

SmaFinger[®]

SF500/SF600



Installation & Operations Manual

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FCC Compliance Statement:

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 communication.

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.

All Giga-Tms products are with CE compliance

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SmaFinger World

SmaFinger Systems identify people and enable access/entry/permission by verification of their fingerprints against a database. It can also perform the same functions without referring to database in C+F Mode. In the rare instance of a non registerable user's fingerprint an RFID card with random code is issued.

SmaFinger devices are developed with the contactless smart card 13.56 MHZ RFID technology and they can be networked to operate in short, medium and long distance installations through RS232/485 LAN network adaptors. The reader supports Mifare MAD1/MAD2 format enabling users to issue customized cards.

Features:

- 1. Supports MAD1/MAD2 standard, and supports customer MAD-AID setting.*
- 2. Supports used card with data offset and length.*
- 3. Supports Multi Sectors.*
- 4. Supports Mifare® Standard 4K or Mifare® Standard 1K card.*
- 5. Each Reader with Reader ID for multi-link application.*
- 6. Output interfaces: Wiegand (Default), ABA-TK2 and RS232.*
- 7. Wiegand output selectable from 26 bits to 128 bits.*
- 8. RS232 output packet can be set with Header, Reader ID and Trailer.*

Application:

- 1. Access Control*
- 2. Time Attendance*
- 3. Guest Registration System*
- 4. Academic Services*
- 5. Info Services*

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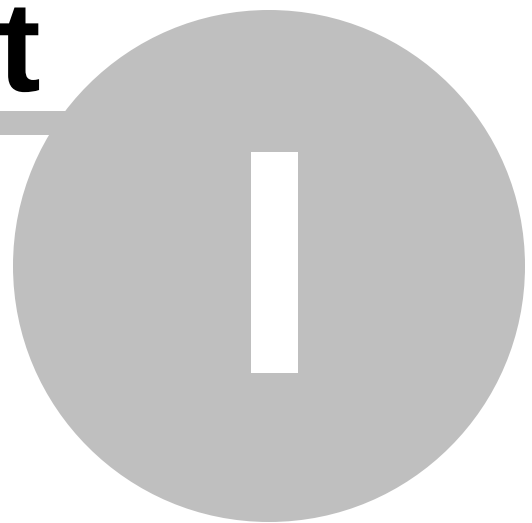
122

Foreword

Congratulations for selecting SmaFinger system and welcome to the fraternity of satisfied SmaFinger customers. This manual has been prepared for easy read and contains comprehensive information on the system. Should you have any further query please contact us.

The manual is divided into two main parts titled Installation and Operation followed by Appendix.

Part



1 Installation

This part contains package content lists and instructions for connecting, powering up and configuration of SmaFinger Start Kit/Online/Integrated System devices.

1.1 Package Contents

Online System

Sl. No	Gadget	Description
1	SmaFinger Reader	SF500/SF600
2	SmaFinger Programmer	SF600P
3	SmaFinger Card Issuer	PCR310U
4	MF700Kit	Optional
5	WAST0029	RS232 cable for MF700Kit. If your PC doesn't have an RS232 port please use an RS232 to USB Converter. Additional information in chapter 3.10.4 RS 232-USB Converter
6	Power Supply Adaptor	9V/120V --- USA / 9V/230V ---- Europe/ 9V/100V ---- Japan/9V/240V ---- British
7	CD5288	Contains software programs, drivers and Installation and Operations Manual etc.
8	User Cards	Mifare Standard 1K card 3 pieces
9	Blank Mifare cards	

Offline System

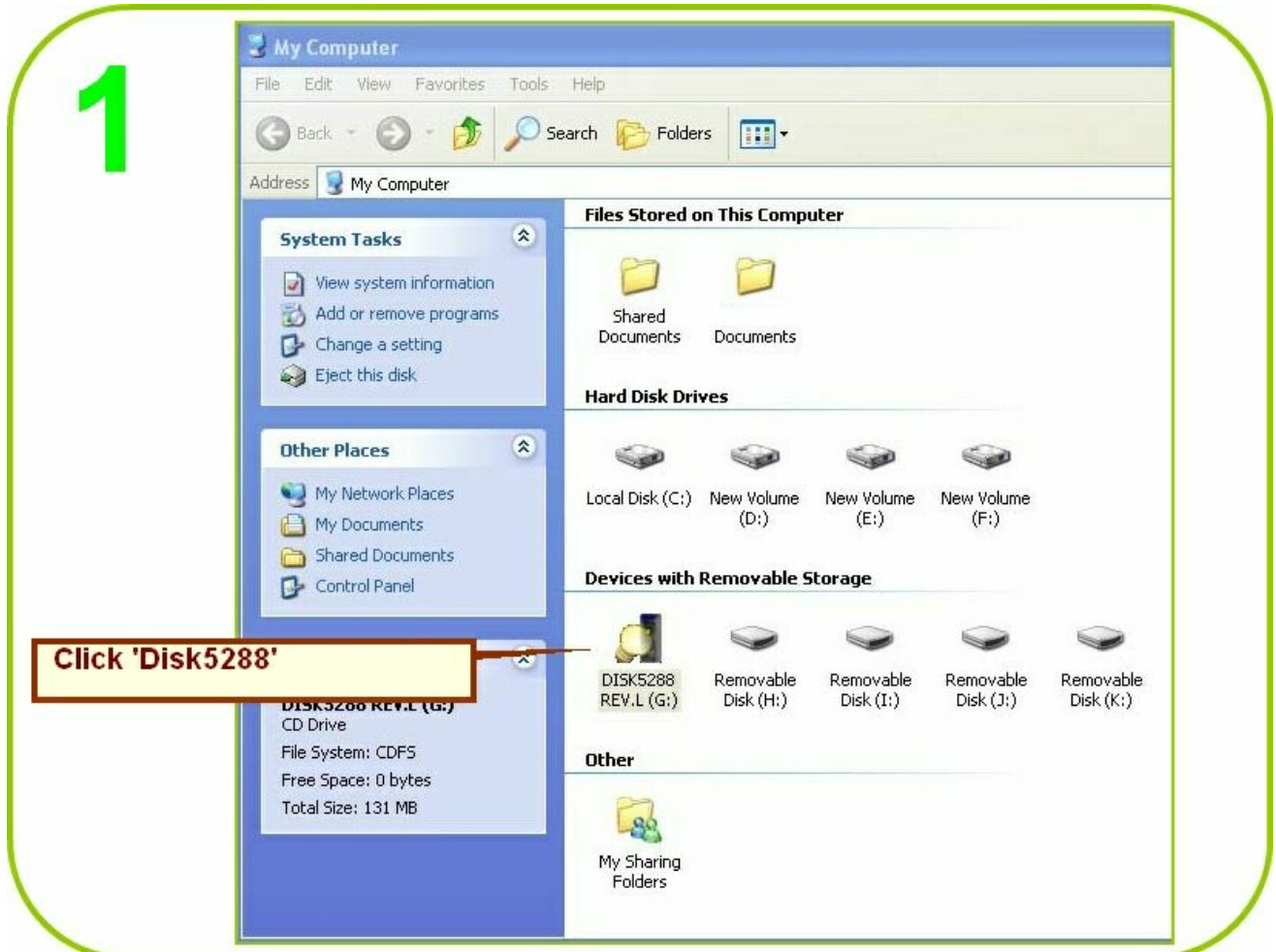
Sl. No	Gadget	Description
1	SmaFinger Reader	SF 500/SF600
2	Power Supply Adaptor	9V/120V --- USA / 9V/230V ---- Europe/ 9V/100V ---- Japan/9V/240V ---- British
3	CD	Contains software programs and drivers.
4	Kit CRD	Contains one each of the following: Manager Enroll card Manager Delete card Card-A Access by Card mode. Card-B Card + Fingerprint mode (Offline System). Card-C Multi-User card.
5	Blank Mifare cards	

Note:

1. You will need a host PC with Operating System (98SE / ME / 2K / XP / Vista).
2. **Offline system (Standalone System)** users may please proceed to chapter 2 [Operation](#)

1.2 Connection & Installation of Card Issuer

Insert Disk5288 supplied with Start Kit into the CD-ROM drive of host PC. CD explorer will automatically open as shown in step 2. If not, double click My Computer icon on the Desktop and then proceed from step1 below.

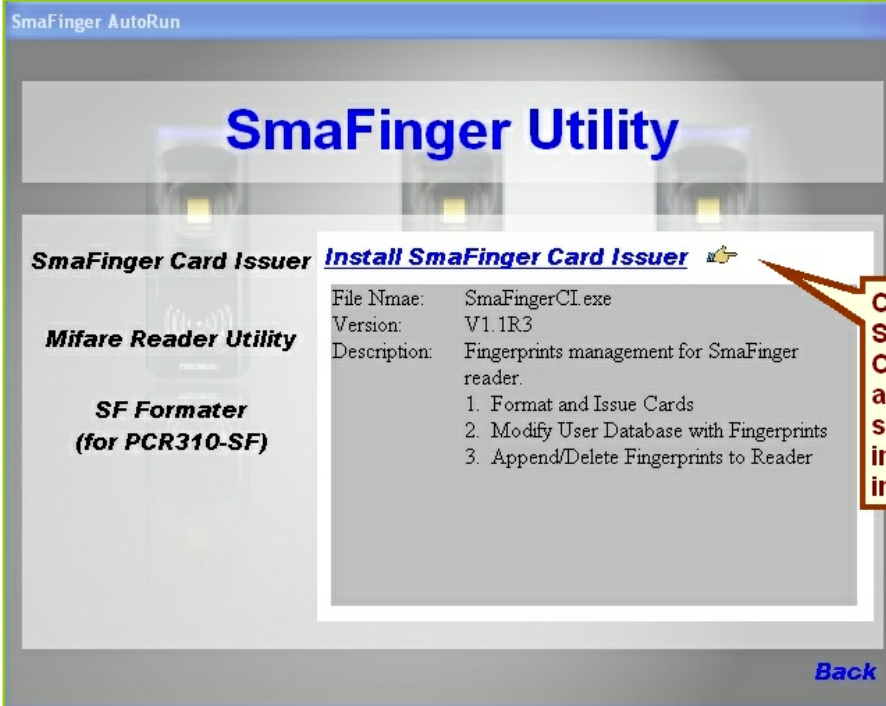


2

Click
'SmaFinger
Utility'



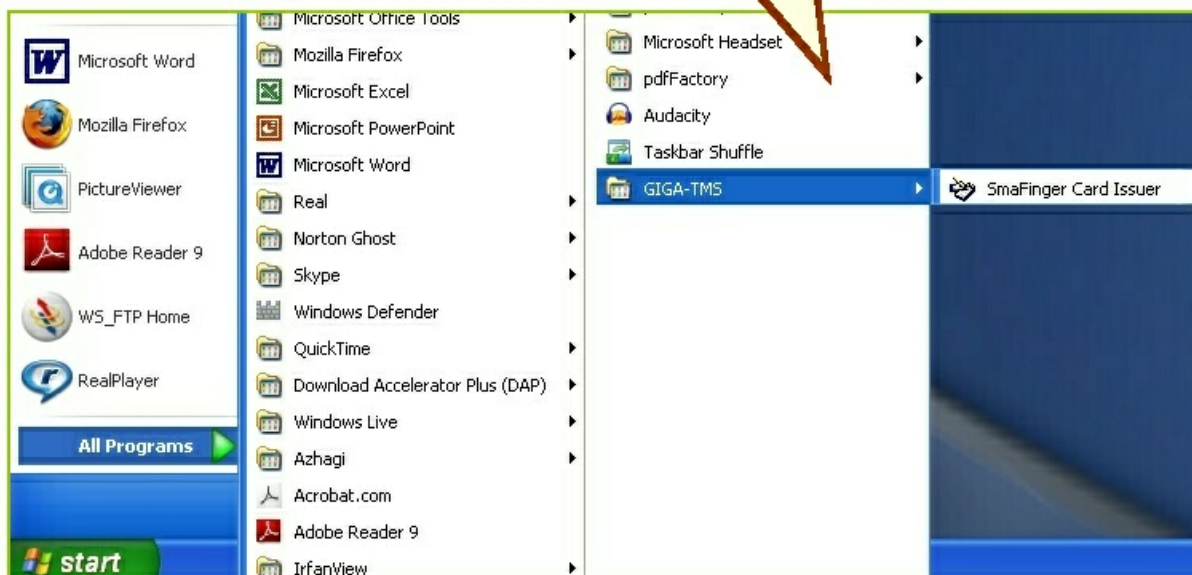
3



Click 'Install
SmaFinger
Card Issuer'
and follow on
screen
instructions to
install it.

4

SmaFinger Card Issuer Program will open. If it hasn't, click Start/All Programs/GIGA-TMS/SmaFinger Card Issuer.



5

'SmaFinger Navigate' will open...



6

Click 'Driver'
and follow on
screen
instructions to
install it.



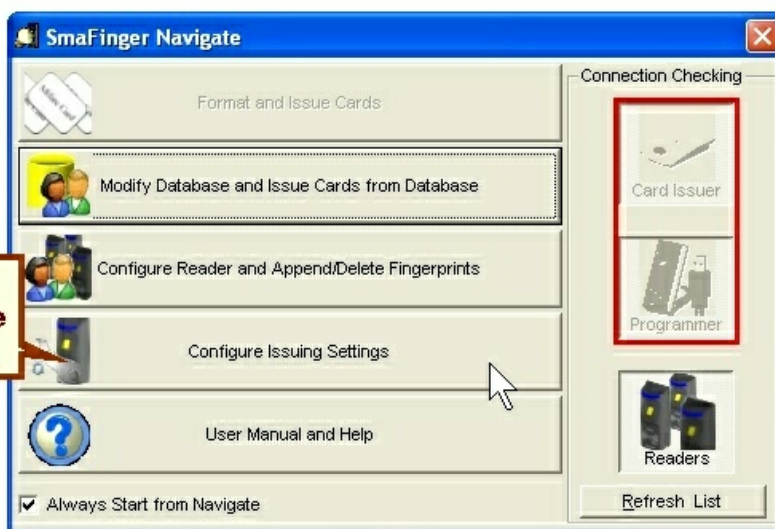
7

Connect
Card
Issuer
PCR310U
to PC, a
green light
will turn
on.



8

Click
'Configure
Settings'.

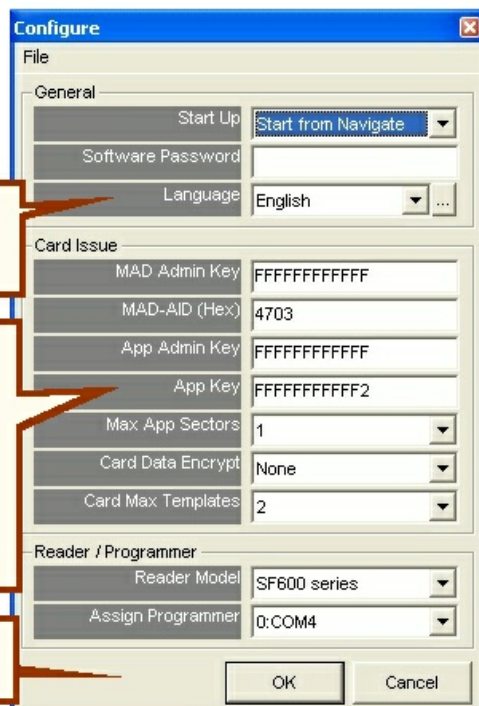


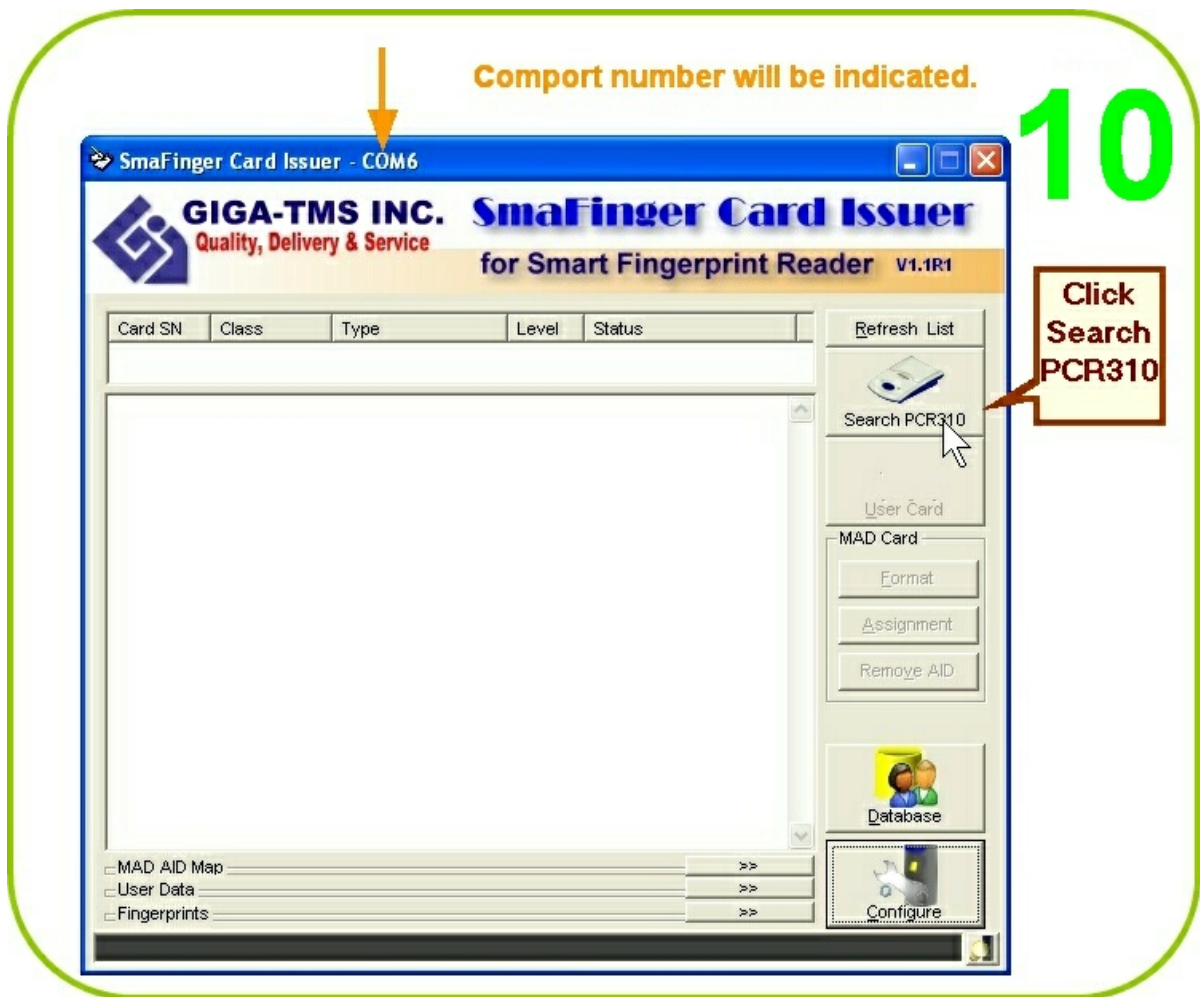
9

1
Select
Language

2
Note App
Key. This
should be
same as in
Mifare
Reader

3
Click 'OK'





Note: 1. For Configure window details please see chapter 3.11.2 [Configure Window Details](#)

2 PCR310 is a Mifare Card Issuer developed by **Giga-Tms Inc.** More details can be found on the web link [PCR310](#)

1.3 Connection & Installation of Programmer

USB Cable Driver (Prolific) should have been installed as illustrated in chapter 1.2 step 6 [Connection & Installation of Card Issuer](#)

**Connect
Programmer
SF600P to
PC's USB
port.**

**The blue
LED on the
programmer
will turn on
with beeps.**

SmaFinger®
SF600P



1.4 Connection and Installation of Reader

For mounting installation please see chapter 3.10.2 [Secure Mounting Installation](#)

This section covers installation of Mifare Reader Utility, connecting and powering up the Reader SF500/SF600 and MF700Kit.

The reader is usually despatched with the following default settings:

MAD-AID = 4703

App Key = FFFFFFFF2

Encrypt = None

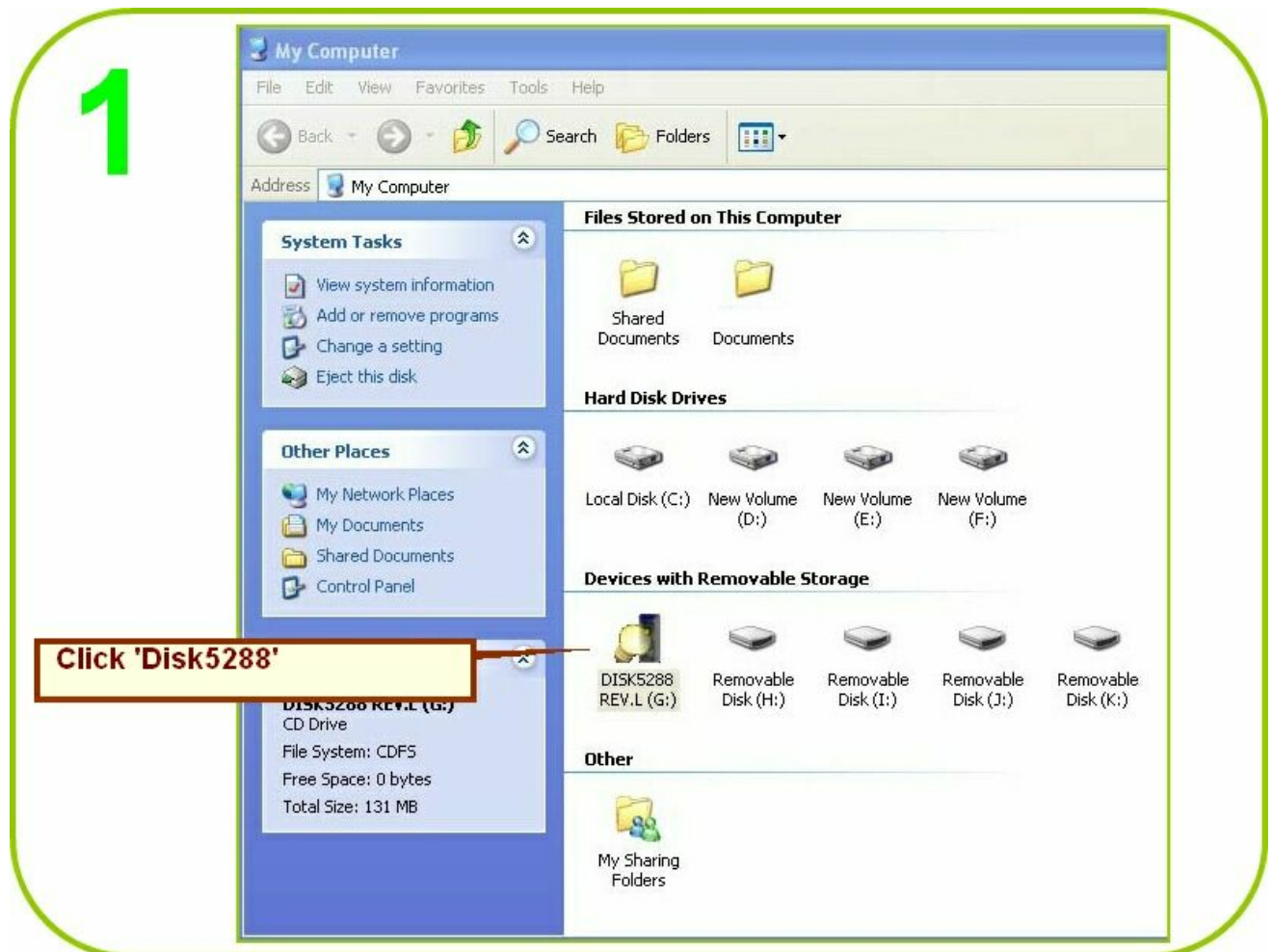
Reader Id = 0

Interface = ABA-TK2 10 digits / Wiegand 26 / RS232 with 9600 baudrate (change by wire)

Manager Card = Enabled

Read Mode= CSN or Card Data

If you want to change any of the above settings please go to : chapter 3.10.3 [Reader Configuration](#) Otherwise, continue to following steps.

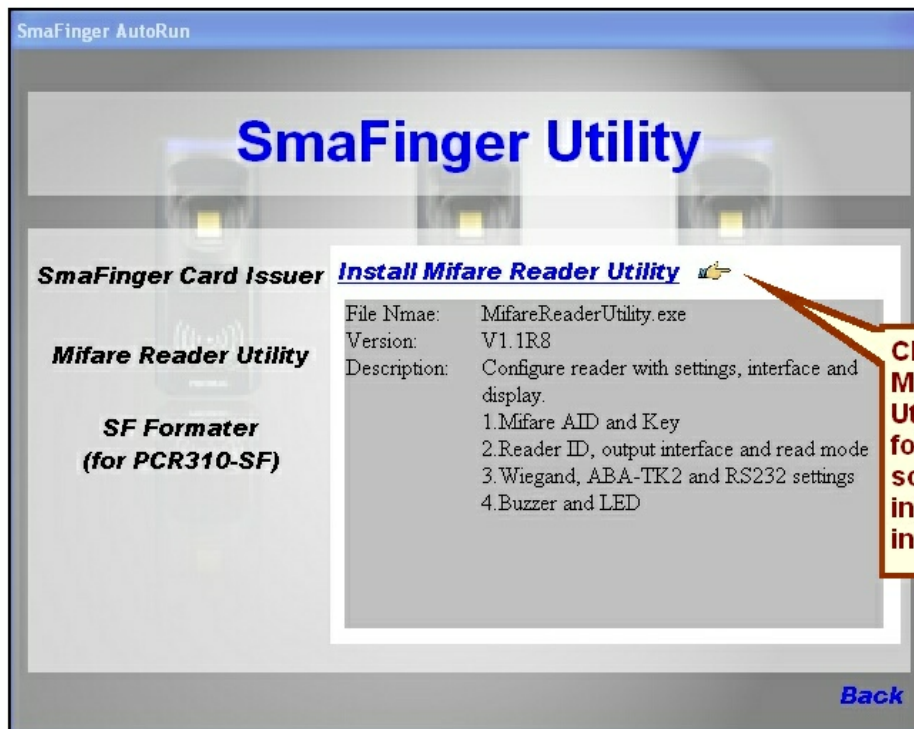


2

Click
'SmaFinger
Utility'



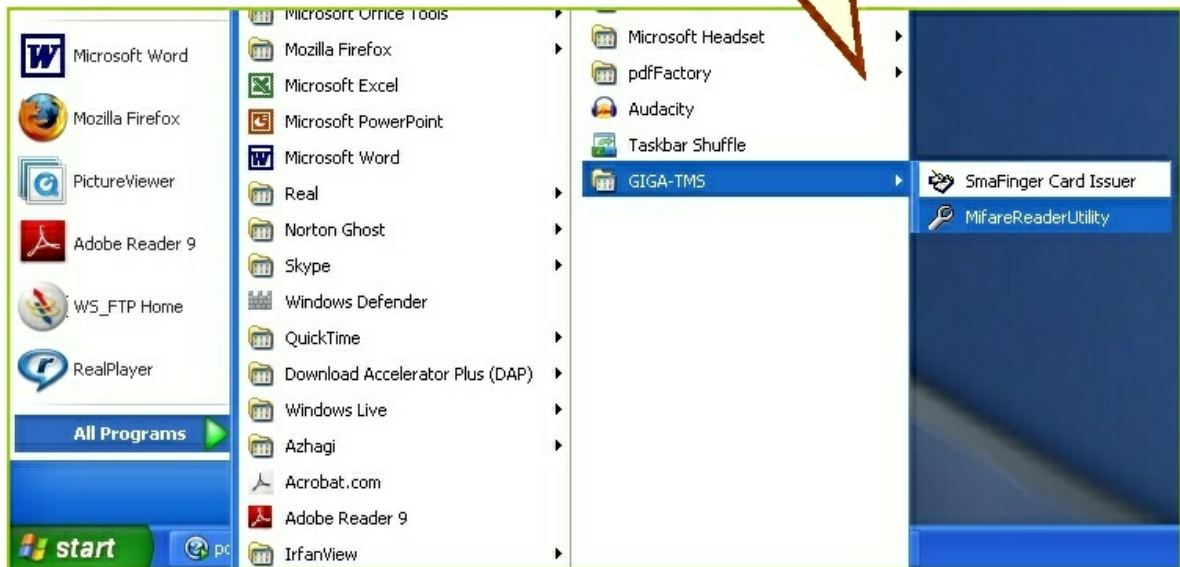
3



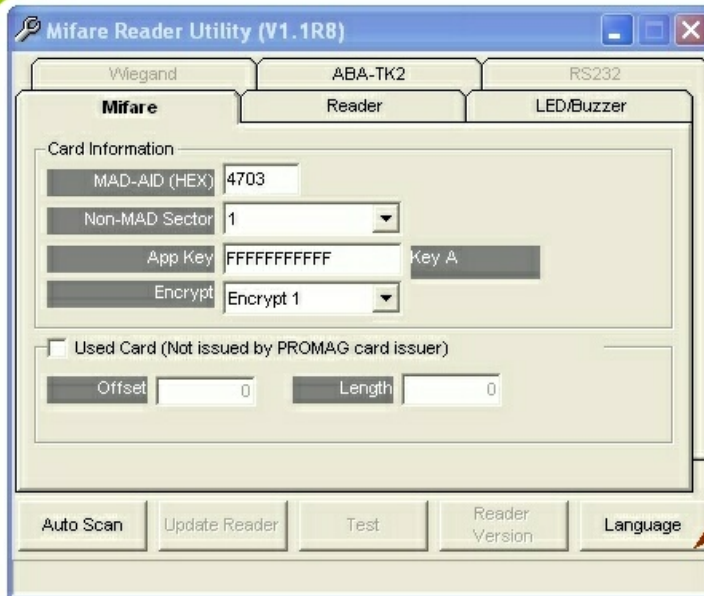
Click 'Install
Mifare Reader
Utility' and
follow on
screen
instructions to
install it.

4

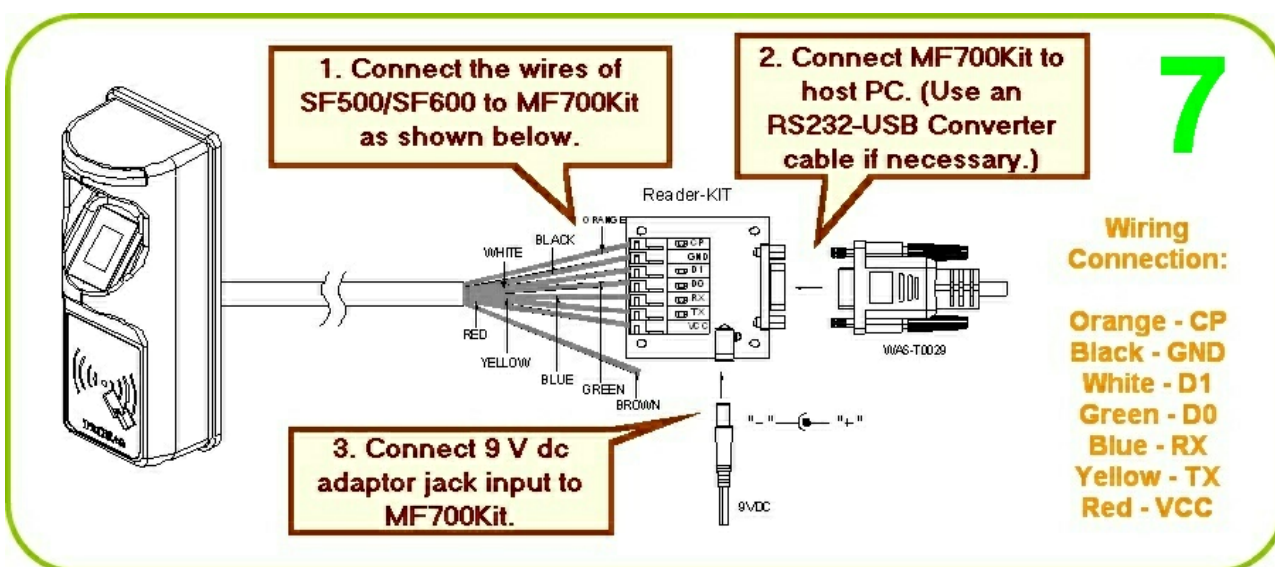
Mifare Reader Utility will open. If it hasn't, click Start/All Programs/GIGA-TMS/MifareReaderUtility



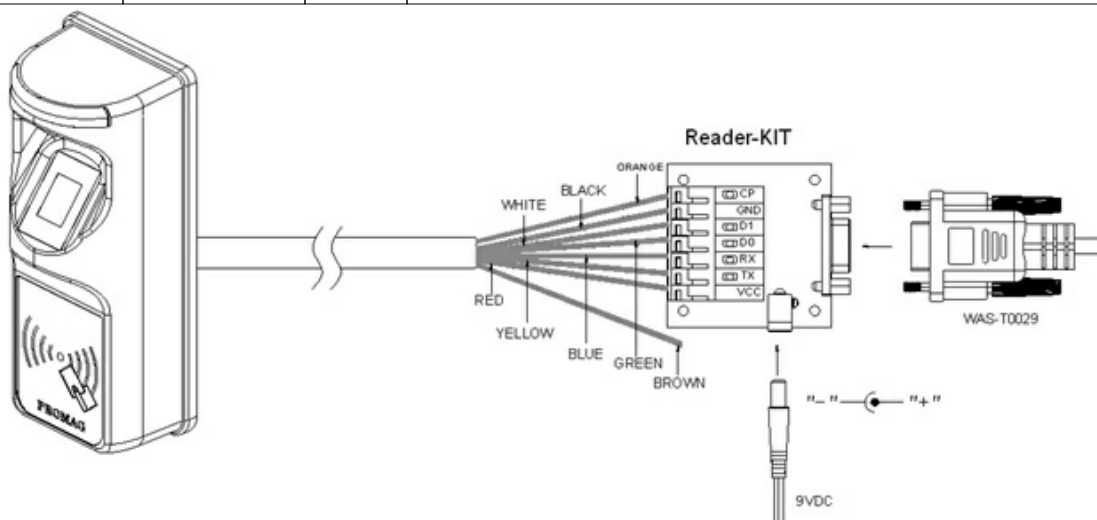
5



Click 'Language and make your selection if you need to.



