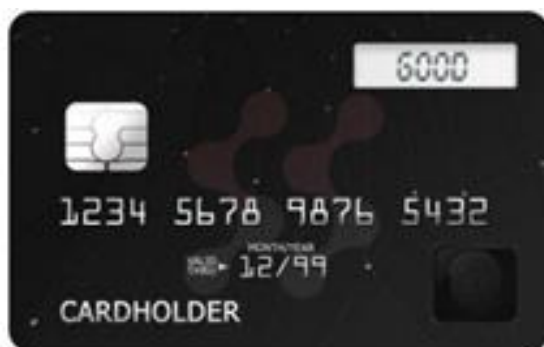


# MyGoldWallet Card Specification

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**LondonCoin**

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## 1. Summary of Specification

- MyGoldWallet Card is a Smartcard which recognizes users' fingerprint with rechargeable battery included. (Here after called as "MGW Card") where only if the registered fingerprint matches the users' fingerprint, the MGW Card functions fully. If the fingerprint does not matches with pre-registered, the the MGW Card works with limited function.
- MGW Card is equipped with re-chargeable battery such that it does not need additional power source to operate.
- MGW Card has LCD display such that users can find out if the fingerprint matches easily as well as can see the fingerprint registration process in details.
- Nowadays, the credit card being used has the risk of lost/stolen card, but with fingerprint authentication card with biometric authentication allows only the registered user himself/herself. Therefore, it reduces the risk of the lost or stolen card significantly.
- Also, the fingerprint authentication is done with the MGW Card directly, it minimizes the fingerprint information is tampered.

## 2. Characteristics and Specification

- With biometric authentication MGW Card enhances the security of the smartcard
- Reduces the risks of lost or stolen card
- Allows card to work by comparing the user's fingerprint with registered one matches
- If the fingerprint does not matches the pre-registered one, the card will work with limited function
- The form factor is same as regular credit card even with battery and fingerprint authentication
- Sensor -Thickness: 0.84mm (Regular credit card size)
- MGW Card operates only 15 seconds after the fingerprint authentication normally, and limits afterward to provide security further
- Displays the fingerprint match on the screen
- Maximum 5 fingerprints can be registered
- High performance fingerprint authentication sensor -8.37mm X 9.19mm size fingerprint sensor -160 X 160 pixel, 508 DPI
- High reliability fingerprint authentication algorithm -1/50,000 FAR -3% FRR
- Specification for the smartcard support -ISO/IEC 7810 -ISO/IEC 7816 -ISO/IEC 14443 -Class

A, B Support

- MGW Card shall function normally for 30 days with single battery charge provided that MGW Card is used 30 times per day
- All other specification shall meet Europay/Visa/Master card physical requirements

### 3. Major Function

- Push power button, and if MGW Card recognizes the fingerprint and matches the fingerprint to display it on screen shows the smartcard is functioning normally
- MGW Card has several applications loaded. Only fingerprint authentication related applications will work with the fingerprint authentication, and other applications which do not require the fingerprint authentication will work without the fingerprint authentication
- 2 level authentication process. Fingerprint authentication processor authenticates first and the smartcard authenticates second level user identity
- Fingerprint registration and re-registration possible
- Works with internal rechargeable battery
- Provides USB port charger
- MGW Card satisfies all the physical requirements of existing smartcard(thickness, tension, torsion, etc) as well as anti-fire protection from the battery

### 4. Applications

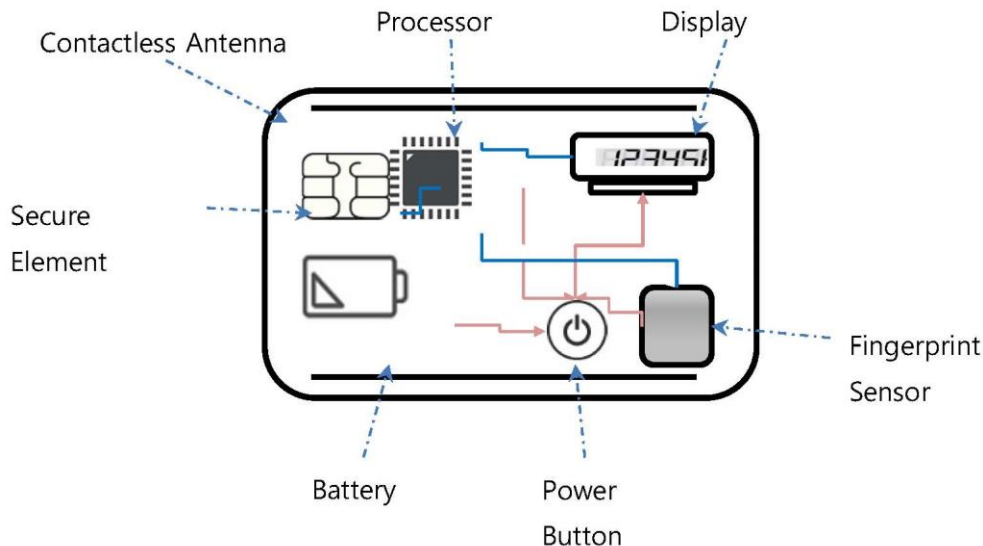
MGW Card can be used on following areas.

