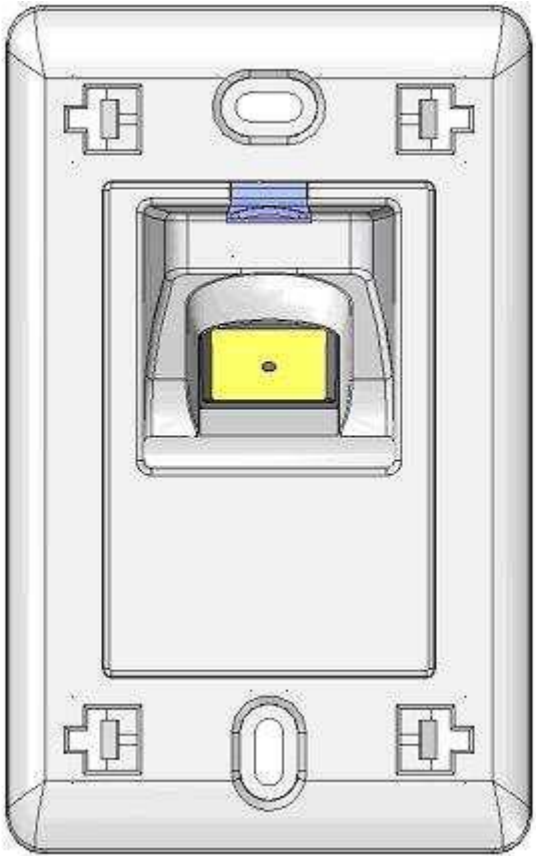
# FMD10-BLE User Guide

Version eng-1.06



# <Revision History>

| Version | Date | Description | Firmware Version |
|---|---|---|---|
| 1.00 | 2014-08-06 | Initial Release | 10.61.00-000.16 |
| 1.01 | 2014-08-07 | Changed default values | |
| 1.06 | 2015-10-19 | FMD10-BLE changes | 20.62.00-000 |
| | | | |

# < Glossary >

● Admin, Administrator

- As a user who can enter into the terminal menu mode, he can register/modify/delete terminal users and change the operating environment by changing settings.
- If there is no administrator for a terminal, anyone can change the settings, so it is recommended to register at least one administrator.
- Caution is required with registration and operation because an administrator has the right to change critical environmental settings of the fingerprint recognition unit.

● Authentication Method

- Various Kinds of authentication including FP (fingerprint) authentication, RF (Card) authentication, or a combination of these methods.
  Ex) Card or FP: Card or fingerprint is used for authentication.

● Bell Button

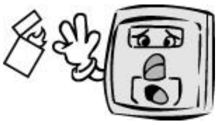
- Used to activate a bell/device/door phone that is externally connected to the device.

# Table of Contents

# 1. Read Before Using

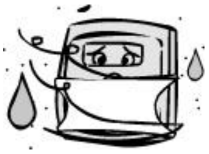
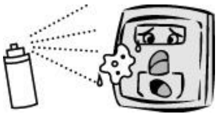
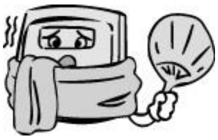
## 1.1. Safety precautions

- Warning

| | | | |
|---|---|---|---|
| Handling with wet hands or allowing liquid to flow into it is not advised.<br>-> it may cause an electric shock or damage. | | Do not place a fire source near the unit.<br>→ It may cause a fire. |  |
| Do not disassemble, repair, or modify the unit.<br>-> It may cause an electric shock, fire or damage. | | Keep out of reach of children.<br>-> It may cause an accident or damage. | |

- If the above warnings are ignored, it may result in death or serious injury.

- Cautions

| | | | |
|---|---|---|---|
| Keep away from direct sunlight<br>-> It may cause deformation or color change. | | Avoid high humidity or dust<br>-> The unit may be damaged. |  |
| Avoid using water, benzene, thinner, or alcohol for cleaning<br>-> It may cause an electric shock or fire. | | Do not place a magnet close to the unit.<br>-> The unit may break down or malfunction. | |
| Do not contaminate the fingerprint input area.<br>-> Fingerprints may not be well recognized. | | Avoid using insecticides or flammable sprays near the unit.<br>-> It may result in deformation or color change. |  |
| Avoid impacts or using sharp objects on the unit.<br>-> The unit may be damaged and broken. | | Avoid severe temperature changes.<br>-> The unit may be broken. |  |