Colour	Symbol	I/O	Description
Red	VCC	IN	Power Input : DC 7.5V~12V
Black	GND	IN	Power Ground
White	DATA 1	OUT	Wiegand Data 1 Signal / ABA TK2 Clock (Strobe)
Green	DATA 0	OUT	Wiegand Data 0 Signal / ABA TK2 Data
Yellow	TXD	OUT	RS232 TXD (To Host RXD)
Blue	RXD	IN	RS232 RXD (To Host TXD)
Orange	CP	OUT	ABA TK2 Card Present
Brown	LED/BUZZER	IN	External LED/BUZZER Control

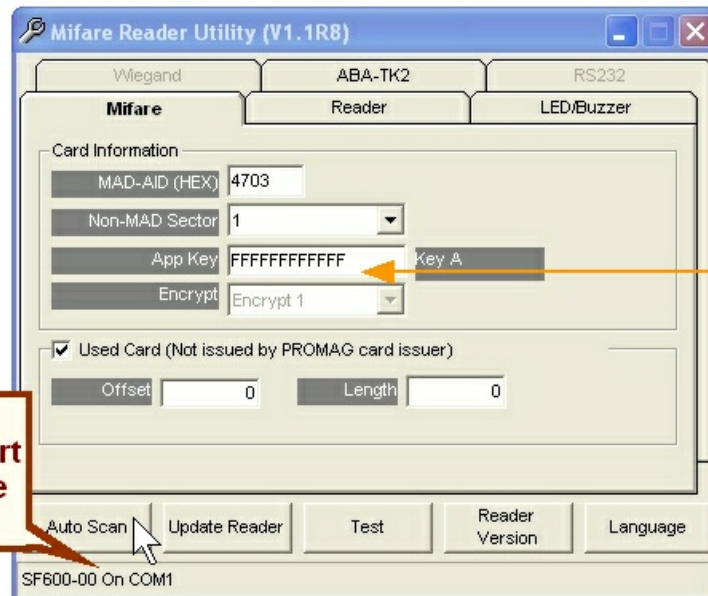


Note: MF700Kit is a test connection kit included in SmaFinger Start Kit for the purpose of configuring the reader.

The reader can also be connected directly as shown below.



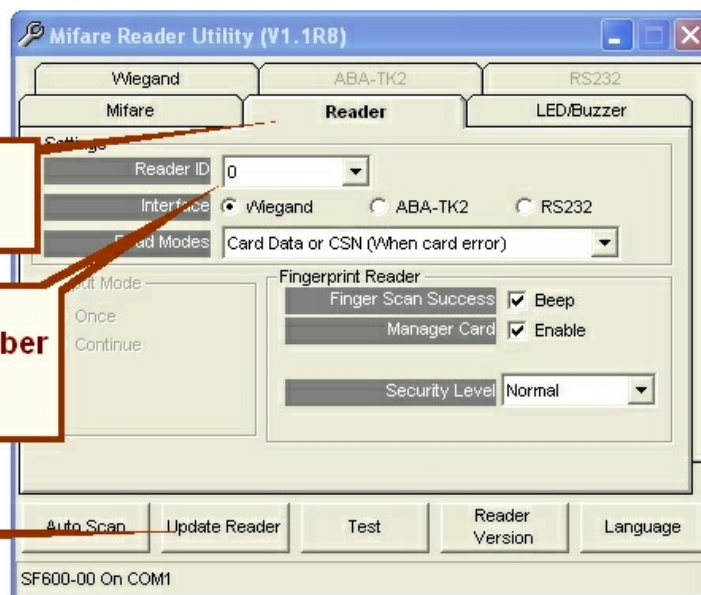
8



Click 'Auto Scan'. Comport number will be displayed.

App Key shall be same as in 'Configure' window of 'SmaFinger Card Issuer program'.

9



1 Select 'Reader' tab.

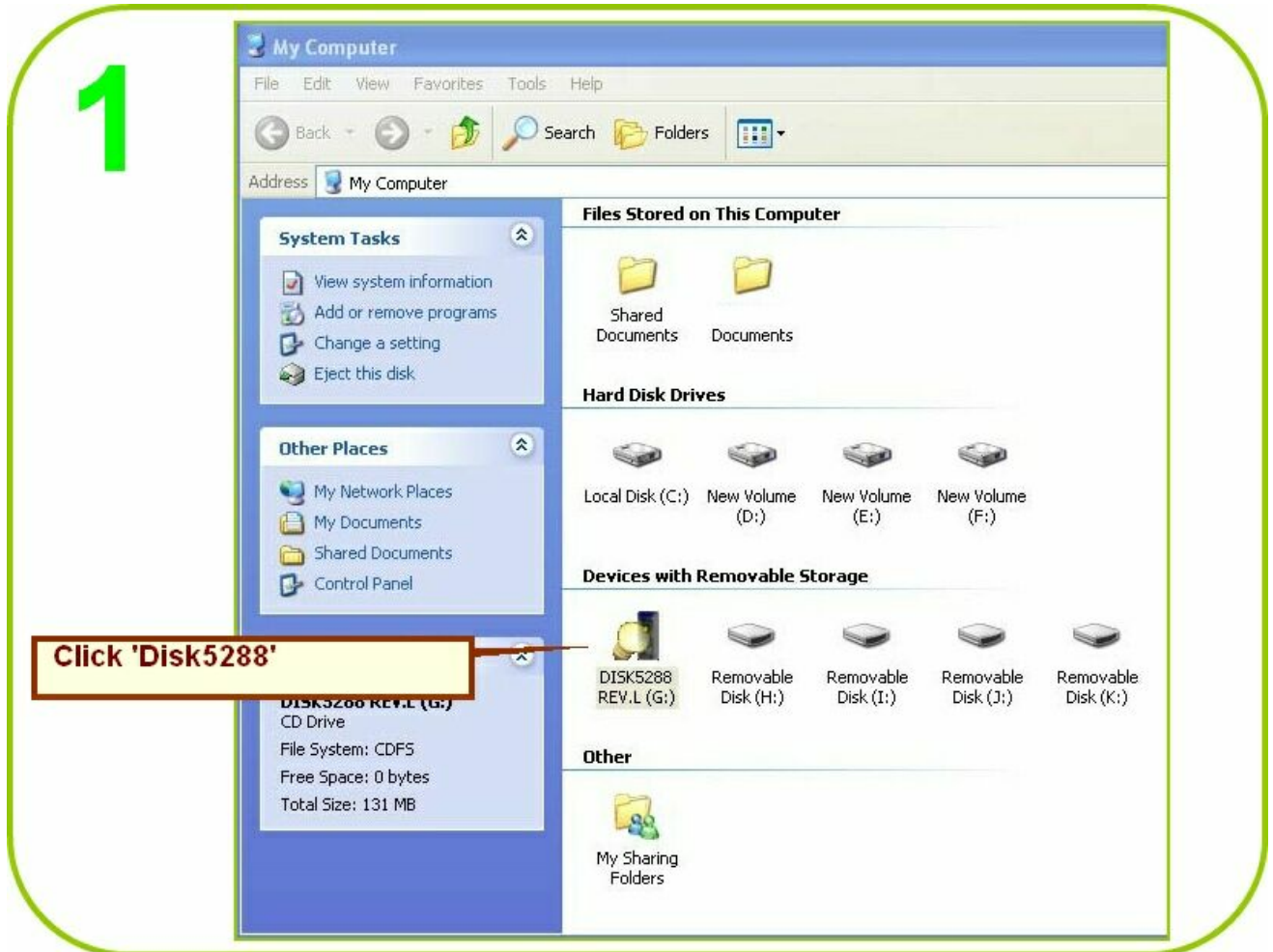
2 A reader id number can be chosen.

3 Click 'Update Reader'.

4. Reader's LED will blink with a beep indicating successful update.

1.5 Installation of SF Formater Software

Insert Disk5288 supplied with Start Kit into the CD-ROM drive of host PC. CD explorer will automatically open as shown in step 2. If not, double click My Computer icon on the Desktop and then proceed from step1 below.



2

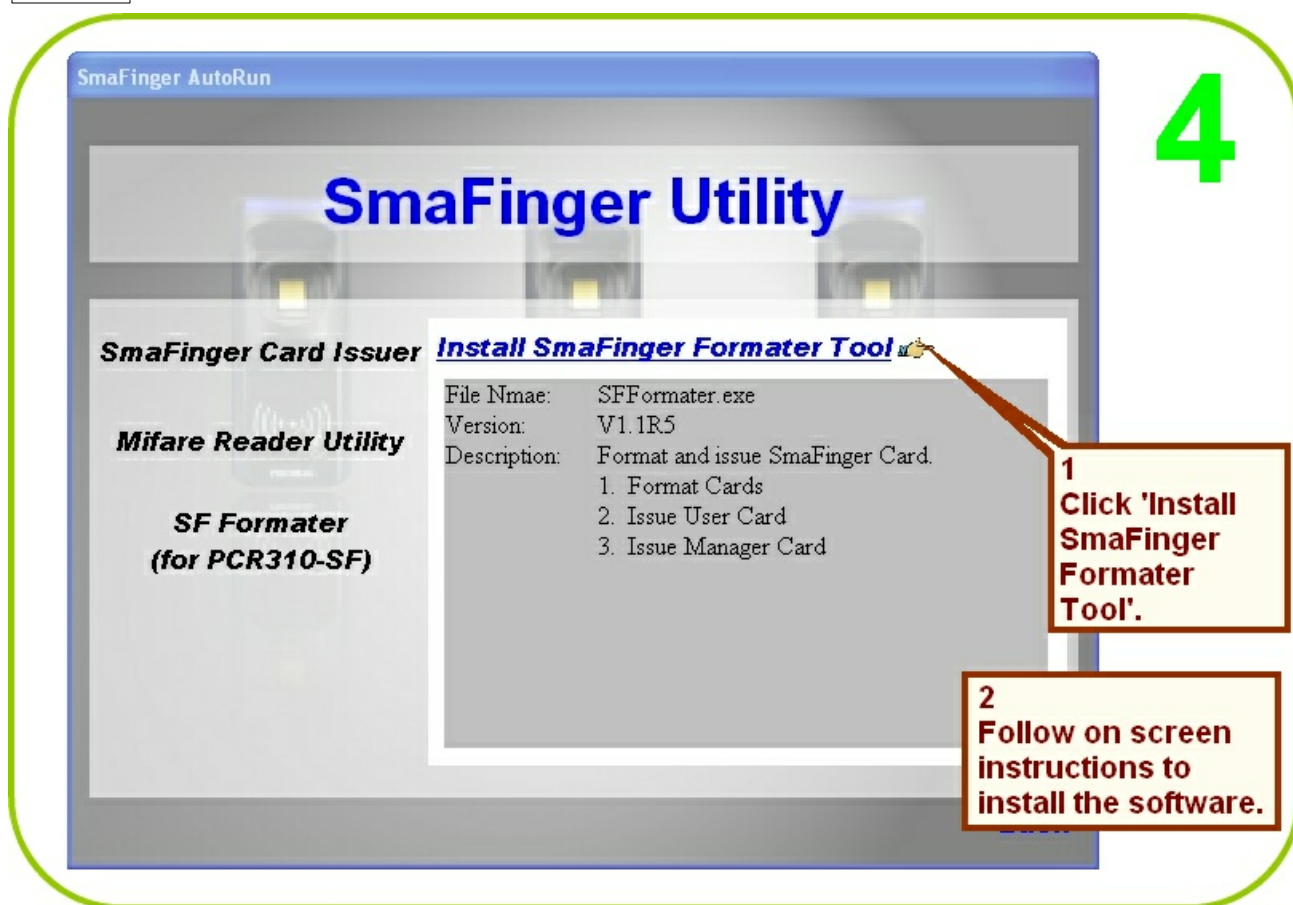
Click
'SmaFinger
Utility'



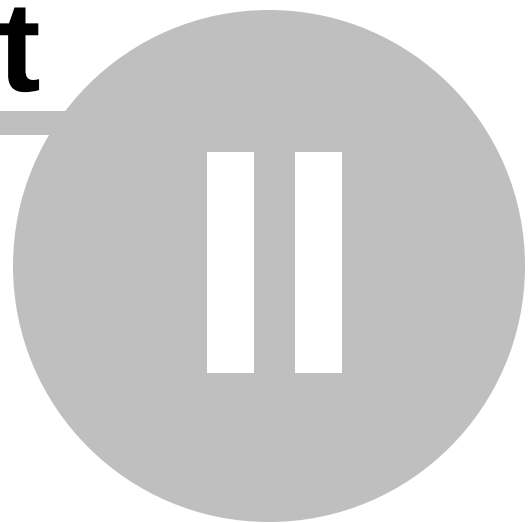
3

Click SF
Formater.





Part



2 Operation

The operations are classified as follows:

1. **Operation with Database (Online/Offline):** Fingerprint data are stored in reader database for verification.

For Operation with Database (Online) continue to next section chapter 2.1 [Operation with Database](#)

For Operations with Database (Offline), please go to chapter 2.1.2 [Offline System](#)

2. **Operations without Database (Online/Offline):** Fingerprint data are not stored in reader database but on user card for verification.

For Operations without Database (Online), please go to chapter 2.2 [Operation without Database](#)

For Operations without Database (Offline), please go to chapter 2.2.2 [Offline System](#)

For an overview of all operating modes please see chapter 3.4 [Overview of SmaFinger System Operating Modes](#)

2.1 Operation with Database

There are two operating systems under this mode:

1. **Online System** Fingerprint data of users are stored in host PC and then saved to readers directly online or transferred through system generated Enroll Cards.

2. **Offline System (Standalone)** Fingerprint data of users are stored in readers using Manager Enroll Cards supplied by Giga-Tms.

2.1.1 Online System

There are two operating modes under this system:

1. Access by Fingerprint.
2. Access by Card.

2.1.1.1 Access by Fingerprint

Access is given by verifying user's fingerprint with that already stored in the host PC and saved to the reader's database. In rare instances when none of the fingerprints of a person can be registered a card with random RFID code is issued to him/her.

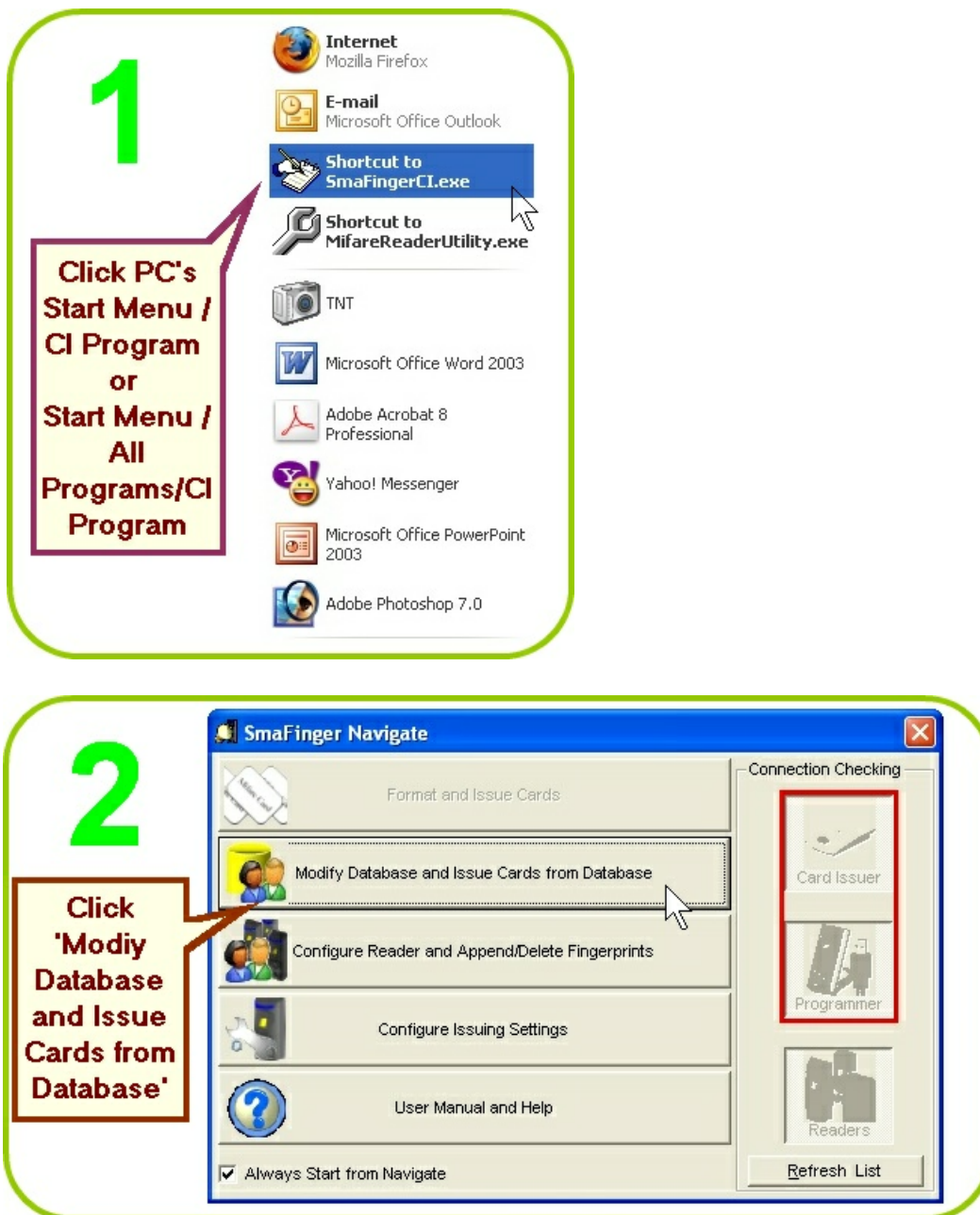
This section illustrates how to

1. register fingerprints of present and new users and save them to readers and
2. delete fingerprints of departed users from the readers.

2.1.1.1.1 How to Register Users' Fingerprints?

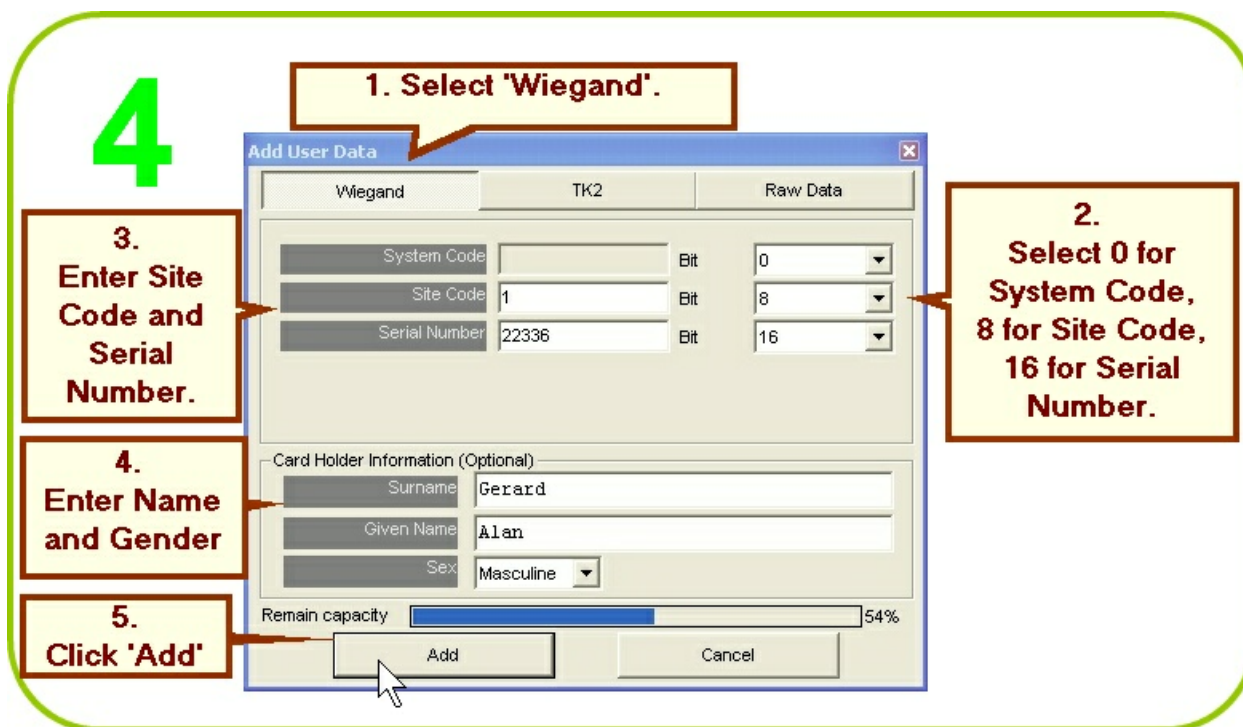
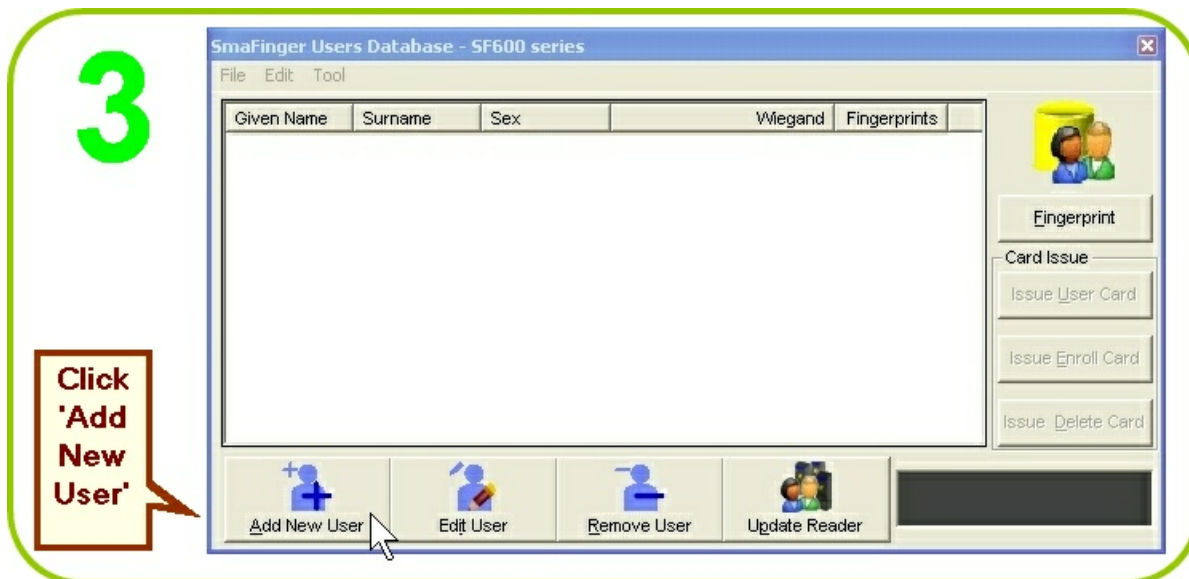
At the time of installation of a SmaFinger Online System, all present users' fingerprints can be registered by the programmer and saved to the reader. This is done with the card issuer, programmer and reader connected to the host PC. After thus updating, the reader can be installed at the access point/terminal.

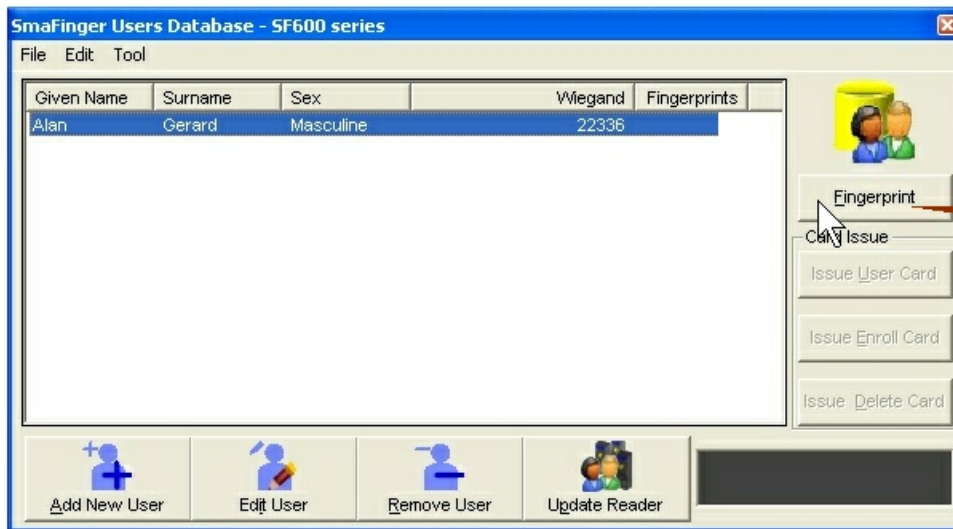
Programmer SF600P should have been installed as illustrated in Chapter 1.3 [Connection & Installation of Programmer](#).



Note: If the SmaFinger Users Database opens with the message 'Port is closed please press Key Search' and on moving the cursor over the right side menu of the window the message 'Can't Find PCR310U' appears, close the window and click '**Search PCR310U**' on the SmaFinger Card Issuer window. If you get the message 'Can't Find

PCR310U' again, remove and reconnect PCR310U or change the USB port to which it is connected.

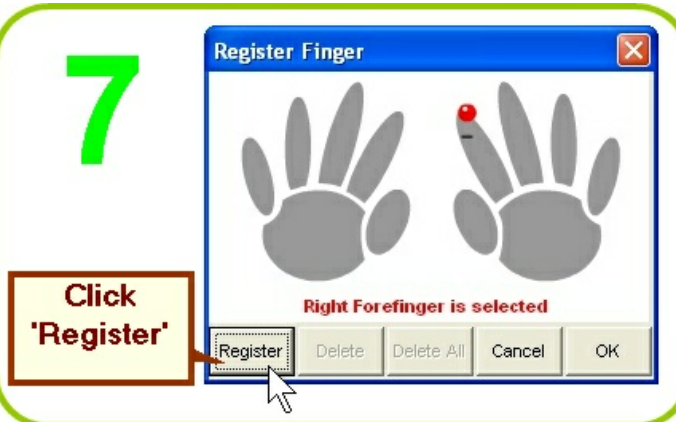


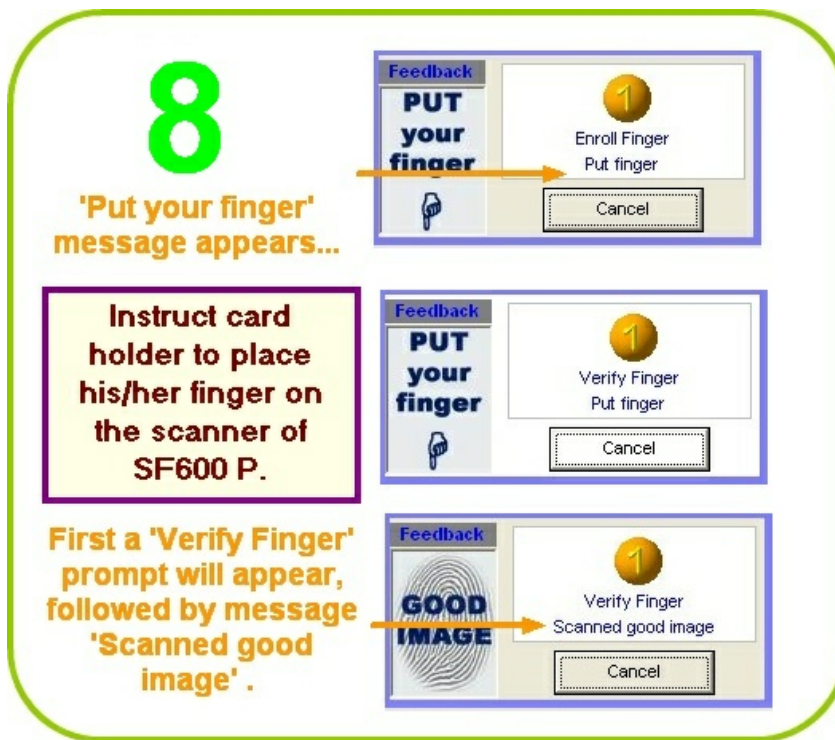


6

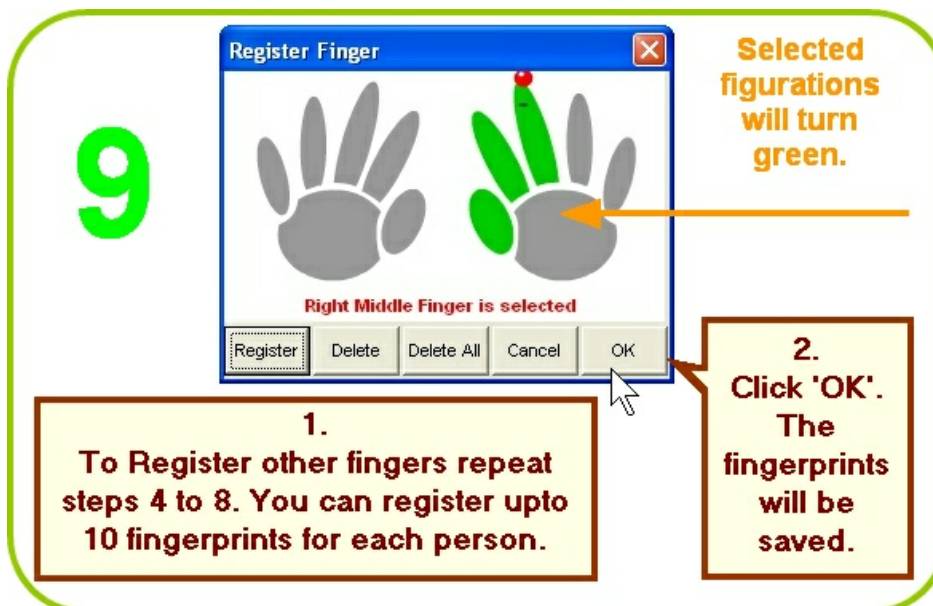


7





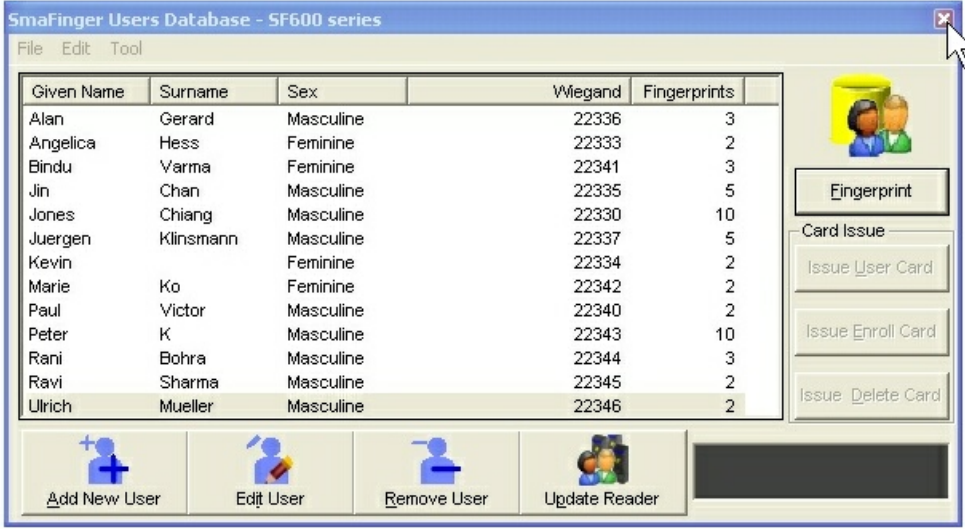
Note: If due to some reason a user's fingerprint doesn't get registered then a card with random RFID code can be issued. (Failing to enroll or verify after repeated attempts means the fingerprint has not registered.) Please refer chapter 2.1.1.2 [Access by Card](#) for the procedure.



10

**1.
Repeat steps 3
to 9 to register
fingerprints of
others.**

**2.
Close the
Database
Window.**



Given Name	Surname	Sex	Wiegand	Fingerprints
Alan	Gerard	Masculine	22336	3
Angelica	Hess	Feminine	22333	2
Bindu	Varma	Feminine	22341	3
Jin	Chan	Masculine	22335	5
Jones	Chiang	Masculine	22330	10
Juergen	Klinsmann	Masculine	22337	5
Kevin		Feminine	22334	2
Marie	Ko	Feminine	22342	2
Paul	Victor	Masculine	22340	2
Peter	K	Masculine	22343	10
Rani	Bohra	Masculine	22344	3
Ravi	Sharma	Masculine	22345	2
Ulrich	Mueller	Masculine	22346	2

Additional reading in chapter 3.11.5 [Managing User Database](#) and chapter 3.11.5.3 [Enroll Fingerprints](#)

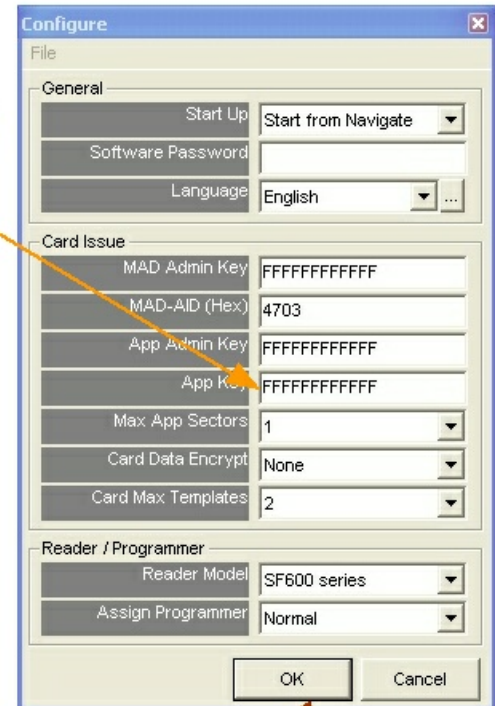
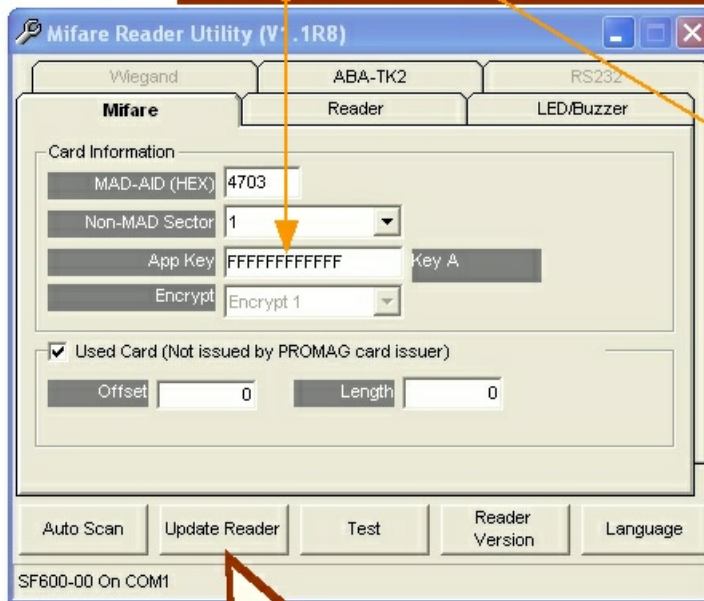
2.1.1.1.2 How to Save/Delete to/from Reader the Users' Fingerprints? (Online Enrollment)

Installation and configuration of the reader should have been completed and powered on as illustrated in chapter 1.4 [Connection and Installation of Reader](#).

