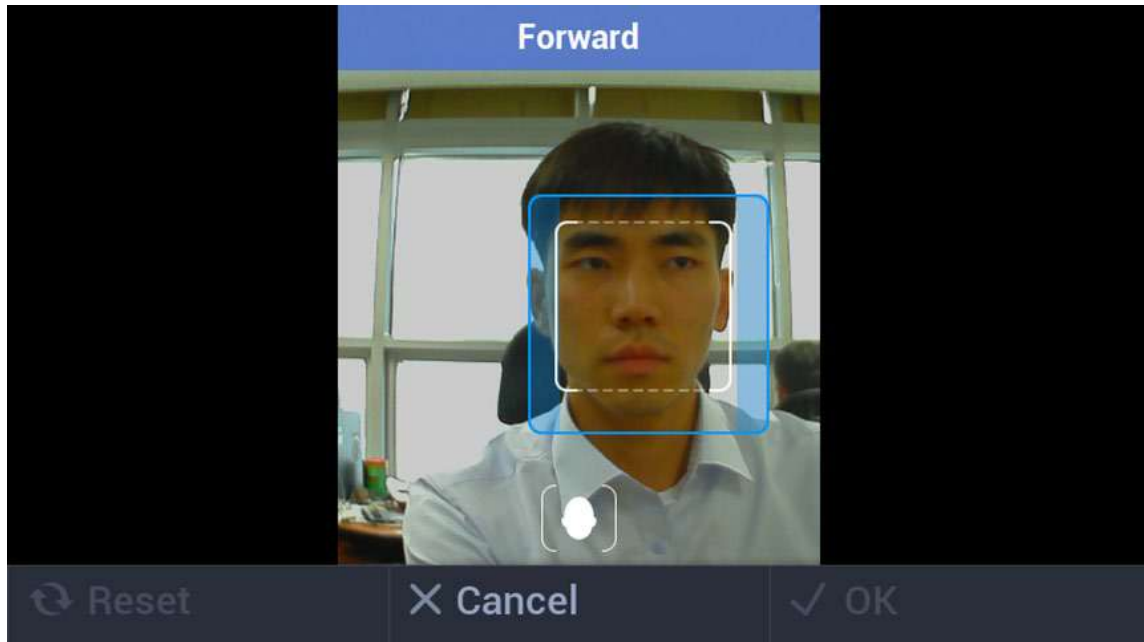
BLUE means too far

GREEN means OK

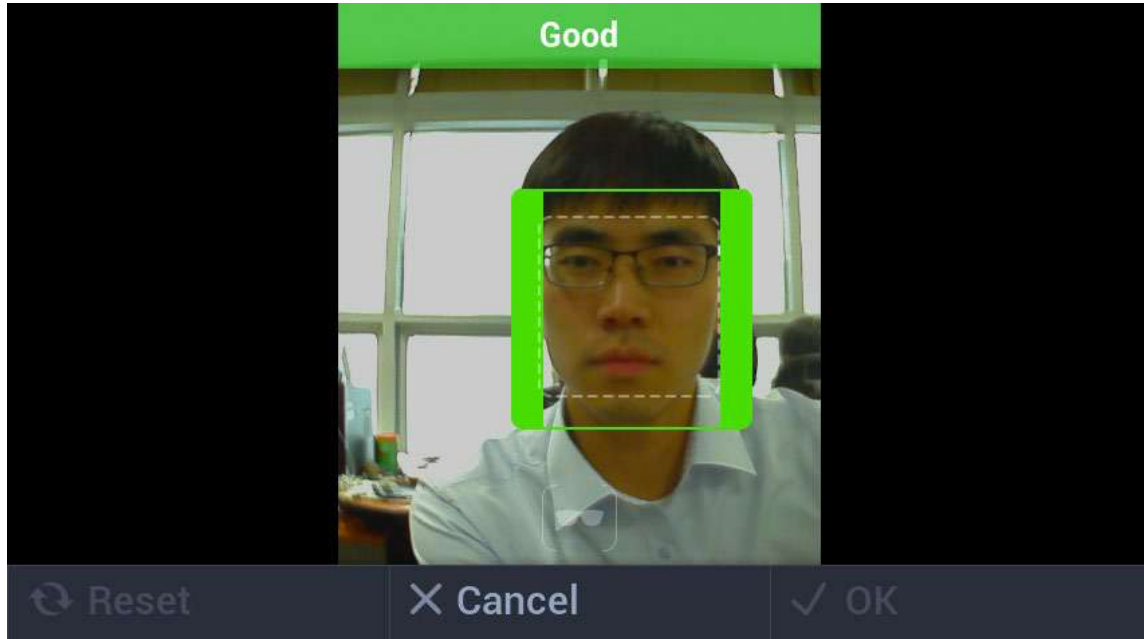
RED means too close.

