Fingerprint Access Controller

SW-300

User Guide

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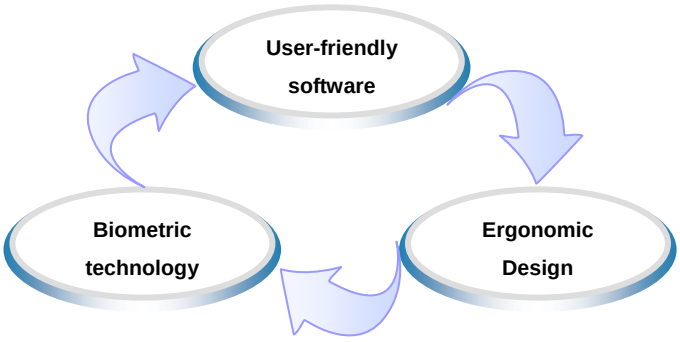
Product Introduction

The SW300/SW301 is general purpose Access controller using NITGEN's core technologies – fingerprint authentication algorithm, optical sensor, embedded system design experiences, and application programs for PC.

It introduces more friendly design and user interface through 4.3" touch screen TFT-LCD. And it provides various authentication methods – fignerrprint, RF card, ID & password, and combinations of them.



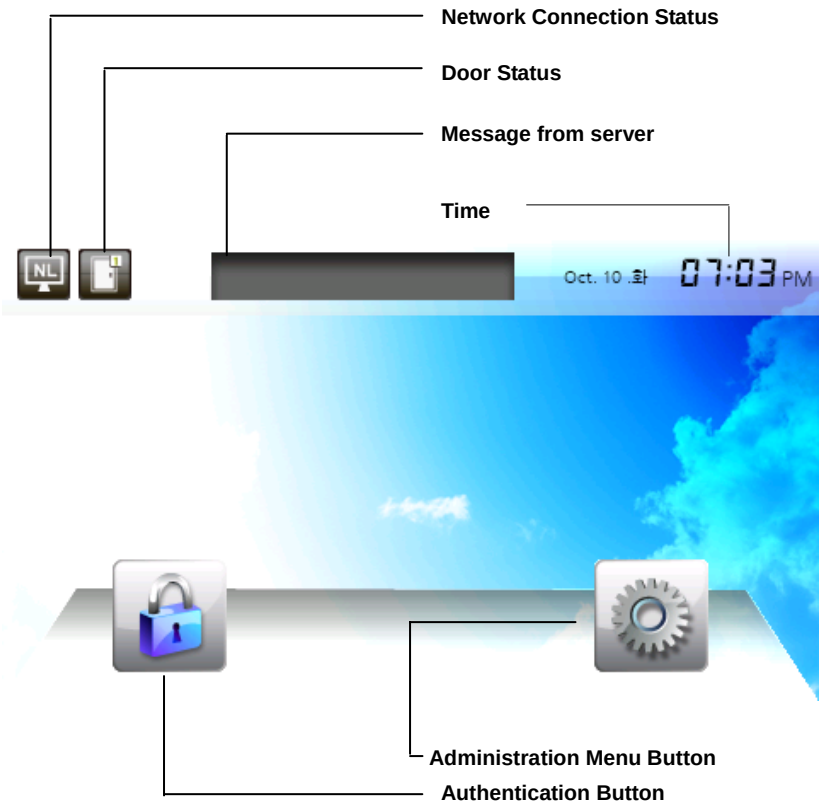
System Configuration

The SW300/SW301 can operation as network mode or stand-alone mode by configuration. In network mode, multiple terminals are connected to server PC through TCP/IP links and managed by administer. In stand-alone mode, single terminal operates and administrated without server connection.
To use SW300/SW301 in network mode, a server and a management program (Access manager Professional) must be installed.

Item	Functions
Server PC	1. ServerS/W : AccessManager Professional 2. Terminal management, communication, and log data collection 3. User profile and log DB 4. Authentication
Client PC	1. Client S/W : RemoteManager 2. User registration and management 3. Checking terminal status and monitoring events
terminal (SW300/SW301)	1. User registration, changing, deletion and checking 2. Consecutive registration of card-only users 3. Handling Warning / Alarm 4. Door control 5. Customizing users 6. Checking logs

Prodcut Description

Touch Screen Display



The follwiong symbos are displayed depending on the network connection status and mode

NL	Connected to server in network mode
NL	Not connected to server in network mode
SO	Stand-alone mode

Chapter 2 Administrator Menu

Entering Administrator Menu
User Management
Authentication Configuration
System Management
Network Configuration
USB Memory Management
External IO Connection
Terminal Initialization

Enterming Administrator Menu

Terminalsers are consists of general users and administrators. General users are only allowed to authentication operation while administrator can change terminal's function by administrator menu.

By touching administrator menu button, administrator authentication screen is displayed.

After authenticating the administrator, administrator menu will be displayed. When delivered from factory, any user can enter the administrator menu without authentication because no user is registered. More than one user must be registered as administrator for security purposes.

1. If no administrator is designated and only general users are registrated in network mode, all users are allowed to enter the administrator menu without authentication.
2. 1:N authentication is used, an administroator with a registered fingerpint can enter administrator menu by authentication of fingerprint without entering ID.

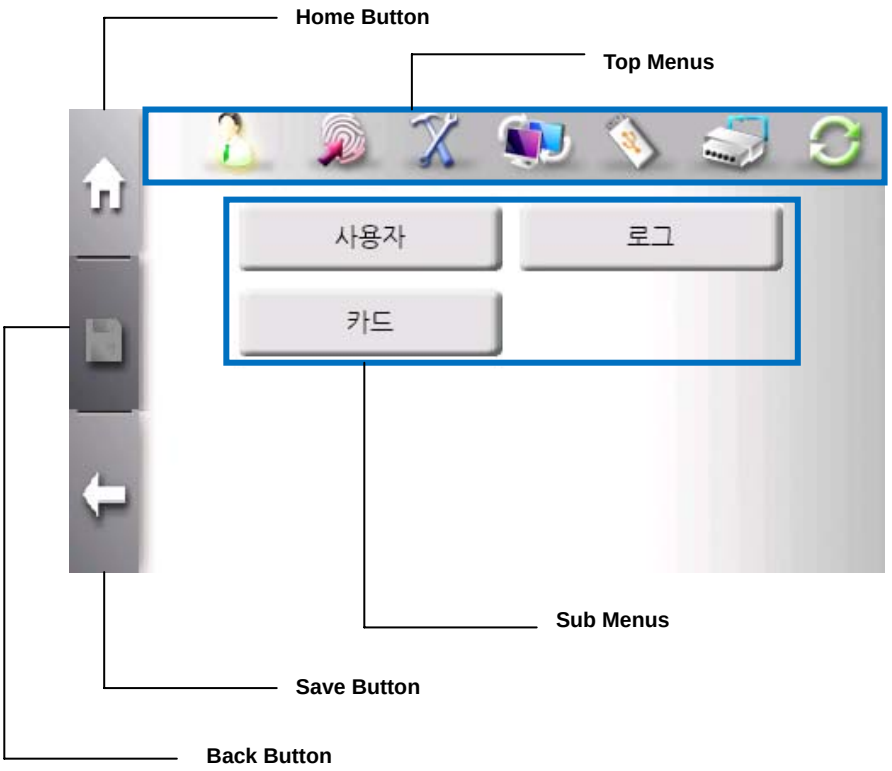
The administrator menu consists of 7 top-menus as shown below.