Mifare Reader Utility should display reader and port numbers. Fingerprints of users should have been already registered as illustrated in chapter 2.1.1.1.1 [How to Register Users' Fingerprints?](#)

1

1 Open 'Mifare Reader Utility' and 'Configure' window and ensure App Keys are same.



2

2 Click 'Update Reader' and then close 'Mifare Reader Utility'.

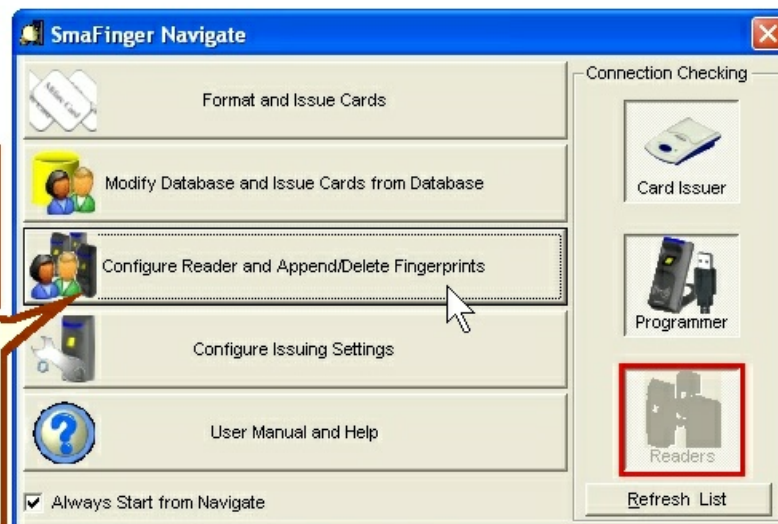
3

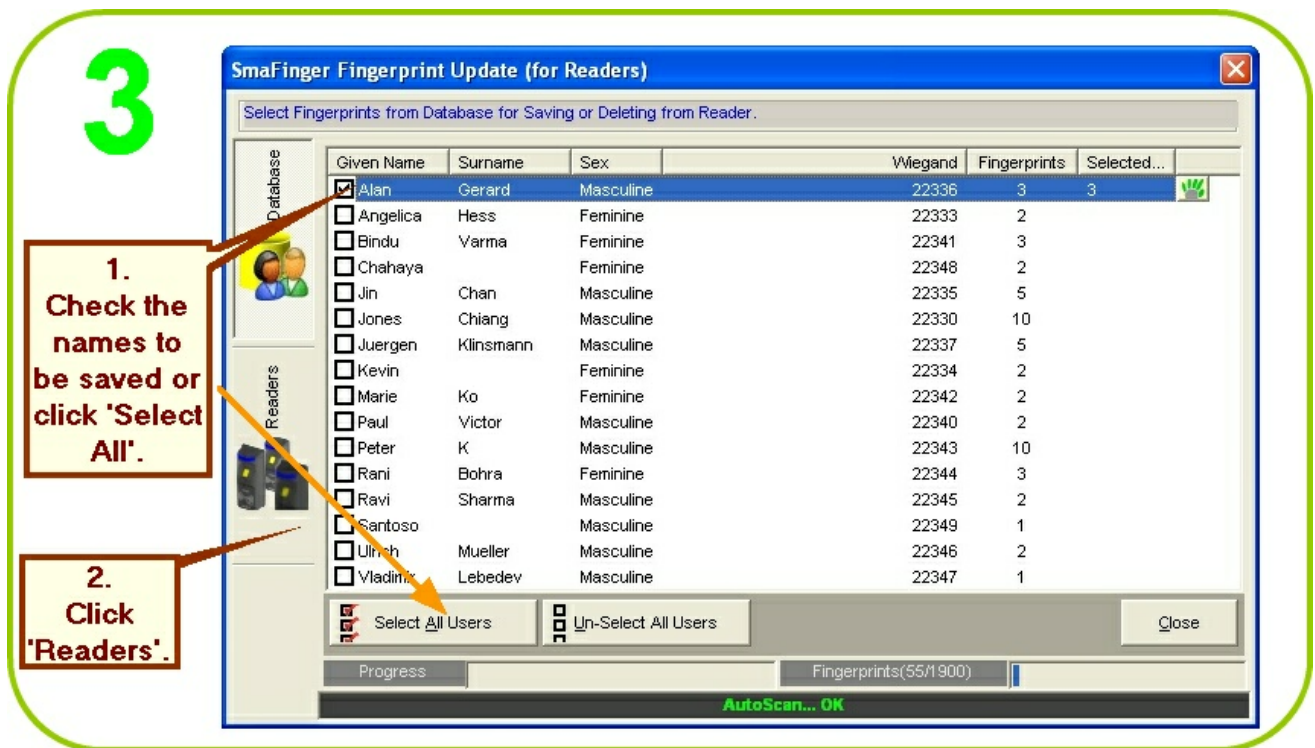
3 Click 'OK' and then closer 'Configure' window.

2

1. Open 'SmaFinger Navigate'.

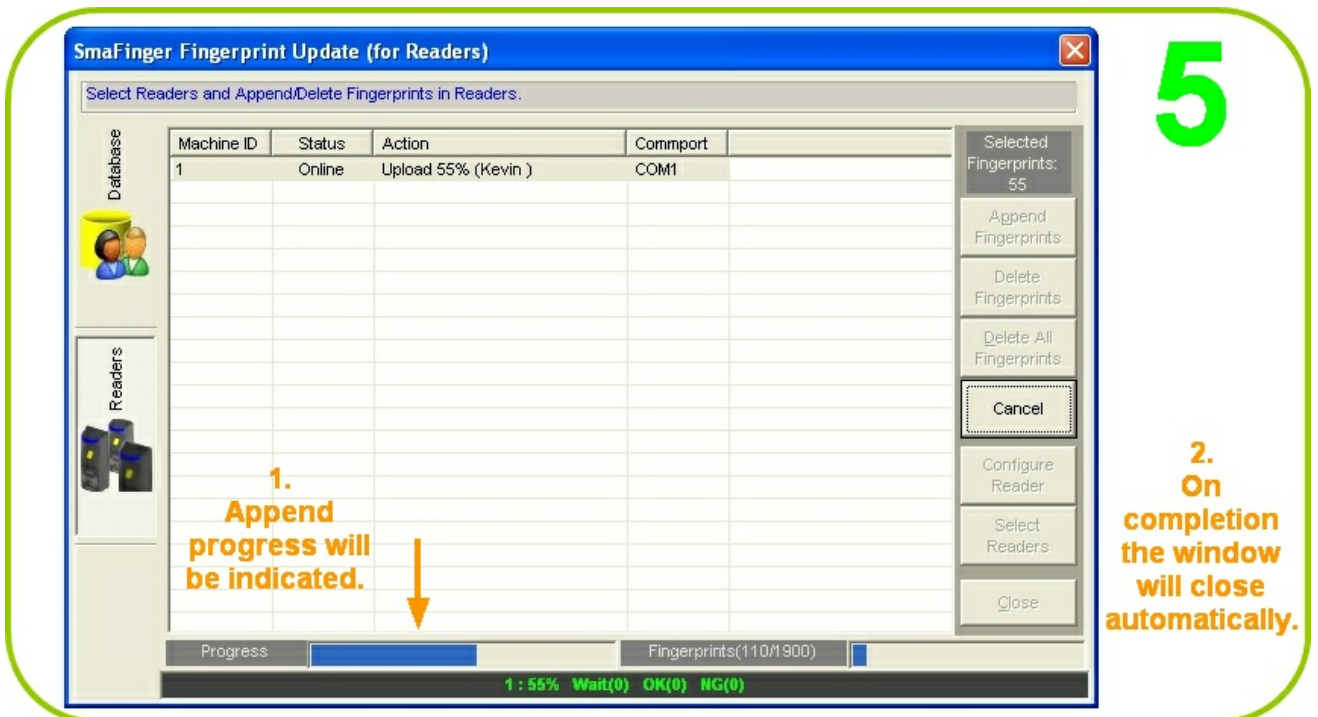
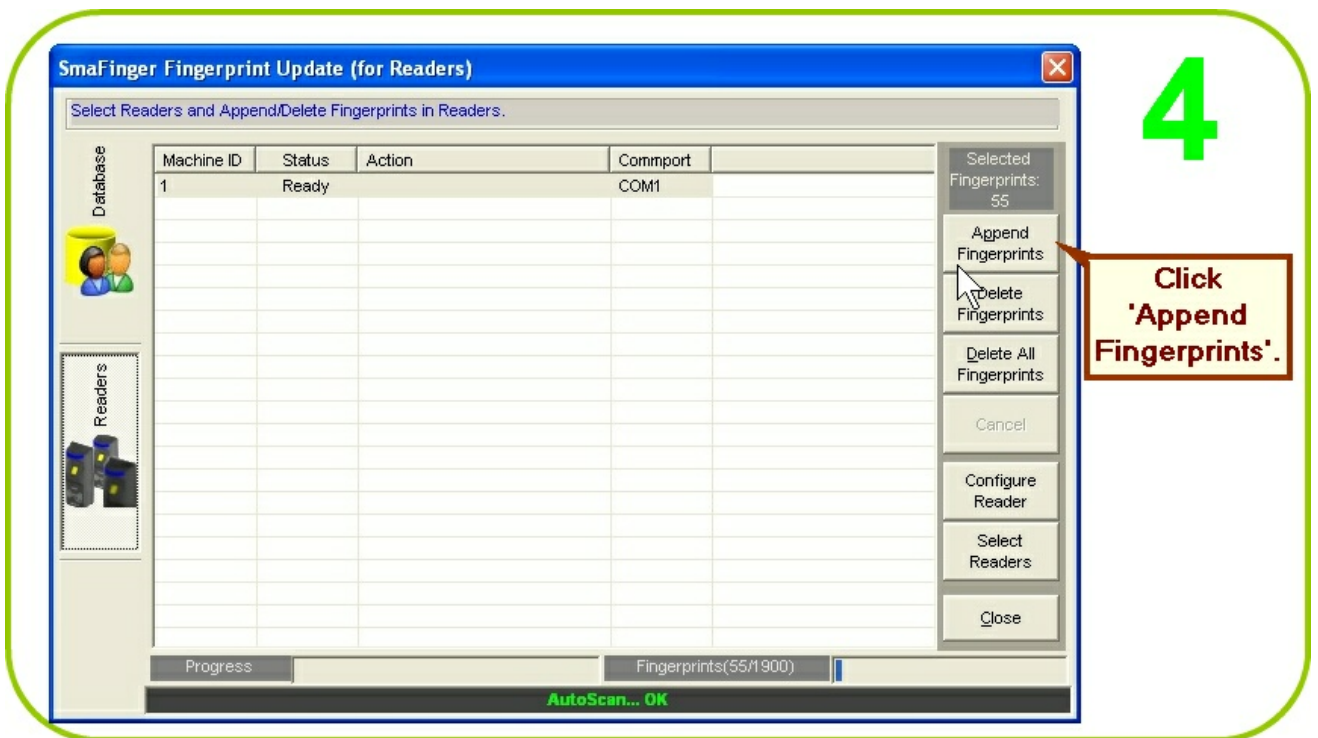
2. Click 'Configure Reader and Append/Delete Fingerprints'.





If 'AutoScan...NG' is displayed on the status bar at the bottom of the window shown above, try one of the following actions:

- Ensure Reader SF600 is connected to PC and powered up. Open Mifare Reader Utility from **Start** menu, click **AutoScan** and see that port number is indicated on the top bar of the Card Issuer window. If 'No Match Reader...' is displayed, disconnect and reconnect or change the reader to a different port. Click **Update Reader**. Then close the Mifare Reader Utility.
- Close the **SmaFinger Fingerprint Update (for Readers)** containing the error message. Reopen again from the SmaFinger Navigate, by clicking **Configure Reader and Append/Delete Fingerprints**. Now the 'OK' message will be displayed. Next proceed to actions at step 3.



6

SmaFinger Fingerprint Update (for Readers)

Select Fingerprints from Database for Saving or Deleting from Reader.

Given Name	Surname	Sex	Wiegand	Fingerprints	Selected...
☒ Alan	Gerard	Masculine	22336	3	3
☒ Angelica	Hess	Feminine	22333	2	2
☒ Bindu	Varma	Feminine	22341	3	3
☒ Chahaya		Feminine	22348	2	2
☒ Jin	Chan	Masculine	22335	5	5
☒ Jones	Chiang	Masculine	22330	10	10
☒ Juergen	Klinsmann	Masculine	22337	5	5
☒ Kevin		Feminine	22334	2	2
☒ Marie	Ko	Feminine	22342	2	2
☒ Paul	Victor	Masculine	22340	2	2
☒ Peter	K	Masculine	22343	10	10
☒ Rani	Bohra	Feminine	22344	3	3
☒ Ravi	Sharma	Masculine	22345	2	2
☒ Santoso		Masculine	22349	1	1
☒ Ulrich	Mueller	Masculine	22346	2	2
☒ Vladimir	Lebedev	Masculine	22347	1	1

Buttons: Select All Users, Un-Select All Users, Close

Progress: Fingerprint(55/1900)

OK

Appended fingerprints will be indicated.

'OK' message will appear on the status bar.

Click 'Close'.

To delete fingerprints click **Database** on the window at step 6 or open **Navigate** and click as shown in step 2.

7

SmaFinger Fingerprint Update (for Readers)

Select Fingerprints from Database for Saving or Deleting from Reader.

Given Name	Surname	Sex	Wiegand	Fingerprints	Selected...
☐ Alan	Gerard	Masculine	22336	3	
☐ Angelica	Hess	Feminine	22333	2	
☐ Bindu	Varma	Feminine	22341	3	
☐ Chahaya		Feminine	22348	2	
☒ Jin	Chan	Masculine	22335	5	5
☐ Jones	Chiang	Masculine	22330	10	
☐ Juergen	Klinsmann	Masculine	22337	5	
☐ Kevin		Feminine	22334	2	
☒ Marie	Ko	Feminine	22342	2	2
☐ Paul	Victor	Masculine	22340	2	
☐ Peter	K	Masculine	22343	10	
☐ Rani	Bohra	Feminine	22344	3	
☒ Ravi	Sharma	Masculine	22345	2	2
☐ Santoso		Masculine	22349	1	
☐ Ulrich	Mueller	Masculine	22346	2	
☐ Vladimir	Lebedev	Masculine	22347	1	

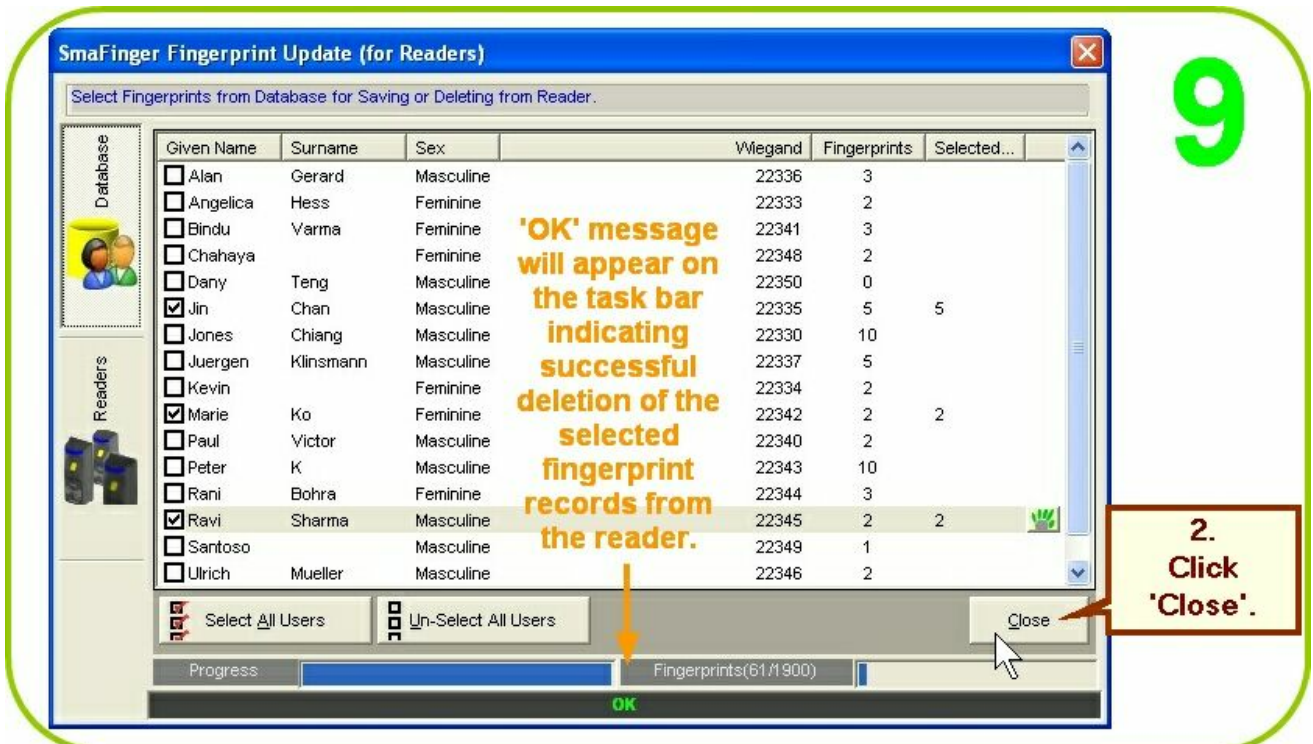
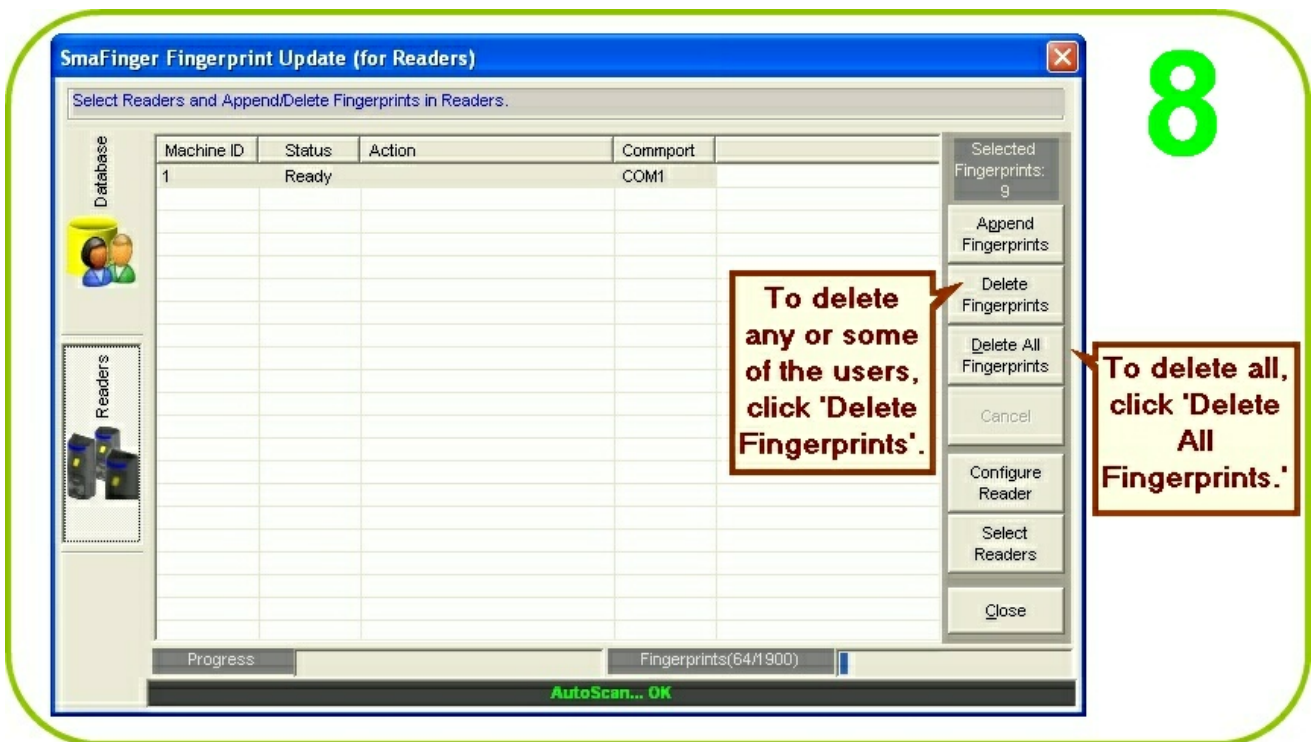
Buttons: Select All Users, Un-Select All Users, Close

Progress: Fingerprint(64/1900)

AutoScan... OK

1. To delete any or all users, check the boxes next to their names.

2. Click 'Readers'.



For test verification please see procedure in chapter 2.1.3 [SmaFinger on Service](#)

For connecting to controller please see procedure in chapter 2.3 [Connecting to Controller](#)

Additional reading in chapters 3.11.3 [SmaFinger Fingerprint Update Window Details](#) & 3.11.6 [Updating Database of Multiple Readers](#)

2.1.1.1.3 How to Register and Save to Reader New Users' Fingerprints?

Fingerprints of new users can be saved in the following ways:

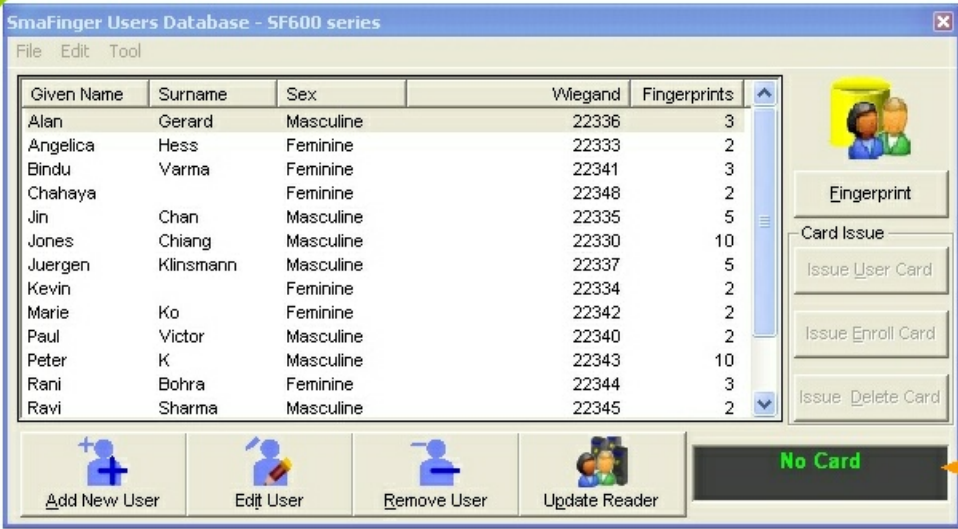
1. Using Enroll Card (Offline Enrollment).
2. Online Enrollment.

2.1.1.1.3.1 Using Enroll Card

When a new user is to be registered, first his/her fingerprints have to be registered using the Programmer SF600P connected with the host PC as illustrated in chapter 2.1.1.1.1 [How to Register Users' Fingerprints?](#) If the reader is already installed at entry point/terminal, instead of disconnecting the reader from there and reconnecting it with host PC to transfer the fingerprint data online, an Enroll Card bearing the fingerprint data of the user can be issued. Reading the Enroll Card at each installed reader will transfer the fingerprint data of the new user to the reader's database. This is referred as Offline Enrollment, the procedure for which is as follows:

The SmaFinger Card Issuer program should have been installed and opened on the host PC. The Card Issuer PCR310U should have been connected to the host PC and detected by CI program. (Please refer chapter 1.2 [Connection & Installation of Card Issuer](#) .)





2

'SmaFinger Users Database' will open with the message 'No Card'.

2

'SmaFinger Users Database' will open with the message 'No Card'.

3

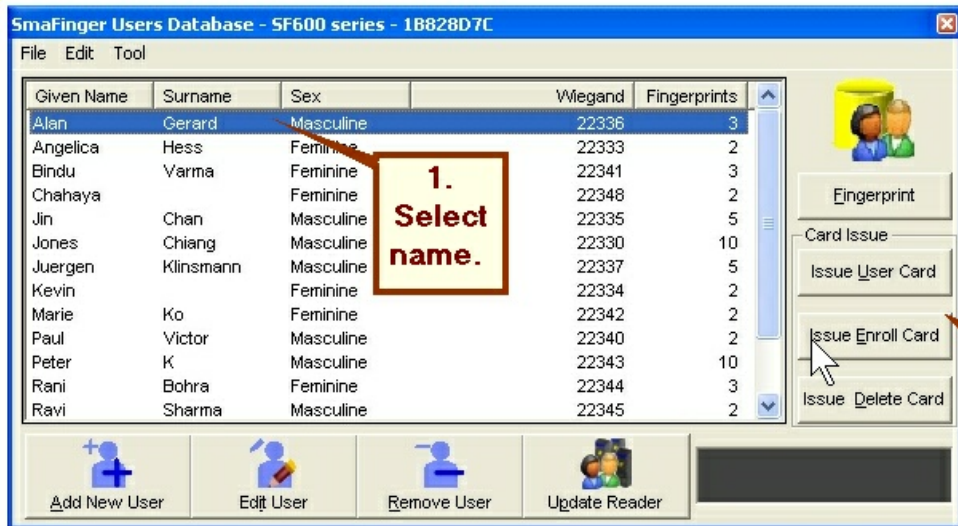
1.

Insert a Mifare card in the cradle of Card Issuer PCR310U. Its second green lamp will glow and a message box will appear.

2.

Click 'Yes'

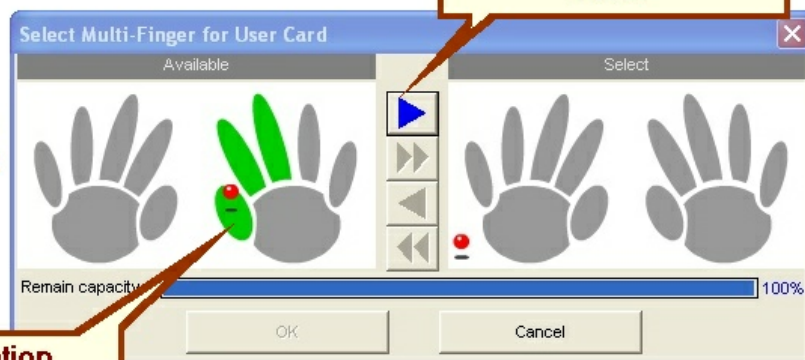




6

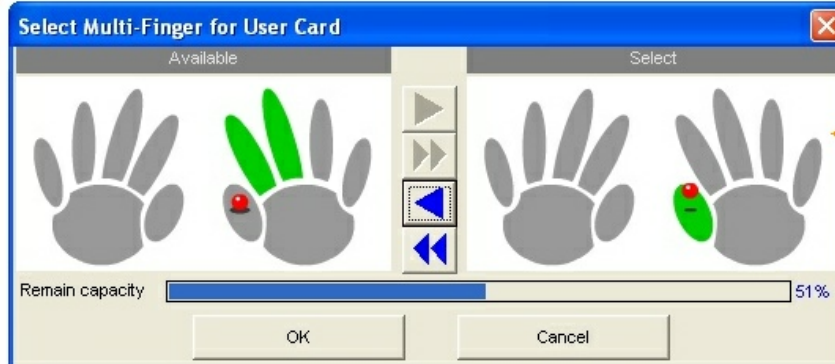
7

The available fingerprints will be displayed on the left window...



1. Click a figuration corresponding to the user's fingerprint to be selected.

2. Select it by clicking here.



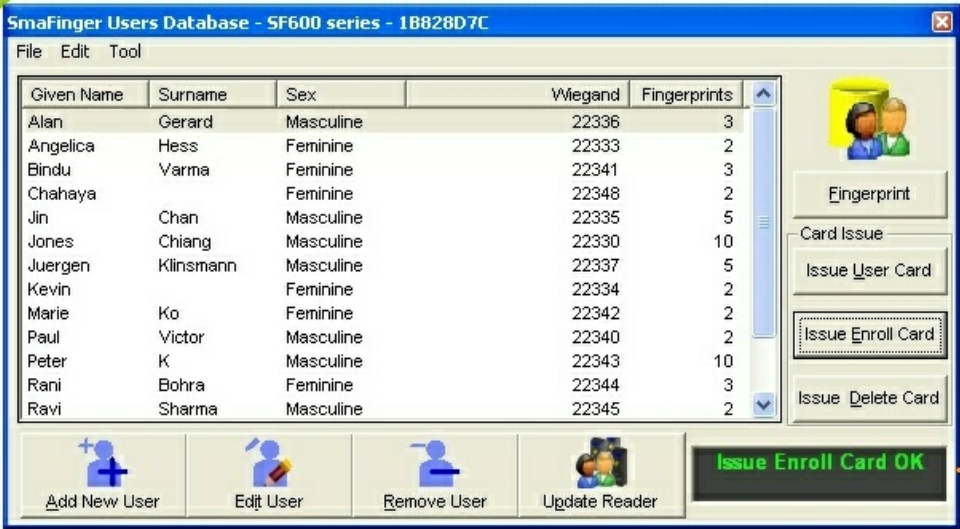
8

Fingerprint is transferred to 'Select' window.

1. Transfer more fingerprints if required.

2. Click OK.

Note: 1K Mifare Card can take prints of up to two fingers and 4k can take that of up to four fingers.



9

Issue Enroll Card message will appear.

Remove card from PCR310U.
Repeat steps 3 to 9 to issue 'Enroll Cards' for other new users.

10



1.

Take 'Enroll Cards' of new users to reader located at entry point/terminal.

3.

Repeat points 1 and 2 for readers at other entry point/terminals.

2.

Scan each card at the reader till the green LED on the reader glows with a beep.

For test verification please see procedure in chapter 2.1.3 [SmaFinger on Service](#)

Additional reading in chapter 3.11.7 [Creating and Managing MAD card](#)

2.1.1.1.3.2 Online Enrollment

Reader can be disconnected from the controller at the entry point/terminal at a convenient time of the day and brought to the host PC and then the fingerprint data of the new user can be transferred online from the host PC as described in chapter 2.1.1.1.1 [How to register Users' Fingerprints?](#) . After the update the reader can be reconnected to the controller at the entry point/terminal.

For test verification please see procedure in chapter 2.1.3 [SmaFinger on Service](#)

Please also refer chapter 3.9.3 [SmaFinger Fingerprint Update Window Details](#)

2.1.1.1.4 How to Delete Records of Departed Users?

When any user is to be denied access permission due to his/her resignation, dismissal etc. the fingerprint data of the user is deleted from the reader. The data of departed users can be deleted in the following ways:

1. Using Delete Card (Offline Deletion)
2. Online Deletion

2.1.1.1.4.1 Using Delete Card

If the reader is already installed at entry point/terminal, instead of disconnecting the reader from there and reconnecting it with host PC to delete fingerprint data online, a Delete Card can be issued. Reading the Delete Card at each installed reader will delete the fingerprint data of the departed user from reader's database and the user cannot gain access anymore. This is referred as Offline Deletion.

The SmaFinger Card Issuer program should have been installed in the host PC. The Card Issuer PCR310U should have been connected to the host PC and detected by the program. (Please refer for details in chapter 1.2 [Connection & Installation of Card Issuer](#) .)



SmaFinger Users Database - SF600 series

Given Name	Surname	Sex	Wiegand	Fingerprints
Alan	Gerard	Masculine	22336	3
Angelica	Hess	Feminine	22333	2
Bindu	Varma	Feminine	22341	3
Chahaya		Feminine	22348	2
Jin	Chan	Masculine	22335	5
Jones	Chiang	Masculine	22330	10
Juergen	Klinsmann	Masculine	22337	5
Kevin		Feminine	22334	2
Marie	Ko	Feminine	22342	2
Paul	Victor	Masculine	22340	2
Peter	K	Masculine	22343	10
Rani	Bohra	Feminine	22344	3
Ravi	Sharma	Masculine	22345	2

Buttons: Add New User, Edit User, Remove User, Update Reader

Buttons: Fingerprint, Card Issue, Issue User Card, Issue Enroll Card, Issue Delete Card

No Card (highlighted in green)

2

'SmaFinger Users Database' will open with the message 'No Card'.

3

1.

Insert a Mifare card in the cradle of Card Issuer PCR310U. Its second green lamp will glow and a message box will appear.

2.

Click 'Yes'

SmaFinger

You don't have MAD format!
Do you want to format?

Yes No

6

1. Select a name.

2. Click 'Issue Delete Card'.

Given Name	Surname	Sex	Wiegand	Fingerprints
Alan	Gerard	Masculine	22336	3
Angelica	Hess	Feminine	22333	2
Bindu	Varma	Feminine	22341	3
Chahaya		Feminine	22348	2
Jin	Chan	Masculine	22335	5
Jones	Chiang	Masculine	22330	10
Juergen	Klinsmann	Masculine	22337	5
Kevin		Feminine	22334	2
Marie	Ko	Feminine	22342	2
Paul	Victor	Masculine	22340	2
Peter	K	Masculine	22343	10
Rani	Bohra	Feminine	22344	3
Ravi	Sharma	Masculine	22345	2

Buttons: Add New User, Edit User, Remove User, Update Reader

Right-hand menu: Fingerprint, Card Issue, Issue User Card, Issue Enroll Card, Issue Delete Card

7

'Issue Delete Card OK' message will appear.

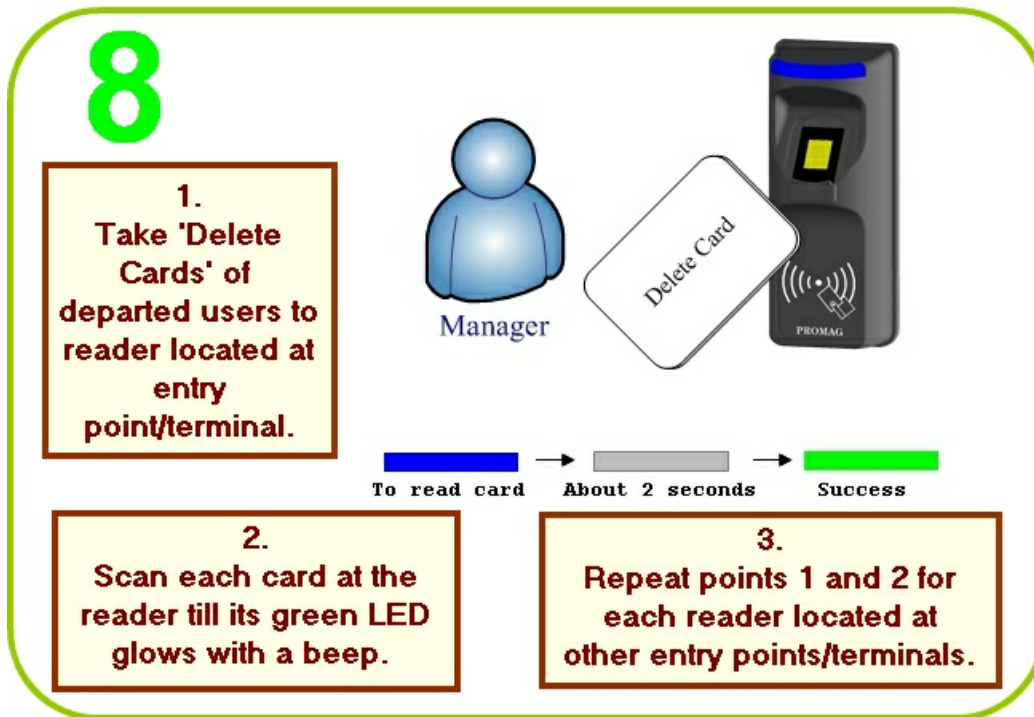
1. After OK message shown above remove the card from PCR310U.