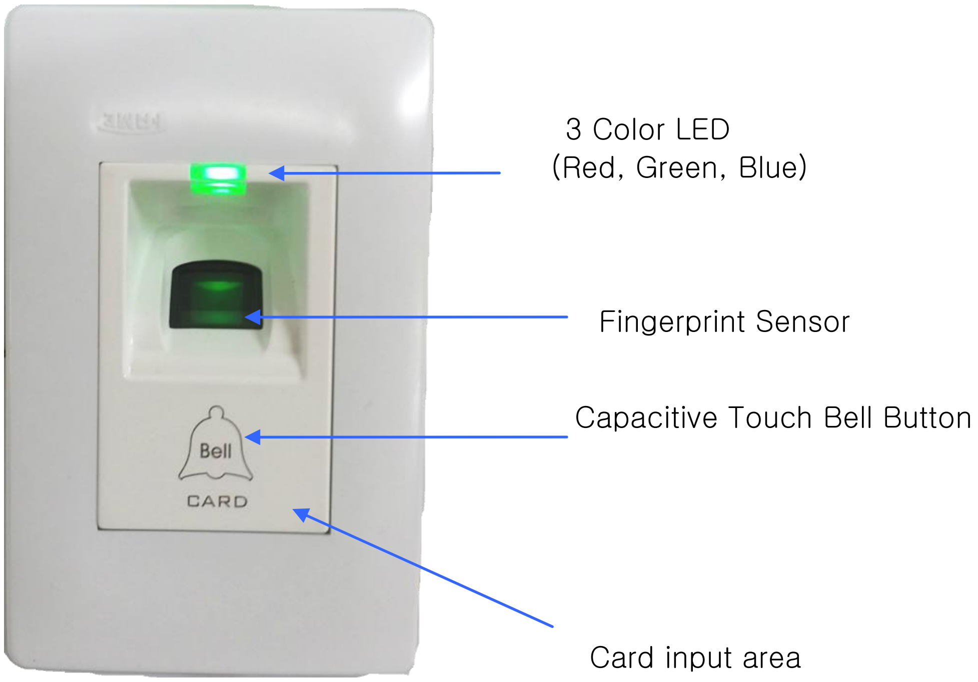
- If the above cautions are ignored, it may result in property loss or human injury.

※Under no circumstances will Union Community be responsible for accidents or damages caused by inappropriate use of the product caused by not referring to the user manual.

## 1.2. Specification

| ITEM | SPEC | REMARK |
|---|---|---|
| CPU | 32Bit RISC CPU(400MHz) | |
| RTC | CPU RTC / Lithium Battery | Time/Date for Logs |
| Bell Key | Capacitive Touch Sensor | Activate Bell Output |
| LED | 3 Colors (Red, Green, Blue) | |
| Buzzer | Audible feedback buzzer | |
| MEMORY | 64M SDRAM | |
| | 4M NOR Flash | 1,000 User<br>(1,000 Finger) |
| Fingerprint Sensor | Optical | |
| Authentication Speed | <1 sec. | |
| Scan Area / Resolution | 13.2 * 15.2 mm / 500 DPI<br>260*300 | |
| FRR / FAR | 0.1% / 0.001% | |
| Temperature / Humidity | | |
| Operating Current | Standby: 80mA<br>Maximum: 250mA | |
| AC / DC Adapter | INPUT : Universal AC 100 ~ 250V | |
| | OUTPUT : DC 12V | |
| | UL, CSA, CE Approved | |
| Communication Port | Bluetooth: Bluetooth v2.1 + EDR Class 2 Output Power | B-UNIS Smartphone application |
| | RS-485 | BLC015/LC010 |
| | Wiegand Out | Standard 26/34 bit Wiegand |
| Lock | Lock Normally Closed/Open | Door Lock |
| Monitoring | M0, M1 Inputs | Door monitoring |
| Inside Open | IO | Exit Button Input |
| Bell Output | Bell A/B<br>Max Current = 60mA | Door phone/bell output |
| Card Reader | 125KHz RF (optional)<br>13.56MHz SC | |
| SIZE | 72mm * 111mm * 41.4mm | |

## 1.3. Device description



## 1.4. LED operation

| | | | |
|---|---|---|---|
| ● | Failure | Red | Light off : Normal<br>Light on : When authentication is failed |
| ● | Success | Green | Light on: Card or Fingerprint successful authentication. Will turn on for the door open period duration. |
| ● | Status | Blue | Flickering : Bluetooth connection status ( if enabled)<br>Light on: When “LED always on” is set in the terminal settings. |

## 1.5. Door Bell Key Operation

| | |
|---|---|
| Normal Operation | When pressed beep sound is emitted and the bell output will activate ( Door Bell Operation) |
| Initialize Parameters | 1) Apply Power<br>2) Within 1 second press and hold the bell key for 2 seconds |
| BLE Register Mode | When registering the device with the mobile application press and hold the Door Bell Key for 5 seconds. |