- Cold storage wallet for cryptocurrencies
- ID/Password replacement for crypto exchanges as well as application such as Metamask
- Entrance card, Employee card, Student card, etc for personal identification
- Transportation card, public auction card, etc for public service sector
- Disabled benefit card, Voucher card, Health card, etc for health welfare sector
- Pre-paid card, Direct payment card, Credit card, and online settlement card, etc for financial sector

## 5. Fingerprint Authentication Card System Structure

Fingerprint authentication card system is comprised of the fingerprint authentication card and the battery charger.

### 5.1 Fingerprint Authenticated Card



- ✓ Secure Element : Enables financial transaction, personal identification etc
- ✓ Fingerprint Sensor : Input user fingerprint
- ✓ Display Screen : Displays Success/Fail results of fingerprint authentication
- ✓ Fingerprint processor: Generates fingerprint template and compare/authenticates
- ✓ Power Button : Turns on and turns off the MGW Card
- ✓ Battery : Secondary battery for MGW Card

### 5.2 Battery Charger

Battery Charger is based on USB type dongle which has the connector to battery as well as LED turns green when charging is complete and red during the charging process

## 6. MGW Card Process

Description is provided below for fingerprint registration and operation process.

### 6.1 1 Fingerprint registration process

(1) Fingerprint registration

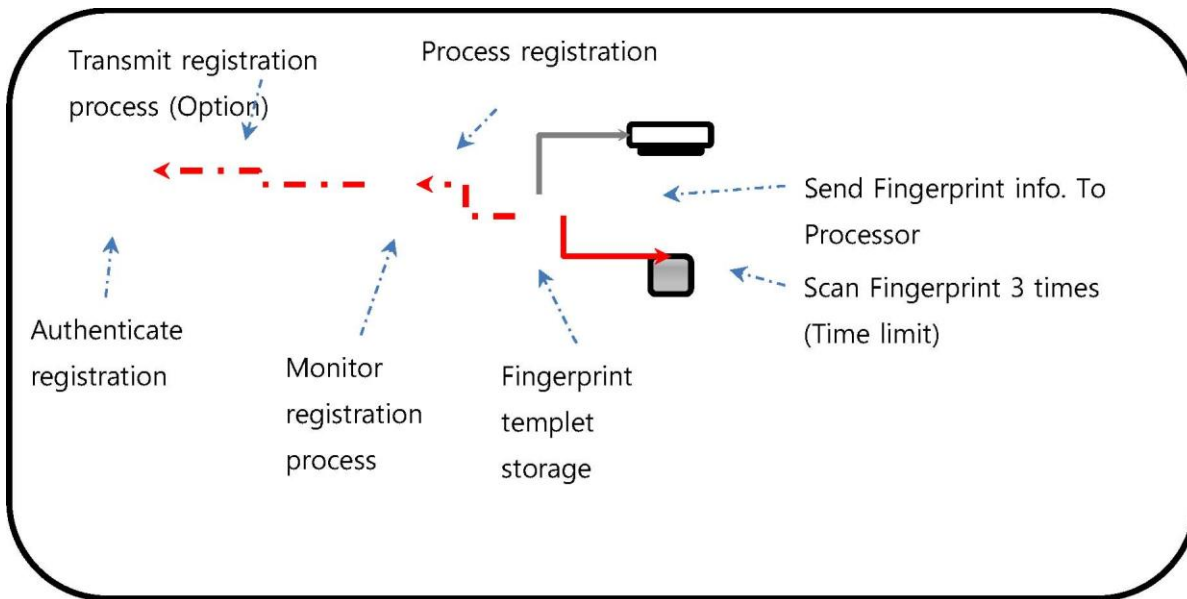
**[Function]** : Process to register the users' fingerprint to MGW Card. MGW Card can be operated normally only if the fingerprint is registered.

**[Operation Process]** : First turn on the power button by pushing, place the fingerprint on the sensor 3 times. Once the fingerprint is registered, then power will be turned off automatically.

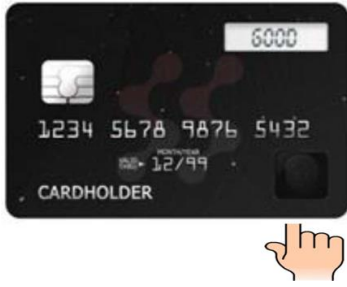
**[Time Limit]** : Fingerprint input needs to be done within 5 seconds. If there is no input for 5 seconds, MGW Card will be turned off.