Switch to Iris Capture stage after good face image acquisition

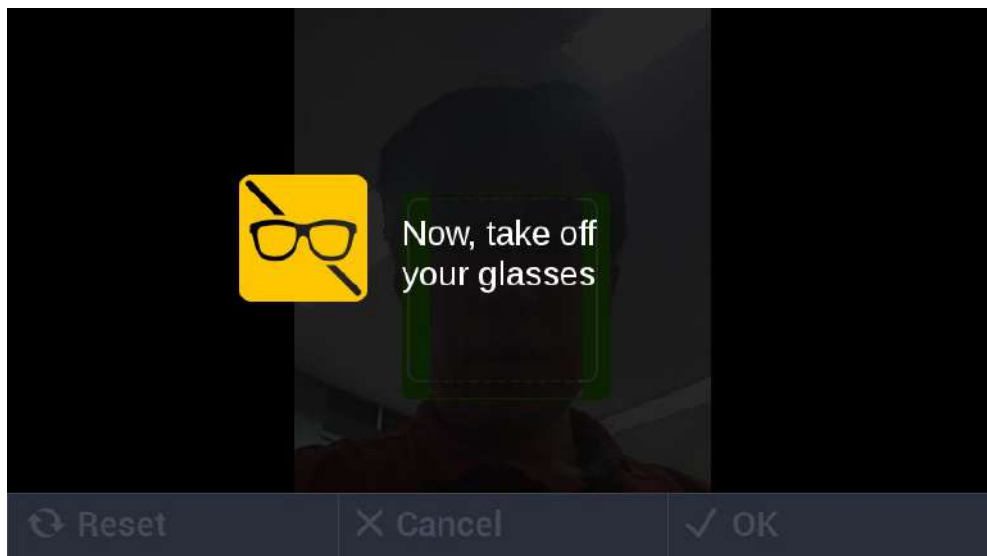
1.4.1.1 Iris & Face Process → Face Capture → Tracking Guide Box UI



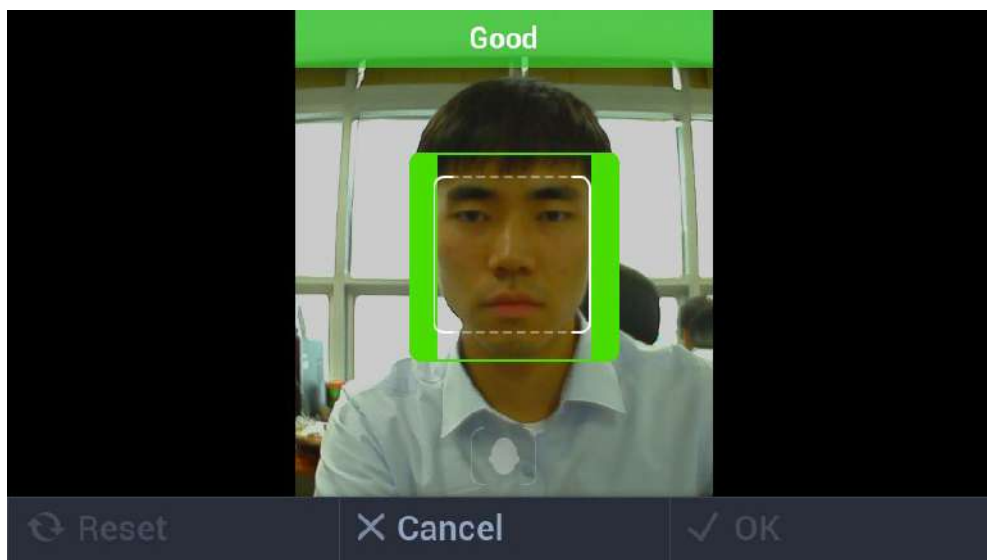
Positioning box appears in order to guide subject.



Capture normal face images.