Top Menu	Sub Menu	Funtion Lists
User	Management	Registration, Changing, Deletion, List, and Seraching
	Card-Only	Registration of card user
	Log	Viewing and Searching
Authentication	Default	Security Level, 1:N Authentication, 1:N Authentication Timeout
	T & A	T&A Type, T&A Auth. Only
	Timezone	Checking Timezone
	Camera	Capture setting, Display
	ETC	Log Saving Enble, User name display mode

System	Display	Languate, LCD Brightness
	Sensor	Capture Timeout, LFD Level, Sensor Option (Brightness, gain, Contrast)
	Information	Terminal ID, Template mode, Firmware Version, OS Version, and so on
	Wallpaper	Terminal Wallpaper
	Sound	Voice, Effect, Volume
	User Info.	Template count, ID length
	Card	Card Type
	Date/Time	Setting data and time
Network	General	Tye, Encryption, Ping Time, AP List
	TCP/IP	Terminal ID, DHCP, Terminal IP, Server IP, Subnet, Gateway, Port number
External IO	Wiegand	Terminal Code, Mode
	Door	Door Function Selection, Signal type, OpenTime, Warning Time
USB Memory Management	Download logs	
	Downlaod all logs	
	Download Users	
	Upload Users	
	Update Firmware	
Initailization	Factory reset	Delete all users and logs Reboot
	Touch Calibaration	
	Self Diagnosis	Check sensor, camera, RTC, network, DB and so on

Using Administrator Menu

Top menu has it's sub menus.If top-menu is seleted, sub-menus are displayed in main window. Top-menus are listed in top of window as shown below.



"**Home Button**" placed in left upper is used to quit current stage and go to initial display.

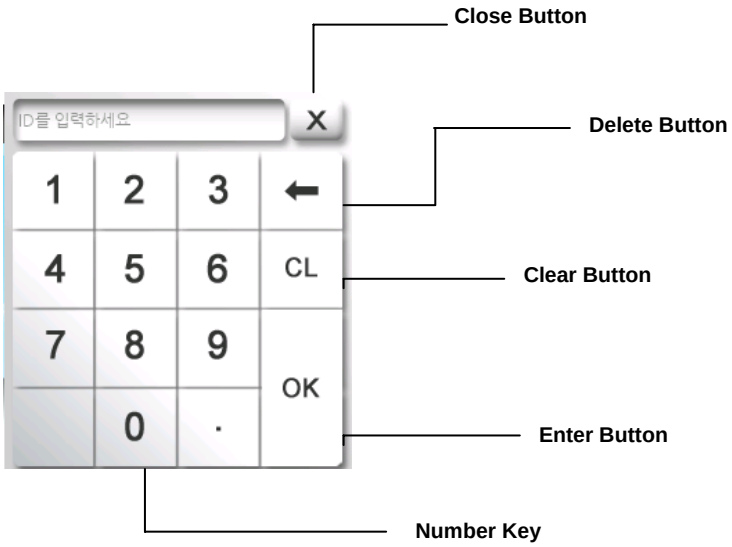
"**Save Button**" placed in left center is enabled when terminal configuration is changed. By clicking this button, new terminal configuration is saved.

"**Back Buttoon**" placed in left bottom is used to go to upper stage.

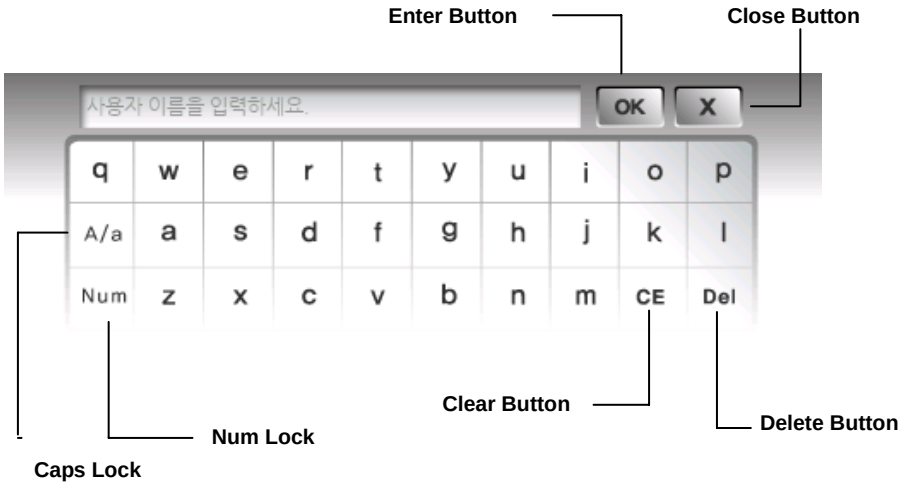
"**Top Menus**" placed in top is used to change menu regardless of current sub-menu.

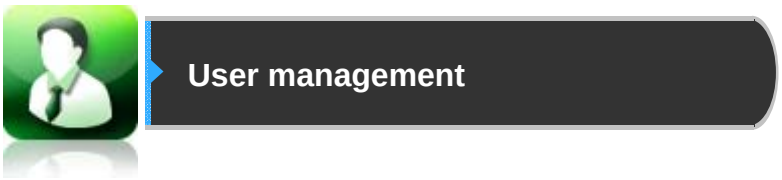
"**Sub Menus**" displays all function lists. By selecting function list, window is changed to support function.

Using Number Keypad

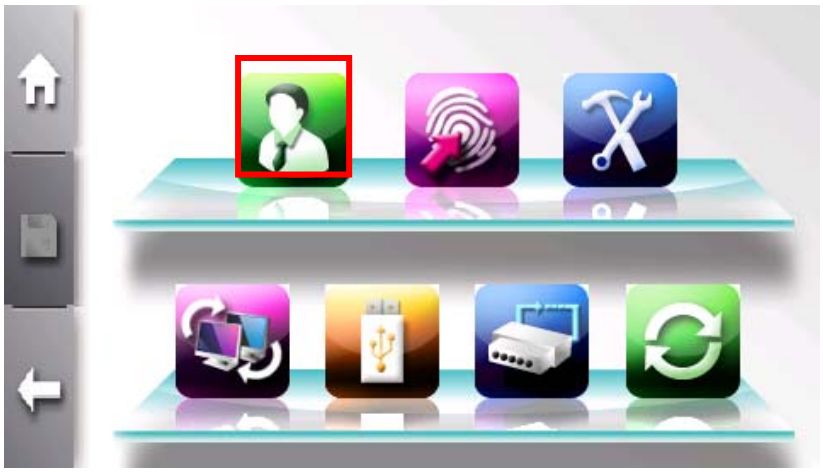


Using Alpabet Keypad





This menu provides user registration, deletion, changing, list of all users, and log of each user.