2. Repeat the procedure from steps 2 to 7 for other departed users.

Given Name	Surname	Sex	Wiegand	Fingerprints
Alan	Gerard	Masculine	22336	3
Angelica	Hess	Feminine	22333	2
Bindu	Varma	Feminine	22341	3
Chahaya		Feminine	22348	2
Jin	Chan	Masculine	22335	5
Jones	Chiang	Masculine	22330	10
Juergen	Klinsmann	Masculine	22337	5
Kevin		Feminine	22334	2
Marie	Ko	Feminine	22342	2
Paul	Victor	Masculine	22340	2
Peter	K	Masculine	22343	10
Rani	Bohra	Feminine	22344	3
Ravi	Sharma	Masculine	22345	2

Buttons: Add New User, Edit User, Remove User, Update Reader

Right-hand menu: Fingerprint, Card Issue, Issue User Card, Issue Enroll Card, Issue Delete Card (highlighted as Issue Delete Card OK)



For test verification please see procedure in chapter 2.1.3 [SmaFinger on Service](#)

2.1.1.1.4.2 Online Deletion

The reader can be disconnected from the controller at the entry point/terminal at a convenient time of the day and brought to the host PC and the fingerprint data of departed users can be deleted online using SmaFinger Card Issuer program in the host PC. Later the reader can be reconnected at its entry point/terminal. This is referred as Offline Deletion.

Installation and configuration of the reader should have been completed as illustrated in chapter 1.4 [Connection and Installation of Reader](#). Fingerprints should have been registered as given in chapter 2.1.1.1.1. Mifare Reader Utility should display reader and port numbers.

1 Open 'Mifare Reader Utility' and 'Configure' window and ensure App Keys are same.

2 Click 'Update Reader' and then close 'Mifare Reader Utility'.

3 Click 'OK' and then closer 'Configure' window.

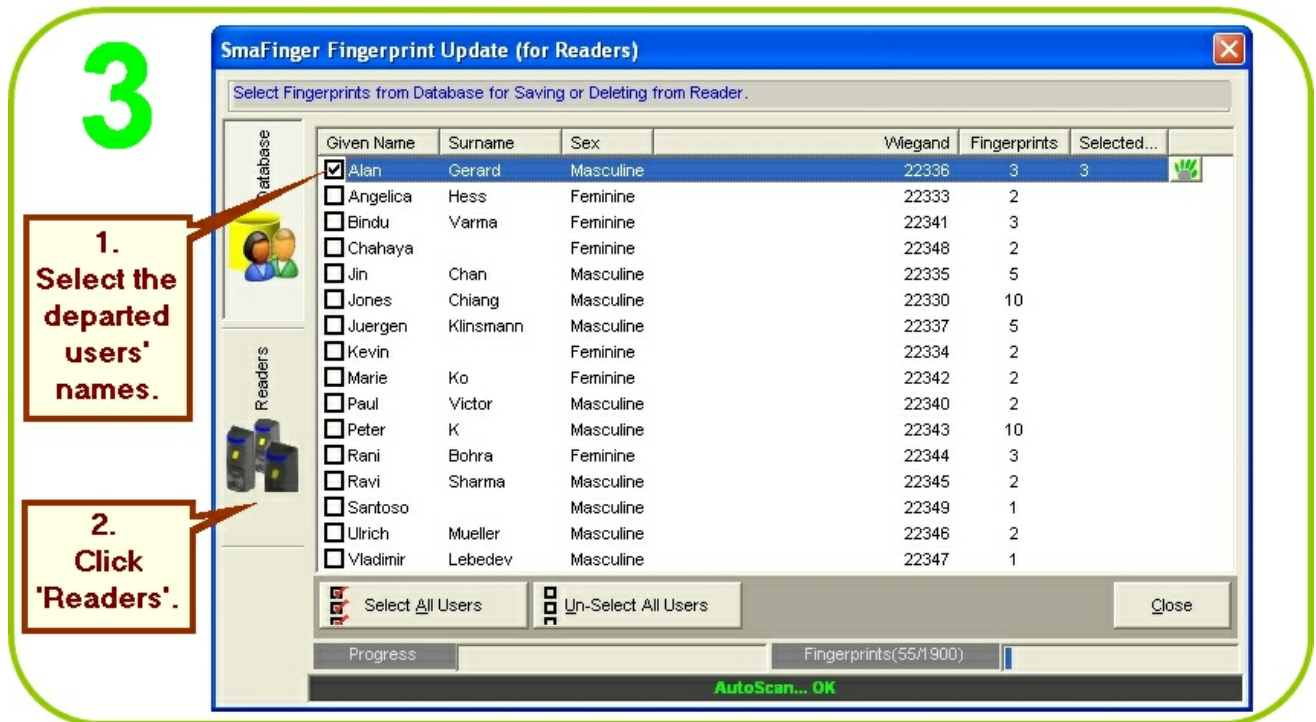
2

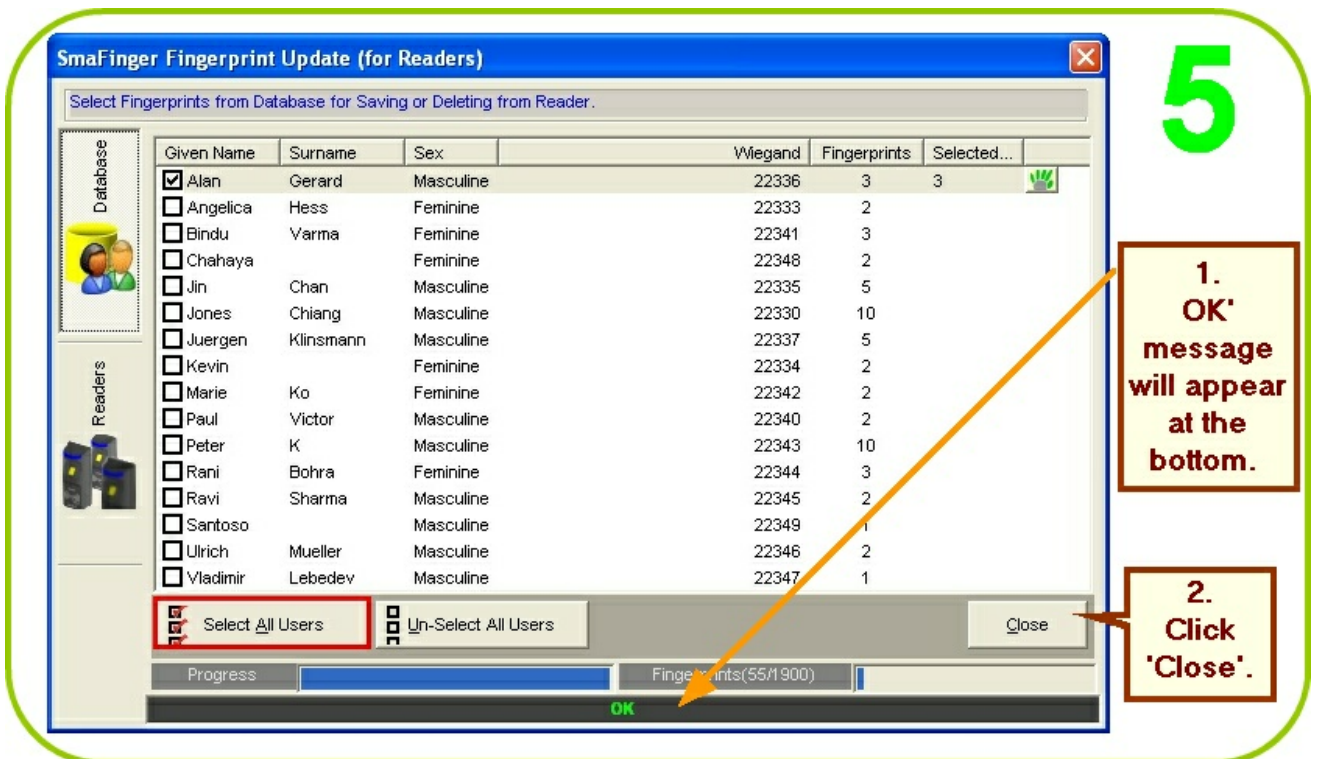
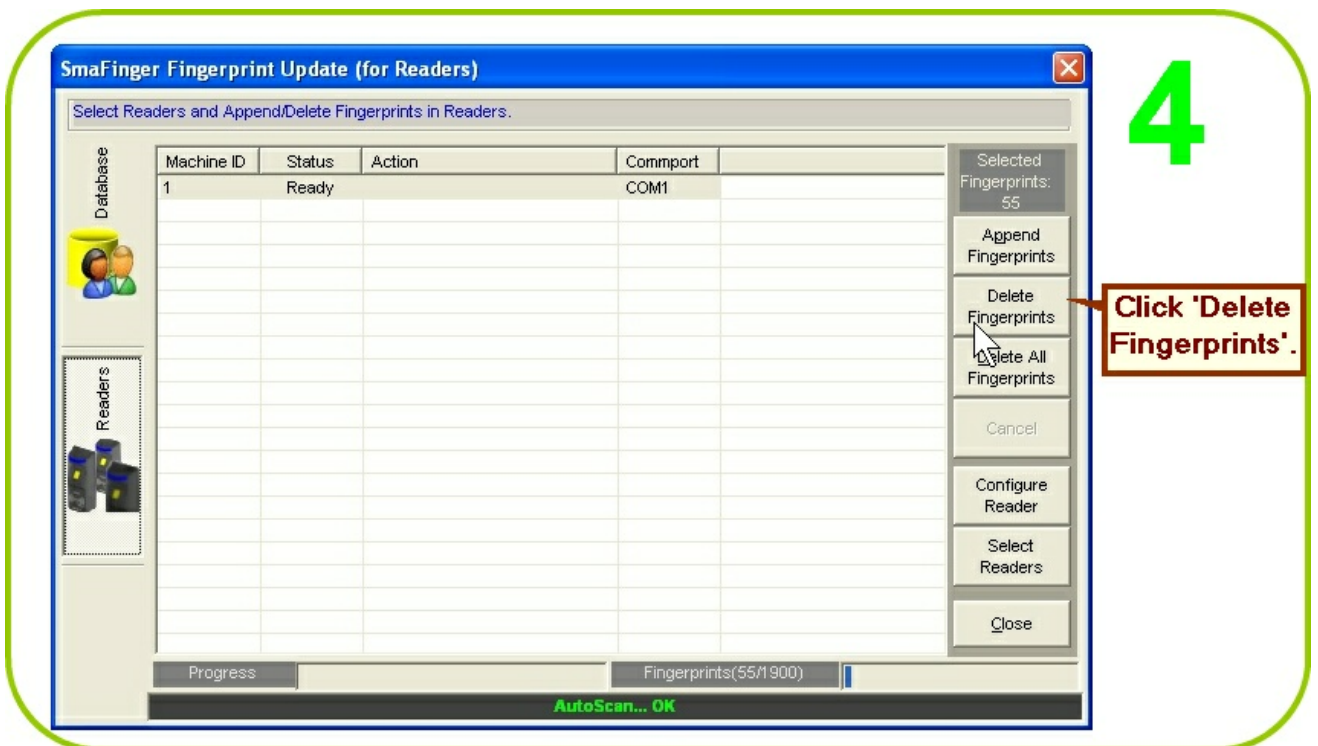
1. Open 'SmaFinger Navigate'.

2. Click 'Configure Reader and Append/Delete Fingerprints'.

If instead of 'AutoScan...OK' or 'OK' message, 'AutoScan...NG' is displayed on the status bar at the bottom of the window shown above, do the following:

- a. Ensure Reader SF600 is connected to PC and powered up. Open Mifare Reader Utility window from **Start** menu. Click **AutoScan** and see that port number is indicated on the blue top bar of the window. If '**No Match Reader...**' is displayed, disconnect and reconnect or change the reader to a different port. Click **Update Reader** . Then close the Mifare Reader Utility window.
- b. Close the **SmaFinger Fingerprint Update (for Readers)** containing the error message. Reopen from the SmaFinger Navigate, by clicking **Configure Reader and Append/Delete Fingerprints**. Now the '**OK**' message will be displayed. Then proceed to actions at step 3.

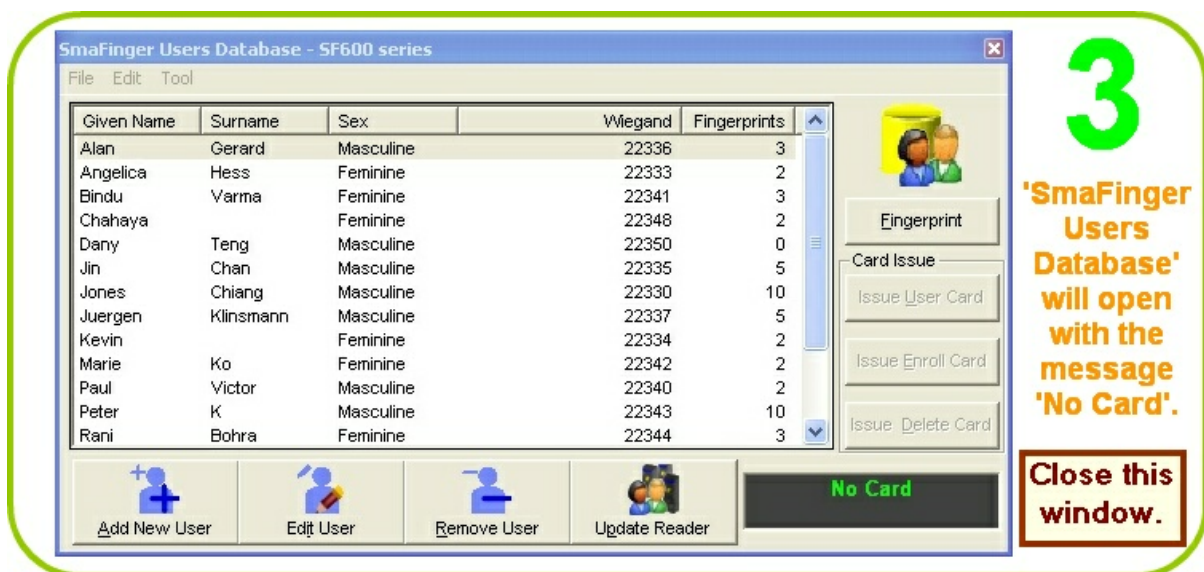




For test verification please see procedure in chapter 2.1.3 [SmaFinger on Service](#)



Note: If the SmaFinger Users Database opens with the message 'Port is closed please press Key Search' and on moving the cursor over the right side menu of the window you see the message 'Can't Find PCR310U', close the window and click 'Search PCR310U' on the SmaFinger Card Issuer window. If you again get the message: 'Can't Find PCR310U' remove and reconnect PCR310U or change the USB port to which it is connected and search again. The port number of Card Issuer PCR310 should be indicated. Next click **Database**.



Note: 'No Card Message' can be seen by moving the cursor over the right side menu of the window.

6

1. Select 'Wiegand' (for example)

2. Select 0 for system code, 8 for site code and 16 for serial number.

3. Enter site code and serial number.

4. Enter name and gender.

5. Select 'Card Only'

6. Click 'Write Card'.

7

'Write OK' message will appear.

Close the window and remove the card from Card Issuer PCR310U

For test verification please see procedure in chapter 2.1.3 [SmaFinger on Service](#)

For connecting the reader to controller please go to 2.3 [Connecting to Controller](#)

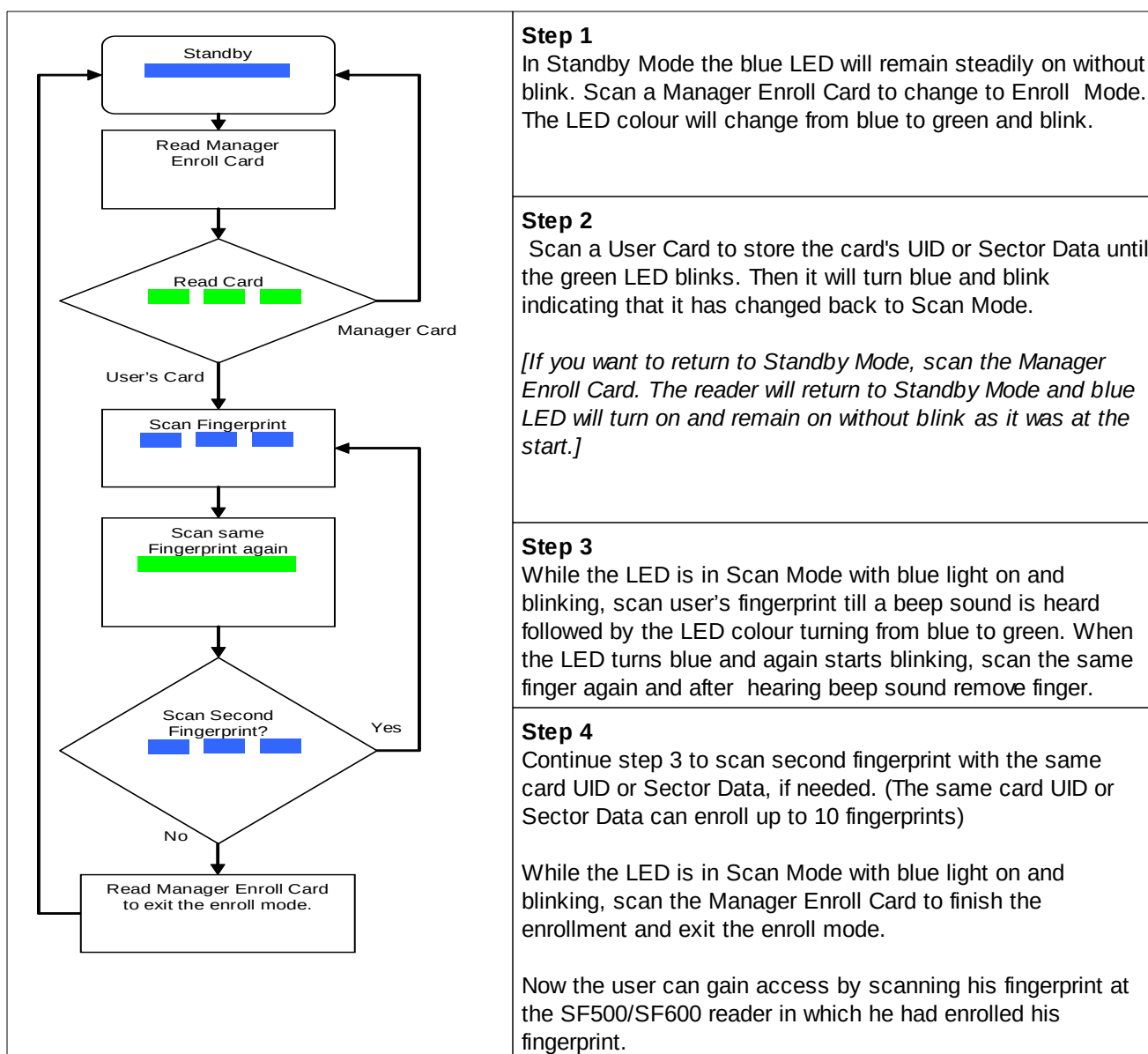
2.1.2 Offline System

Only the reader is necessary in this system. Manager Enroll Card and Manager Delete Card supplied by **Giga-Tms** along with User Cards are required. Once registered user can gain access by scanning their fingerprint or card. On the rare occasions when the reader fails to capture a user's fingerprint, a card with randomly generated RFID code can be issued.

The reader should have been mounted and connected as per the connection details in chapter 3.10.2 [Secure Mounting Installation](#) and chapter 2.3 [Connecting to Controller](#)

2.1.2.1 Access by Fingerprint

User's fingerprints are stored only in the reader and each user can register up to 10 fingerprints. Once registered, user can gain access by scanning any of the fingers that were registered.



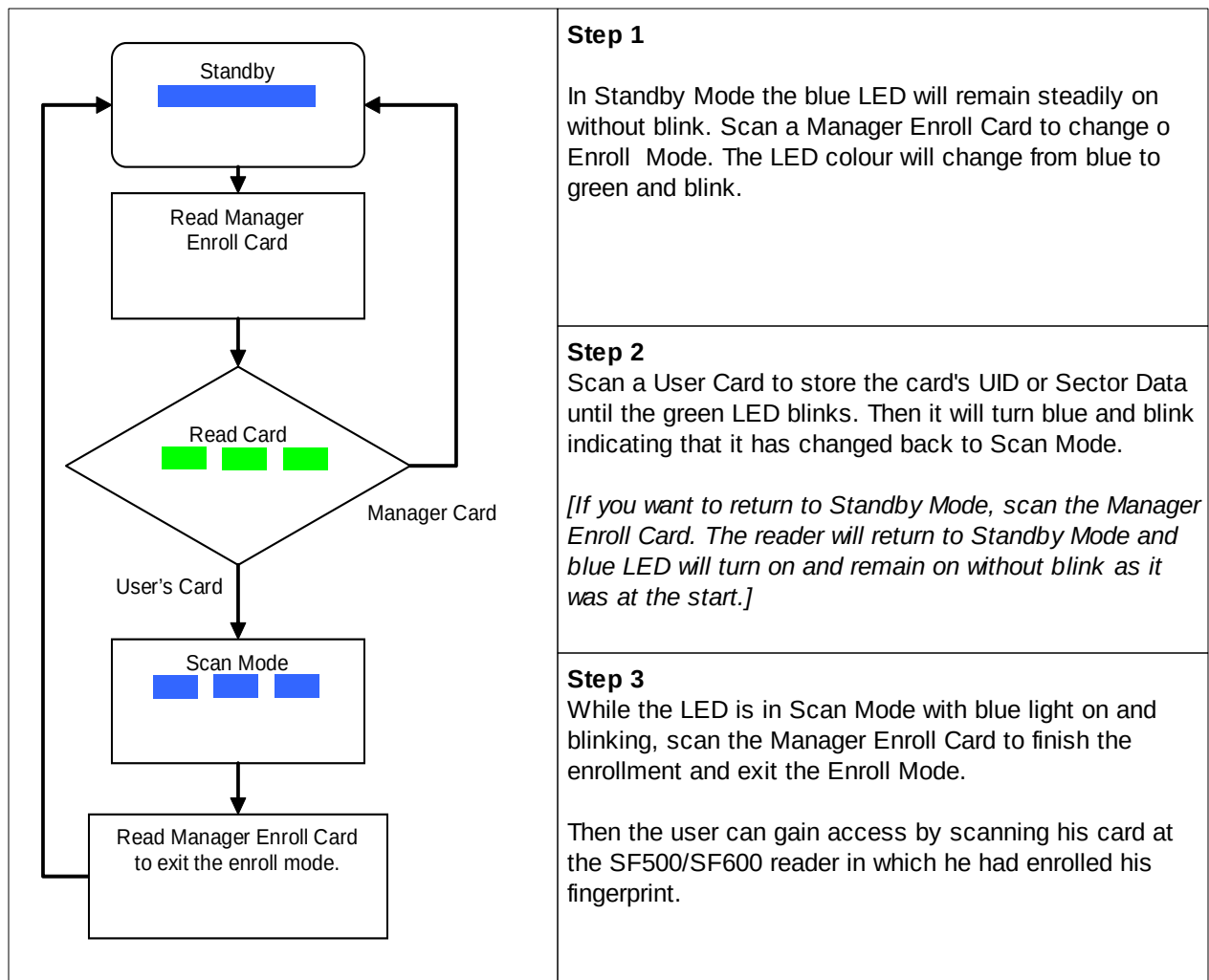
Note:

1. Warning: Keep the User Card and do not lose it as otherwise you cannot delete user from the reader.
2. For multi-user, please use the Multi-User Card to create serial number automatically.

For test verification please see procedure in chapter 2.1.3 [SmaFinger on Service](#)

2.1.2.2 Access by Card

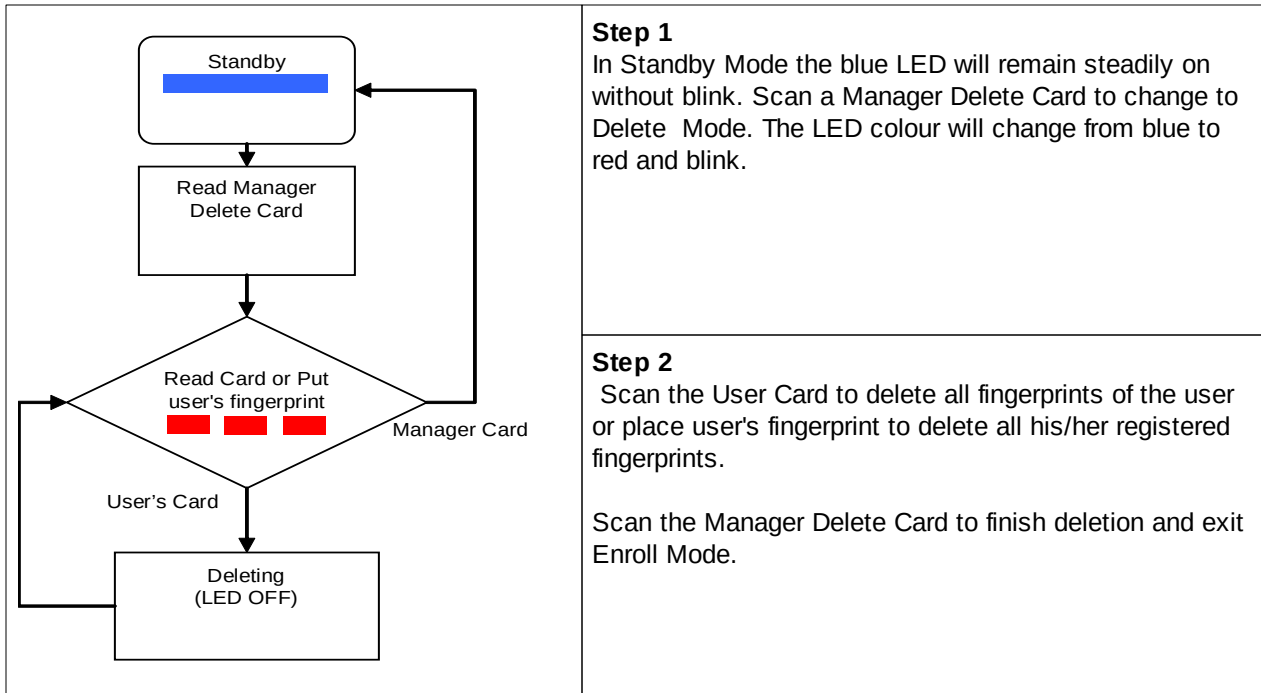
Card data is stored in the reader. Access is gained by cards only.



For test verification please see procedure in chapter 2.1.3 [SmaFinger on Service](#)

2.1.2.3 Deletion

Steps to delete fingerprint and card data from the reader.



For test verification please see procedure in chapter 2.1.3 [SmaFinger on Service](#)

For connecting to controller please go to chapter 2.3 [Connecting to Controller](#)

2.1.3 SmaFinger on Service

After registering and saving a fingerprint or issuing a card a test verification can be done by scanning the fingerprint or card at the reader. (Controller's action can be seen only when the reader is connected to it.)

- If the fingerprint of user does not match with that in the database of the reader, its blue LED will go off with beeps and then come back to steady blue indicating standby mode. The reader will not pass access signal to the controller.
- When the fingerprint of the user matches with the reader database, blue LED will turn off and green LED will turn on. Access signal will be passed to controller.
- If a card is presented by a user the reader will scan the card data and compare it with its database. Same as above, access signal will be passed if it finds match with its database, otherwise not.

2.2 Operation without Database

This facility is provided for countries where maintaining fingerprint database by private organizations may have been disallowed. The fingerprints are not stored in host PC or reader's database but on a User Card and the same is issued to the user. The user gains access by scanning the card in his possession along with his/her fingerprint. The reader enables access if the user's fingerprint matches with that on the user's card.

This is available under the following two systems:

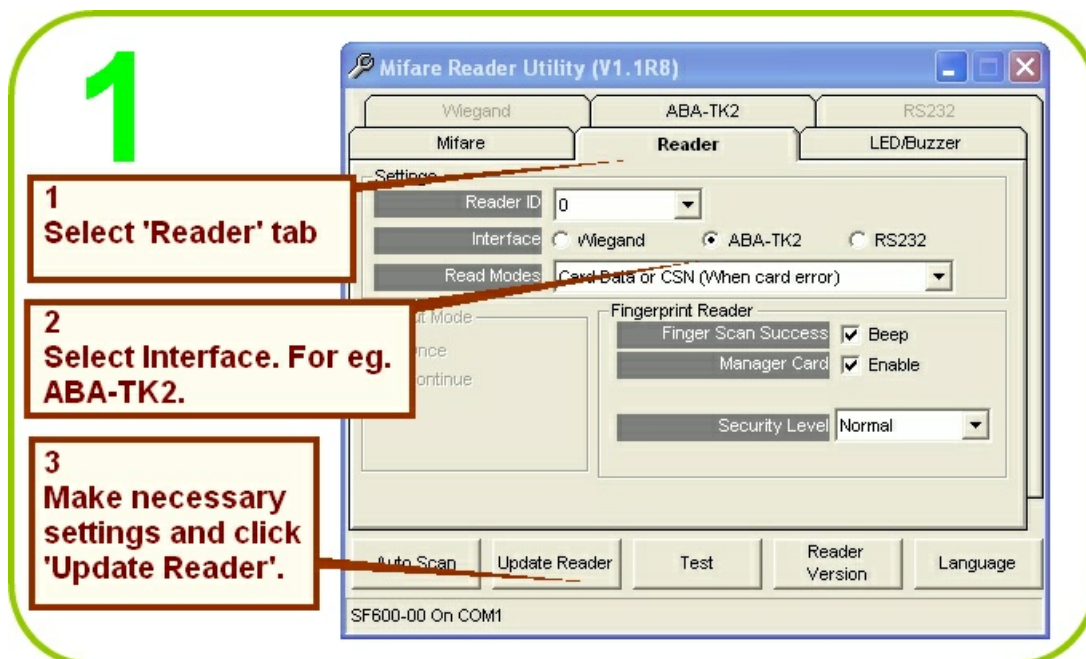
1. Online System
2. Offline System

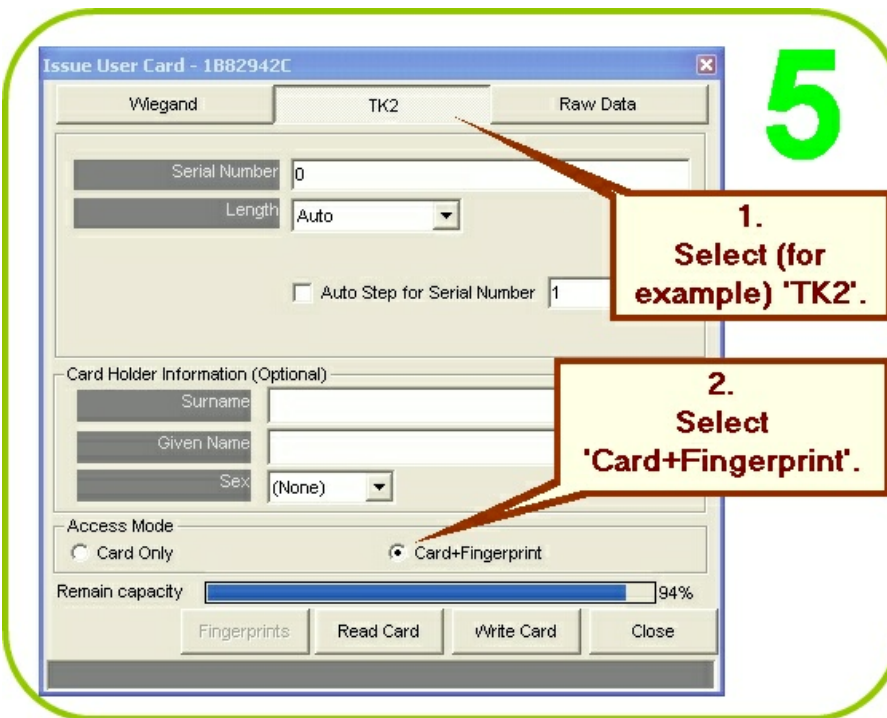
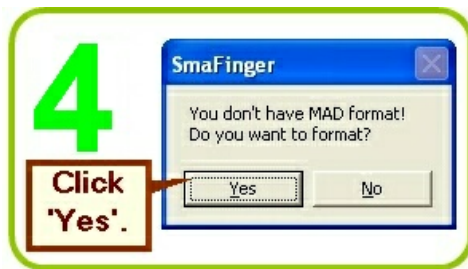
2.2.1 Online System

This integrated system consists of devices Card Issuer PCR310U, Programmer SF600P and Reader SF500/600. An Enroll Card bearing the fingerprint data of user is generated to transfer the data to the reader located at entry point/terminal.

2.2.1.1 Access by Card + Fingerprint Card

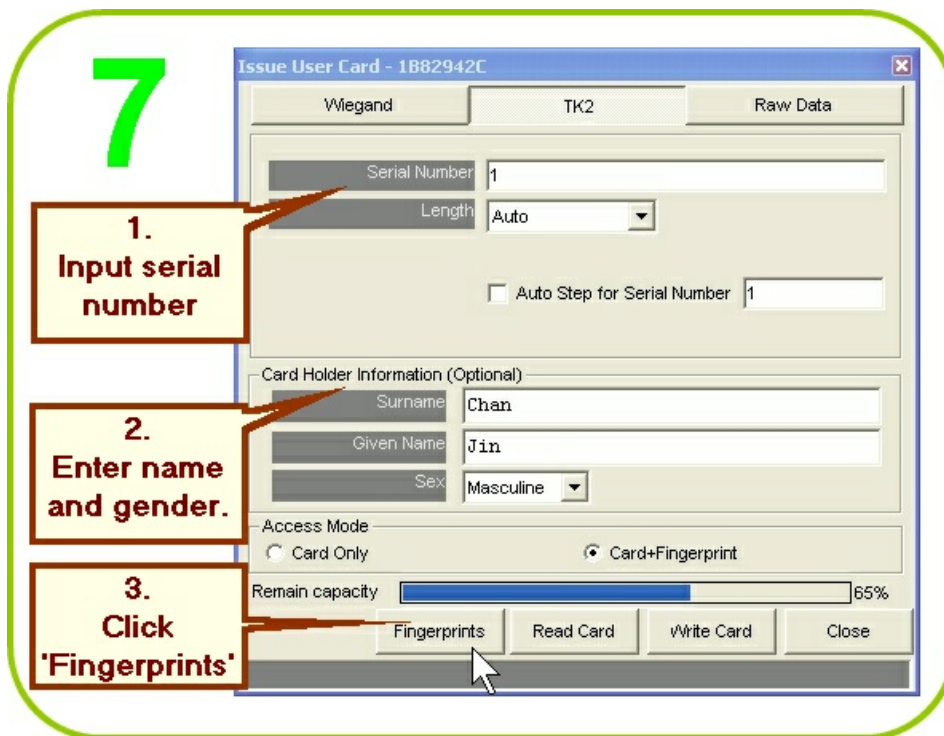
Proceed as follows after installation of Card Issuer PCR310U, Programmer SF600P and Reader SF500/600 as illustrated under chapter 1 [Installation](#)



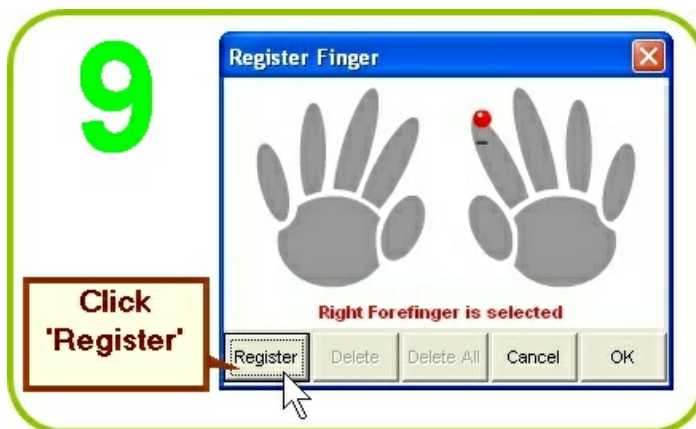
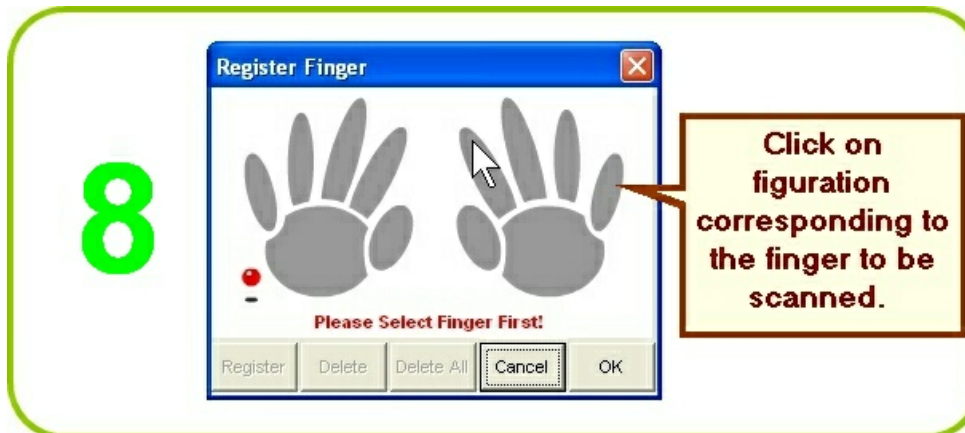


Additional information on interfaces in Chapter 3.11.4 [Card Issuer Interface Window Details](#)





Note: 1K Mifare Card can store up to two fingerprints and 4k up to four fingerprints.