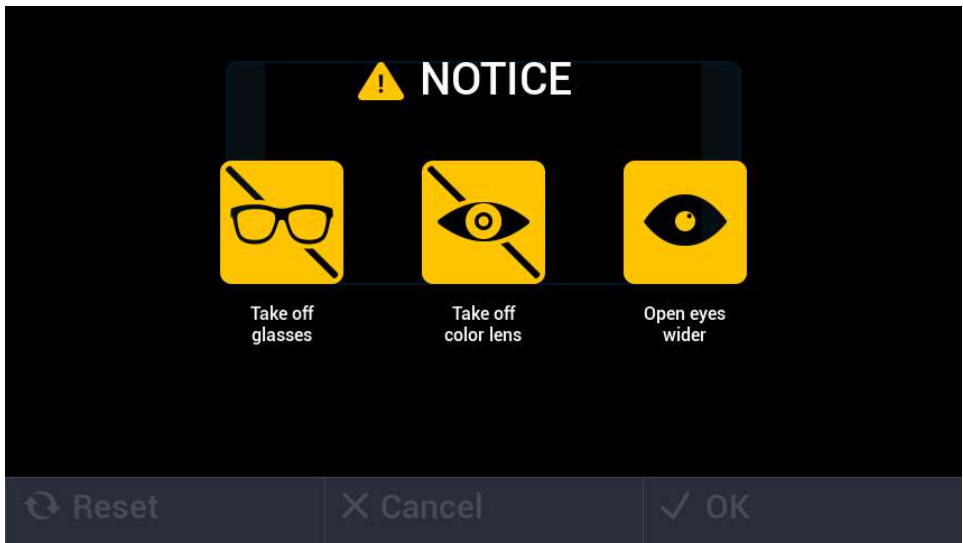


In case of selection of Glasses wearer check box, will be active for about 3 to 5 seconds.



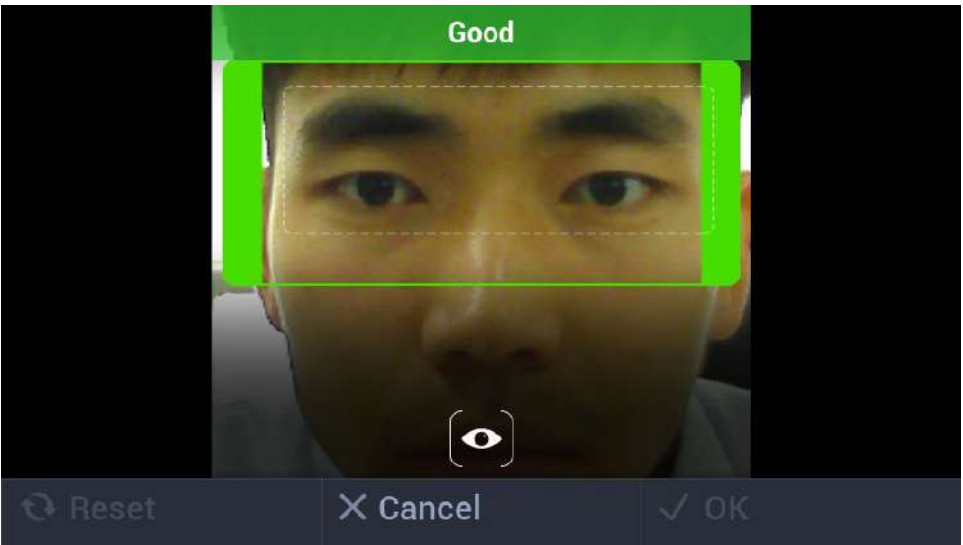
Capture additional face images with glasses off.