**[Display]** : Fingerprint and scan number will be displayed every time scan is done.

**[Fingerprint Storage]** : Fingerprint information is cryptically store in the Secure Zone



(2) How to Operate



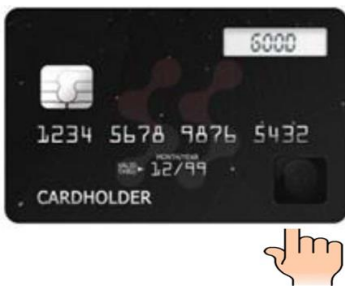
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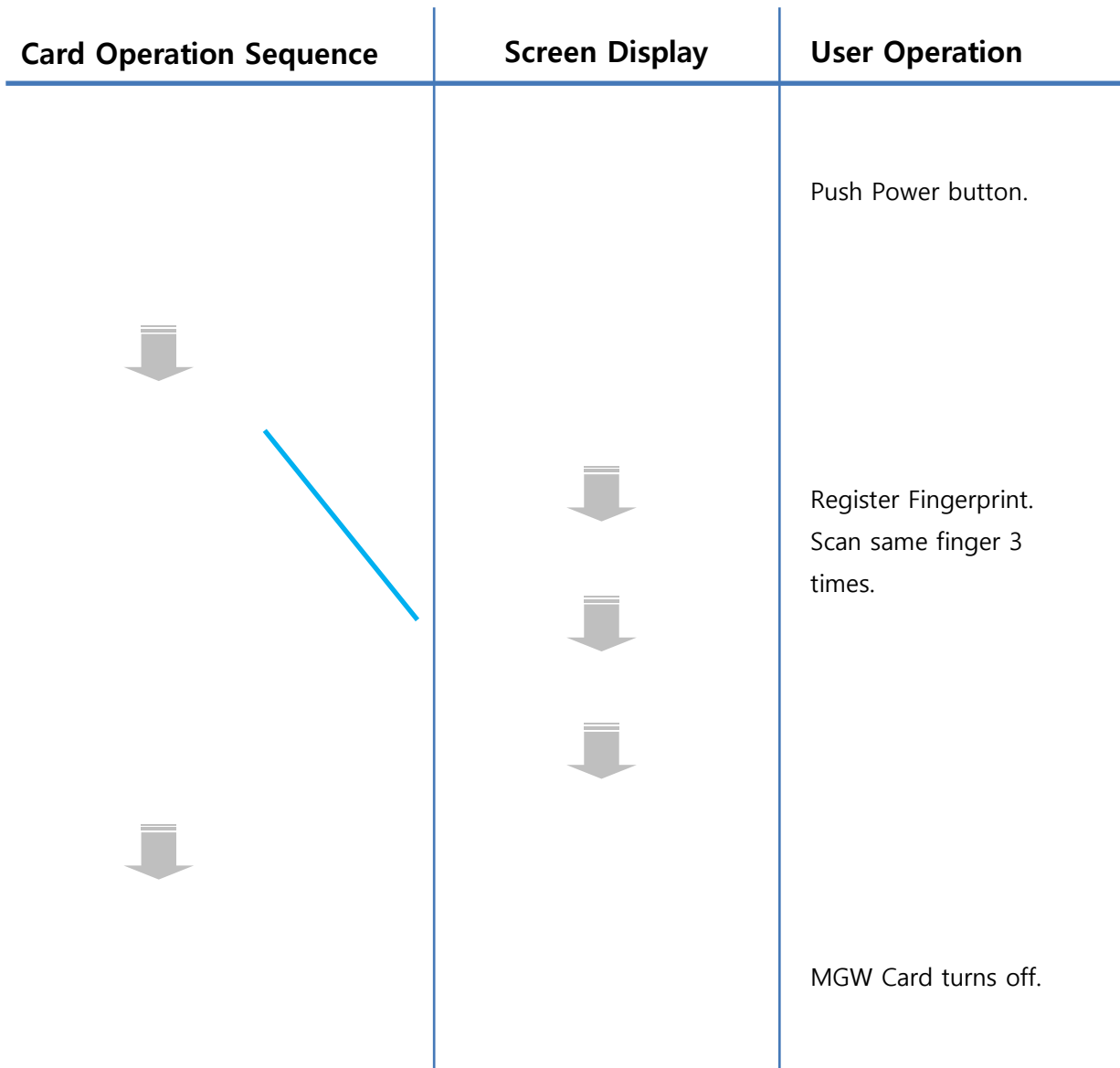
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## 6.2 Fingerprint Authentication Process