User Registrartion

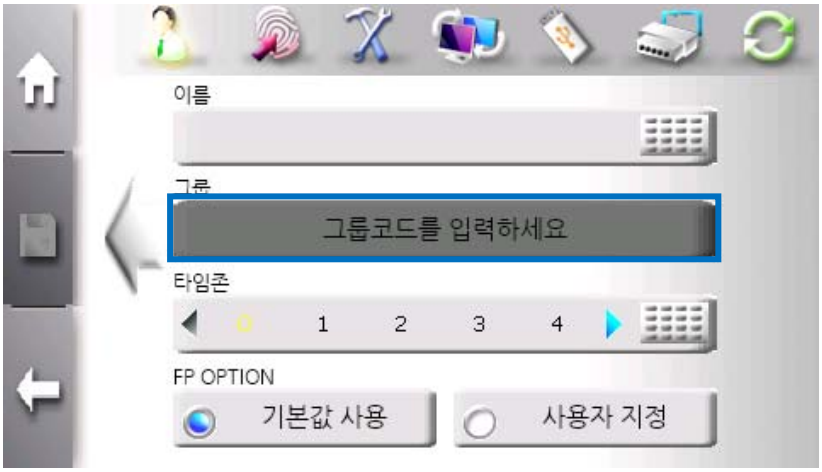
The maximum template capacity of terminal is 100,000. And the user capacity is 100,000.
Accordiing to authentication mode, user has different templates. All users can have password of Card. But user having fingerpint authentication mode has more than 2 and less than 20 templates.
New user can be added if template count is less than 100,000 and user count is also less than 100,000.

For example, 5000 users have 20 templates for each. It reaches the limit of template capacity, but not user capacity. New user can be added if user has only password and Card until user count reaches 100,000.

To add new user, use "Top Menu" → "User Management" → "Registration".

⚠ The firstly registered user is automatically added as administrator.

Click “Keypad” button to input ID.

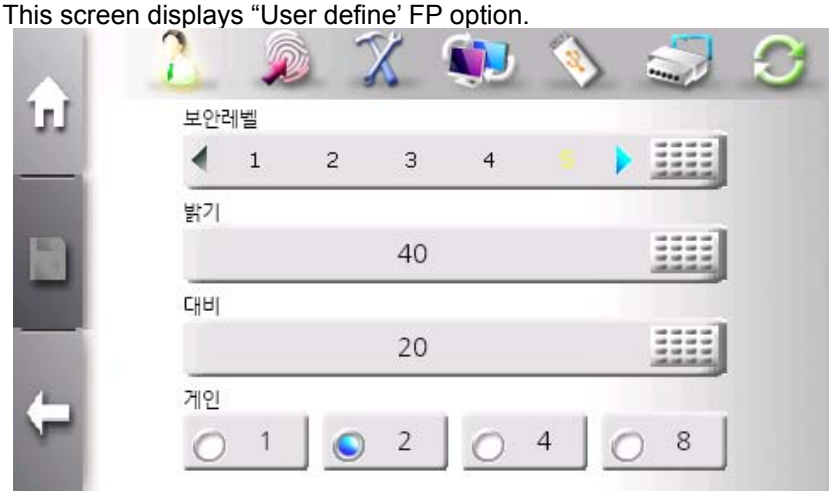


If wanting to assign user to group, select group which is defined in Access Manager Professional program.

Select privilege. Only administrator can enter administrator menu.

"FP option" means fingerpint option. These options are used to sensor capture condition and fingerprint matching level. Sensor capture condition affects fingerprint image quality. Fingerprint matching level defines required matching level to adapt templates. When adding new user, terminal needs twice placements of fingerprint. Each placement produces template. These two templates has more than matching level defined in fingerprint matching level to be registered. We recommend default value if not in specific case.

This screen displays "User define' FP option.



Select more than one of authentication types – Password, fingerpint and RF ID. And click “Save” Buuton.

User Registration - Fingerprint

If fingerprint authentication is selected, the following window is display to get fingerpint.

Select a finger to be registered.

If finger is placed in sensor, fingerprint image is diaplayed. For better aception rate, please place the core of ginerprint on the sensor.

After registering finerprint successfully, green light is turned on above finger. To change registered finger, click green light.
To finish fingerprint registration, click ″Save″ button in left center.

User Registration - Password

If password authentication is selected, the number keypad window is display to get password.

The length of password is between 4 and 11.

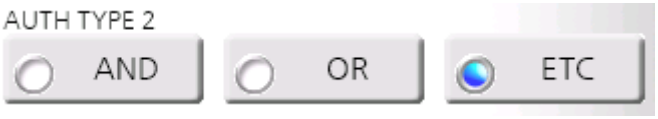
User Registration - Card

If card authentication is selected, the card input window is display to get card ID.

Touch card to card input area.
Caution) Card type must be selected in system management sub menu before touching card.

Combination of authentication mode

User can select various combination of authentication mode.



There are “AND” and “OR” operator. If more than two authentication modes are selected, user can select operator.

With “AND” operator, all of authentication modes are satisfied to be authenticated. With “OR” operator, any one of authentication mode is satisfied to be authenticated.

There is our new authentication type for more flexible combination. User can select thie mode using “ETC” operator.
In “ETC” mode, user can combine 3 authentication types. One is mandatory type and others are optinal types that is combined with “OR” operator.

For example,
If card is mandatory type, fingerprint or password is required for authentication after card authentication.

User Change

An administrator can change user information by selecting user from list that shows user ID and name.

User ID is unique and cannot be changed. Group is only changed in Access Contorl Professional program. The other information can be freely changed.

> Caution
> ▪If there is only one administrator, it cannot be changed to general user.

To change user, use "Top Menu" → "User Management" → "Change" and enter user ID or select user from list.

Select item user want to change and click “Save” button.

User Deletion

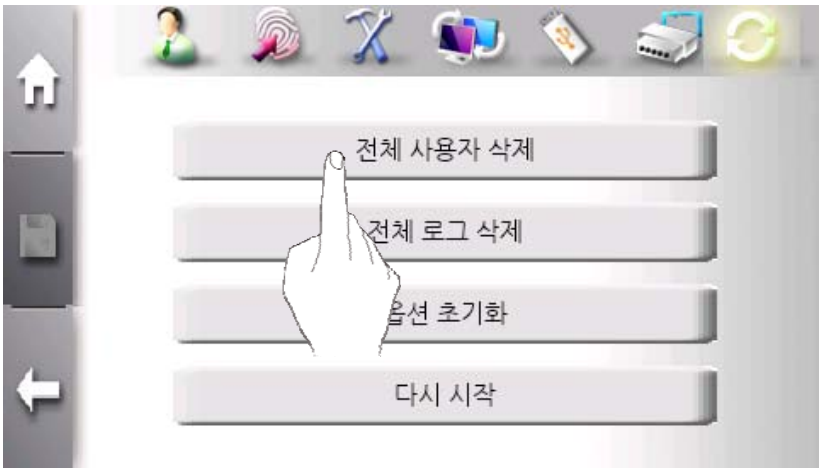
An administrator selects user from list that shows user ID and name and enter change mode to delete user. By processing this sequence, it prevents unintentional deletion.