1.4.2 Iris & Face Process → Iris Capture



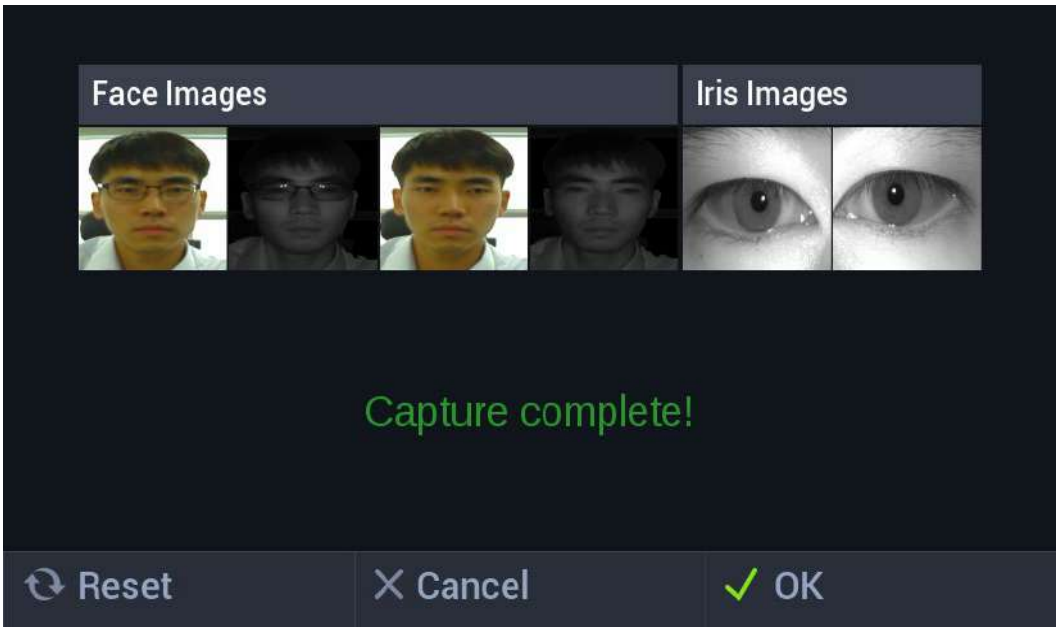
In case of Tracking Guide Box UI mode, display will be active for about 3 to 5 seconds.