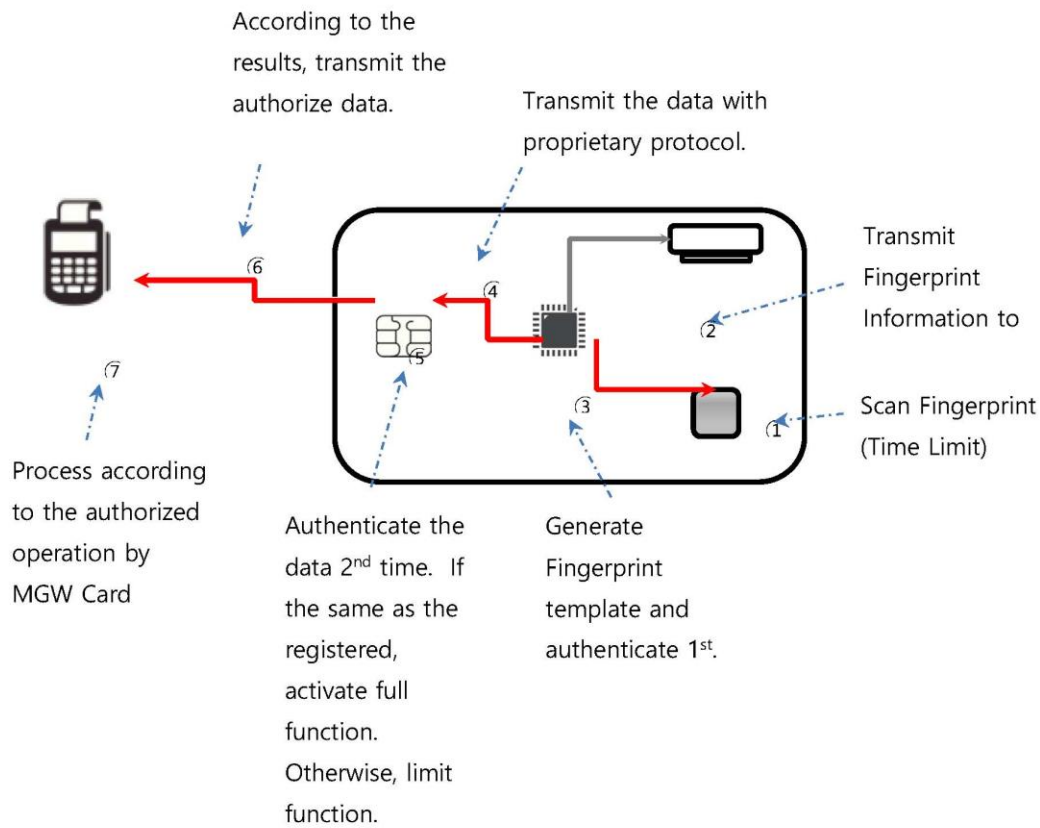
### (1) Fingerprint Authentication Process

**[Function]** : Process which compares and authenticates the registered fingerprint with input fingerprint.

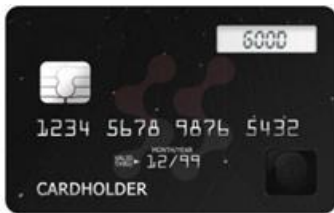
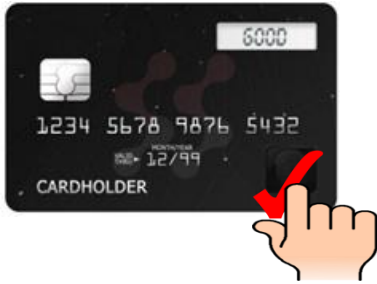
**[Operation Process]** : Firstly, turn on the power button by pushing, scan the fingerprint. Once the result is displayed, enter to the card terminal. Payment, Password, ID etc will be processed with terminal and MGW Card