By click “garbage can” button, user is deleted. For double checking, comfirmation window is displayed.

Total User Deletion

There is case when an administrator wants to delete all users. Terminal provides this function in initialization menu.

In initialization menu, click “Factory Reset” button.



Click “Total User Deletion” button.

User Search

An administrator can check registered user in terminal and search specific user.

In one list, five users are displalyed. If more than 5 users are registered, user list is updated using left and right arrow button.

The above window displays registered user list.

An administrator moves to previous or next page using left or right arrow button.

An administrator can enter user ID to find specific user and click search button.

If partial ID is entered, all matching ID is listed.

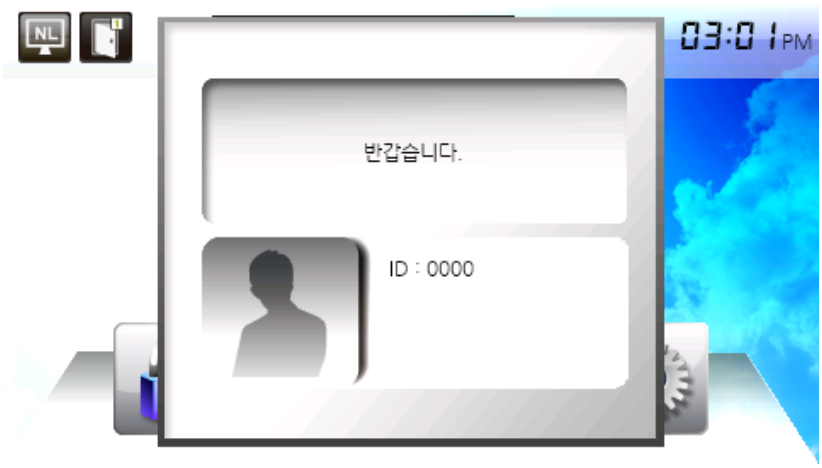
Card-only User Registration

The SW300/SW301 terminal allows door access to be controlled only by card authentication, not fingerprints or passwords. The card-only feature is provided for an aminitrator to conveniently register users. The card-only users are also viewed and changed in user list.

To enter card-only registeration, use ″Top Menu″ → “User Management” → “Card”.

Touch a card on card input area. A card ID is automatically created and user registration is completed.

The registered card-only user can be viewed in user list.



To authenticate with the registered card, touch a card on card input area without user ID.

Information

Card ID is generated from “0”. If ID is used, next ID is automatically increased.

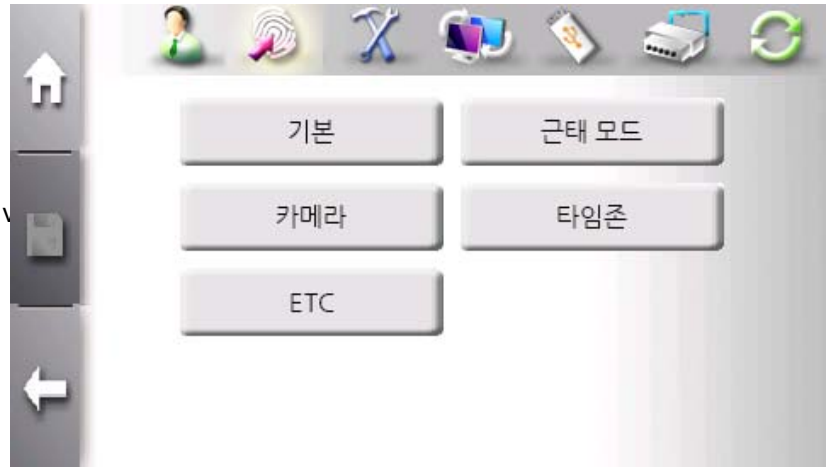
This card-only registration is only supported in network mode.

Authentication Configuration

In this menu, administrator can change Authentication options, sensor options, T&A mode, and card type.

Click top center button to enter authentication configuration menu.

The sub menu consists of Default, T&A, Camera, Timezone, and ETC button.



The “**Default**” button is used to set security level, 1:N indentification mode selection, identification timeout and so on.

The “**T&A**” button is used to set T&A mode.

The “**Camera”** button is used to configure snapshot camera operation.

The “**Timezone”** button is used to view current timezone and select timezone from server timezone list.

The “**ETC**” button is used to configure log saving options and so on.

Default Menu

In this menu, 1:1 security level, 1:N security level, the use of 1:N identification mode, and 1:N identification timeout are configured.

The use of 1:N identification mode

SW300/SW301supports two fingerprint authentication mode – 1:1 verification and 1:N identification. In 1:1 verification mode, an user ID must be needed for authentication. On the other hand, In 1:N identification mode, user ID is not needed and authentication is done by searching all templates.
1:1 verification is recommended for faster authentication and 1:N identification is recommended for simple authentification.
To use 1:N identification, select “Use” check box.

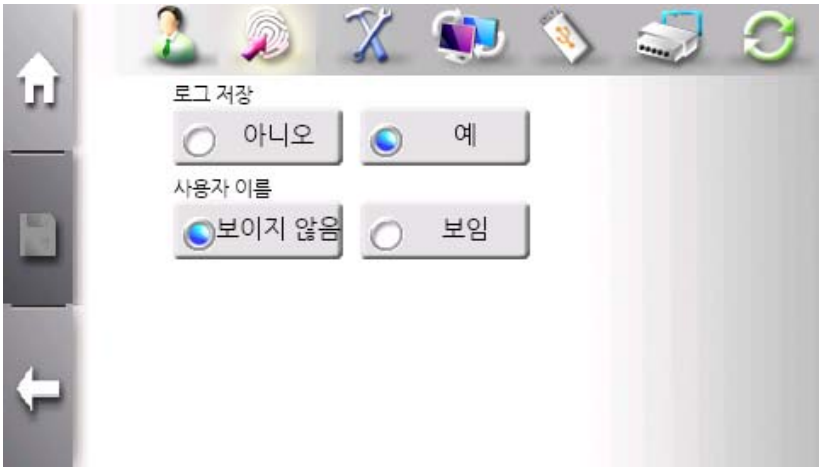
Security Level

There are two security levels – 1:1 verification security level and 1:N identification security level. The 1:1 verification security level is between 1 and 9, and the default is 5. The 1:N identification security level is between 5 and 9, and the default is 8. The higher security level is, the higher FRR (False Reject Ratio) is. The lower security level is, the higher FAR (False Accept Ratio) is. Therefore the default level is recommended. This level is applied to all users except those who choose user security level.

1:N identification timeout

When 1:N identification is used, terminal needs the time limit during which template data is searched. This time can be from 3 to 9 seconds with default 3 seconds. If not find matching template, “Identification timeout” error will occur.

ETC Menu



The use of User name Display
It selects whether user name is displayed when authentification is succeeded,

Saving Logs
It selects whether logs occurred during user authentication are saved or not. To save logs, select “Yes” check box.