10

'Put your finger' message appears...

Instruct card holder to place his/her finger on the scanner of SF600 P.

First a 'Verify Finger' prompt will appear, followed by message 'Scanned good image'.

11

Registered figurations will turn green.

Right Forefinger is selected

1.
To register other fingerprints repeat steps 8 to 11. You can register up to 2 fingerprints in Mifare 1K card and 4 fingerprints in Mifare 4K card.

2.
Then click 'OK'.

If due to some reason a user's fingerprint doesn't register then a card without fingerprint data can be issued. Please refer chapter 2.1.1.2 [Access by Card](#)

12

1. 'Write with Fingerprint!' message will appear.

2. Click 'Write Card'.

13

'Write OK' message will appear.

Click 'Close' and remove the card from PCR310U. To issue cards to others repeat steps 3 to 13.

For test verification please see procedure in chapter 2.2.3 [SmaFinger on Service](#)

For connecting to controller please see chapter 2.3 [Connecting to Controller](#)

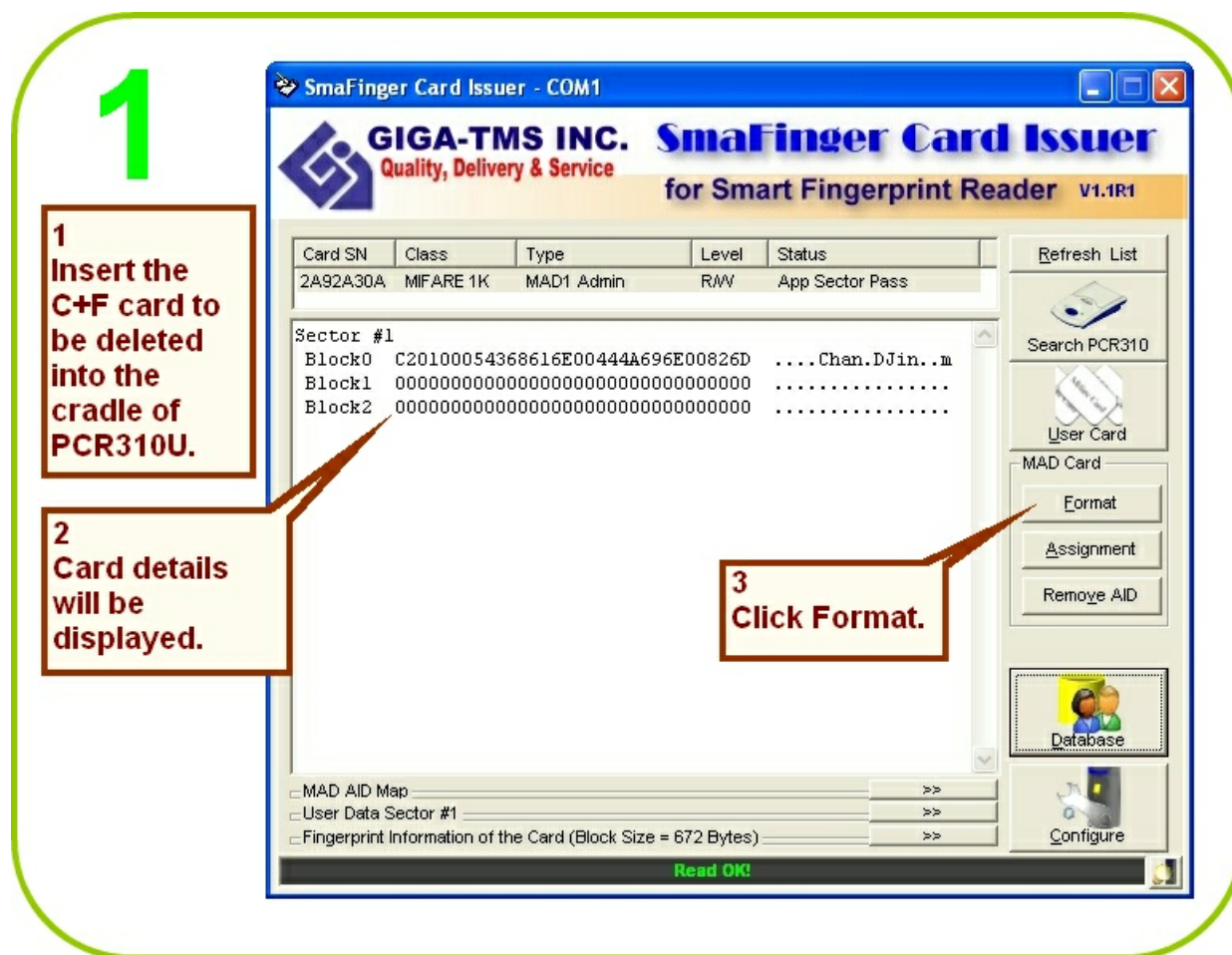
2.2.1.2 Deletion of Card + Fingerprint Card

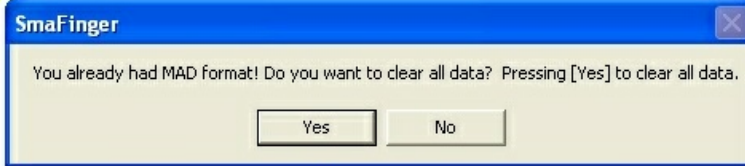
In Card + Fingerprint Mode the fingerprint of the user is stored on the card and handed over to the user. Therefore unlike in Finger Only Mode Offline/Online systems, in C+F Online/Offline systems the user's records are not there in the reader to be deleted. So, to delete the C+F card it is necessary to collect back the issued card and delete its data when the user is not authorised to use it anymore such as in the eventuality of an employee's dismissal or resignation or expiry of validity. The deletion of data stored on a C+F card can be done by using the reformatting facility of either of the following two programs:

1. SmaFinger Card Issuer Program
2. SF Formater

2.2.1.2.1 C+F Card Deletion by CI Program

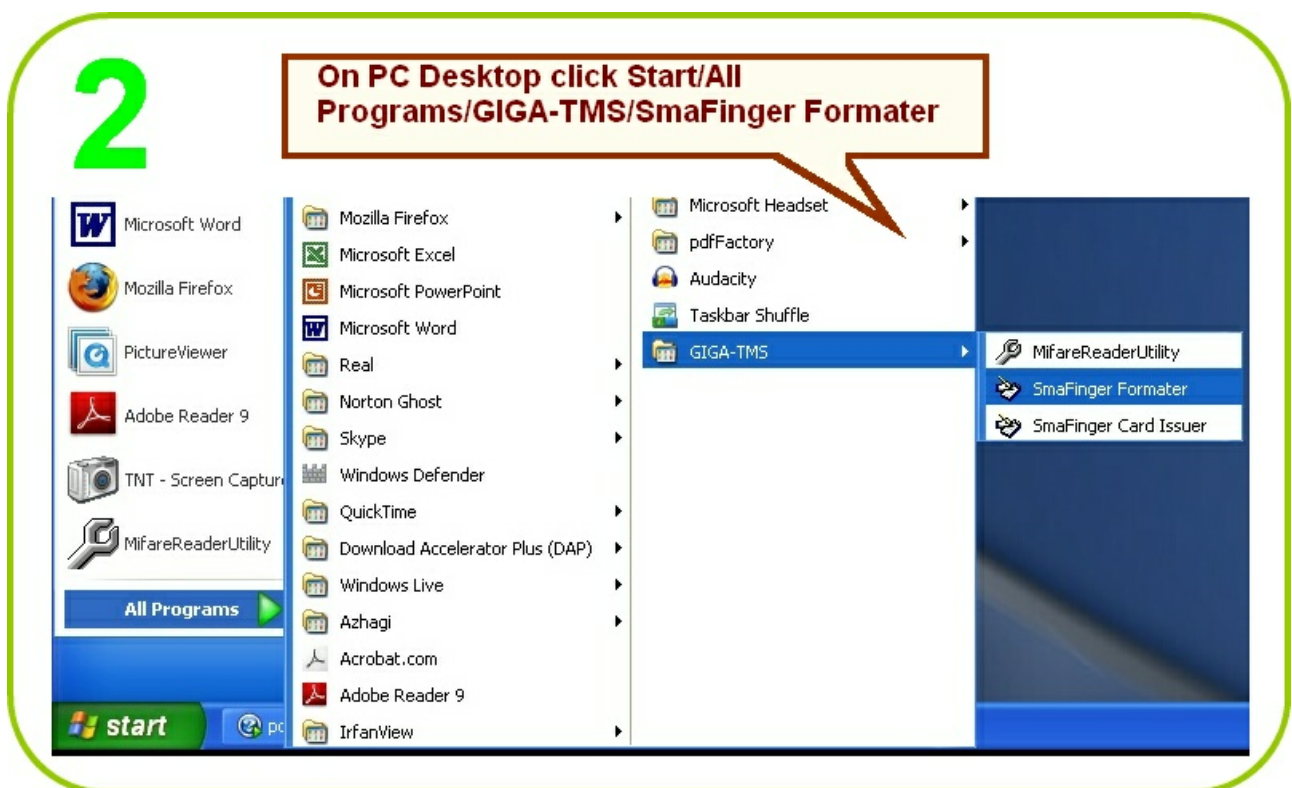
The Card Issuer PCR310U should have been connected and installed as illustrated in chapter 1.2 [Connection & Installation of Card Issuer](#)

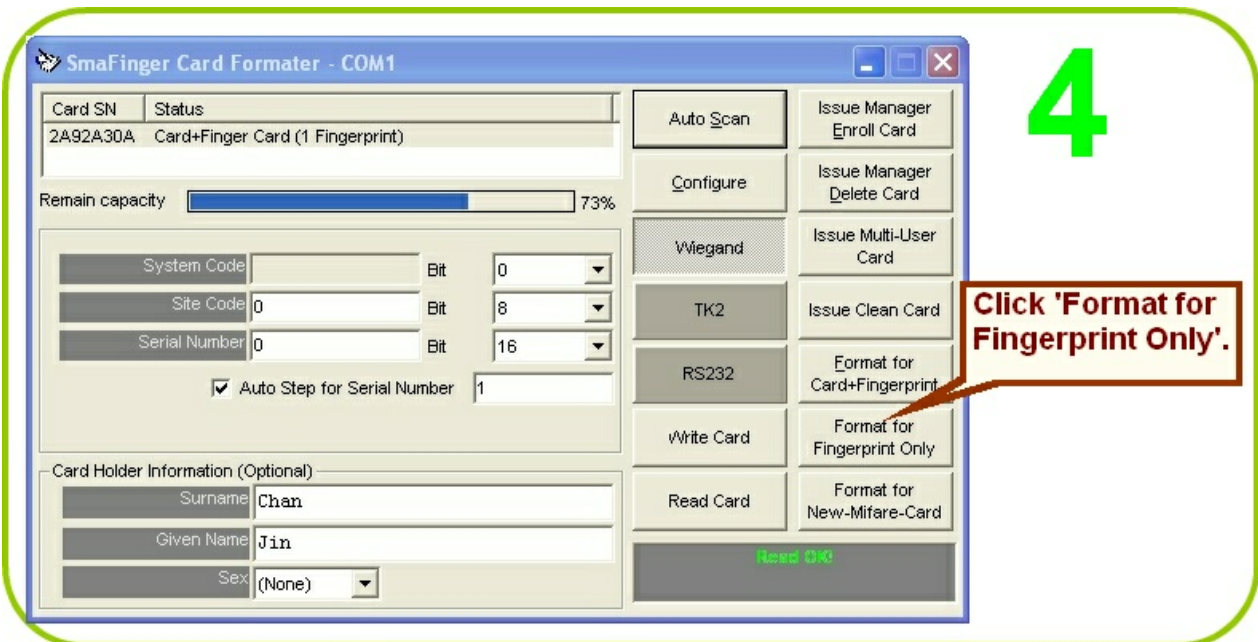
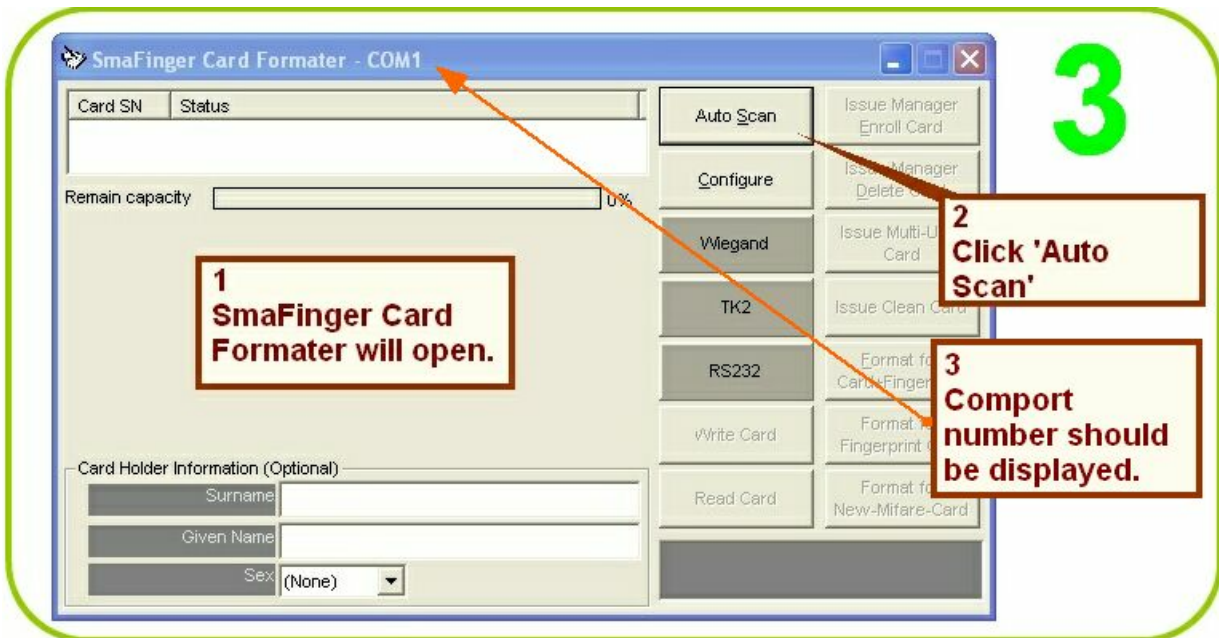


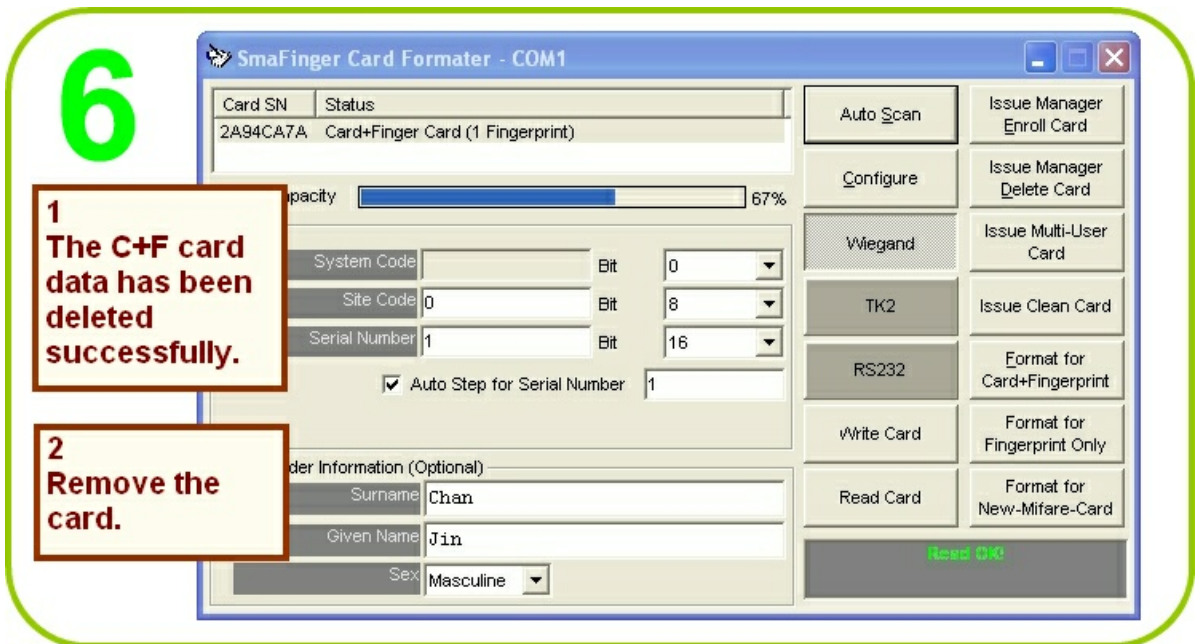
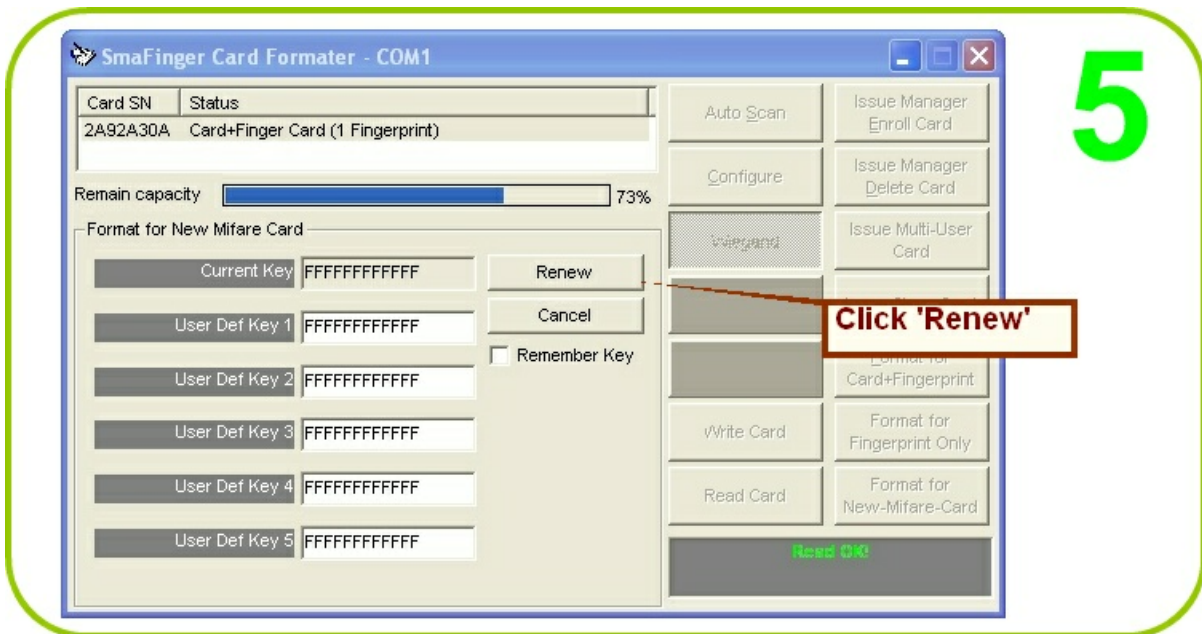
**2****Click 'Yes'.****3****1**
Card data
deletion is
successful.**2**
Remove the
card.

2.2.1.2.2 C+F Card Deletion by SF Formater

SF Formater software should have been installed as illustrated in chapter 1.5 [Installation of SF Formater Software](#)







1
The C+F card
data has been
deleted
successfully.

2
Remove the
card.

2.2.2 Offline System

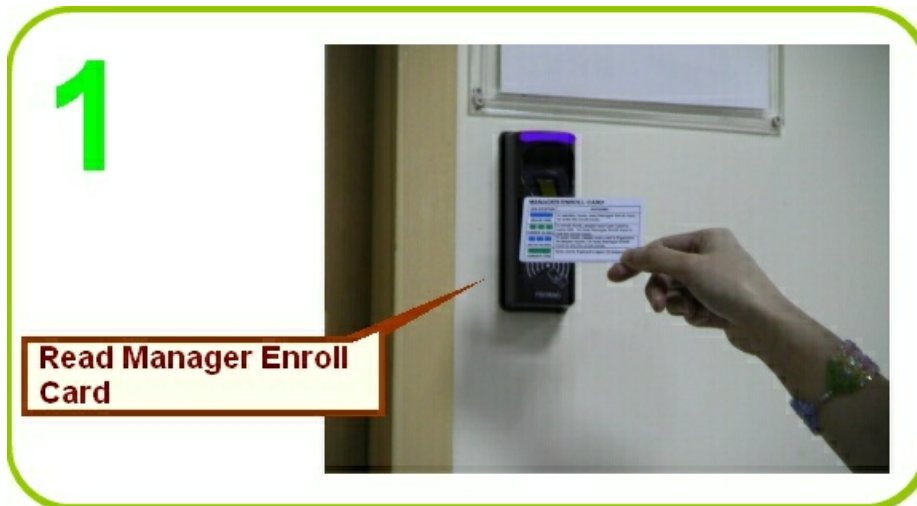
Only the reader is necessary in this system. Manager Enroll Card , Manager Delete Card and User Card-B supplied by **Giga Tms** are required.

User gains access by scanning both his card and fingerprint. The user's fingerprint is verified against that stored on the card and access is enabled if they match. If they don't match access will not be enabled. On the rare occasions when the reader fails to capture a user's fingerprint scan, a card with randomly generated code is issued to the user.

If cards not bearing SmaFinger data format are used only fingerprint is enrolled and verified.

2.2.2.1 Access by Card + Fingerprint Card

The reader should have been mounted and connected as illustrated in chapter 3.10.2 [Secure Mounting Installation](#) and chapter 2.3 [Connecting to Controller](#)



4

Scan finger till beep.

**5**

Scan finger again till the reader's light turn to green with a beep.

**6**

Read User Card-B again till beep. The light will turn green.



7

**Registration successful.
Reader's light goes back
to steady blue.**



For test verification please see procedure in chapter 2.2.3 [SmaFinger on Service](#)

3

The light will turn from blinking red to blinking green. Read the same card again while the green light is still blinking.



4

With a beep the light will turn to steady green indicating successful deletion of the user's records from the card.

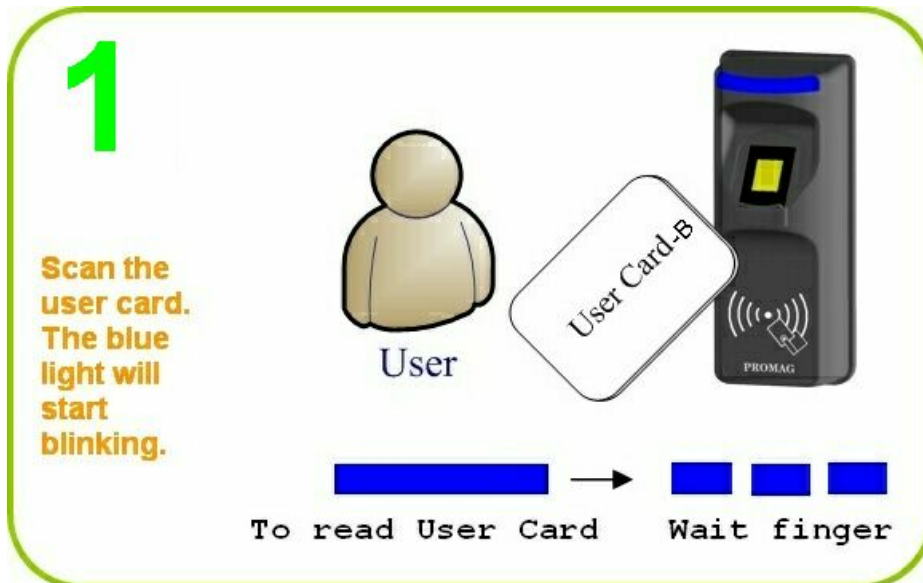


5

The light will return to steady blue indicating standby mode and readiness for next user's card reading or deletion.

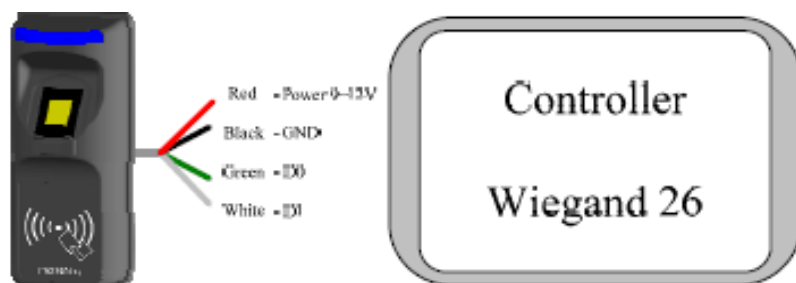


2.2.3 SmaFinger on Service



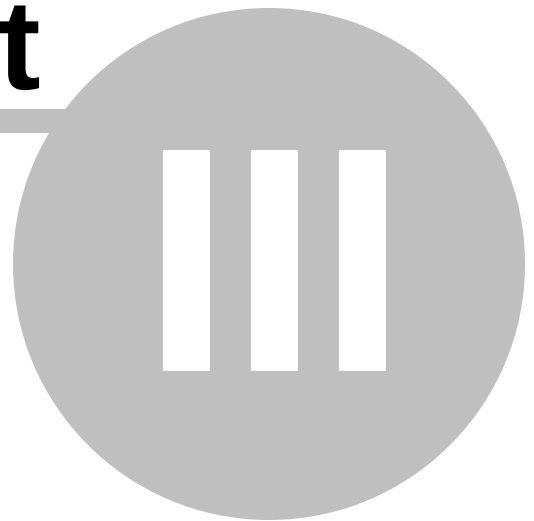
2.3 Connecting to Controller

Connect the Reader SF500/600 to Controller according to the following chart.



	Red	Yellow	Blue	Green	White	Black	Orange	Brown
Wiegand	Vcc	X	X	D0	D1	GND	GND	X
ABA/TK2	Vcc	X	X	Clock	Data	GND	CP	X
RS232	Vcc	Rx	Tx	X	X	GND	GND	X

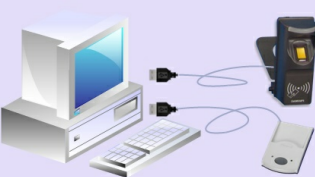
Part



3 Appendix

This part contains chronicles of revisions, card issue and reader flow charts, order details, instructions for Reader Configuration and additional information on reader, programmer and card issuer displays and operations.

3.1 How to... (Linking Index)

	• Standalone (for SF500/SF600 series) - o How to store Fingerprints into Reader - o How to remove Fingerprints from Reader - o How to store Fingerprints into Card
	• Reader Connection - o How to connect to Controller - o How to connect to PC with MF700KIT
	• Manage the Fingerprints - o How to register Fingerprints into PC(Database) - o How to create User Data (for Card, for Database) - o How to assign Reader as Programmer
	• Update Reader - o How to save Fingerprints into Reader - o How to delete Fingerprints from Reader - o How to save Fingerprints into Card - o How to upgrade Firmware of Reader
	• Configure Reader - o How to connect to PC with MF700KIT - o How to configure Reader Settings (ID, Interface, Mode, etc.) - o How to configure Mifare Settings (AID, Keys, Encrypt, etc.) - o How to configure LED and Buzzer (Control, Indicator, etc.) - o How to configure Interface Settings (Wiegand, ABA-TK2, RS232)

3.2 Reader Chronicle

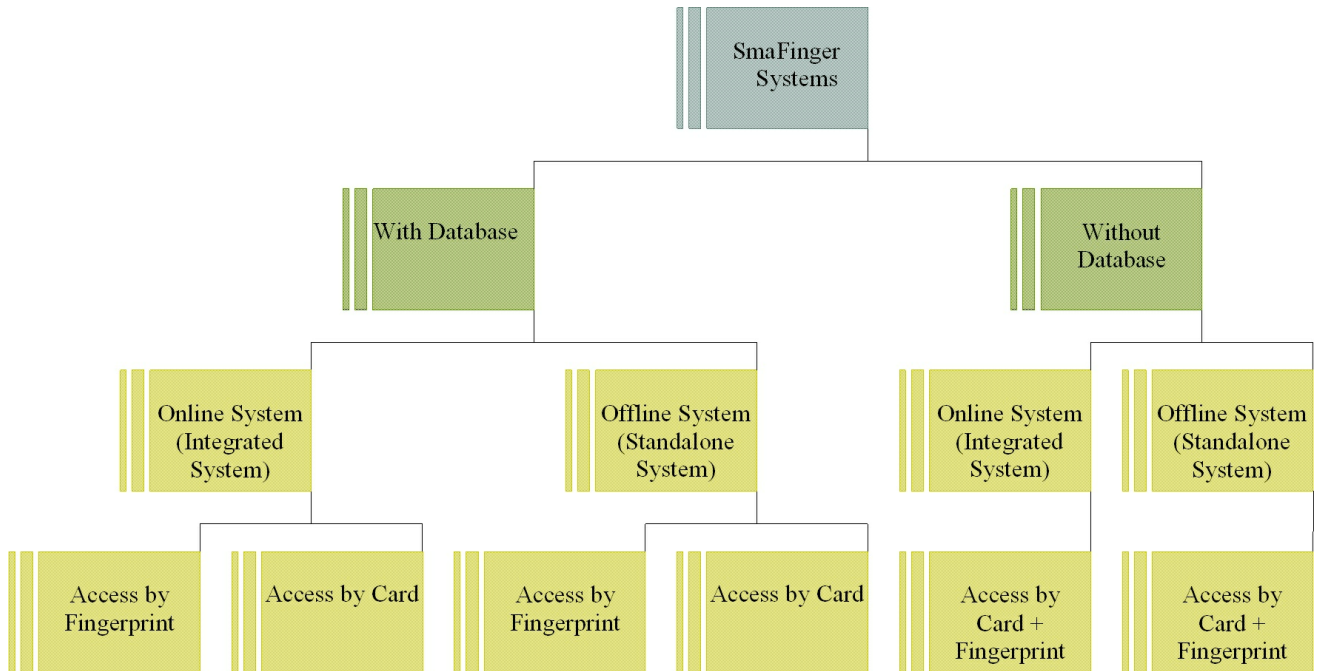
Revision	Date of Revision	Details of Revision
A	27 November 2006	Initial SmaFinger Configurable Sector Reader
B	1 February 2007	RS232 Command Set Control Enabled: (For 38400,n,8,1 Only). Fix baud rate from 19200 to 38400. Security Level added for SF600, Blue LED Configurable
C	13 February 2007	Dimension Update
D	11 May 2007	Offline Func Added ABA-TK2 "Data Conversion"-"Byte to DEC" added RS232 Default settings Change Read Modes-"Card Data or CSN", "CSN Only" added
E	25 July 2007	Door Control for SF610,SF601
F	28 January 2008	TK2 code length up to 48

3.3 Card Issuer Chronicle

Revision	Date of Revision	Details of Revision
A	12 October 2006	Initial SmaFinger Card Issuer
B	5 February 2007	Support 4 fingerprint templates in 4k Card
C	23 April 2007	Two Process Samples for Quick Start
D	26 July 2007	Multi Device Update
F	2 October 2007	Add 'Append Finger' and 'Delete Finger'.
G	28 January 2008	TK2 code length up to 48
H	21 May 2008	Modify User Interface for User Friendly

3.4 Overview of SmaFinger System Operating Modes

SmaFinger System Modes



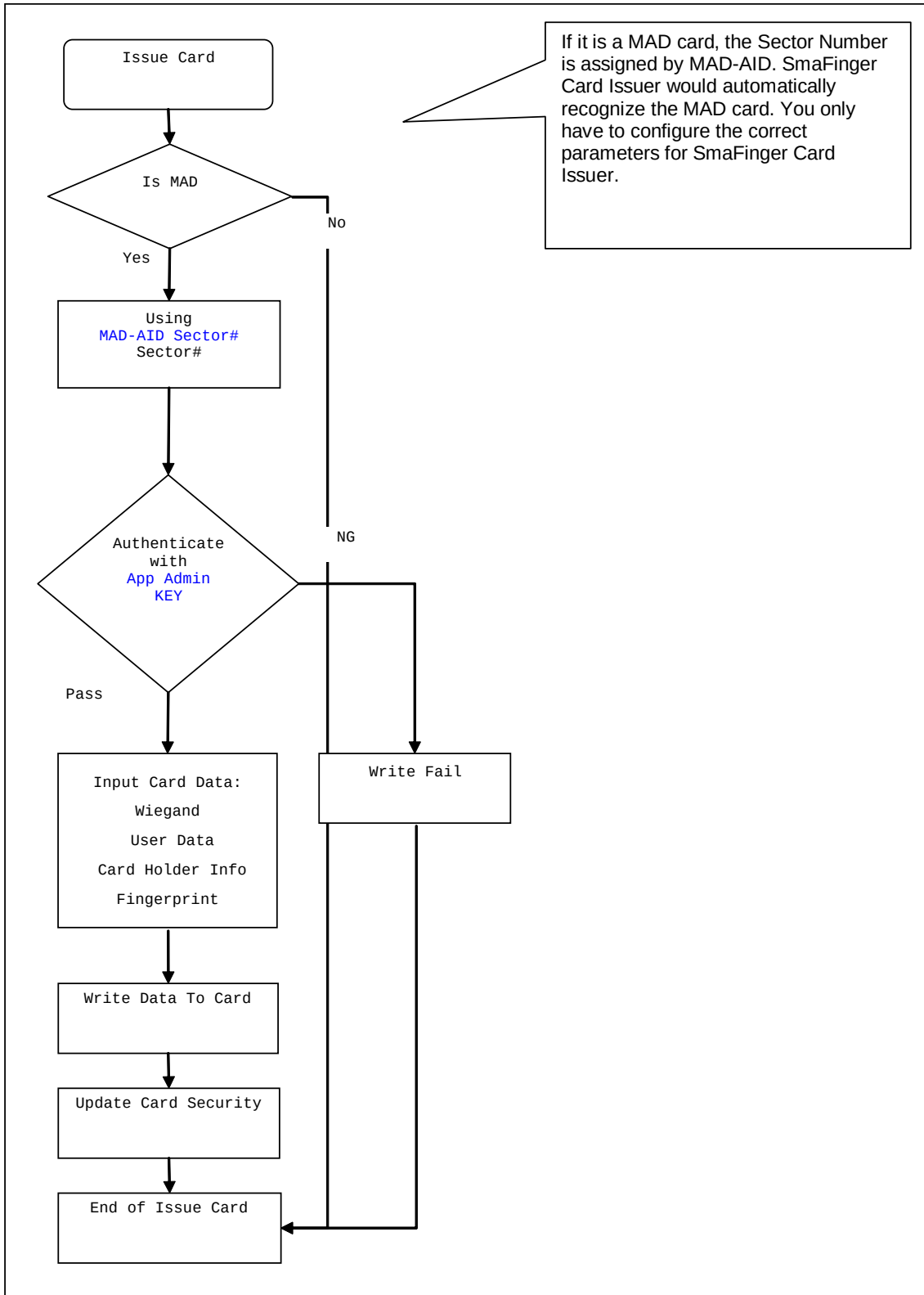
Mode	Description
With Database	Fingerprint data are stored in reader database for verification.
Without Database	Users' fingerprint are not stored in PC or reader but on User Card for verification.
Integrated System	Card issuer, programmer and reader are used with PC. Data transfer to reader can be done online and also offline through a card generated by the system.
Standalone System	Only the reader is necessary. Manager Enroll Card and Manager Delete Card supplied by Giga-Tms along with User Cards are required.
Access by Fingerprint	User gains access by scanning fingers at the reader.
Access by Card	User gains access by scanning card at the reader.
Access by Fingerprint + Card	User gains access by scanning both card and finger.