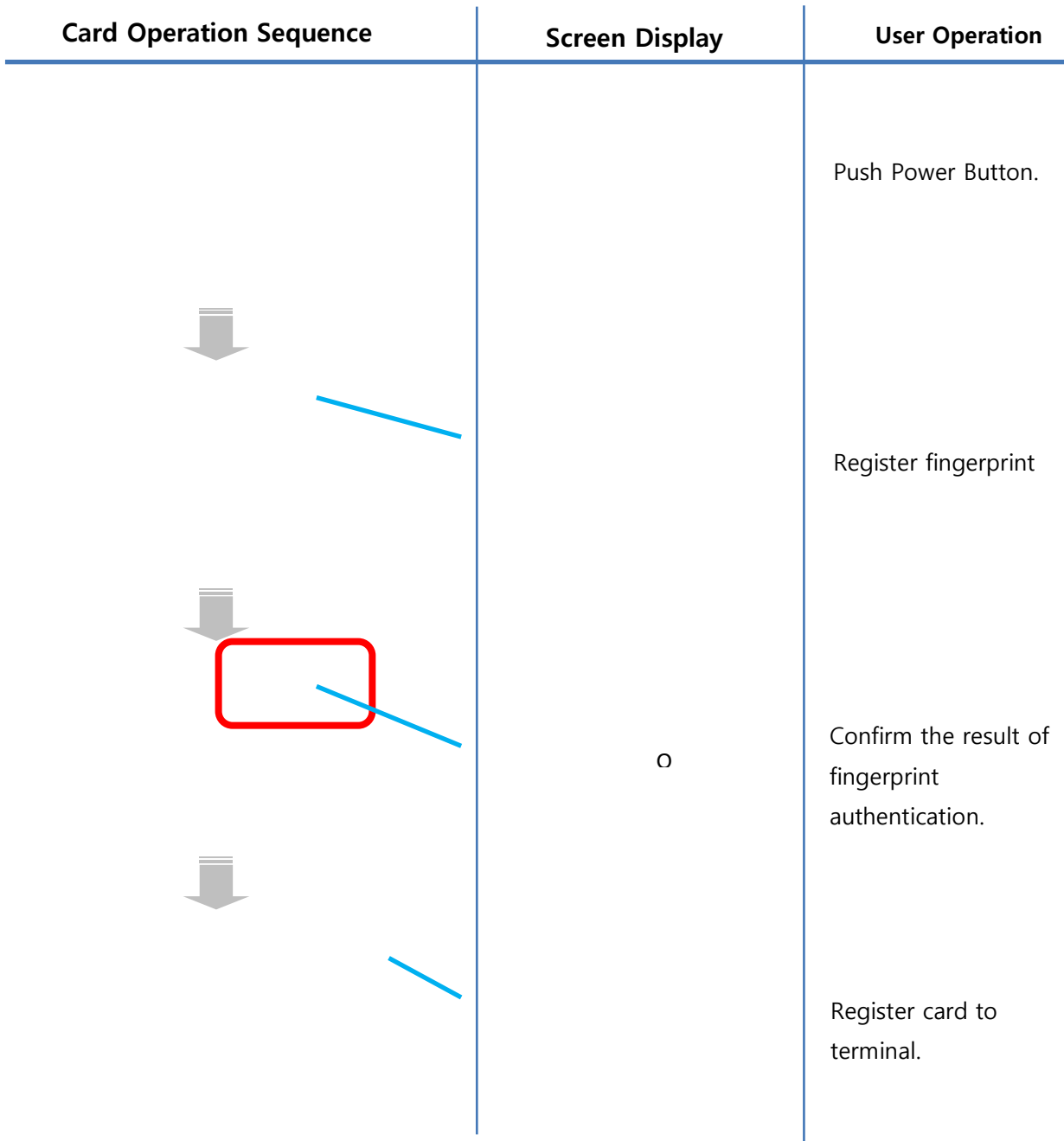
**[Fingerprint Authentication]** : If input fingerprint and registered fingerprint matches, MGW Card can be used normally. If it does not match, MGW Card can be used with limited function. For example, the MGW Card can be recognized without payment nor the ID detection

**[Time Limit]** : Fingerprint input needs to be done within 15 seconds. MGW Card will be turned off after the authentication is done.



(2) How to Operate





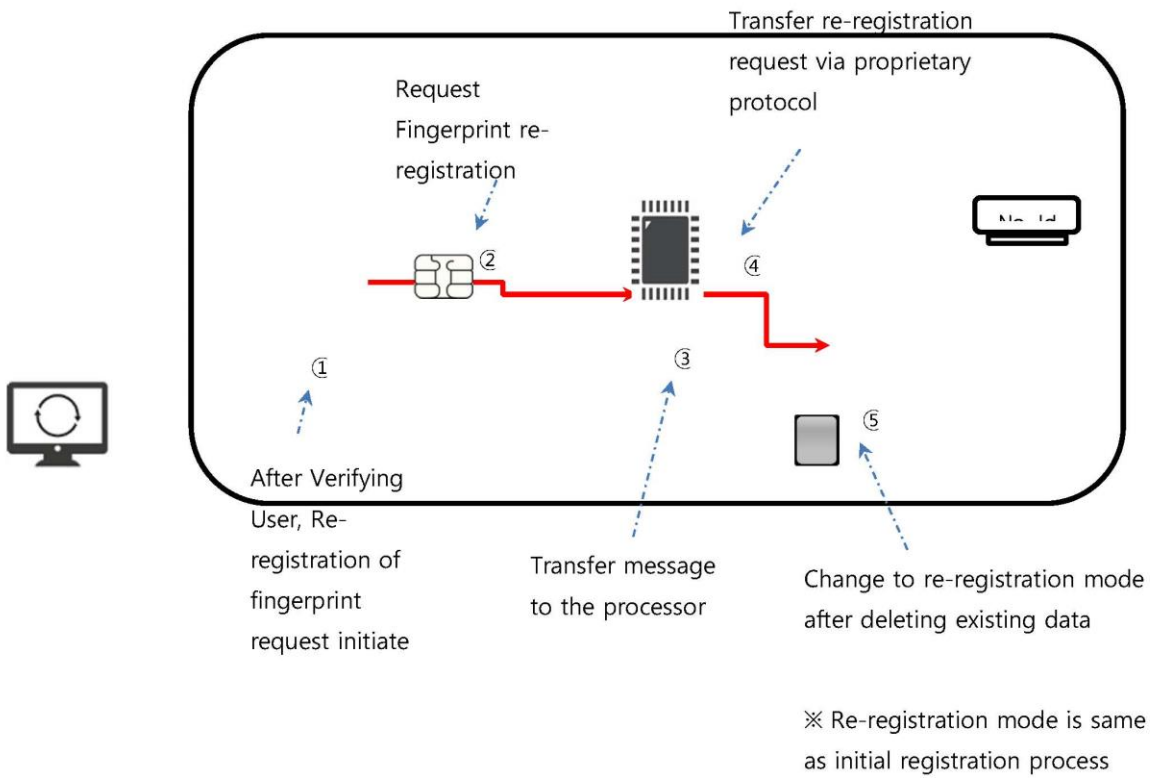
### 6.3 Re-Registration of Fingerprint Process