T&A Menu

In Time and attendance mode, user must touch function key before performing ahtuentication process. The authentication log will be sent to server with function key information.
According to function keys, user records are classified into “Coming to work”, “Leaving work”, “Going out”, and “Returning” for efficient management.

Time and Attendance mode selection

To use T&A mode, select one of “Simple”, “Normal”, and “Extended” check box. “Simple” mode supports 2 function keys, “Normal” mode supports 4 function keys, and “Extended” mode supports 99 function keys. The default setting for “Simple” and “Normal” are as followings.

F1: Coming to work
F2: Leaving work
F3: Going out

F4: Returning

In “Extended” mode, function keys can be freely defined depending on the user’s requirements

To allow entry only through T&A authentication, select “Yes” check box in “T&A Auth Only” type. If this mode is enabled, user must press function key to open the door.

Click “Save” button to save current setting.

Camera Menu

In this menu, camera operation such as the usage and the time of capture can be configured.

Capture mode
The usage of camera and the capture timing can be configured. Camera takes picture when authentication success, fail, or both according to the capture mode.

Resolution mode
This mode is fixed to Low (320 x 240 pixels).

Display mode

If display mode is enabled, captured image is shown on the screen after authentication result window is closed.

 # Information

The photo data is saved in ACM pro folder in server and SD memory in terminal. Server has no limit for photo count, but terminal can save upto 20,000 photos. If new photo is added after reaching limit, the oldest photo is deleted.

Timezone Menu

This menu is used to restrict or allow access during certain time period – time or date. In this menu, current timezone configuration is displayed. The selection of timezone is configured in “User Management” menu.

Terminal Timezone means currently applied timezone name.

Using left or right arrow, display can be scrolled.

Caution

▪Timezone can be set only through AccessMnanger Professinal program but not through terminal.

Information

Terminal supports 16 timezone configurations. It cannot change timezone configuration but selects which timezone is to be sued.

System Management

In this menu, administrator can change backgroud wallpaper, language, time, sound and so on.

Click top right button to enter system management menu.

The sub menu consists of Display, Sound, Sensor, User, Information, Card, Background, and Date&Time button.

The “**Display Menu**” button is used to set terminal language, the brightness of LCD.

The “**Sound**” button is used to set sound effect, voice, and volume.

The “**Sensor**” button is used to config sensor options and capture timeout.

The “**User**” button is used to set user information such as ID length, the number of template for one user, and so on.

The “**Information**” button is used to check current terminal status.

The “**Card**” button is used to set card type and usage.

The “**Background**” button is used to change backgroud image.

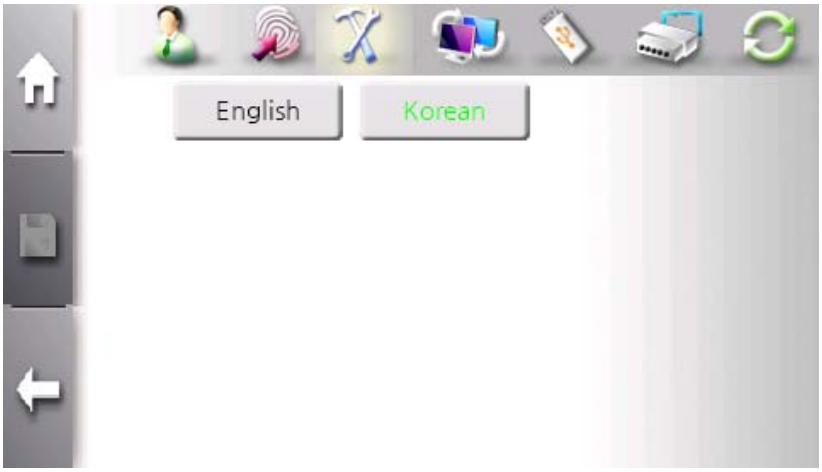
The “**Data&Time**” button is used to set system data & time.

Display Menu

This menu is used to change display & voice language and adjust LCD brightness.

LCD brightness

LCD brightness can be set between 1 and 100. The default value is 100. The smaller value is, the darker LCD brightness is. To change value, click keypad button and enter value.



Language

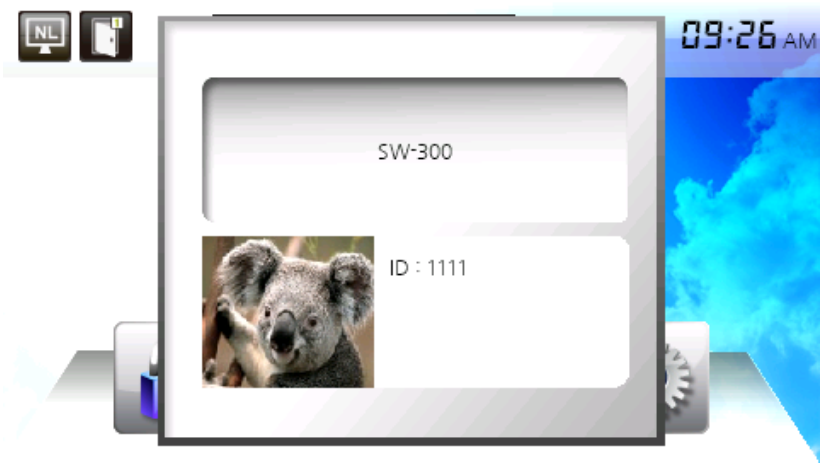
Select language pack applied to display and voice. More language will be added.

Background Menu

Background

The background image can be selected from defult images and user images using left or right arrow button. After selecting, click “Save” button to activate. User images must be transferred to terminal through AccessManager professional program before selection.

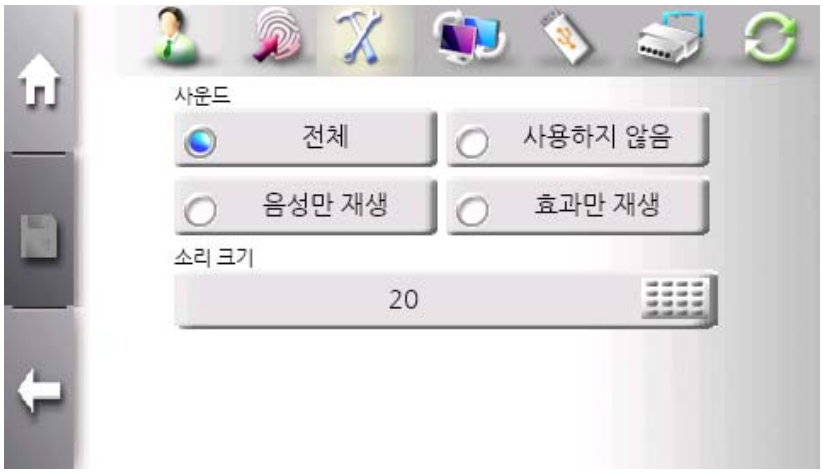
Information
If the size of image is less then 480x272, image can be contorted.