3.5 Features of SmaFinger Product Series

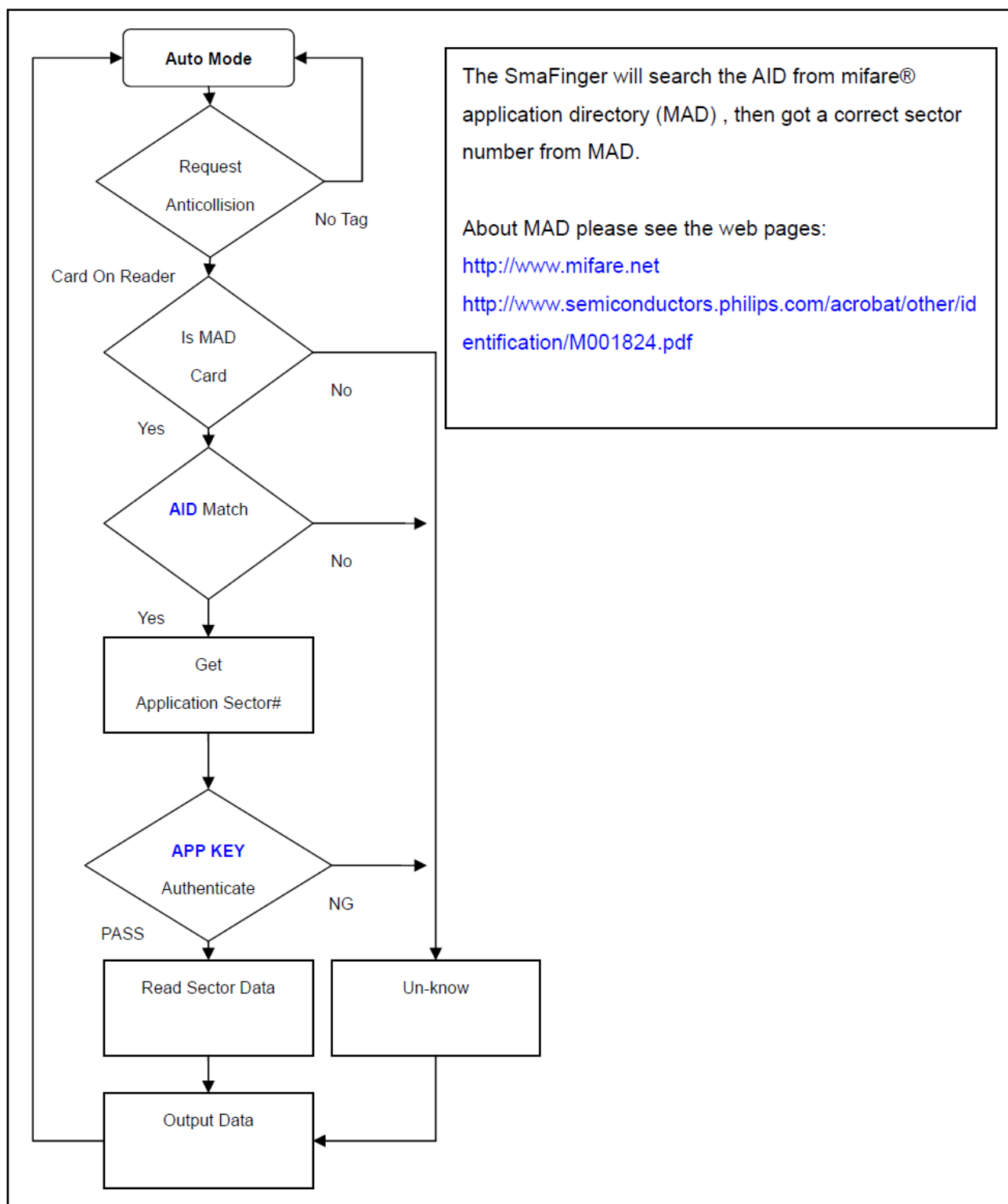
Product	Description	Card + Fingerprint (for 1:1)	Modulation
SF500-00	Online mode enrollment	Support & Unlimited	Mifare
SF500-10	Offline C+F Card issuing by Kit CRD 500		Mifare
SF500SK	Start Kit		Mifare
SF510	Offline C+F Card issuing by Kit CRD 500	Support & Unlimited	Mifare
SF600	13.56MHz		Mifare
SF600-00	Online mode enrollment	Support & Unlimited	Mifare
SF600-10	Offline C+F Card issuing by Kit CRD 500		Mifare
SF600SK	Start Kit		Mifare
SF610	Offline C+F Card issuing by Kit CRD 500	Support & Unlimited	Mifare
SF601EM-00	Online/Offline mode enrollment		EM
SF601-HID	Online/Offline mode enrollment		HID
SF601-MF	Online/Offline mode enrollment		Mifare/Felica

Note: Online programming is by Start Kit. For more details refer 'SmaFinger Buyer Guidance', Giga-Tms.

3.6 Card Issue Flow Chart



3.7 Reader Flow Chart



3.8 Order Information

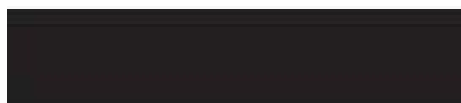
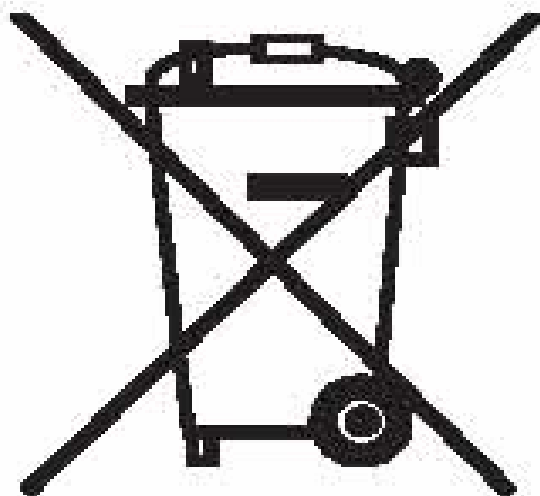
Order Information for SF500

Part Number	Include	Description
SF500SK-00	SF500P-00	SF500 Fingerprint USB Programmer
	SF500-00	SF500 Configurable Reader
	MF700Kit	MF700 Reader Kit
	WAS-T0029	RS232 Cable for Reader Kit
	Power Adaptor	DC Power Adaptor for Reader Kit
SF500-00	PCR310U	SmaFinger Card Issue Programmer
	DISK5288	SmaFinger Card Issue and Utility Software
	User Card x 3	Mifare Standard 1K Card 3pcs
SF500P-00	SF500P-00	SF500 Fingerprint USB Programmer
PCR310U-40	PCR310U	SmaFinger Card Issue Programmer
MFA01	MFA01	Mifare® Standard 1K Card
MFA04	MFA04	Mifare® Standard 4K Card

Order Information for SF600

Part Number	Include	Description
SF600SK-00	SF600P-00	SF600 Fingerprint USB Programmer
	SF600-00	SF600 Configurable Reader
	MF700Kit	MF700 Reader Kit
	WAS-T0029	RS232 Cable for Reader Kit
	Power Adaptor	DC Power Adaptor for Reader for Reader Kit
SF600-00	PCR310U	Card Issue Programmer
	DISK5288	Card Issue and Utility Software
	User Card x 3	Mifare Standard 1K Card 3pcs
SF600P-00	SF600P-00	SF600 Fingerprint USB Programmer
PCR310U-40	PCR310U	SmaFinger Card Issue Programmer
MFA01	MFA01	Mifare® Standard 1K Card
MFA04	MFA04	Mifare® Standard 4K Card

3.9 Caution



The crossed out wheeled bin label that can be found on your product indicates that this product should not be disposed of via the normal household waste stream.

To prevent possible harm to the environment or human health please separate this product from other waste streams to ensure that it can be recycled in an environmentally sound manner. For more details on available collection facilities please contact your local government office or the retailer where you purchased this product.

This information only applies to customers in the European Union. For other countries, please contact your local government to investigate the possibility of recycling your product.

3.10 Reader

This contains specifications, mounting instructions and configuration settings of Reader SF600 and Mifare Reader Utility settings.

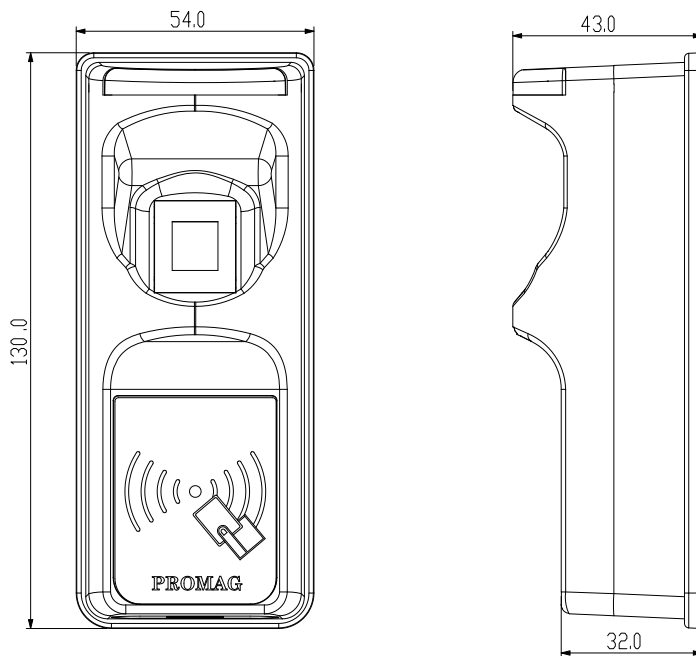
3.10.1 Hardware Specification

	SmaFinger
Major Feature	Mifare® Application Directory Reader

	Access Control & Security
Card Type	ISO14443A, Mifare Class (Mifare® 1K, Mifare® 4K for MAD1/MAD2)
RF Frequency	13.56MHz
RF Distance2	50mm (Using the MFA01 Mifare® card of GIGA-TMS INC.)
DC Power	7.5VDC~12VDC (Max 250mA @ 12V)
Interface	Wiegand 26~128 bits (Standard / Reverse) RS232 2400bps~57600bps ABA-TK2 40IPS: 2~48 codes
Power Input	DC 7.5~12V
Power Consuming	210mA @ 12V
Operating Temp.	0~50 degree C
Humidity	10~90% Humidity
Dimension	H130.0mm x W54.0mm x D43.0mm

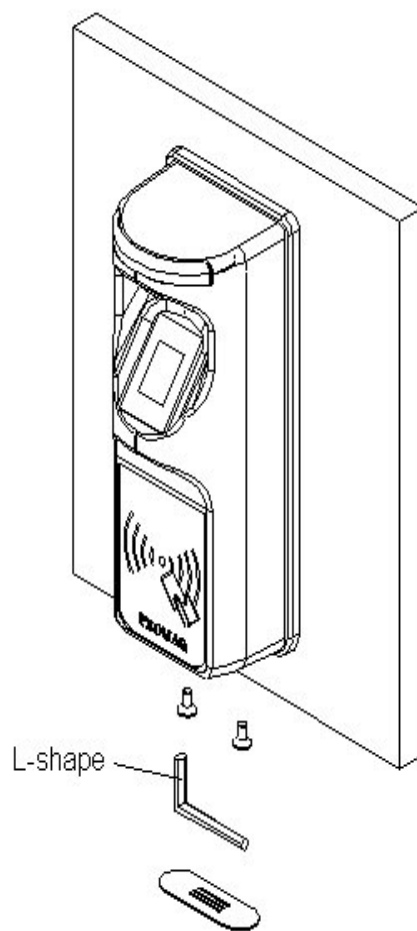
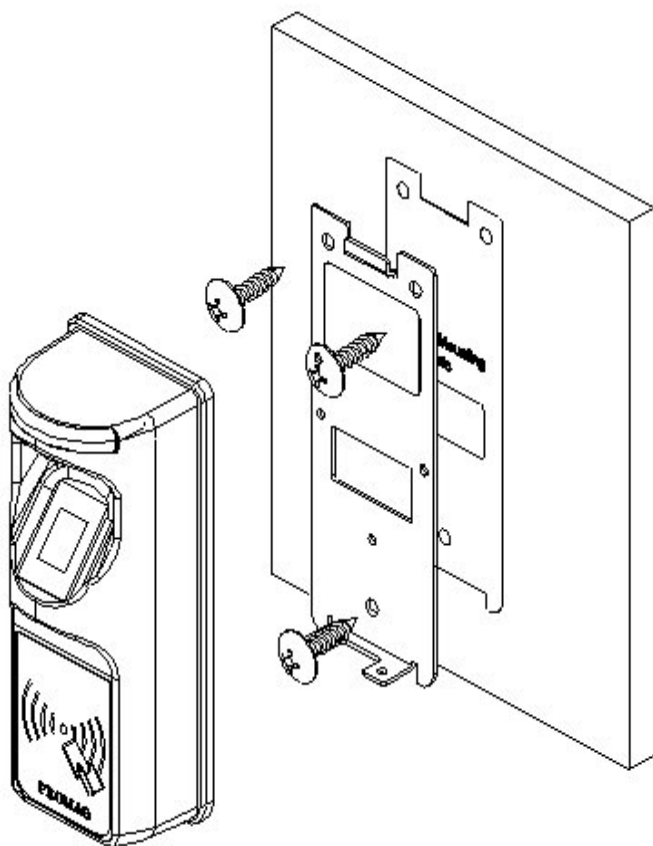
Note:

1. Mifare Class: Mifare Standard 1K/4K/Pro (without Mifare Ultra-Light).
2. SmaFinger RF distance can reach up to 50mm with MFA01 (Mifare® Standard 1K Card) of GIGA-TMS INC.



3.10.2 Secure Mounting Installation

Attach the bottom plate label on the target position. Drill the holes to match the bottom plate then fix the SmaFinger reader.



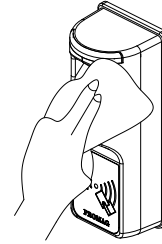
After fixing the SmaFinger reader with attached screws (using the L-shape spanner), apply the buzzer hole plate for completion.

Caution:

SmaFinger is not designed for outdoor usage. Avoid exposing to sunshine or rains.



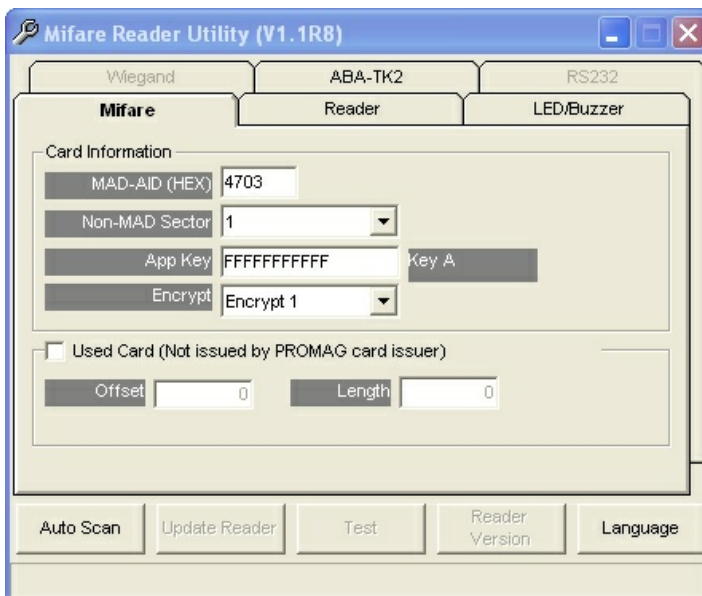
To keep SmaFinger in good working condition, it is recommended to have regular maintenance and physical cleaning of the reader.



3.10.3 Reader Configuration

Configuration settings of reader and interface are illustrated in this section. Multi-reader and door lock connections are also illustrated.

3.10.3.1 Mifare Reader Utility Settings



MAD - AID (Default 4703)

MAD Application Identifier number is authorized and assigned by Mifare.net upon the customer's request for registered Application Identifier in a Mifare [registered trademark] application open system (AID: 000h~FFFFh).

Or it is also possible for the user to define the AID himself for the application in user defined closed system without registering into MAD group. According to the AID, SmaFinger can find and read the corresponding sector on the MAD card.

App Key (KEY_A): (Default=0FFFFFFFFF OR FFFFFFFFFF)

SmaFinger and the card should have the same App Key (KEY_A). If not, SmaFinger cannot read the sector data on the card.

Encrypt: (Default=None)

By default there is no encryption. But to protect your card you can select one of the five encrypts i.e. Encrypt 1, Encrypt 2, Encrypt 3, Encrypt 4, Encrypt 5 from the list.

The Mifare Card Issuer program also should have the same encrypt selection.

Used Card (Not issued by "Mifare Card Issuer")

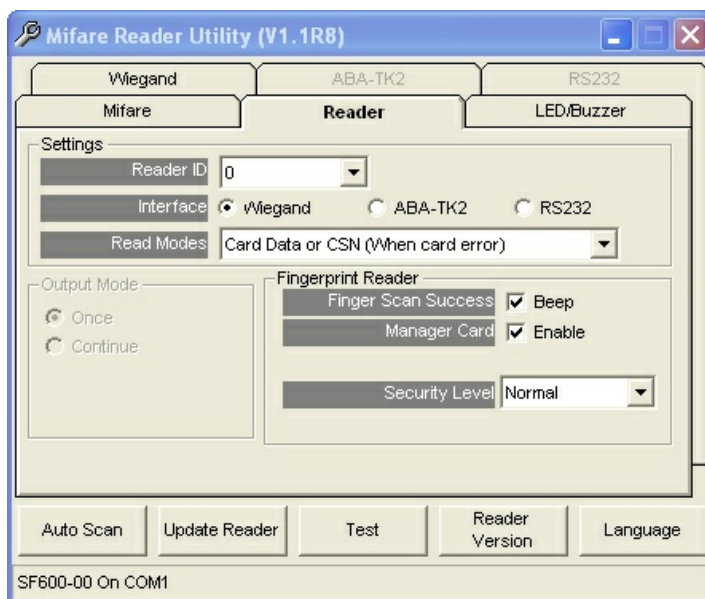
You have to indicate the data position on the card when the card is not issued by "Mifare Card Issuer" software. And you must set the "Offset" (Max 255, and base from zero) from the beginning of sector and set your data "Length" (Max 128).

Example:

If your card data in the grey grid of sector, you have to set the "Offset" = 17, and set the "Length"= 20.

	AID Sector (or Non-MAD Sector)															
Block 0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Block 1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Block 2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47

3.10.3.2 Reader Settings

**Reader ID: (Default=0)**

SmaFinger reader device ID's (for multi link application) 0 to 99.

Interface: (Default=Wiegand)

Output interface options are Wiegand, RS232 or ABA-TK2.

Read Modes:

Card Data Only Reads card sector data only: If any error (eg. Mifare key error), reader will show "Card Invalid".

Card Data or CSN Read card sector data; When any error (eg. Mifare key error), reader will show "CSN".

CSN Only: Read card CSN only.

Output Mode: (Default=Once) Once: Send data to host once.

Fingerprint Reader

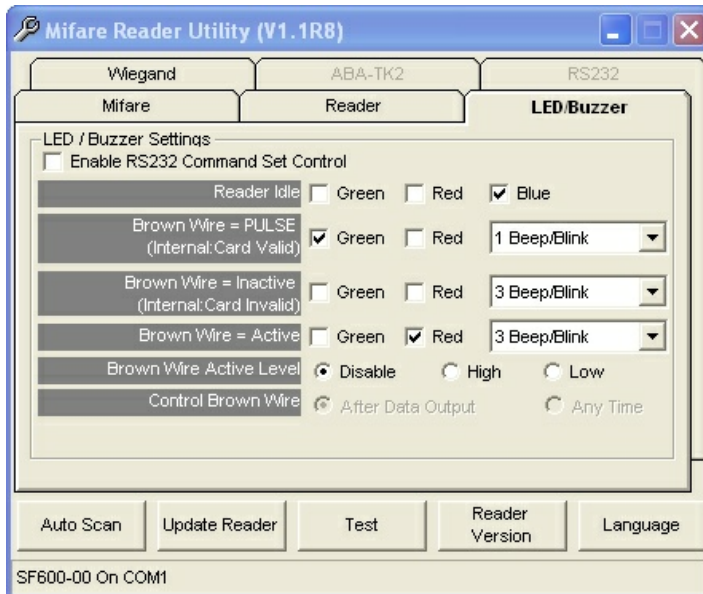
Finger Scan Success: To beep on successful finger scan check the box.

Manager Card: Enable/Disable this Offline function.

SF600 Fingerprint Security Level for FAR (False Acceptance Ratio) **New!!**

Level	Verification (1:1)	Identification (1:N)			
		1~9	10~99	100~999	>=1000
Normal (Default)	1/10,000	1/10,000	1/100,000	1/1,000,000	1/10,000,000
Secure	1/100,000	1/100,000	1/1,000,000	1/10,000,000	1/100,000,000
More Secure	1/1,000,000	1/1,000,000	1/10,000,000	1/100,000,000	1/100,000,000

3.10.3.3 LED/Buzzer Settings



SmaFinger SF600 supports LED/Alarm Configuration.

Enable RS232 Command Set Control: (For Baud rates 38400,n,8,1)

Note: If you enable the RS232 Command Set Control (for LED/Buzzer), the external LED/Buzzer control with high/low level control will be disabled.

Set LED/Buzzer command frame as below:

STX	J	NUMBER (0~9)	CR
02h	4Ah	30h~39h	0Dh

Command Table:

NUMBER	Descriptions
0 (30h)	All LED Off, Buzzer Off
1 (31h)	Green LED ON
2 (32h)	Green LED OFF
3 (33h)	Red LED ON
4 (34h)	Red LED OFF
5 (35h)	Buzzer Beep 1 Time
6 (36h)	Buzzer Beep 3 Time
7 (37h)	Green LED ON with Beep 1 Time
8 (38h)	Red LED ON with Beep 3 Time
9 (39h)	All LED ON (Orange)
A (41h)	Blue LED ON New!!
B (42h)	Blue LED OFF New!!

Note: If RS232 Command set control is enabled, the external LED control with high/low level control will be disabled.

PULSE SIGNALS

Indications and level controls on Reader SF600 [with brown wire disconnected]:

Read Idle: Show LED colour after power on or idle state.

Brown wire = PULSE (or Card is valid): Show LED colour and beeps to indicate the end-user when brown wire = PULSE, or card was passed by SmaFinger reader.

Brown wire = Inactive (or Card Is invalid): Show LED colour and beeps to indicate the end-user when brown wire = Inactive, or card was failed by SmaFinger .

Brown wire = Active: Show LED colour and beeps to indicate the end-user that brown wire = Active signal from Host.

Brown wire Active level: Set Brown wire Active level condition with Host status.

Disable: Always disable the Brown wire. (Default), LED/Buzzer control by reader self.

High: Active High / Normal keep in Low.

Low: Active Low / Normal keep in High.

Note: If set Active Low, you may have to connect brown wire to a pull-up resistor (1K~10K) with 5VDC).

Control Brown wire:

After Data Output: The brown wire will be enabling after finished output the card data or CSN. (Default)

Any Time: The brown wire enabled in any time.

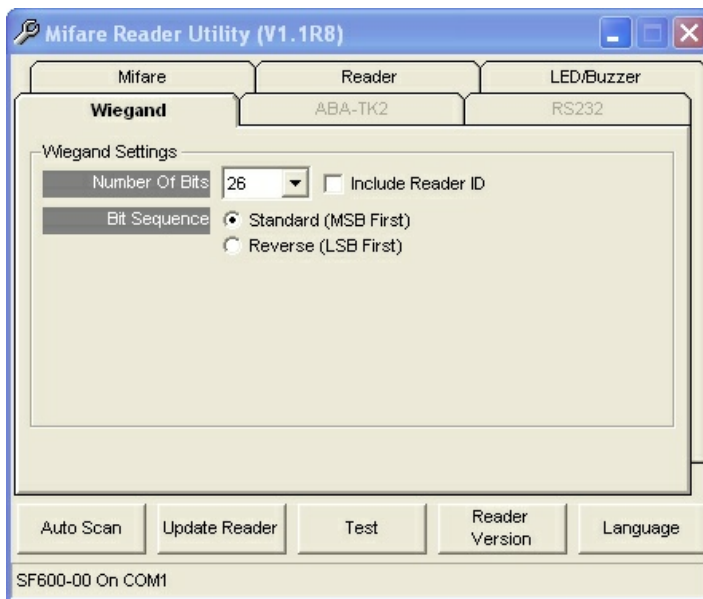
The LED/Buzzer also can be controlled externally with High/Low level control. Additional information at chapter 3.10.8 [LED/Buzzer Settings](#)

3.10.3.4 Interface Settings

Choose the required Interface [Wiegand / ABA-TK2 / RS 232] from Mifare Reader Utility tab 'Reader'. Settings for each interface are given in the following three sections.

3.10.3.4.1 Wiegand

Open 'Reader' tab and select option 'Wiegand'. The window will be displayed as below:



Number of Bits Set according to your Host or Terminal type. It can be set from 26 to 128 (Default=26).

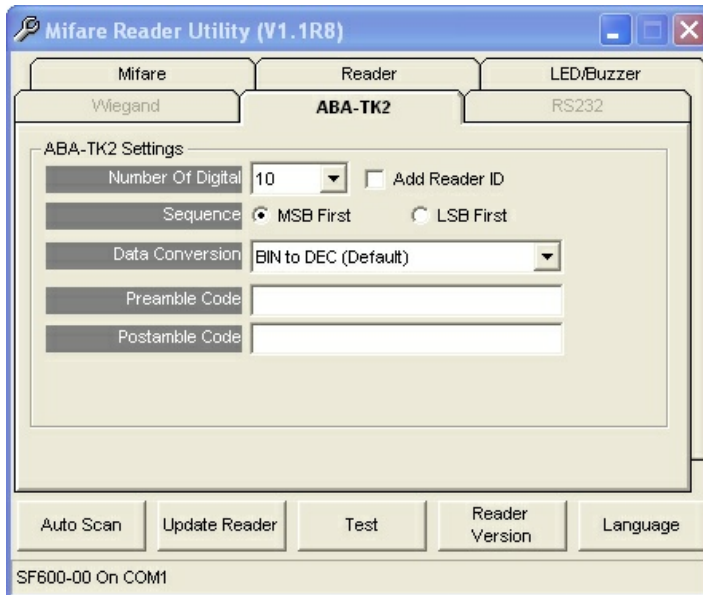
Include Reader ID Includes Reader ID along with Wiegand output data. (Default=Disable).

Bit Sequence is to set the Wiegand output data sequence. It can be standard data sequence (MSB first) or Reverse data sequence (LSB first). (Default=Standard).

Additional information at chapter 3.10.5 Wiegand Interface

3.10.3.4.2 ABA-TK2

Open 'Reader' tab and select option ABA-TK2. The window will be displayed as shown below:



Number Of Digital: Set number of digital codes for TK2 output. (Default=10)

Add Reader ID: Add reader ID into TK2 data. (Default=Disable)

Sequence: Set the TK2 data sequence. (Default=MSB First)

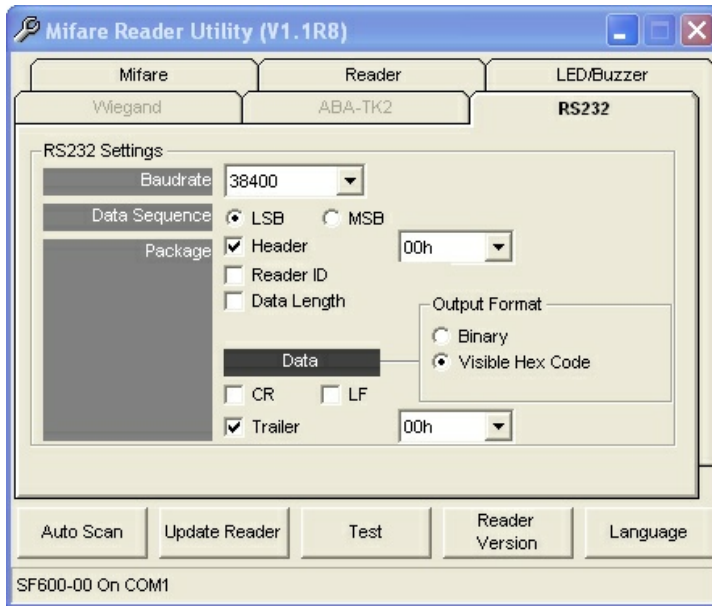
Data Conversion: Select card data format to convert

- a. BIN to DEC (Default, card issued by Mifare Card Issuer)
- b. Decimal String (eg. "123456")
- c. BCD (Standard)
- d. Direct (Memory Map)
- e. Bytes to DEC

Additional information at chapter 3.10.6 TK2 Interface

3.10.3.4.3 RS232

Open 'Reader' tab and select option 'RS232'. The window will be displayed as shown below:



Baud rate can be set 2400bps~57600bps (Default=9600bps)

Data Sequence can be set "LSB" first and "MSB" first (Default).

Package is to set the output data packet to include Header, Reader ID, Data Length, CR, LF and Trailer. (Header: 00h~FFh, Trailer: 00h~FFh). (Default = Header(02h)+CR+LF+Trailer(03h))

Output Format can be "Binary" or "Hex String"(Default) for output format.

Note:

(1). Wiegand output data packet with reader ID:

Standard	Parity(Even)	Reader ID	(MSB) Data Bits (LSB)	Parity(Odd)
Reverse	Parity(Odd)	Reader ID	(LSB) Data Bits (MSB)	Parity(Even)

(2). RS232 output data packet with Header, Reader ID and Trailer:

Header	Reader ID	(MSB) Data Bytes (LSB)	Trailer
--------	-----------	------------------------	---------

(3). ABA-TK2 with Reader ID:

MSB First	SS	Reader ID	(MSB) Digital Code (LSB)	ES	LRC
LSB First	SS	Reader ID	(LSB) Digital Code (MSB)	ES	LRC

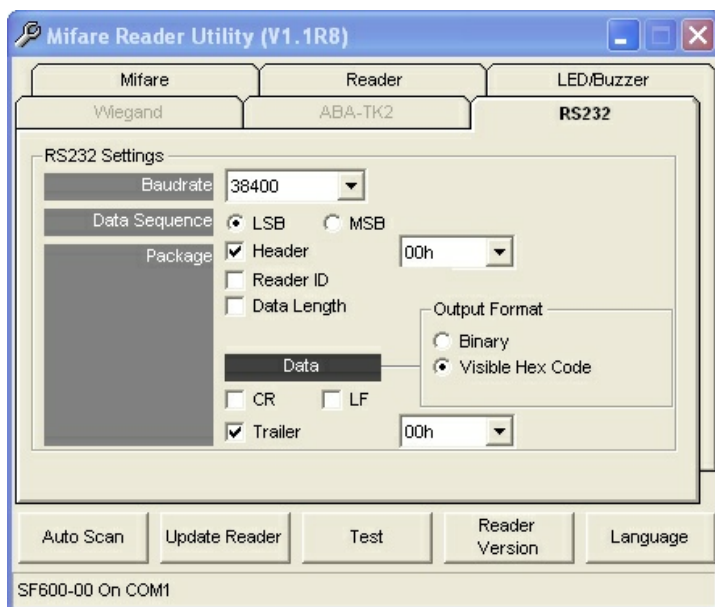
Note:

Once configured any of the features set in the SmaFinger Reader cannot be read by other device. This will also

protect your APP KEY.

Additional Information at chapter 3.10.7 RS232 Interface

3.10.3.5 Save Settings



After all the settings are done, click **Update Reader** to save the settings.

3.10.4 RS 232-USB Converter

If your PC does not have an RS 232 port to connect SF600 + MF700Kit to PC, use an RS 232-USB Converter.