#### (1) Re-Registration of Fingerprint Process

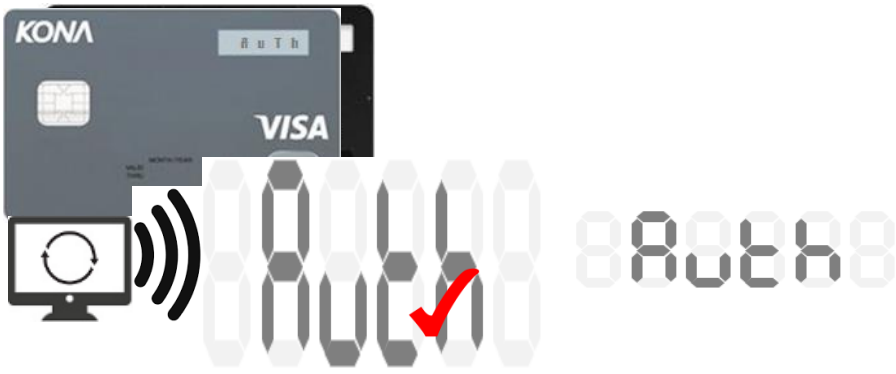
**[Function]** : Deleting of existing data in order to re-register the fingerprint to MGW Card.

**[Operation Process]** : Firstly, Turn the power on by pushing the power button, and re-register the card to the terminal. Once existing data is deleted, the power will be turned off automatically. Turn the power on again to proceed with the fingerprint registration process.