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



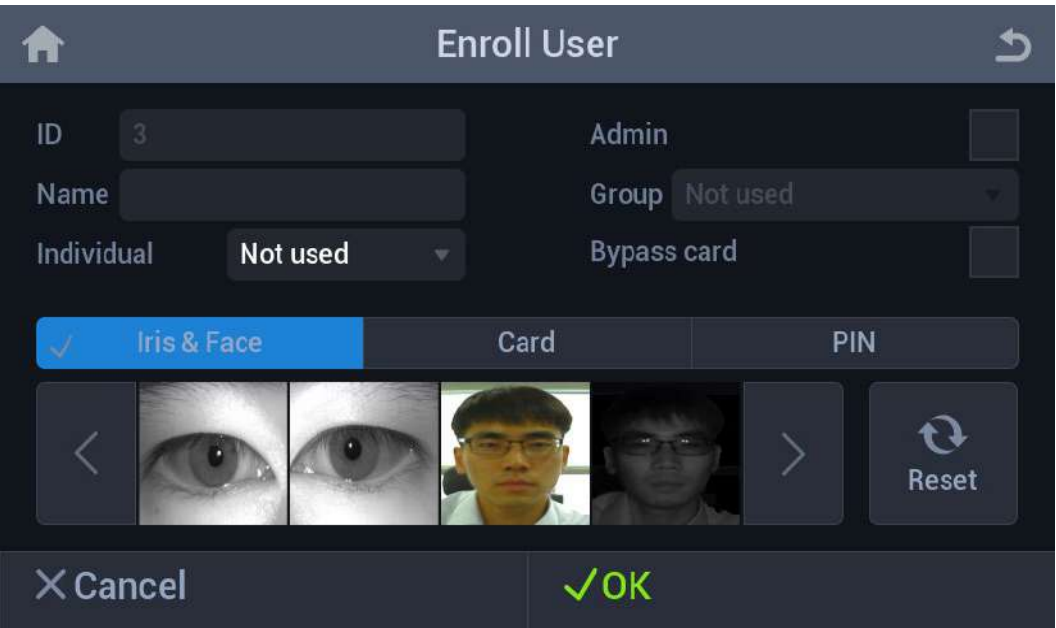
- Reset

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

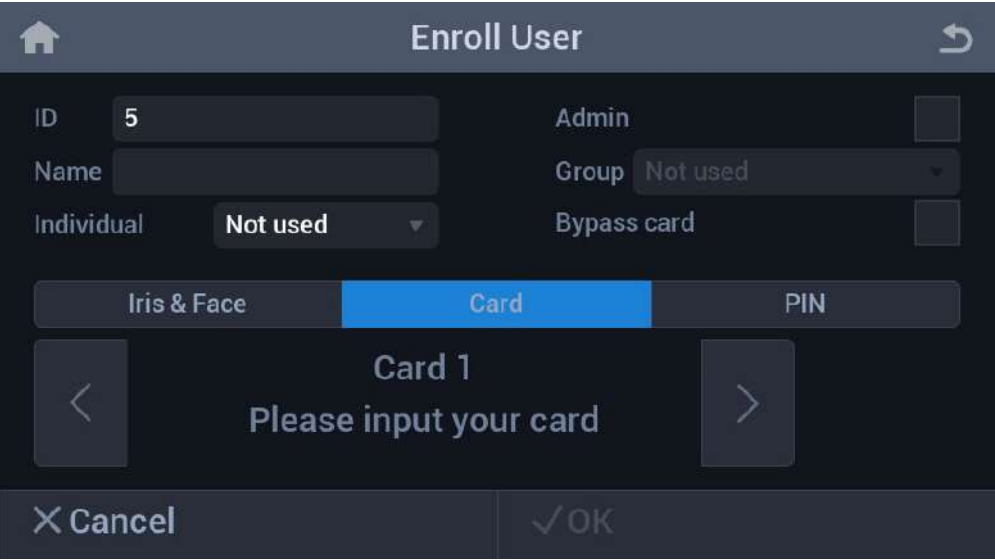


- Cancel

Return to User Main screen
- OK

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

1.5 Card

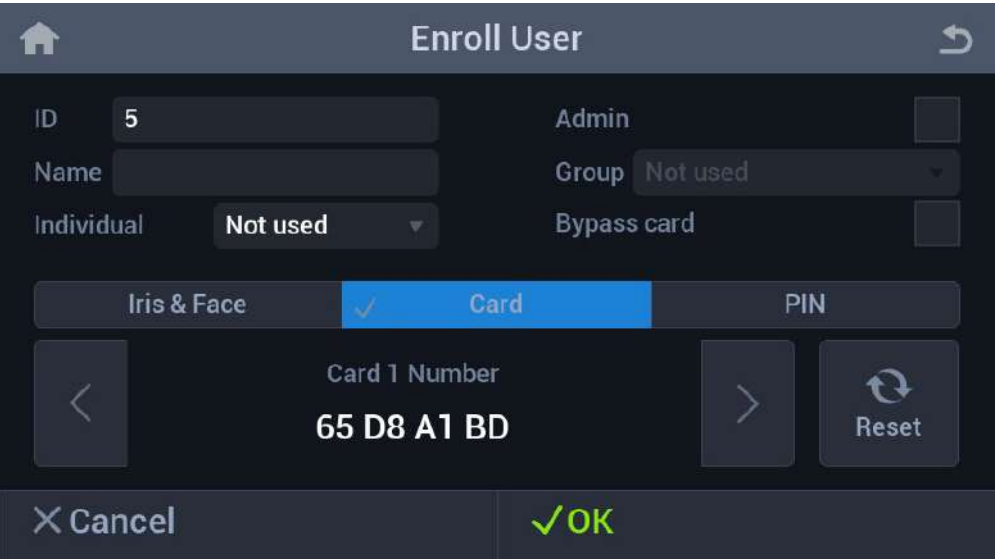


Card tab Selection changes tab to blue color

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).