Display photo and text for each user

When user is authenticated successfully, user-defined photo and text can be displayed. This function is only configured through AccessMange professional program. For more information, please refer to “AccessMananger professional user manual”.

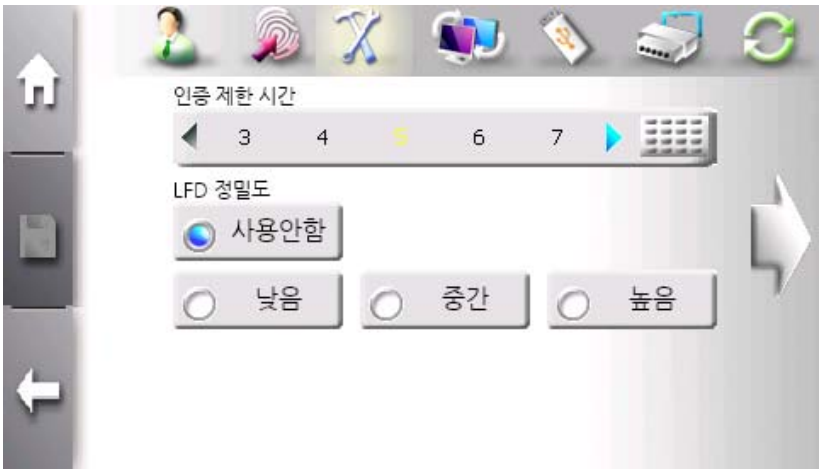
Sound Menu



Volum can be set between 0 and 100. But 0 means mute. To change volume, click keypad button and enter value. According to sound selection, voice only or sound effect only is possible.

Sensor Menu

This menu is used to sensor options such as gain, brightness, contrast, capture timeout, and LFD level. Thiese options are terminal default values. If individual user's options are not defined in registration process, terminal default values are applied.



Capture Timeout

This value defines how log sensor waits to finish capture. This value is set from 3 to 9 seconds. The default value is 5 seconds.

LFD (Live Finger Detection) Level

This selects which level of LFD is used. "Low", "Middle", "High" and "Disable" are available.

Sensor Options

If the image of fingerprint is too bright or dark, sensor options can be adjusted. The brightness and contrast is chaged by clicking keypad button. And the gain is selected from 1, 2, 4, and 8.

The default brightness is 40, the default contrast is 20, and the default gain is 2. These values are seletected deliberately by NITGEN&COMPANY. We strongly recommend these default vaules.

User Menu

This menu is used to configure fingerprint scan count to be inpuuted during fingerprint registration and the length of ID. These values can be changed only when there is no user in terminal. An administrator must delete all users before changing vaules.

The finigerprint scan count is selected to 1 or 2. The default value is 2.

The length of ID is selected from 4 to 20. The default value I 4.

Information Menu

This menu is used to check terminal ID, the total number of users and templates, the number of administrators, firmware version, OS version, network version, T&A mode, and card type.

Card Menu

This menu is used to configure the usage of card and card type.

The usage of card is selected. To accept card authentication, this selection must be set to “Normal”

Five card types are currently supported. These ara available card types.

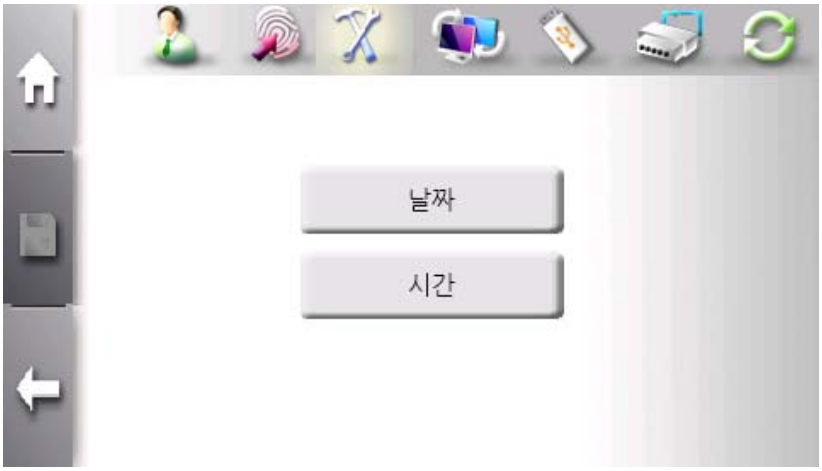
- Mifare
- EM
- HID 26-bit
- HID 35-bit
- IClass 26-bit

If card type is not match to card module installed in terminal, card authentication does not operate normally.

If the usage of card is selected as “Disable”, card types are disabled and unselectable.

Data&Time Menu

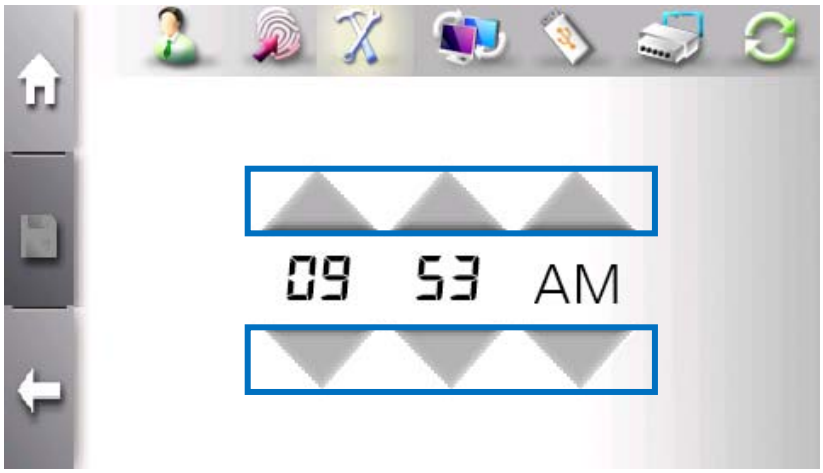
This menu is used to set terminal system data and time.



The “**Date**” button and the “**Time**” button are provided for selection.

Year and Month is set using keypad. Year can be selected from 1900 to 2300. And Month can be selected form 1 to 12.

Using left or right arrow button, month can be moved previous or next month.



Time can be changed by enter value from keypad after clicking hour or minute or by clicking up/down arrow.

Network Configartion

SW300/301 terminal operates either in network or stand-alone mode. In network mode, wire or wireless network is supported.

Click bottom left button to enter network configration menu.

The sub menu consists of General and TCP/IP button.

The “**Normal**” button is used to select operation mode and related option about network.

The “**TCP/IP**” button is used to configure server IP, server port number, ad the usage of DHCP.

Normal Menu

Stand-alone mode

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The terminal operates without external connection through network.

To change to stand-alone mode, set type to “Disable” check box.
This changed is activated after clicking “save” button.

⚠ In stand-aline mode, all operations about registeraion and authentication are done in terminal.

Notwork mode

The terminal communicates with server for convient and efficient management such as registration, log control, user management, and so on.
To use network mode, AccessManager Professional program and server must be installed in PC.