**[Time Limit]** : Register the MGW Card within 5 seconds to the terminal. Otherwise, MGW Card will be turned off.



(2) How to Operate



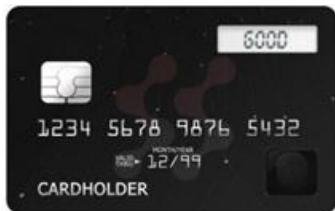
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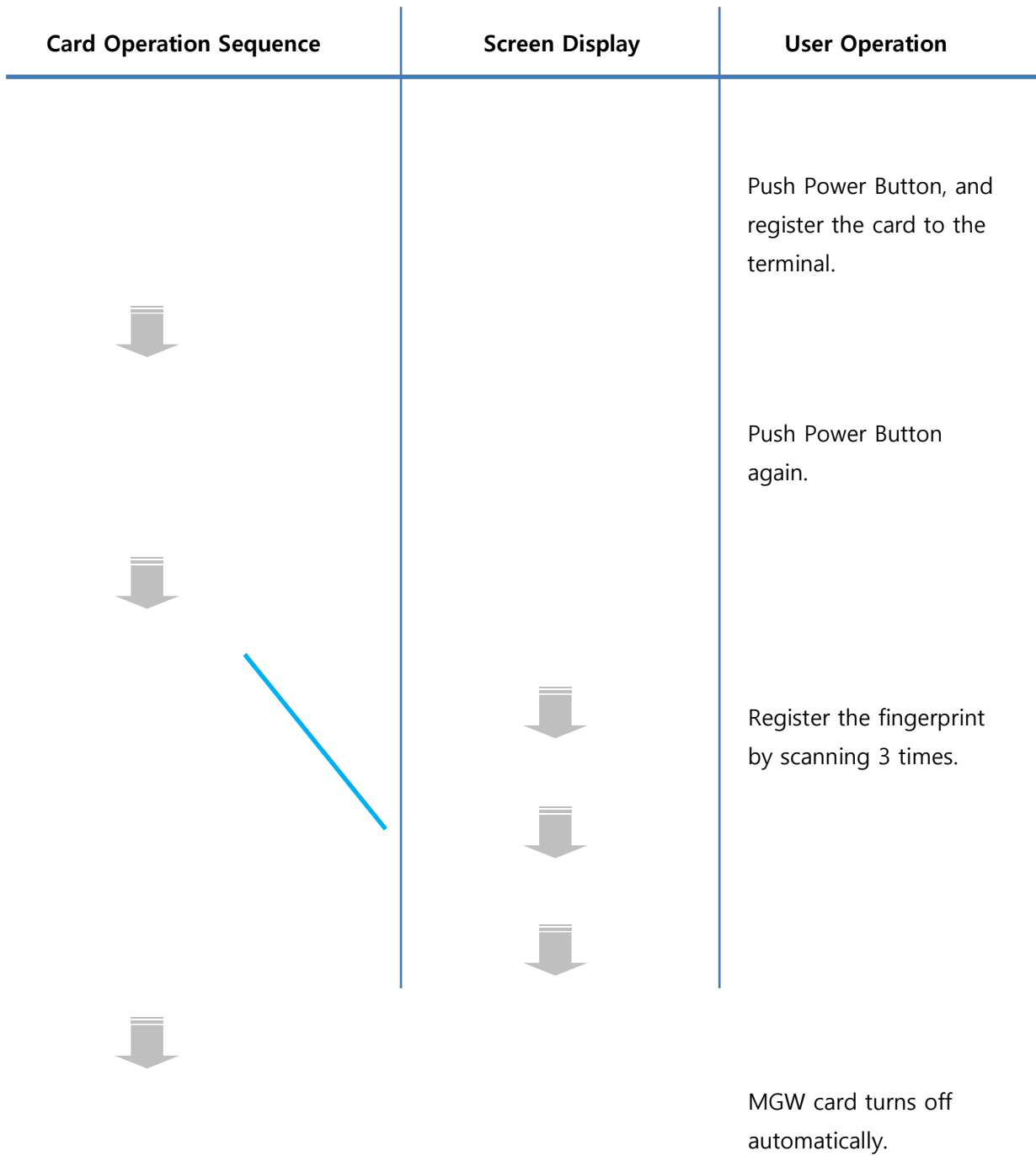
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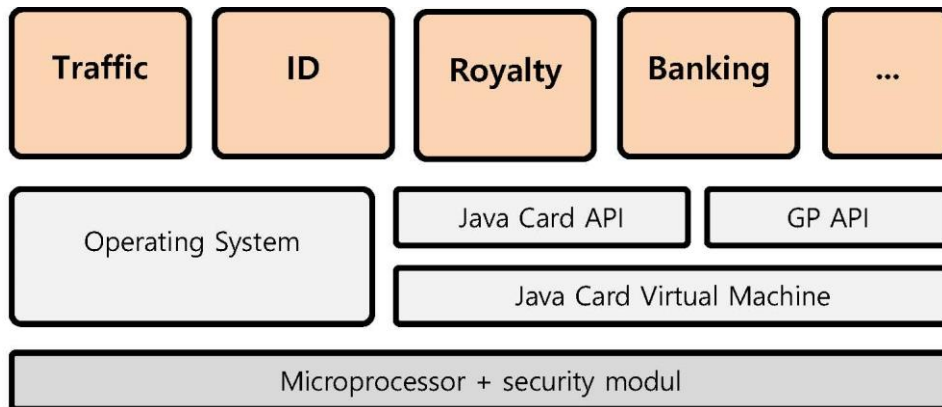
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## Appendix 1. SmartCard

MGW Card has internal smart IC Chip which enables security function as well as various application. The hardware On the back of the card the magnetic strip(MS) is attached which small data can be saved as well as problem exists for security since it is easily copied.

and software structure is shown below.



- ✓ Smart IC Chip is comprised of hardware microprocessor and security module as well as software OS for smart card which enables the data storage and processing capabilities.
- ✓ Smart IC provides 4 security mechanism.
- ✓ Confidentiality; Prohibits information leak nor release to unauthorized personnel.
- ✓ Authentication; Authenticate whether sender or receiver is authorized.
- ✓ Integrity; Guarantees that the data received is not tampered with from the sender.
- ✓ Non-repudiation; Protects the senders claim that the information is not sent when receiver got correct information
- ✓ Card without the OS in single program in comparison, Java Card OS based smart card enables various application via applet which can be applied to traffic, ID, entrance control, and banking.
- ✓ MGW Card has these security functions and Java Card OS is loaded on the smart card chip. Therefore, traffic, banking, ID, and other various value added services can be loaded.