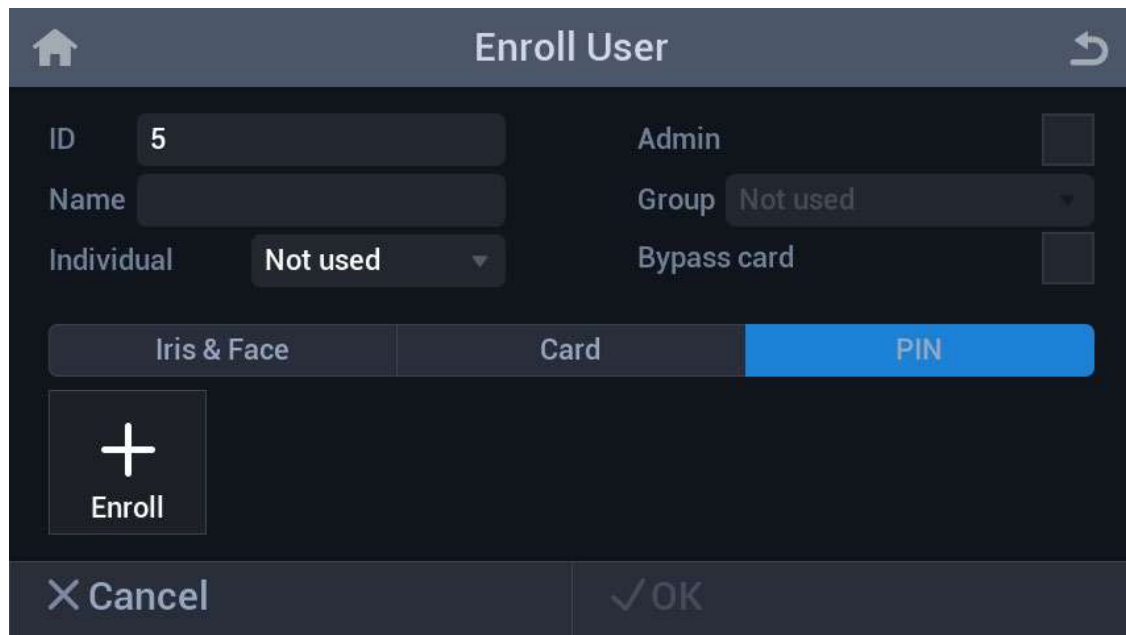
1.5.1 Card → Save Data



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



The 'Enroll User' screen features a dark blue header with a home icon, the title 'Enroll User', and a back arrow. Below the header, there are input fields for 'ID' (containing '5'), 'Name', 'Individual' (a dropdown menu showing 'Not used'), 'Admin' (a checkbox), 'Group' (a dropdown menu showing 'Not used'), and 'Bypass card' (a checkbox). At the bottom, there are three tabs: 'Iris & Face', 'Card', and 'PIN' (which is highlighted in blue). Below the tabs is a large white plus sign in a dark blue box labeled 'Enroll'. At the very bottom, there are two buttons: 'X Cancel' and '✓ OK'.

PIN tab

Selection changes tab to blue color

Enroll (+) button


Switch to input screen

1.6.1 Pin → Input




The 'PIN Input' screen has a dark blue header with a back arrow. Below the header, there is a light gray box with the text 'Please input user PIN Number'. Below this, there is a virtual keyboard with white keys on a light gray background. The keyboard includes letters q through p, a, s, d, f, g, h, j, k, l, z, x, c, v, b, n, m, a space bar, a period key, and a 'Done' button. There are also keys for 'ABC', '?,123', and a backspace key.

1.6.2 Pin → Save Data



Enroll User



ID5


Admin

☐

Name


Group

Not used



Individual

Not used



Bypass card

☐

Iris & Face


✓

Card

✓

PIN

PIN Number


Reset

✕ Cancel

✓ OK

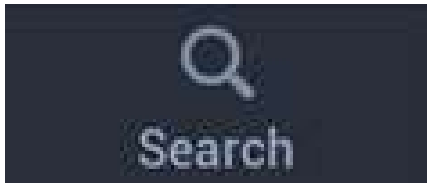
Pin number is shown as "*" character.