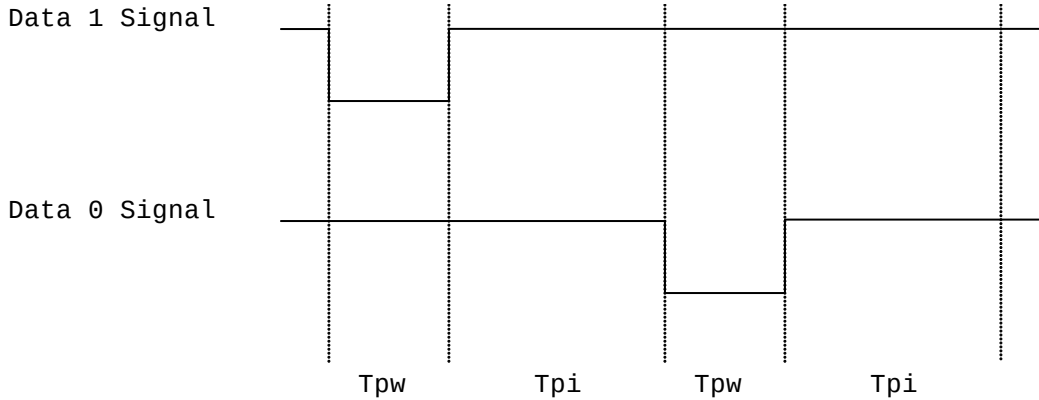


More details at web link [RS232-USB Converter](#)

3.10.5 Wiegand, ABA-TK2 & RS232 Pulse Diagrams and Interface Connections

WIEGAND INTERFACE

The Data 1 and Data 0 signals are held at a logic high level unit, the reader is ready to send a data stream. The reader places data as asynchronous low-going pulses on the Data 1 or Data 0 lines to transmit the data stream to Host. The Data 1 and Data 0 pulses will allowable pulse width times and pulse interval times for the SmaFinger reader.



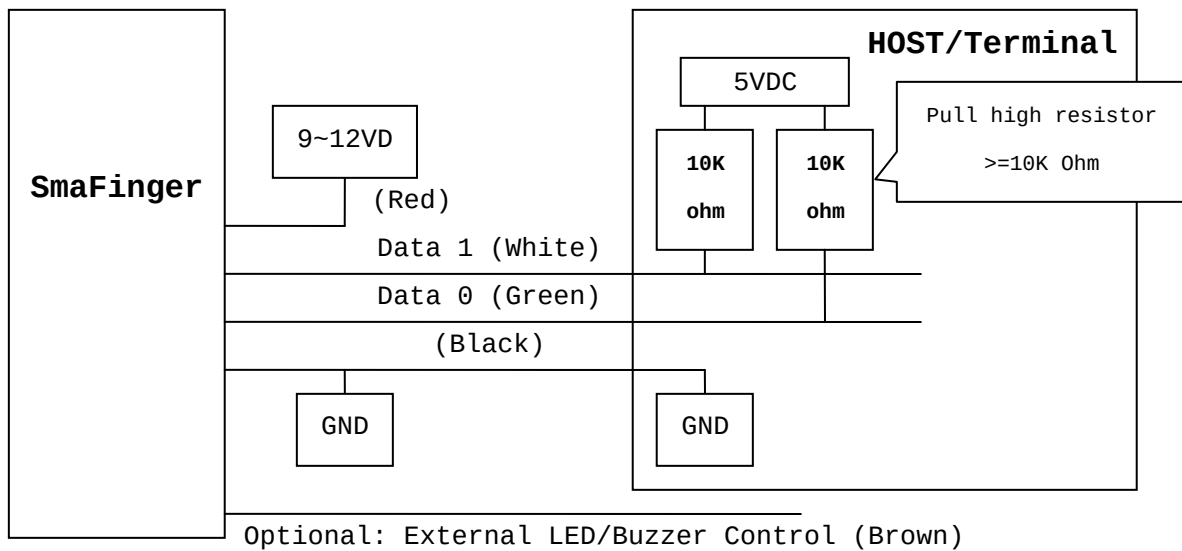
Pulse Times

Symbol	Description	Typical Time
Tpw	Pulse Width Time	100us +/- 3%
Tpi	Pulse Interval Time	1.9ms +/- 3%

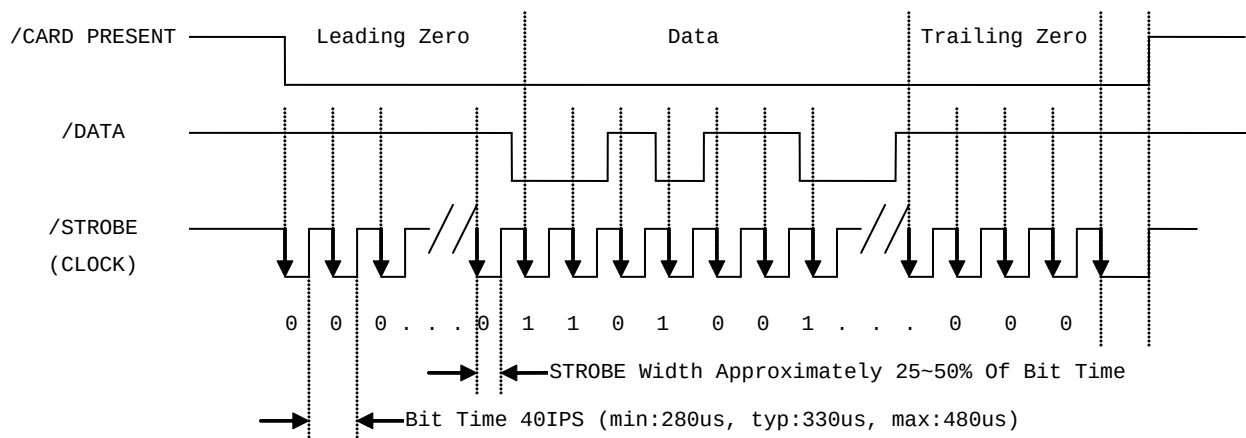
Wiegand Packet (Without Reader ID)

Standard (Default)	Parity(Even)	(MSB)	Data Bits	Parity(Odd)
Reverse (Option)	Parity(Odd)	(LSB)	Data Bits	Parity(Even)
		(MSB)		

Connect the Wiegand wires, example as below: (The pull high resistor must $\geq 10K \Omega$)

**ABA-TK2**

The timing for Card Present, Clock (Strobe) and Data , example as below:



DATA

The data signal is valid while the clock is low. If the Data signal is high, the bit is a zero. If the Data signal is low, the bit is a one.

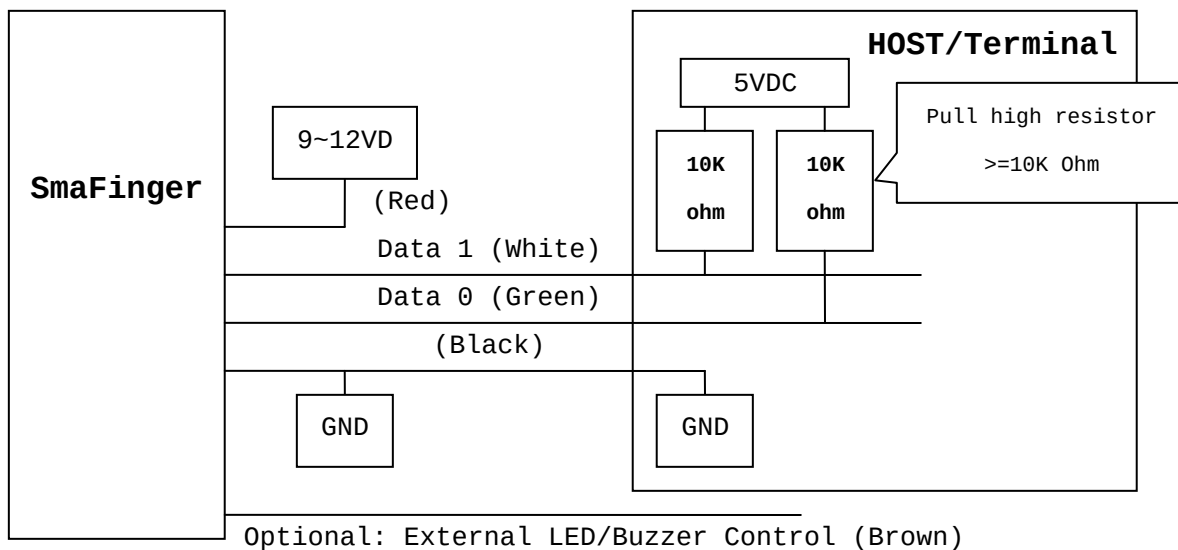
CLOCK (STROBE)

The Clock signal indicates when Data is valid. It is recommended that Data be loaded by the user with the leading edge (negative) of the Strobe.

CARD PRESENT

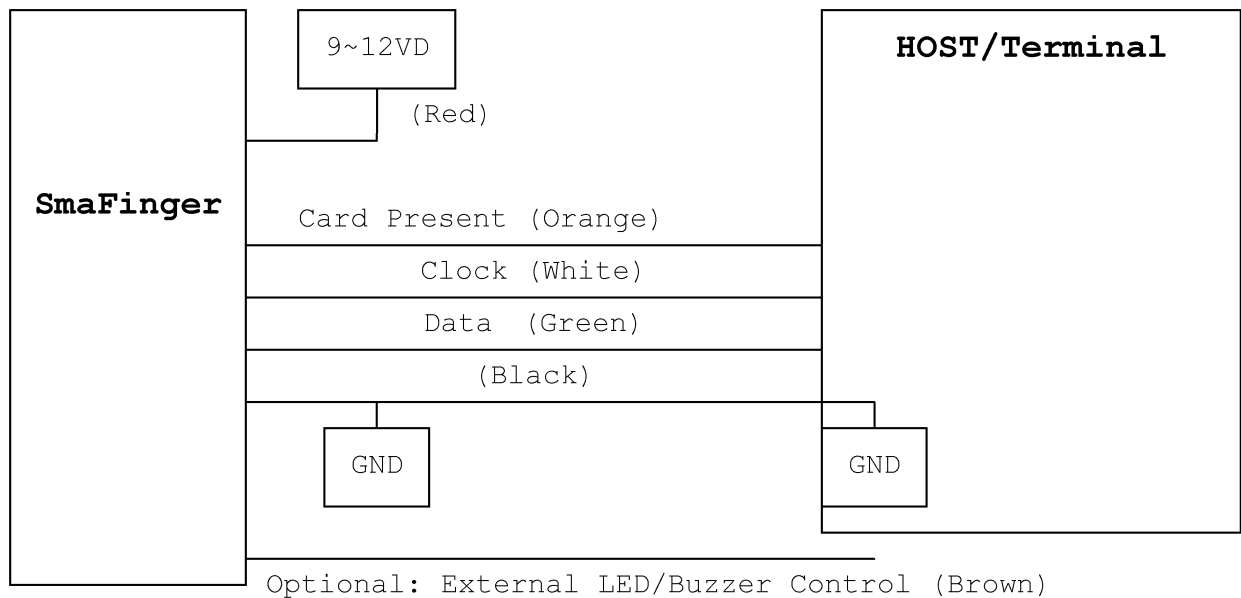
Card Present will go low after flux reversals from the Reader. Card Present will return high after the last flux reversal.

Connect the ABA TK2 wires, example as below:



RS232

Connect the RS232 wires, example as below:



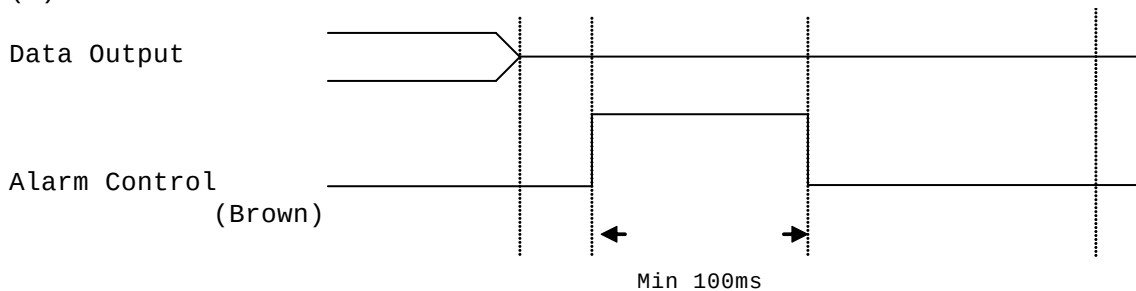
3.10.6 External LED/Buzzer Control

External LED/Buzzer Control

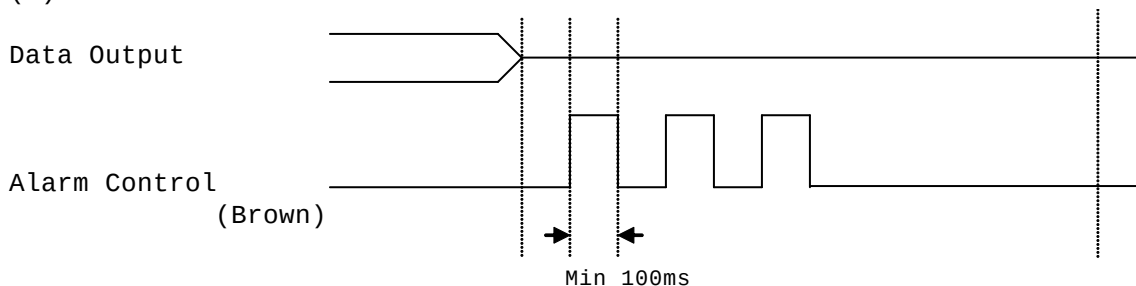
SmaFinger supports the external LED/Buzzer control for Terminal (or Host) to indicate to end-user that his/her card is invalid or valid. Brown wire is meant for this purpose.

Examples as below: (Active High)

(1) Show External Invalid Status



(2) Show Card Valid Status



Note:

1. Send one pulse to show the "External Invalid" LED/Buzzer Status.

2. Send three or more pulses to show the "Card Valid" LED/Buzzer status.
3. You can configure the LED/Buzzer status by Mifare Reader utility.

3.10.7 Web ISP

SmaFinger also supports the ISP (In-System Program) function to upgrade devices' firmware.

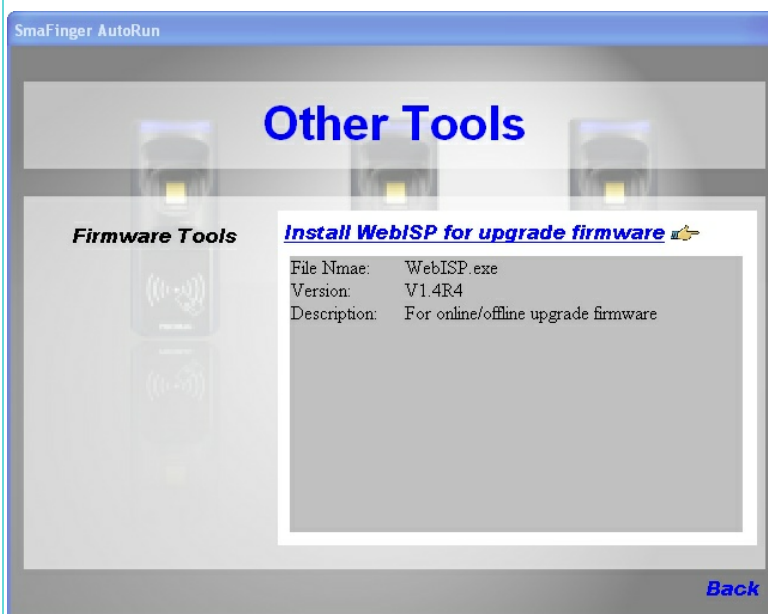
1. Insert DISK5288 into CD/DVD ROM drive of your PC.
Click open the disk from desktop/My Computer. On the SmaFinger AutoRun that opens, select **Other Tools**.

You may also download the same software from (<ftp://vip:26954214@ftp.gigatms.com.tw/public/utility/WebISP/WebISP.zip>)



2. On the **Other Tools** window click **Install WebISP for Firmware Upgrade** and follow on screen instructions to install the software.

3. Connect the reader/programmer to PC and make sure it is powered-on.



4. Open the ISP software from Start/All Programs/GIGA-TMS/WebISP.

5. Input the following

FTP path : <ftp.gigatms.com.tw>

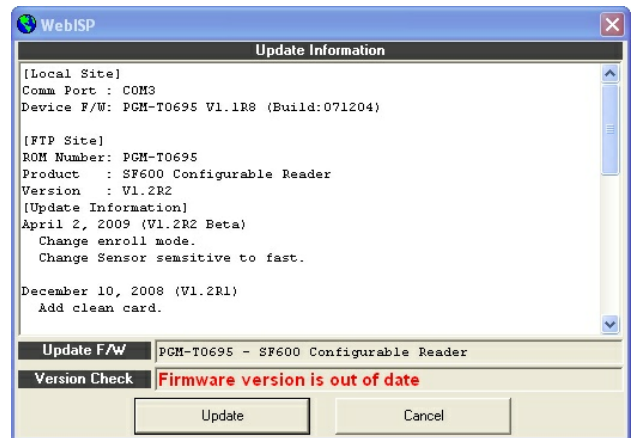
User Name : isp

Password : 26954214

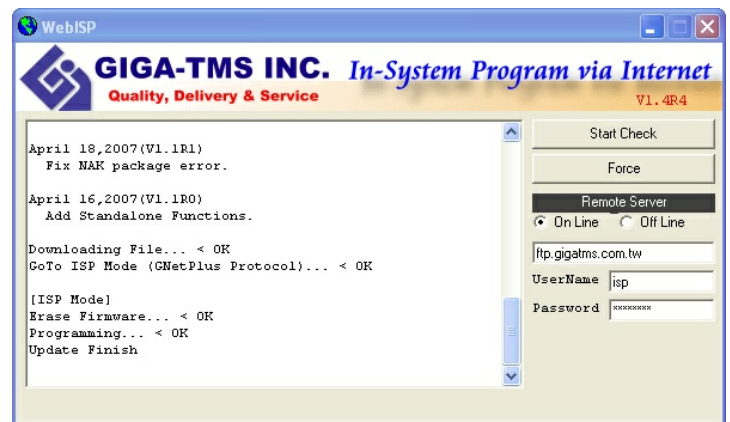
6. Click **Start Check**



7. If the version is out of date the message **Firmware version is out of date** will appear. Click Update.



8. Firmware will be updated and **Update Finish** message will appear. Close the software window.

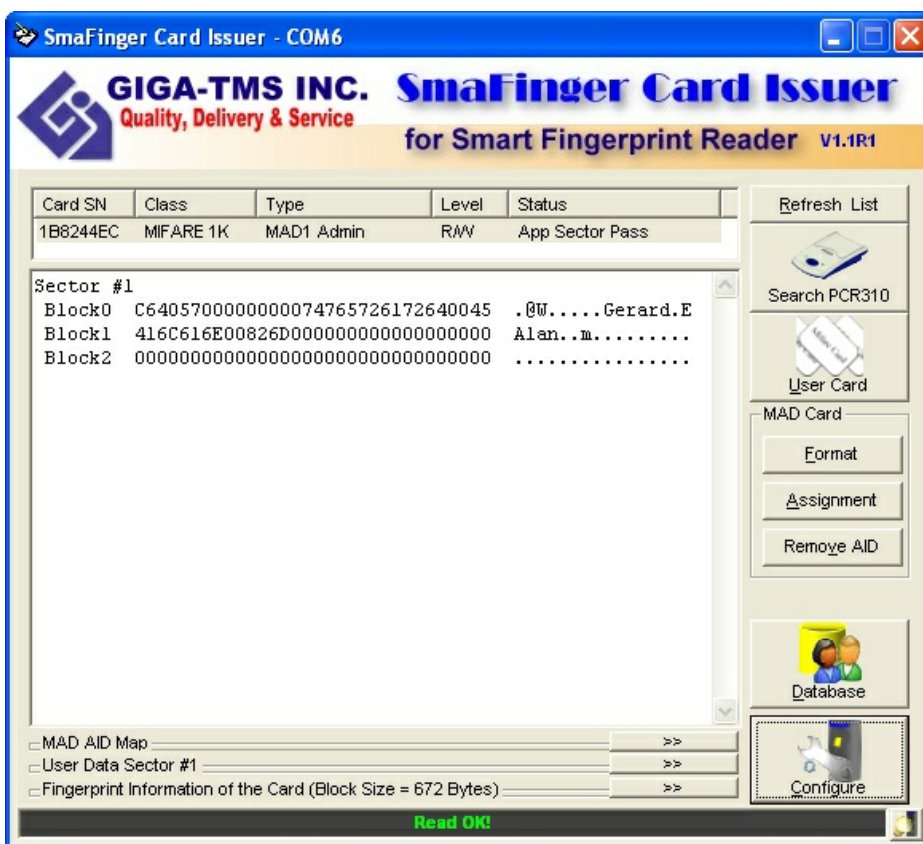


3.11 Programmer and Card Issuer

This contains further readings and additional information on Programmer SF600P and Card Issuer PCR310.

3.11.1 SmaFinger Card Issuer Program Main Window Details

a) SmaFinger Card Issuer Program Main Window



Refresh List: to reload the card information from PCR310.

Search PCR310: to find and connect the PCR310

User Card: to issue SmaFinger Cards including the 'Card Only' and 'Card+Fingerprint' cards.

Format: to create MAD card and include SmaFinger AID.

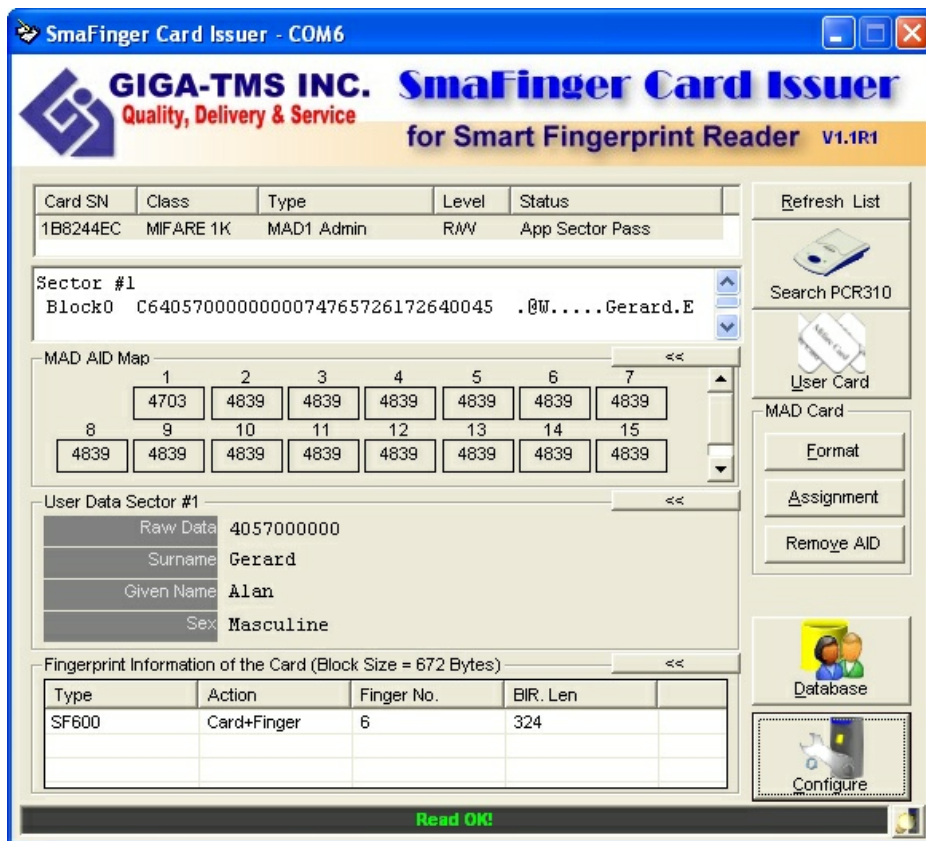
Assignment: to assign customer AID into MAD card.

Remove AID: to remove customer AID from MAD card.

Database: to manage multi-users data.

Configure: to configure the parameters of SmaFinger Card Issue.

b) SmaFinger Card Issuer Program Main Window with Inner Window Details



Fingerprint Information of the Card: Type of reader, card etc

Card List: to show card list (Max 2 cards)

MAD AID Map: to show AID map from MAD sector.

App. Sector Data: to show Application Sector Data in Hex Code and ASCII Code.

Status Bar: to show Message about result of action.

3.11.2 Configure Window Details

According to MAD application, you have to set the card issuer parameters before issuing the card.

Click **Configure Issue Settings** on **SmaFinger Navigate** to begin settings the parameters: (Example as below)

The screenshot shows a 'Configure' dialog box with the following sections and settings:

- General**
 - Start Up: Start from Navigate (dropdown)
 - Software Password: (empty text field)
 - Language: English (dropdown with a menu icon)
- Card Issue**
 - MAD Admin Key: FFFFFFFFFFFFFFFF (text field)
 - MAD-AID (Hex): 4703 (text field)
 - App Admin Key: FFFFFFFFFFFFFFFF (text field)
 - App Key: FFFFFFFFFFFFFFFF (text field)
 - Max App Sectors: 1 (dropdown)
 - Card Data Encrypt: None (dropdown)
 - Card Max Templates: 2 (dropdown)
- Reader / Programmer**
 - Reader Model: SF600 series (dropdown)
 - Assign Programmer: Normal (dropdown)

At the bottom are 'OK' and 'Cancel' buttons.

1. MAD Admin Key (Default=FFFFFFFFFFFFFFF):

The key works for the Administrator to plan the MAD application and it can assign the AID and its mating sector number.

2. MAD-AID (Hex, Default=4703):

If you have already applied for an AID from Mifare MAD group, you may set this AID number into MAD-AID to become the identifier of your application. (Or you may assign AID number by yourself for your application if you did not apply an AID from Mifare MAD Group.). **The default 4703 is the AID for Access Control & Security applied by GIGA-TMS INC from Mifare MAD Group.**

3. App Admin Key (Default=FFFFFFFFFFFFFFF):

The key is used for managing the data in the Application Sector. It can be used for Reading and Writing the data.

4. App Key (Default=FFFFFFFFFFFFFFF)

The key can only read the data. SmaFinger Reader is using the App Key to authenticate with the card.

5. Max App Sectors (Default=1) for multi sectors in use.

6. Password (Default=Blank)

The SmaFinger Card Issuer software is designed for a logon password protection. If you set up a password, you have to enter the password every time you open the SmaFinger Card Issuer program.

7. Encrypt (Default=None)

Fraud prevention. Select Encrypt Mode (None, Encrypt 1, Encrypt 2, Encrypt 3, Encrypt 4, and Encrypt 5) to protect your card data. (Note: Encrypt mode must to work together with the same encrypt mode of SmaFinger configure utility.)

8. Card Max Templates(Default=2)

Set the max fingerprint templates for User Card and Enroll Card.

9. Save & Load

You can save all configurations as a file. You also can load all configurations by the configuration file.

Note. When you exit the SmaFinger Navigate, it would automatically store all these keys and parameters you have set. You should as well as save all these files to avoid any problems.

10. **Start Up** (Default=Start from Navigate)

You can start this program from Navigate or the main window.

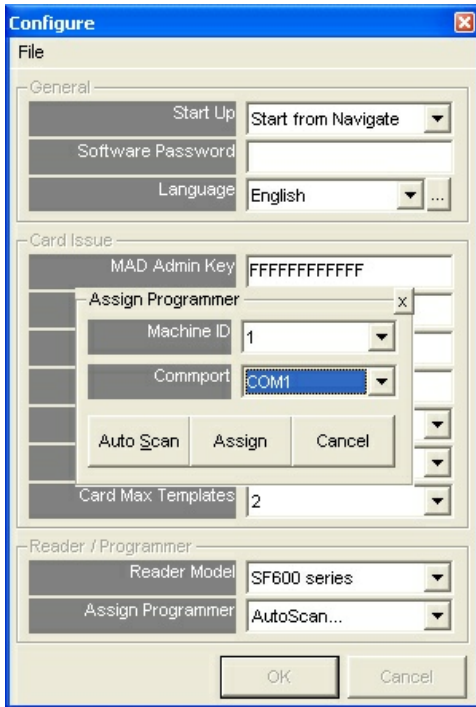
11. **Language** (Default=Local Language)

It auto detects you language.

12. **Reader Modes** (Default=SF600 Series)

Choose the product kind (SF500 series or SF600 series).

13. **Assign Programmer** (Default=Normal)

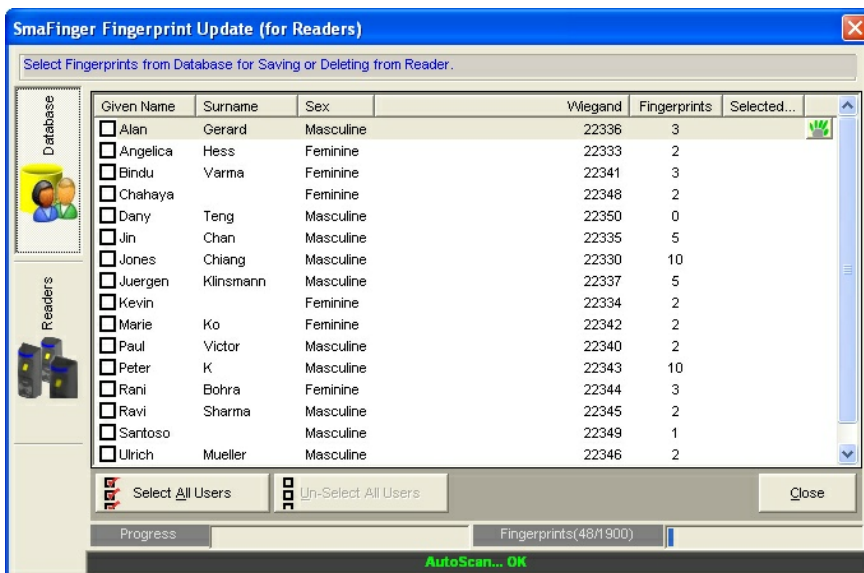


In normal mode, you connect the programmer (SF600P / SF500P) and auto scan it to enroll fingerprints.

You may also use the reader itself as programmer by using Assign Programmer facility.

Click "**Auto Scan...**" and choose the comport and reader ID to assign the reader to be programmer. Next click "**Auto Scan**" to detect the reader. Finally, click "**Assign**" and finish assigning the programmer.

3.11.3 SmaFinger Fingerprint Update Window Details

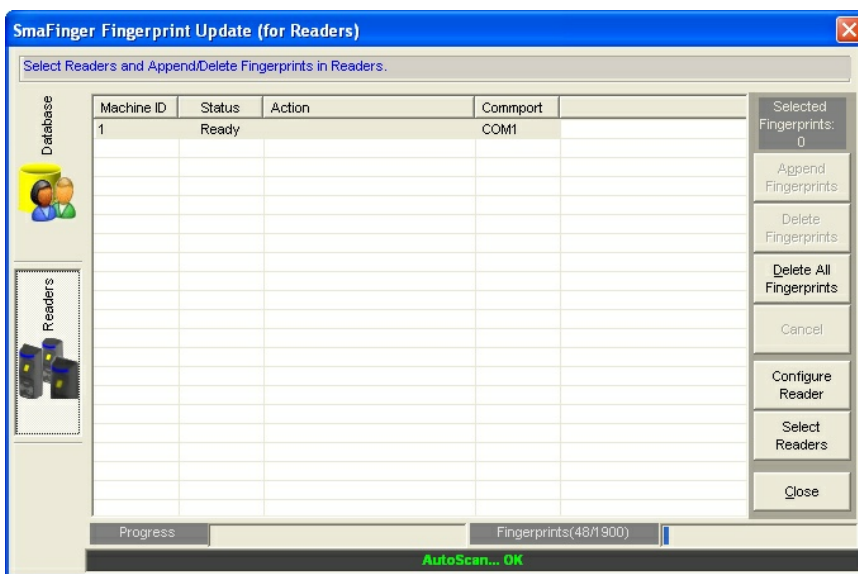


Database Click to go back to SmaFinger Database

Reader Click to open the next window to append to/delete from readers the fingerprints.

Select All Users Click to select all users in the database.

Unselect Users Click to cancel selection of all users in the database.



Selected Fingerprints: Indicates the number of fingerprints selected.

Append Fingerprints: Click to append fingerprints to reader.

Delete Fingerprint: Click to delete selected fingerprints.

Delete All Fingerprints: Click to delete all fingerprints from the reader.

Configure Reader: Click to open Mifare Utility Reader and configure.

Select Reader: Click to select readers - in case of multiple readers.

3.11.4 Card Issuer Interface Window Details

Issue SmaFinger Card

The image displays three overlapping screenshots of the 'Issue User Card' window, titled 'Issue User Card - 55858394'. The window has three tabs: 'Wiegand', 'TK2', and 'Raw Data'.

Wiegand Tab: Contains fields for 'System Code' (0), 'Site Code' (0), and 'Serial Number' (0). Each field has a 'Bk Size' dropdown menu (16, 8, 16 respectively). There is a checkbox for 'Auto Step for Serial Number' and a value of 1.

TK2 Tab: Contains fields for 'Serial Number' and 'Length' (Auto). There is a checkbox for 'Auto Step for Serial Number' and a value of 1.

Raw Data Tab: Contains an 'ASCII String Edit' field and a 'Hex Code Edit' field. Below these is 'Card Holder Information (Optional)' with fields for 'Surname', 'Given Name', and 'Sex' (None). There is an 'Access Mode' section with radio buttons for 'Card Only' (selected) and 'Card+Fingerprint'. A 'Remain capacity' bar shows 100%. At the bottom are buttons for 'Fingerprint', 'Read Card', 'Write Card', and 'Close'.

Wiegand: "System Code", "Site Code" and "Serial Number"

1. Auto Step: Automatically step the numbers. If this function is enabled, it will step the number with the set step value for the sequential number. This function is only good for the "Serial Number" field.

Fields	Bit Size	Memory Order
System Code	8~42	3 (MSB)
Site Code	8~42	2
Serial Number	8~42	1 (LSB)

2. Wiegand Format as below: (Max 16 bytes for Wiegand Format)

Remark: The SmaFinger reader will read number of data size by "Number Of Bits" set.

Example for Wiegand 44bits (Standard Bits Sequence and "Serial Number" bit size=18):

Parity Bit	System Code	Site Code	Serial Number	Parity Bit
Even	b16 b1	b8 b1	b18 b1	Odd
b44	(Even)	b23	b22	(Odd)
				b1

TK2:

- 1. Auto Step:** Automatically step the numbers. If this function is enabled, it will step the number with the set step value for the sequential number. This function is only good for the "Serial Number" field.
- 2.**
- 3. Format as below:**

Fields	Length	Memo
Serial Number	2~24	You can set Auto

Raw Data: Input Hex Code in "Hex Code Edit" or Input ASCII string in "ASCII String Edit".

Card Holder Information: to input Surname, Given Name, Sex and User Data

Access Mode: to choose issue "card only" or "card+ fingerprint"

Fingerprint: to enroll user's fingerprint into database. (See Enroll Fingerprint)

Read Card: to read user's data from card.

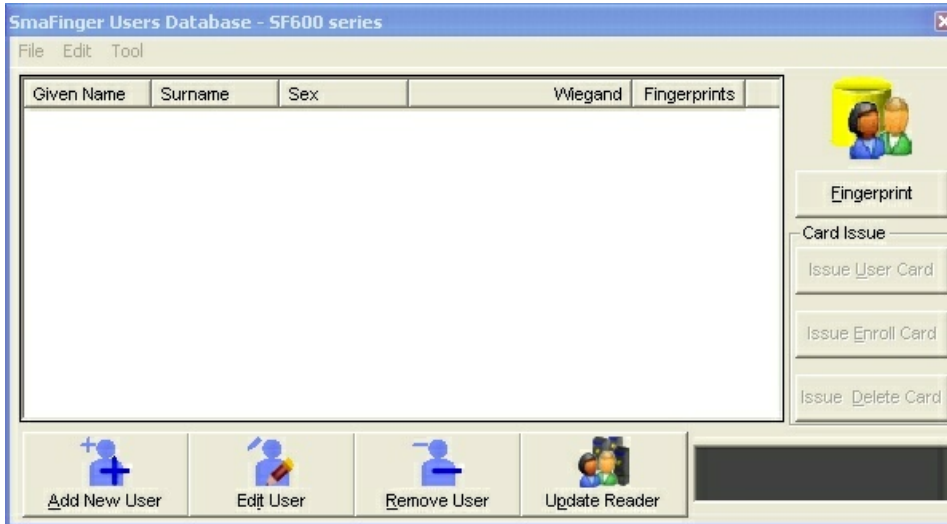
Write Card: to write the changes in to card.