Network mode is selected by setting type to “Wire” check box to use wire network or by setting type to “Wireless” check bot to use wireless network

The “Encryption” field selects which encryption algorithm is used to exchange data between terminal and server. It supports DES and AES 256bit mode.

AP (Access Point) list shows available wirless network connection. According to AP prection mode, some AP requires protection key.

This changed is activated after clicking “save” button.

TCP/IP Menu

After selecting network mode, TCP/IP must be configured to connect to server.

The “Terminal ID” is unique identification number assigned to terminal between 1 and 2000.

The “Server IP” field must have IP address of PC in which AccessManager Professional program.
The “Port” field must have port address of PC in which AccessManager Professional program. This value can be set between 2000 and 65535. The default value is 7332. This value must be same as that of AccessManager Professional program.

If DHCP is enabled, terminal gets network configuration from DHCP server.

What is DHCP (Dynamic Host Configuration Protocol)?
The DHCP server automatically allocates and manages settings for TCP/IP communication. If DHCP is on, related information such as terminal IP, subnet mask, and gateway are automatically allocated.

If DHCP is disabled, network configuration needs to be set manually. Network configuration consists of terminal IP, subnet mask and gateway IP. Please contact IT manager of office to get available setting.

This changed is activated after clicking “save” button.

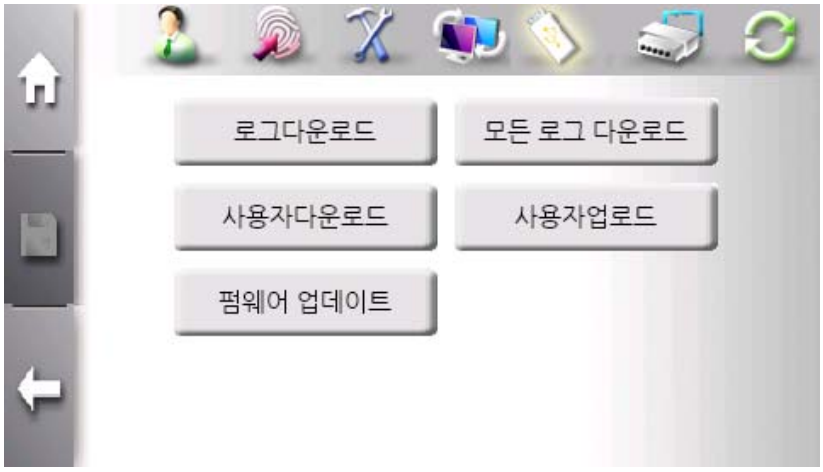
USB Memory Management

SW300/SW301 terminal provides USB port to upload/download user data and download log data.

All upload/download functions are available in stand-alone mode, but log download function is available in network mode.

Click bottom “USB memory” icon button to enter USB memory mangement menu.

The sub menu consists of Log Download, All Log Donwload, User Download, User Upload, and Firmware Update.



The “**Log Download**” button is used to download newly added logs after downloading lastly.

The “**All Log Donwload**” button is used to download all logs that saved in terminal.

The “**User Download**” button is used to download all of users.

The “**User Upload**” button is used to upload new users from USB memory to terminal.

The “**Firmware Update**” button is used to update firmware.

Log Download Menu

Log data would be downloaded to USB memory stick selectively - all logs or newly added logs.

In network mode, all logs are saved in server without network problem. If network problem occurs, newly added logs can be downloaded using USB memory management function

Log data is stored with file name of SW300_LogDB_Dn1.nlg. New log data is stored in same USB memory stick , filename is changed to increase last index such as SW3000_LogDB_Dn2. Log, SW300_LogDB_Dn3.log and so on.

All log data stored in USB memory stick can be loaded by AccessManager Professional and saved to server.

User Download Menu

When downloading user data to USB memory stick, user data is stored in root directory with filename “_User.ndb”.
Pop-up window is displayed to confirm overwriting if same-named file exists. If “No” is selected, user-download is cancelled.

User data stored in USB memory stick can be loaded by AccessManager Professional.
User-download function is only available in stand-alone mode.

User Upload Menu

When uploading user data from USB memory stick to a terminal, it is added to the existing DB, and if the user ID exists already, this user data is ignored.

User-uoload function is only available in stand-alone mode.

To move the user data form terminal #1 to terminal #2, process the following sequences

1. Insert USB memory stick to terminal #1 and select user-download function.
2. If finished, “SW300_User.ndb” file is created in root directory.
3. Insert USB memory stick to terminal #2 and select user-upload function.

Firmwware Update Menu

SW300/SW301 supports firmware update using USB memory stick.

After inserting USB memory stick having SW300_Cab.CAB file in root directory, click “Firmware Update” button. During copying, the progressing bar is displayed. If done, terminal will be rebooted.

There is another way to update firmware.
After inserting USB memory stick, reboot terminal. When rebooting, terminal checks USB memorystick and update firmware automatically.

Firmware update can be possible from Remote Manager program of AccessManager Professional.

External IO Connection

An administrator configures external IO operation through this menu.

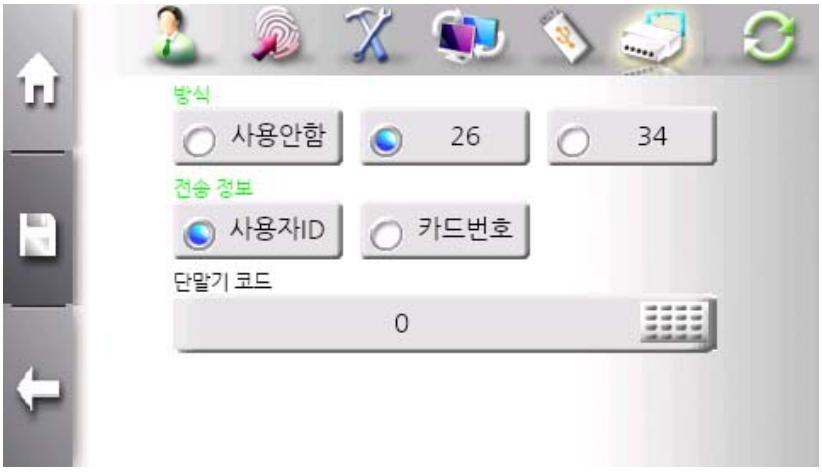
The sub menu consists of Wiegand and Door.

The “**Wiegand**” button is used to select the usage of wiegand data line and data format.

The “**Door**” button is used to configure door control and operation.

Wiegand (Wiegand out configuration) Menu

When authentication success occurs, terminal transmits data through wiegand lines according to the configuration of this menu.



The “Type” field defines the usage of wiegand out lines. When enabled, 26-bit and 34-bit formats are supported.

The “Send Data” field selects which information is send between user ID and card ID.

User ID

- 26bit Wiegand: E.Parity(1bit)+Facility Code(8bit)+User ID(16bit)+O.Parity(1bit)
- 34bit Wiegand: E.Parity(1bit)+Facility Code(16bit)+User ID(16bit)+O.Parity(1bit)

Card Number

- 26bit Wiegand: E.Parity(1bit)+Card Data(24bit)+O.Parity(1bit)
- 34bit Wiegand: E.Parity(1bit)+Card Data(32bit)+O.Parity(1bit)

Wiegand In (with Externl RF Reader) Operation

- It is possible to use external RF reader with wiegnad-In port.