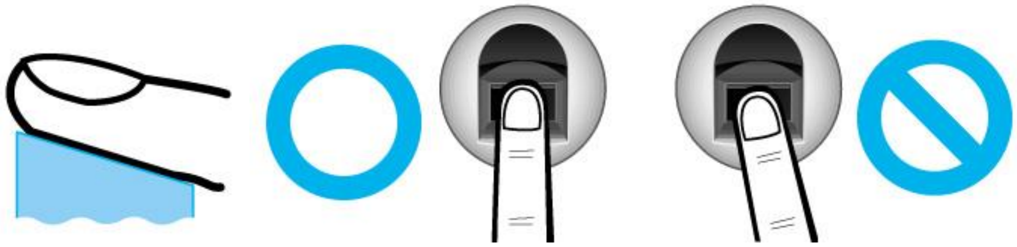
## 1.6. Buzzer sound during operation

| | | |
|---|---|---|
| “beep” | Pressing Bell button or a reading a card | When a button is pressed or a card is being read<br>When fingerprint input is completed, allowing the user to remove his fingerprint |
| “beep beep” | Failed | Authentication failed or wrong user input |
| “beep,beep beep” | Successful | Authentication successful or settings for the current user are completed. |

## 1.7. Correct fingerprint registration and input methods

- Correct fingerprint registration methods

Place your index finger on the window just as you do with a finger stamp.
Finger tip touching is not an appropriate registration or input method.
Make sure the center of your finger touches the window.



- Use your index finger.

The index finger guarantees an accurate and stable fingerprint input.

* Check if your fingerprint is unclear or damaged.
It is difficult to recognize fingerprints on dry, wet, unclear, or injured fingers.
Use another finger in this case.

- Cautions about fingerprint condition

Depending on the user’s fingerprint condition, some fingerprints may not be used or may cause an inconvenience.

- If the fingerprint is damaged or very unclear, then it cannot be recognized.
  Please use a password instead in this case.
- When a finger is dry, breathe on the finger for smooth operation.
- For kids, it may be tricky or impossible to use the unit because their fingerprints are too small or very unclear. It is recommended to register their fingerprints every six months.
- For the elderly, it may not be possible to register their fingerprints if there are too many fine lines on the fingerprints.
- It is recommended that you register more than 2 fingerprints.

# 2. Introduction

## 2.1. Description

FMD10 is a flush mount access control device. It can be used in small/medium business applications or residential access control. FMD10 will provide access into a secured area using a registered fingerprint or card. A door bell feature is available for connecting the FMD10 to a door phone or door bell for visitors.
FMD10 communicates using Bluetooth Low Energy (BLE) Technology to the UNIS-B Plus or imKey mobile application for mobile key access and/or administrative functions.

## 2.2. Features

- **Bluetooth v4.0 Communication**

  - Simple setup using UNIS-B Plus smartphone application
    - ◆ Log management
    - ◆ Firmware upgrade
    - ◆ User Management

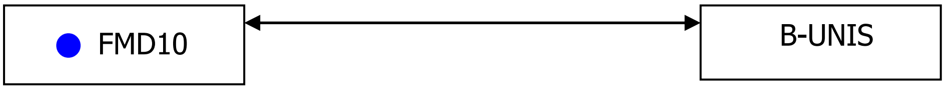
- **Optical Fingerprint Sensor**
  Auto Sensing - Simple authentication process without any key input
  Live Finger Detection (LFD) – Programmable LFD level for detecting real/fake fingerprints.

- **Card Reader**
  Smart card reader (standard) or optional 125KHZ RF reader.

- **Door Bell**
  - Capacitive touch key for activating an externally connected door phone/bell for visitors.

## 2.2. Configuration

### 2.2.1. Standalone Configuration



Please see the B-UNIS SmartApp User Guide for setup and connection information

Establish Bluetooth connection to B-UNIS smartphone application

- B-UNIS Password: 9999

- Basic setup when released from a factory

NOTE: If the B-UNIS Password is lost and you cannot connect to the FMD10 you should factory initialize the device see 1.5. Door Bell Key Operation

# 3. Environment Settings

## 3.1. Parameters

Setup parameters are set from the B-UNIS Smartphone application:

**Terminal/Device Name**: 1-30 characters
This is the FMD10 name for identifying the device from the Bluetooth
Default: FMD10_99999999

**Buzzer Sound**: ON/OFF
This is to control the buzzer output
Default: ON

**Bluetooth Status LED**: Enable/Disable
If enabled the blue LED will flicker when successfully connected to the B-UNIS application
Default: ON

**Blue LED:** Enable/Disable
If enabled the blue LED will always be on and if connected to the B-UNIS application the blue LED will turn off. If Bluetooth status LED is enabled, the blue LED will flicker when connected.
Default: ON

**LFD Level**: Off/Low/Medium/High
Live Finger Detection for fingerprint detection. This feature can be used for higher security applications when the user would like to protect against fake fingerprints. If the level is too high some registered users may take longer for fingerprint authentication.
Default: Off