Reset Clear pin number and (+) button is shown

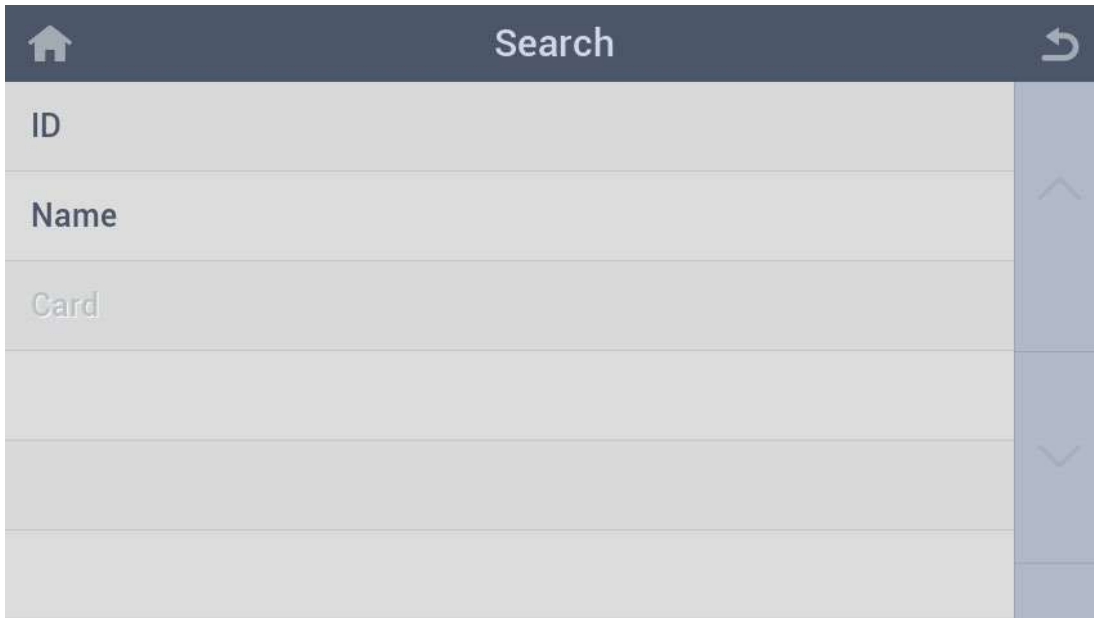
Cancel Return to User Main screen

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

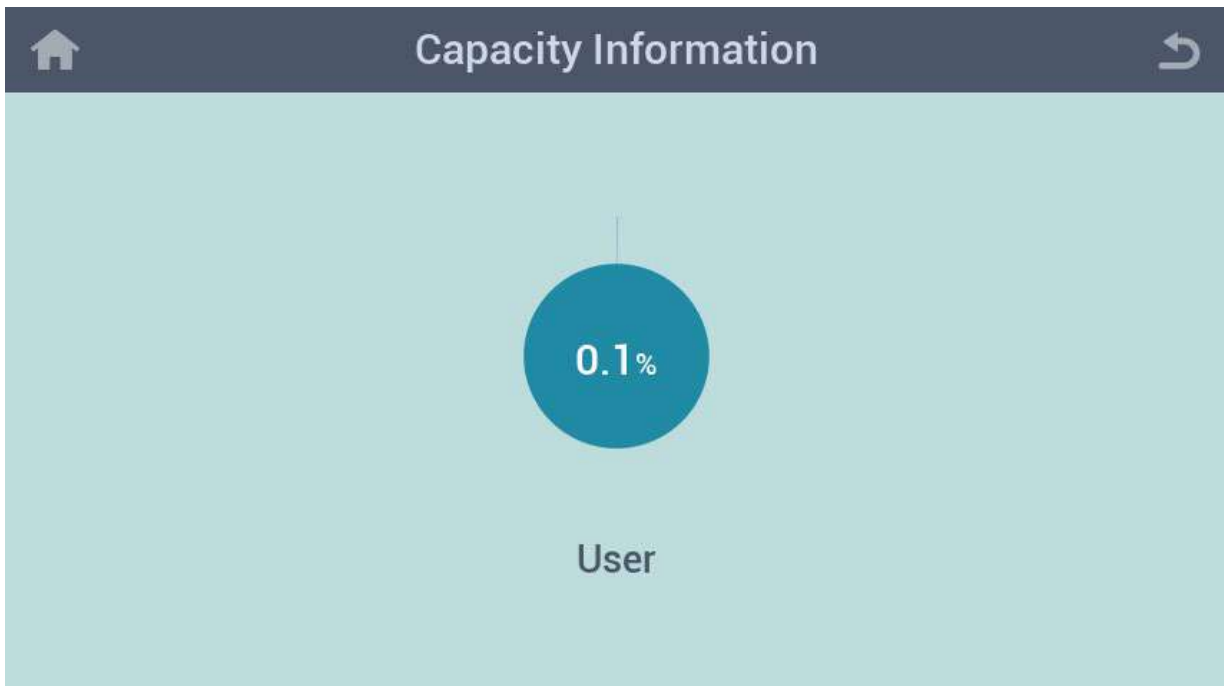


2.2 Search → Name

3. Capacity Info