## 별 Appendix 2. Card Categories

### (1) MS(Magnetic Stripe) Card

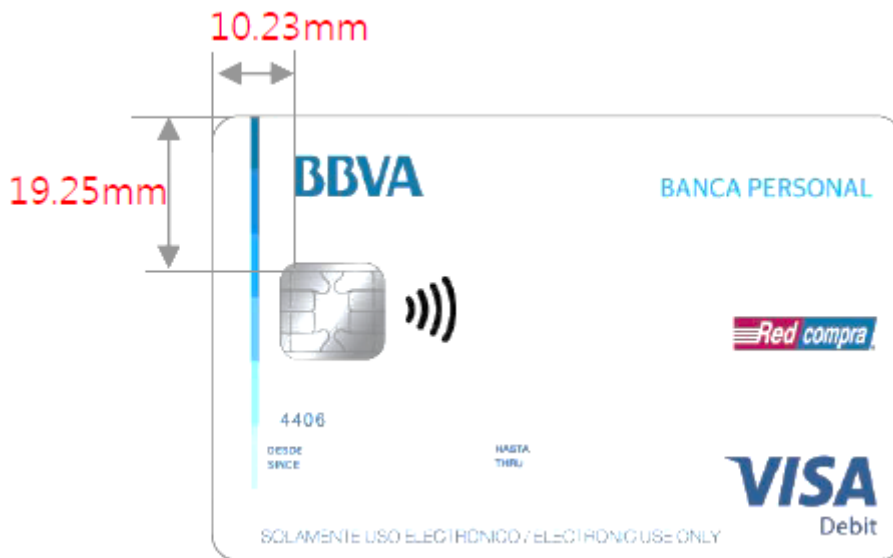


- Magnetic strip width is 12.5mm, and one magnetic strip is comprised of three tracks where the tracks and the purpose of use is defined by ISO7811 specification



**(2) IC (Integrated Circuit) Card**

IC card is equipped with IC Chips to enable to use large data and Applets compared with MS Card. ISO7816 specifies the number of terminals where total number of terminals are 8, but in real usage 6 terminals are used.



### Appendix 3.

All ID-1 Type cards are manufactured with ISO7810/10373 specification

\* ISO7810 : Physical requirements of Card body

\* ISO10373 : Physical testing requirements

#### (1) Size of Card

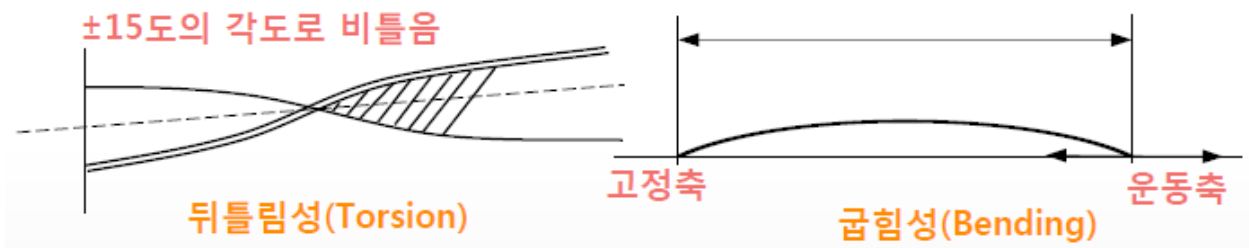
Item	ISO Specification
Width	85.47 ~ 85.72
Hight	53,92 ~ 54.03
Thickness(MS Card / IC Card)	0.68 ~ 0.84
Edge Round	2.88 ~ 3.48
Burr	0.08 이내

#### (2) Reliability Test(Card Physical Characteristics)

□ [Thickness Pressure(N/cm) ] : Overlay should be from Card body with separation 10mm and 30cm/min line speed more than 3.5N/.



□ [Bending and Torsion] : From the edge of the card, there should not be an visual anomalies by applying more than 1,000 times of bending and torsion trials.



**#Appendix 4. Chip Detailed Specification(Example)**

Item	Detailed Specification
CPU	<ul style="list-style-type: none"> <li>• SecuCalm-16bit</li> </ul>
Co-processor	<ul style="list-style-type: none"> <li>• Tornado-E</li> </ul>
Memory	<ul style="list-style-type: none"> <li>• Flash : 320KB</li> <li>• RAM : 9KB</li> </ul>
CC certification	<ul style="list-style-type: none"> <li>• EAL 6+ ASE_TSS.2</li> </ul>
CMOS 공정	<ul style="list-style-type: none"> <li>• 80nm</li> </ul>
Memory reliability	<ul style="list-style-type: none"> <li>• 25 years storage with more than 500,000 read/write</li> </ul>
Data transmission speed	<ul style="list-style-type: none"> <li>• 106~848Kbps</li> </ul>
Module Size	<ul style="list-style-type: none"> <li>• 5.00 mm × 4.80 mm</li> </ul>
Module Thickness	<ul style="list-style-type: none"> <li>• 0.25 mm±0.01 mm</li> </ul>
Interfaces	<ul style="list-style-type: none"> <li>• ISO/IEC 7816</li> <li>• ISO/IEC 14443 : Type A/B</li> </ul>
HW cryptic support	<ul style="list-style-type: none"> <li>• ECC, RSA, DES / 3KEY(TDES), AES</li> </ul>
Security	<ul style="list-style-type: none"> <li>• ISO/IEC 14443 및 ISO 10373-1 spec. satisfaction</li> </ul>