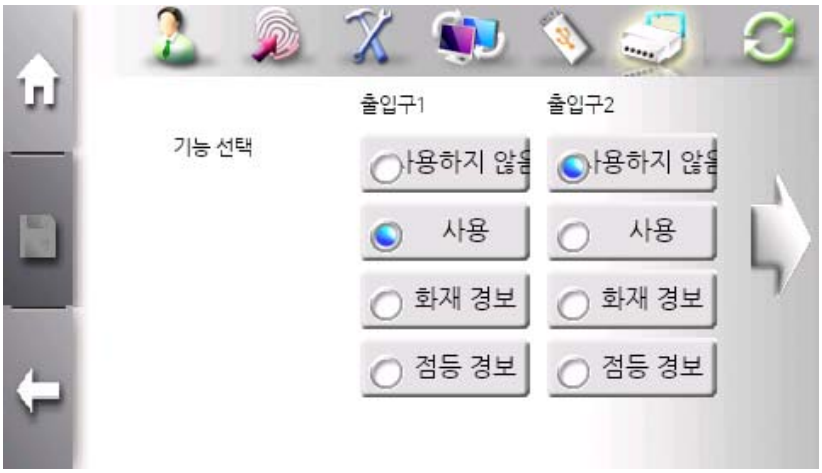
- Wiegand-In is configured as card type.

- Wiegnad in can be set to 34bit (Mifare) or26bit (EM,HID26).

- External RF reader should be installed near terminal. If a user uses the fuction of T&A Auth Only or Combined authentication, a user must touch the LCD or sensor with the terminal

Door Menu

This menu is used to configure two doors operation mode. Each door has three operatioin modes – Normal use, Fire Alarm, and Light Alarm.



If “Fire Alarm” is selected, external event is detected, warning message is displayed and waring sound is played.

The “Result signal” field selects in which result signal is outputted. If “Success” is selected, active signal is outputted when successful authentication occur.

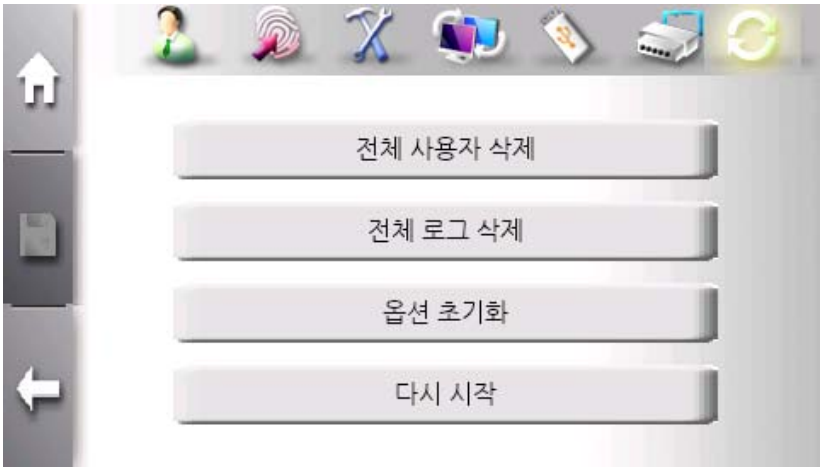
The “Open Duration” field defines how log signal is active. This value is from 5 to 20.

Terminal Initialization

An administrator instiallzes terminal to factory-setup and calibrates touch-panel.

The sub menu consists of Initialization, Calribration and Self-Diagnosis.

Initialization Menu



The “Delete All Users” button is used to delete all users.

The “Delete All Logs” button is used to delete all logs.

The “Option Initializatoin” button is used to set option to default value.

The “Reset” button is used to reboot terminal.

Self-Diagnosis Menu

In this menu, terminal tests internal parts such as sensor, camera, RTC, network, and DB validity.

The diagnosis is started by clicking “Start Self Test” button.
Accordign to the result, “OK” or “Fail” is marked for each list.

Calibration Menu

In this menu, the sensitivity and position of touch-panel is adjusted.

Carefully press the “+” mark and keep holding for a while.
After the “+” mark moves, repeat press and hold.
After completing calibaration, touch the screen once and save the calibration data. If no action is taken for 30 seconds, the calibration will be cancelled and the previous setting will be restored.

For touch the screen correctly, please use a delicate tool such as styplus pen.

Chapter 3 Appendix

Troubleshooting

Specification

Troubleshooting

<If the Touch function does not work properly>

1. Check if there is any dust on the touch sensor, and clean the sensor with soft towel or paper.
2. If the area of the finger touching the screen is large, sensitivity may drop. Use your fingertip when touching the screen.
3. Scratches or damage to the touch sensor may result in malfunctioning. Check for scratches or damage to the touch screen.
4. Adjust the sensitivity of the touch screen by selecting “Initialization” → “Calibration”.

The device is designed to respond when your finger is removed from the touch screen. If the position where the finger was placed is different from the position where the finger was removed, the touch function may not work properly

<If fingerprint authentication takes too long>

1. If the terminal uses 1:N authentication in network mode, server overload may occur, resulting in slow authentication and recognition. In this case, a dedicated server should be used.
2. Check if the finger and the sensor are clean. Clean the finger and the sensor. If the user’s finger is hurt, the user must register another fingerprint.
3. If the fingerprint is not clean, lower the security level of the user and use the 1:1 authentication method.

Input the user’s ID in 1:1 mode and check if the user exists.

<If fingerprint is not registered>

If the finger is too dry or humid, fingerprint image quality may be poor and may not register. Dry or moisturize the finger before registering the fingerprint.

Specification

Item	Description
LCD	4.3” Touch Screen TFT-LCD High Color(16Bit), 480(H) x 272(W)
CPU	667MHz 32Bit RISC
Memory	256MB RAM, 256MB Nand Flash
Sensor	NITGEN OPP06 Optic sensor 500DPI(LFD, Auto-On)
Authenticaition Speed	1:1 Verificaitoin: less than 0.5 second 1:N Identification: less than 1 second in 4000 templats
FAR/FRR	0.001% /0.1%
Capacity	100,000 templates or 100,000 users(PW, RF)
Communication	TCP/IP, WIFI, Wiegand
Dimension	167.4(W) x 146.5(L) x 67(H) mm
Adaptor Power	Input : AC 100V ~ 240V, 50/60 Hz Output: DC 12V, 3A
Door Connection	Upto two doors (DeadBolt, Electro Magnetic-lock, Elecric Strike, Auto door Fire Alarm)
Options	RF Module, Wireless Network, Battery, POE
Temperature/ Humidity	-20 ~ 60℃
etc	Voice announcement, USB Port, Warning/Alarm

WARNING

This is a class A product. In a domestic environment this product may cause radio interference in Which case the user may be required to take adequate measures.

INFORMATION TO THE USER (15.105(a))

For Class A digital device

INFORMATION TO THE USER

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING(Part 15.21)

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.