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

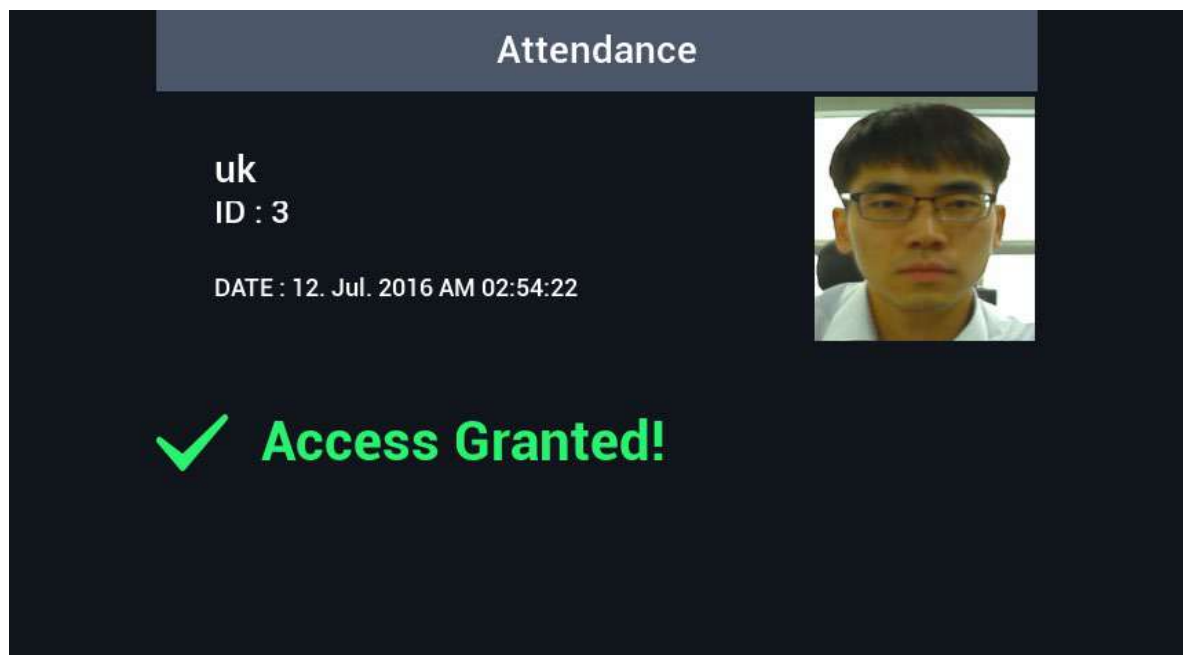


5. Recognition Process

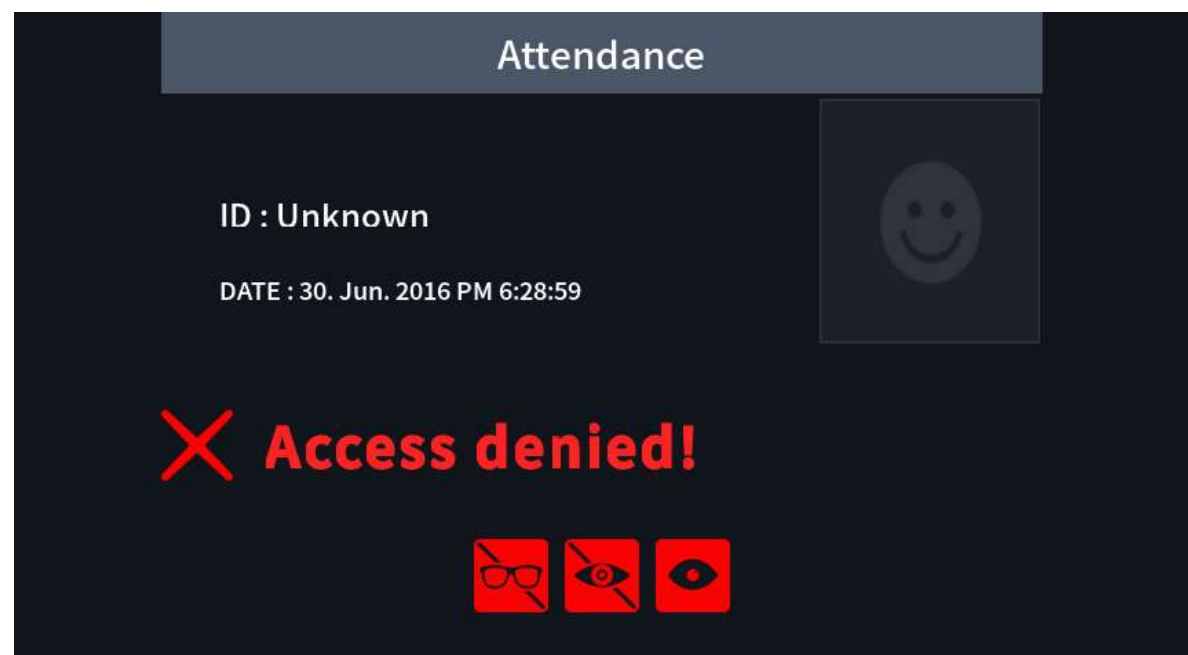
5.1 Recognition Process

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.