**Logon Password**: 1-16 characters
This password is used for logging into the B-UNIS application via the smartphone.
Default: 9999

**Door Status #1**: Disabled/Normally Open/Normally Closed
If a monitoring device (door lock) is connected to the M0 input on the FMD10, this value should be set according to the external device settings. (NO or NC)
Default: Disabled

**Door Status #2**: Disabled/Normally Open/Normally Closed/Fire Normally Open/Fire Normally Closed
If a monitoring device is connected to the M1 input on the FMD10, this value should be set according to the external device settings, if connected to an external fire system and a fire is detected, the FMD10 will open the door. (NO or NC).
Default: Disabled

**Door Open Time**: 1-60 seconds
This is the lock activation period. If a lock is connected to the lock output, the lock will open for this period.
Default: 3

**Bell Touch Key**: 100-5000ms (0=disabled)
If the bell key is used for a door bell, this is the period in which the bell button must be pressed for. If 0 is set the bell touch key is disabled.
Default: 5000ms

**Bell Activation Period**: 0-60 seconds
If the Bell touch key is pressed, this is the period in which the bell output will activate. 0 = disabled.
Default: 1 second

**Card Format**:Hexa Reversed, Hexa Normal, Decimal, Decimal_2
When a card is scanned this setting determines the encoding format of the card.
Default: Hexa Reversed

**Wiegand Output:** Disabled/26 bit/34 bit
If the FMD10 is connected to an external controller using the Wiegand outputs, this is the format of the User ID sent to the external controller using wiegand. Note: Only a successful authentication will send the user id via wiegand
Default: Disabled

**Wiegand SiteCode:** 0-255 decimal
If wiegand output is enabled, this is the 3 digit ID code sent before the user id on the wiegand output ( i.e 2551234) this is 255 and user ID=1234.
Default: 0

**Lock Function:**

LOCAL= Set this option if connecting your lock device on the FMD10 device. (Default setting)
BLC015/LC010 = Set this option if connecting your lock to the LC010 or BLC015.
485ID = **(Unsupported, Do not use)** Set this option, and then set ID from 0-7 if using the 485A/B connected to an external controller.

*Note: For all devices externally connected to the FMD10 (locks, monitoring, wiegand, etc). Please see the FMD10 Installation and Wiring Diagram.*
*When setting for BLC015/LC010, the lock output and the Inside Open on the FMD10 will not operate. In this case the lock should only be connected to the BLC015/LC010.*

**1:N Level:** valid entries from 3-9

This option represents the security level between the captured fingerprint (from the sensor window), and the fingerprints stored in the terminal. This level represents the terminal level, not individual users. Possible values are from 3-9.The higher the value, the higher the security level, which means more comparisons are done on the fingerprint data. If user's fingerprints are failing during authentication you should lower this value.

**1:1 Level:** valid entries from 1-9

This option represents the matching security level in the device between the captured fingerprint (from the sensor window) and the stored fingerprint in the database for that user. This value is used when the card & fingerprint authentication type is used. Instead of comparing the captured fingerprint with all the database fingerprints, only the user's fingerprint is compared. Possible values are from 1-9. The higher the value level, the higher the security level; however authentication matching may fail since more matching is done on the fingerprint data.

# 4. How to use the terminal

## 4.2. Authentication

### 4.2.1. Fingerprint authentication

When you place your finger on the fingerprint sensor, the light of the sensor will turn on and the buzzer will beep indicating a successful fingerprint scan. You should not remove your finger until the beep is heard. If there are no registered users in the FMD10, the fingerprint light will not turn on.

### 4.2.2. Card authentication

Swipe a card on the card input area.

### 4.2.3. Successful Authentication

When a registered card or fingerprint is detected the FMD10 can activate a lock output for a programmable period of time to open the door. The beeper will indicate a successful entry and the LED will light up green color for the door open period.

### 4.2.4. Door Bell Operation

If the bell button is pressed for the bell touch period, the bell output will activate for a programmable period of time (Bell Activation Period). The device will annunciate a ‘ding-dong’ sound and the LED will flash.

If a fingerprint or card is used during the Bell Activation Period, the bell will immediately turn off.

If a fingerprint or card is used the bell button will not accept any button presses until the door open duration has expired

## FCC Information

This device complies with part 15 of the FCC Results. Operation is subject to the following two conditions :

(1) This Device may not cause harmful interface, and

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

Note: This equipment has been tested and found to comply with the limits for CLASS B digital device, pursuant to Part 15 of 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 instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try correct the interference by one or more of the following measures:

1.1. Reorient or relocate the receiving antenna.
1.2. Increase the separation between the equipment and receiver.
1.3. Connect the equipment into an outlet on a circuit different from that to which receiver is connected.
1.4. Consult the dealer or experienced radio/TV technician for help.

## WARNING

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

Contains FCC ID: 2AEEY-PBLN51822M