Available Capacity: indication of the card remaining capacity.

Close: to close the window.

3.11.5 Managing User Database

SmaFinger Users Database contains all registered users' fingerprint and card data. You can "Add New", "Edit Data", "Remove Data", "Create Black List", "Enroll to Machine", and "Issue User Card from database".



Data list: to list users in database

Add New User: to insert a new user. (See [Add/Edit User](#))

Edit User: to modify user's data. (See [Add/Edit User](#))

Remove User: to delete user from database

Update Reader: to enroll user's fingerprints from database to SmaFinger Reader.
(See [Update SmaFinger Reader](#))

Fingerprint: to enroll user's fingerprint into database. (See [Enroll Fingerprints](#))

Issue Enroll Card: to issue Enroll Card that can enroll user data from Card to SmaFinger Reader.
(See [Issue Card from Database](#))

Issue User Card: to issue User data from database to Card. (See [Issue Card from Database](#))

Issue Delete Card: to issue Delete Cards to delete users that enrolled in SmaFinger Reader.

SmaFinger Programmer Type: Auto display SmaFinger Programmer Type. (See [Detect Programmer Type](#))

3.11.5.1 Add/Edit User

Wiegand:

1 Select [Wiegand]

2 Input System Code, Site Code and Serial Number in the Wiegand Fields.

3 Click [Add] or [Update] to save all Wiegand Fields into database.

TK2:

1 Select [TK2]

2 Input Serial Number in the TK2 Fields.

3 Click [Add] or [Update] to save all TK2 Fields into database.

Raw-Data :

1 Select [Raw Data]

2 Input Hex Code in "Hex Code Edit" or Input ASCII string in "ASCII String Edit".

3 Click [Add] or [Update] to save data into database.

Card Holder Info :

1 Input Surname, Given Name, Sex and User Data

2 Click [Add] or [Update] to save all Card Holder Info into database.

Edit User Data

Wiegand TK2 Raw Data

System Code		Bit Size	0
Site Code	91	Bit Size	8
Serial Number	52502	Bit Size	16

Card Holder Information (Optional)

Surname	Demo
Given Name	Member
Sex	Masculine

Remain capacity 54%

Update Cancel

Add User Data

Wiegand TK2 Raw Data

System Code		Bit Size	0
Site Code	91	Bit Size	8
Serial Number	52503	Bit Size	16

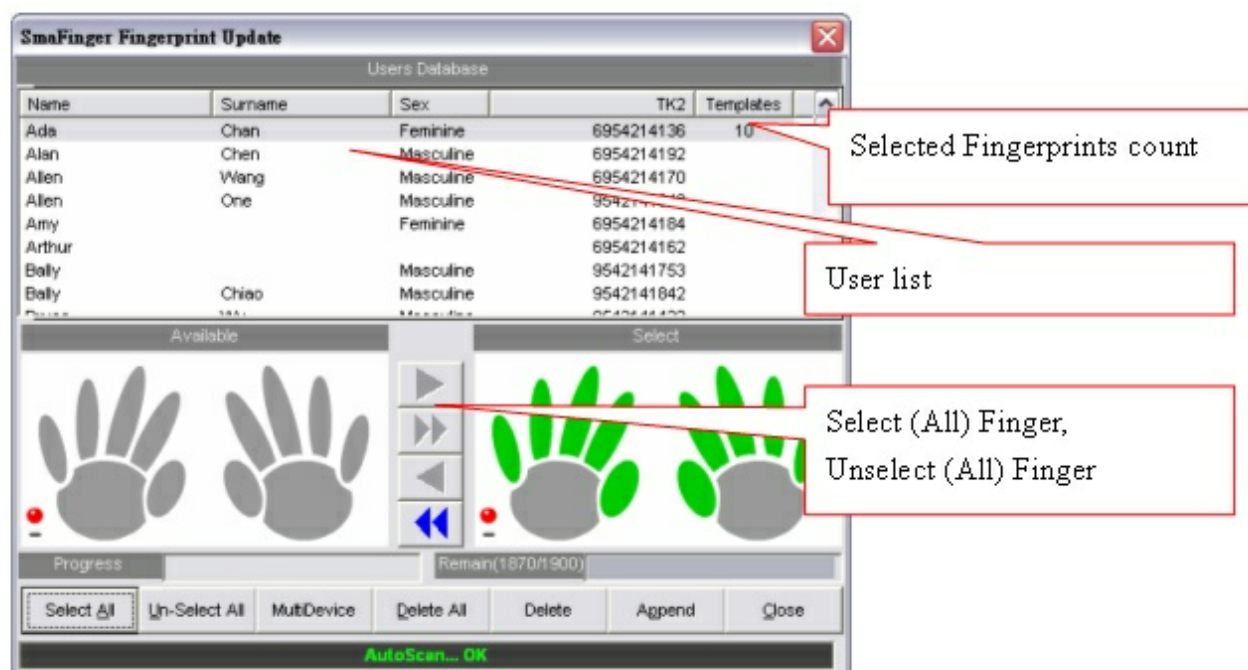
Card Holder Information (Optional)

Surname	
Given Name	
Sex	Masculine

Remain capacity 83%

Add Cancel

3.11.5.2 Update SmaFinger Reader



User list: to select one or more users to enroll fingerprints.

Select All: to select all user's fingerprints.

Un-Select All: to cancel all user's selected fingerprints.

MultiDevice: to set more readers to update, (refer to Update Multi-Reader)

Delete All: to delete all fingerprints in SmaFinger Reader.

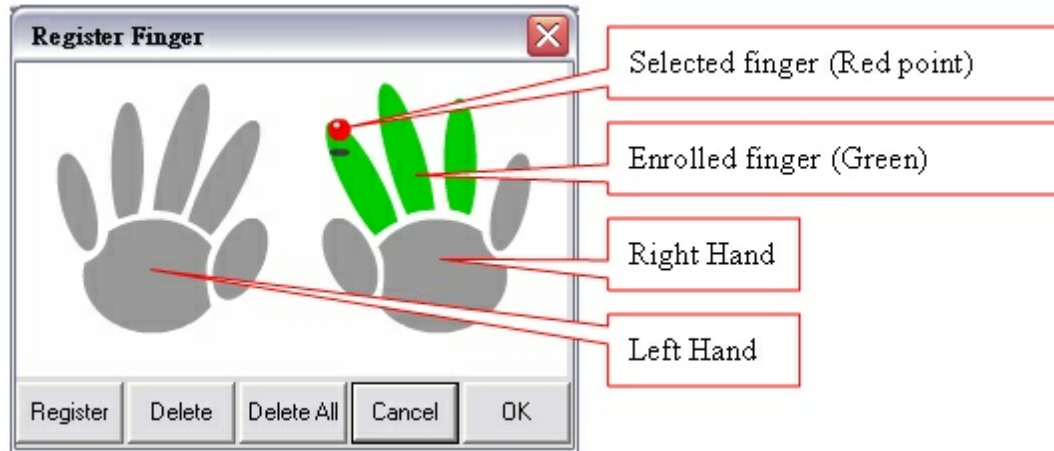
Delete: to delete selected fingerprints in SmaFinger Reader.

Append: to append selected fingerprints from database to SmaFinger Reader.

Close: to close this window.

3.11.5.3 Enroll Fingerprints

Enroll Fingerprint:



Delete: to delete selected finger's fingerprint.

Delete All: to delete all fingerprints.

Cancel: to cancel all changes and close this window.

OK: to save all changes and close this window.

Register: to enroll fingerprints



Step1:

No.1 light is on;
please put one of your
fingers on SmaFinger
Programmer's sensor.



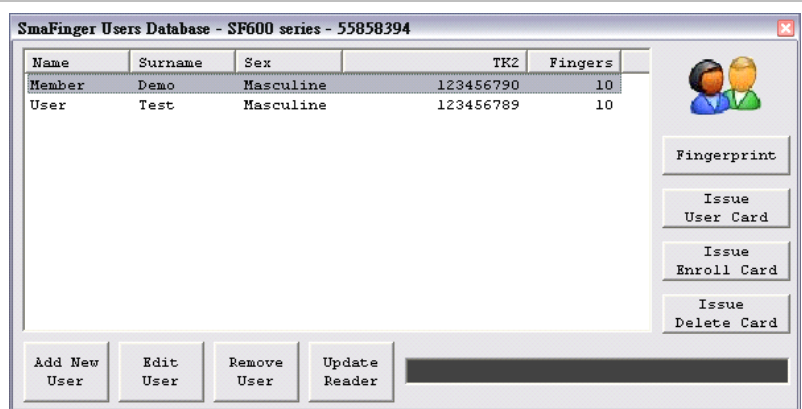
Step 2: When you hear a beep, or see message "remove finger" remove your finger from SmaFinger Programmer. *SF600 series users ignore Step3-4	
Step 3: When No2 light is on, Please put the same finger again on SmaFinger Programmer's sensor. *Only works for SF500 series	
Step 4: Repeat the Step 2 and Step 3 for the 3rd time enrollment. *Only works for SF500 series	
Step 5: Put your finger on SmaFinger Programmer's sensor to verify fingerprint.	
Step 6: This window will close when verification is successful. Otherwise, please repeat step 1 to step 5.	

3.11.5.4 Issue Card from Database

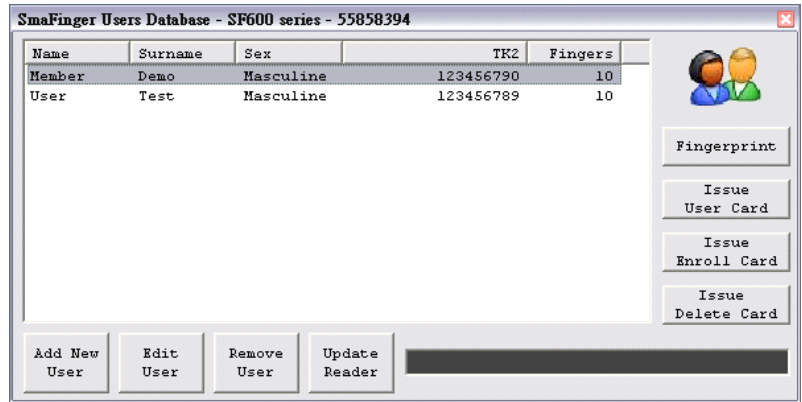
The procedure to issue the Enroll Card and the User Card is the same. The Enroll Card will enroll the user data and fingerprint from database to card and then to SmaFinger Reader. And the User Card is for access by verification of user's fingerprint in Card Only mode.

Step1:

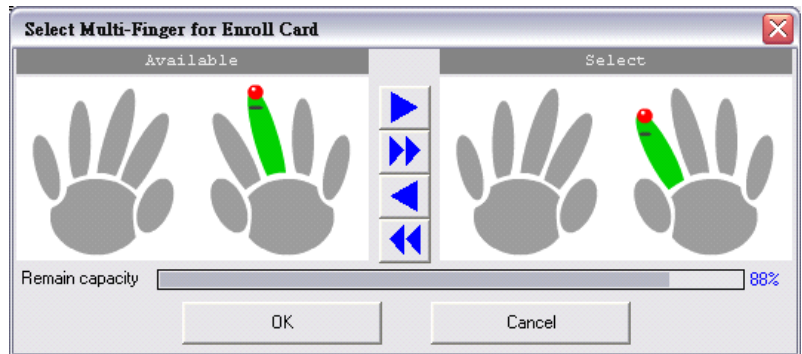
Select one of the users from the user list.

**Step 2:**

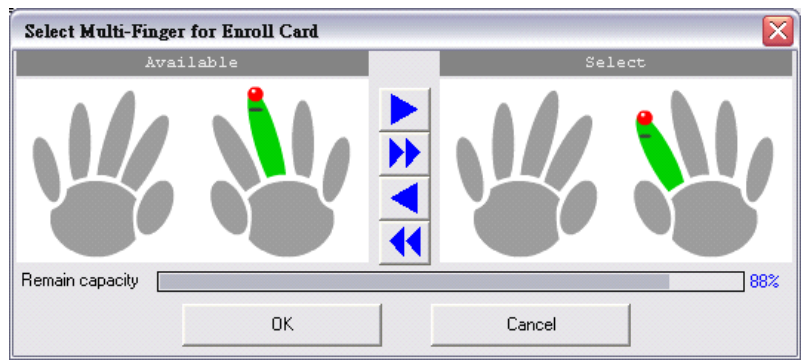
Click "Issue Enroll Card" to issue Enroll Card. Click "Issue User Card" to issue User Card. *It will issue a card immediately when the user has enrolled even one fingerprint.

**Step 3:**

Select fingers that you want to issue. *The max count of fingers you can select is defined by SmaFinger Reader and limited by card capacity.

**Step 4:**

Click "OK" to issue card. Click "Cancel" will close this window without issue.



3.11.5.5 Detect Programmer Type

There are three statuses in programmer detection.

Status 1: First time (Never recorded any user's fingerprint.).



Status 2: Auto detect SmaFinger Programmer type.



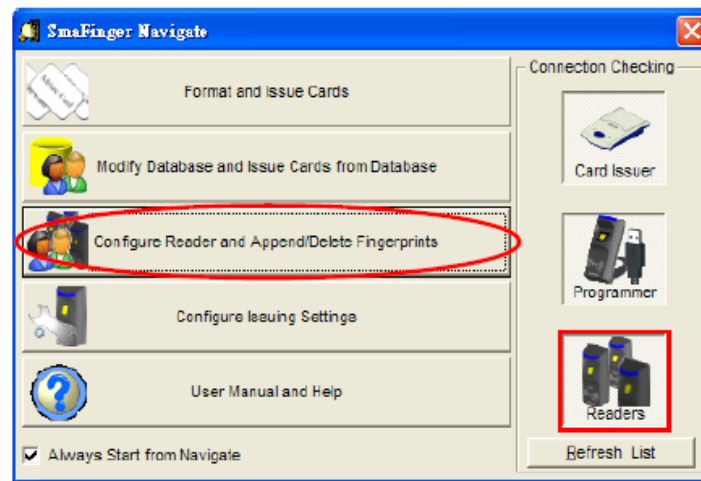
Status 3: No connected programmer (You have recorded more than one type of fingerprint.).



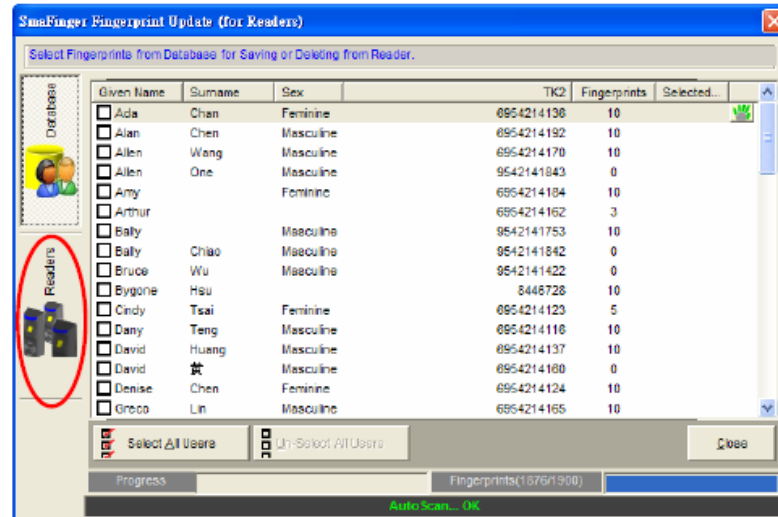
3.11.6 Updating Database of Multiple Readers

Run the software
"SmaFinger Card
Issuer"

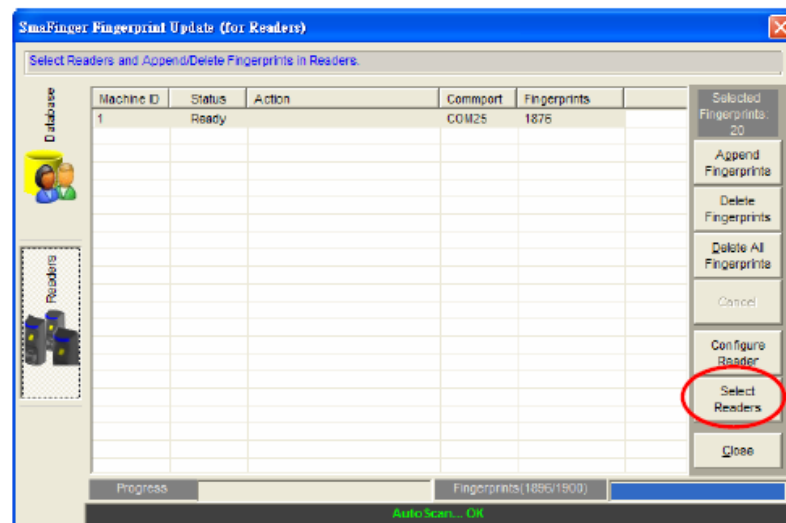
Click "Configure
Reader and
Append/Delete
Fingerprints"

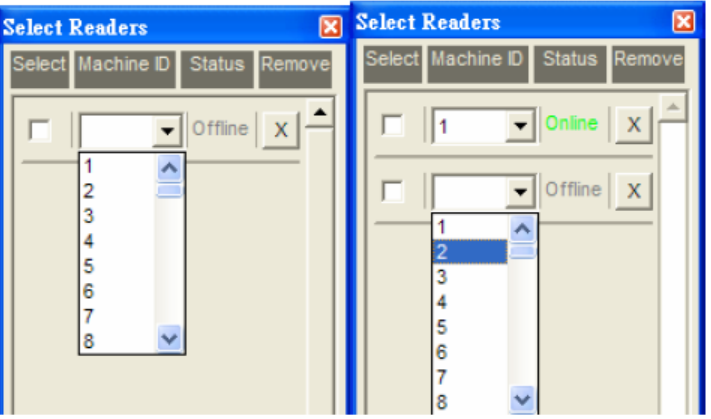
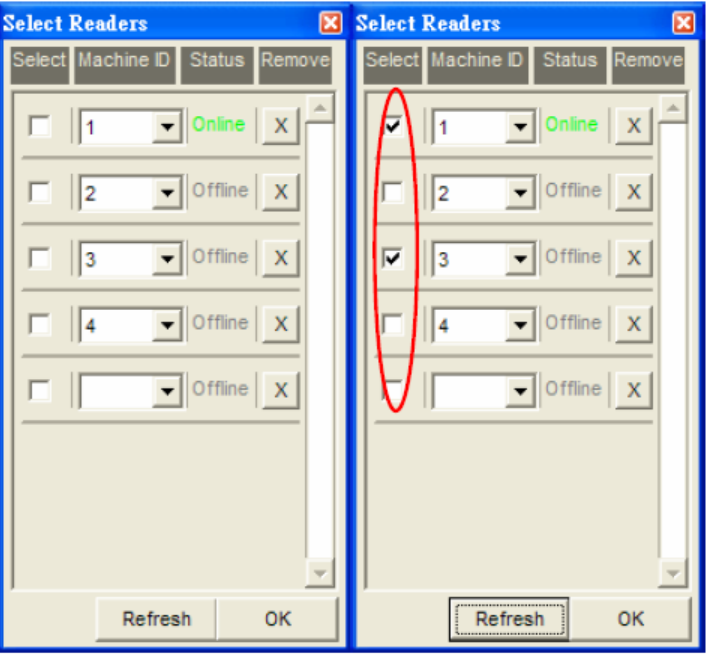
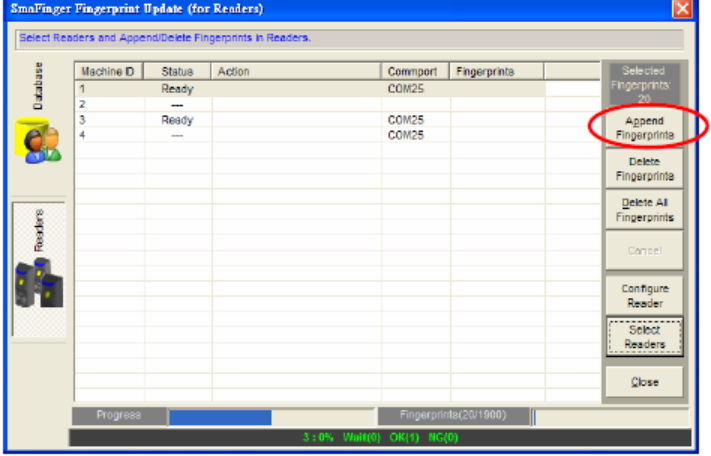


Click "Readers"



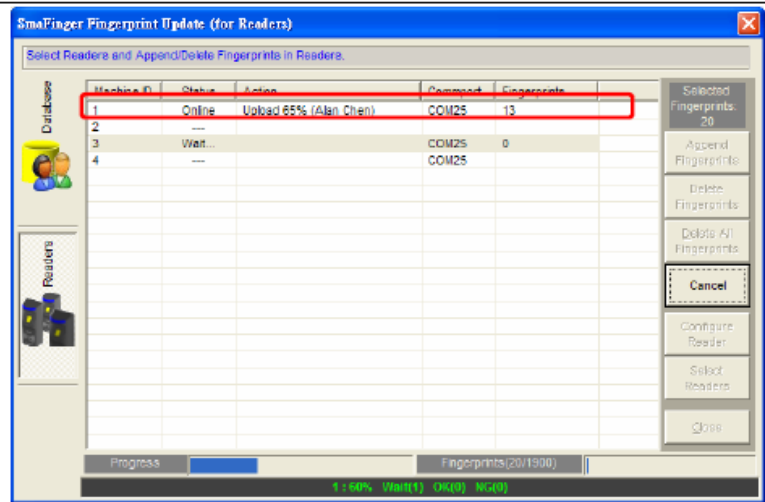
Click "Select Readers"



Select Machine ID	
Mark on the Machine ID If Machine ID is existent, it will show "Online" Click "OK" to close the window	
Save fingerprints to Readers Auto update all of the reader you enabled	

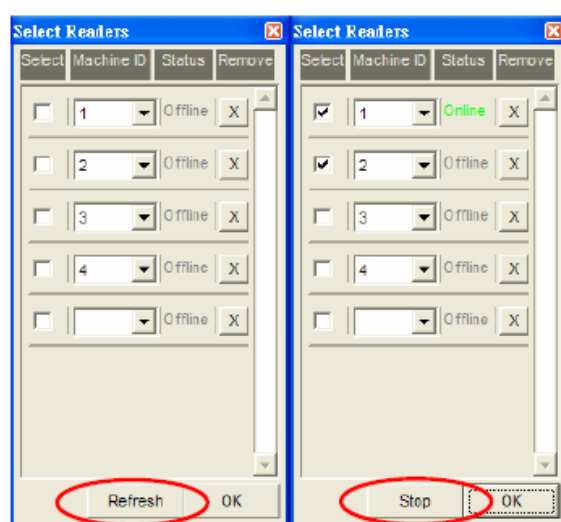
If Reader ID is not connect, it display "Offline".

If Reader ID is not enabled, it display "---"



Auto Mark On

1. Select Reader ID
 2. Click "Refresh"
 3. Mark on the Existent Reader ID
- Click "Stop" to stop scan



3.11.7 Creating and Managing MAD card

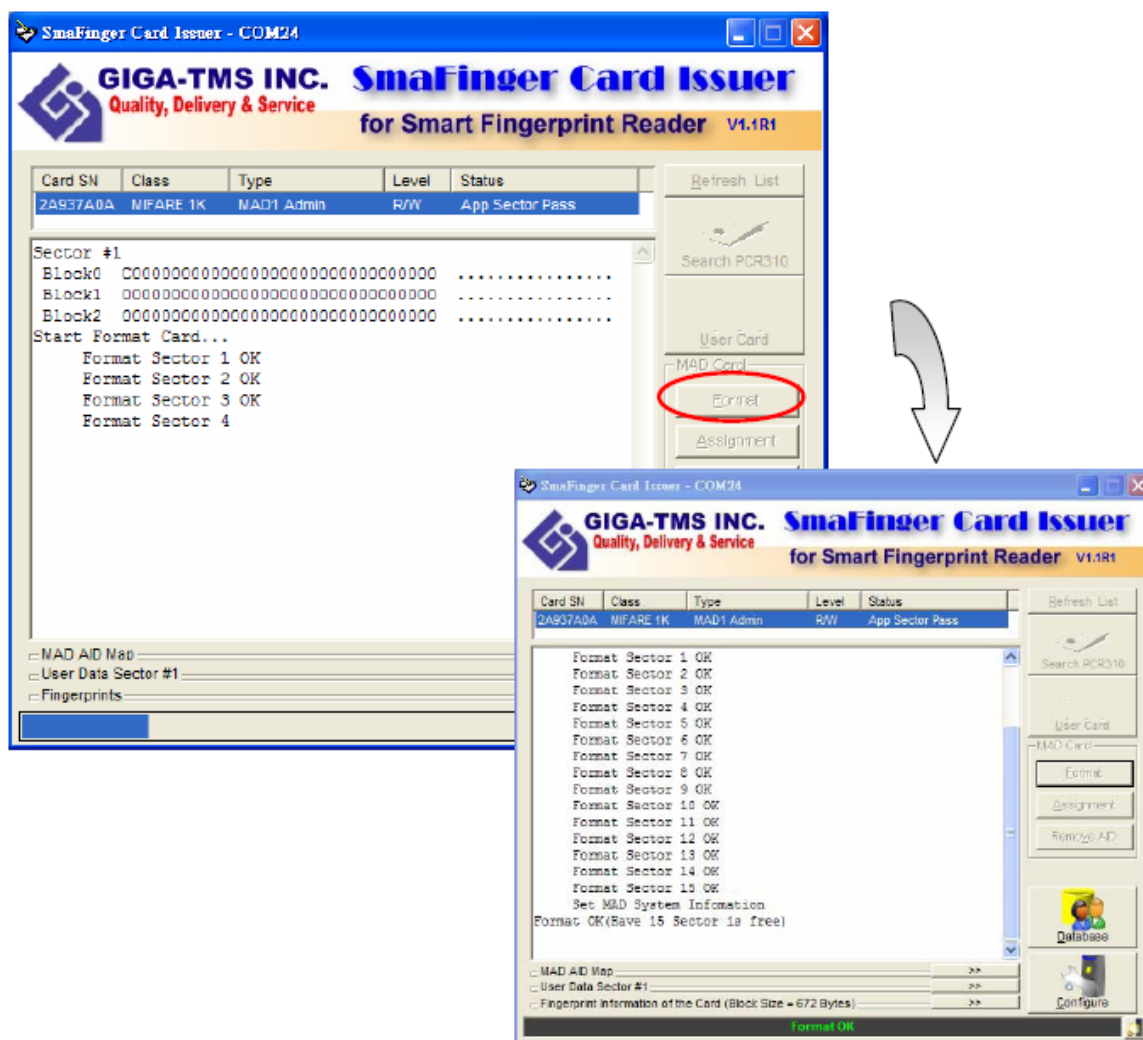
If you are issuing MAD card, you may use "Format", "Assignment" and "Remove AID" to create and manage your MAD card.

1. Click **Format** to create your MAD cards and include your AID.

You may format all new cards with MAD Format first. After formatting, all the sectors on the card will be protected with MAD Admin KEY (KEY_B). If you have set AID when you configure to set the SmaFinger Card Issuer parameters, it will write AID into MAD Sector when you format the cards, and it will automatically mate AID to Sector #1 and the Sector #1 will be protected with App Key (KEY_A : Read Only) and App Admin Key (KEY_B: Read/Write).

Note 1: If Sector#1 has been used by other Application, it will mate AID to Sector#2 or other free sector when the card is formatted.

To format a Non-MAD card to a MAD format card, see example below (AID=4703):

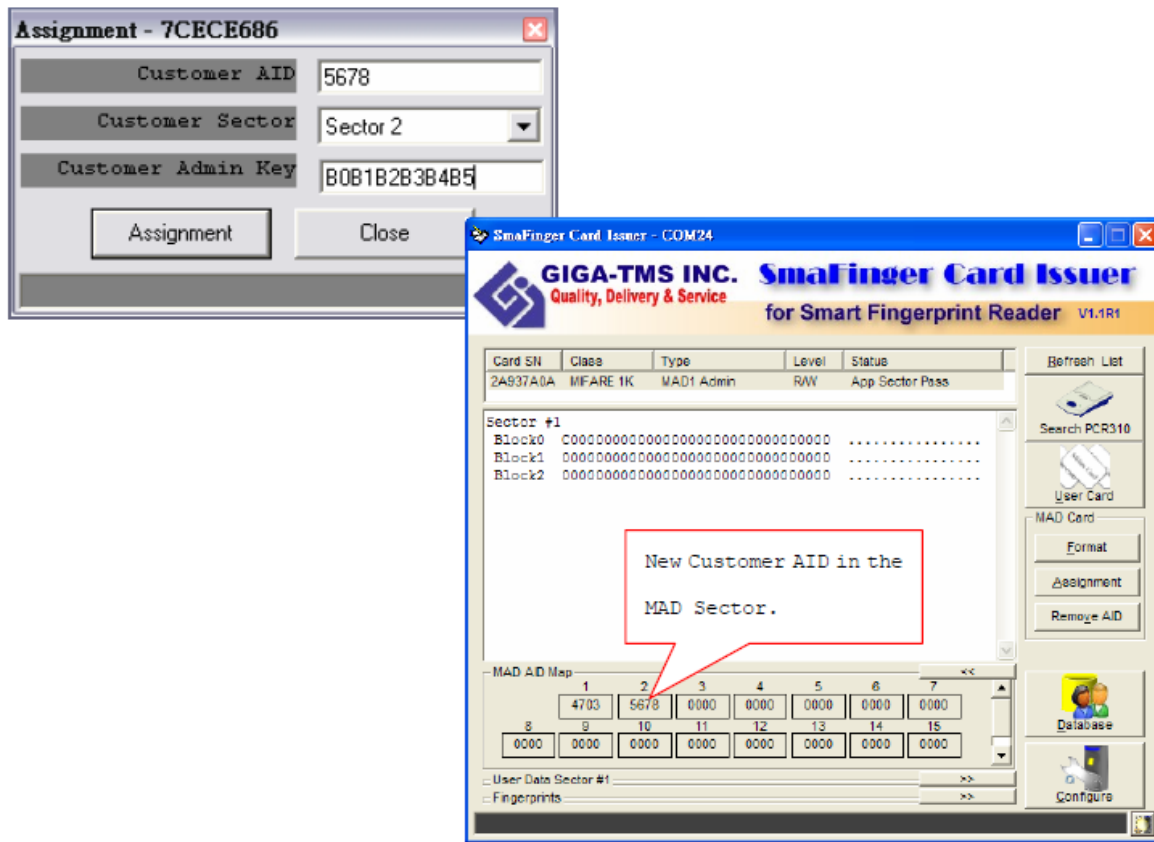


Note 2: All fingerprint modes need to use the card in MAD format.

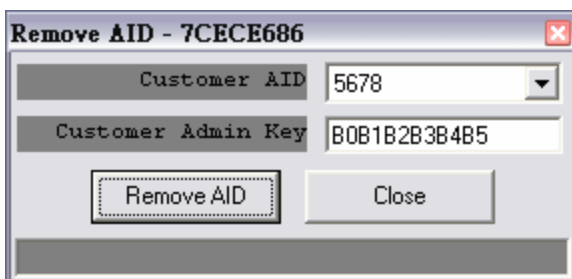
2. Use **Assignment** to assign your customer AID into your MAD card.

You may also put the Customer AID into your MAD card and you may assign the Customer AID to use the Customer Sector#. And let the Customer Sector# be protected with Customer Admin Key (KEY_B: Read / Write, Default=FFFFFFFFFFFF).

For example, to Assignment the AID=5678 to Sector 2 with KEY=B0B1B2B3B4B5 (KEY_B) protected as below:



3. Click **Remove AID** to remove AID from your MAD card.
You may also to remove the issued AID from your MAD card. The AID pointer sector will be free and protected with MAD Admin Key after the AID be removed.
For Example, to remove the AID=5687 from your MAD card.



Note: The customer Admin Key must be set in "Customer Admin Key" field, to free the AID pointer sector.

3.11.8 Replacing Manager Enroll/Delete Cards

When your Manager Enroll/Delete Card is lost/damaged you can create a new card for replacement as follows.

SF Formater should have been installed as illustrated in chapter 1.5 [Installation of SF Formater](#)

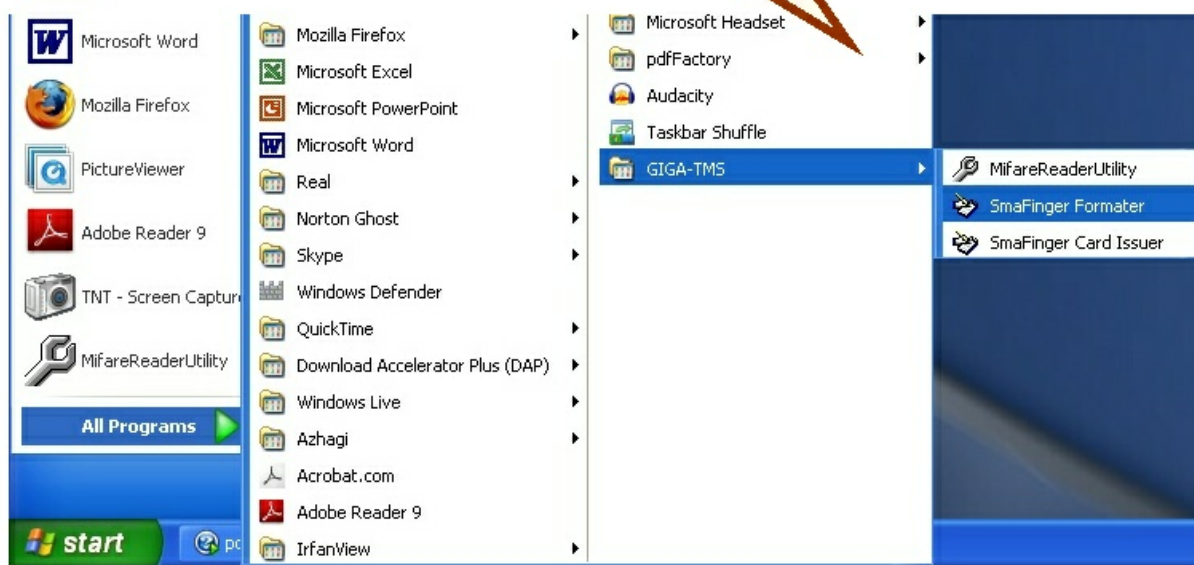
1

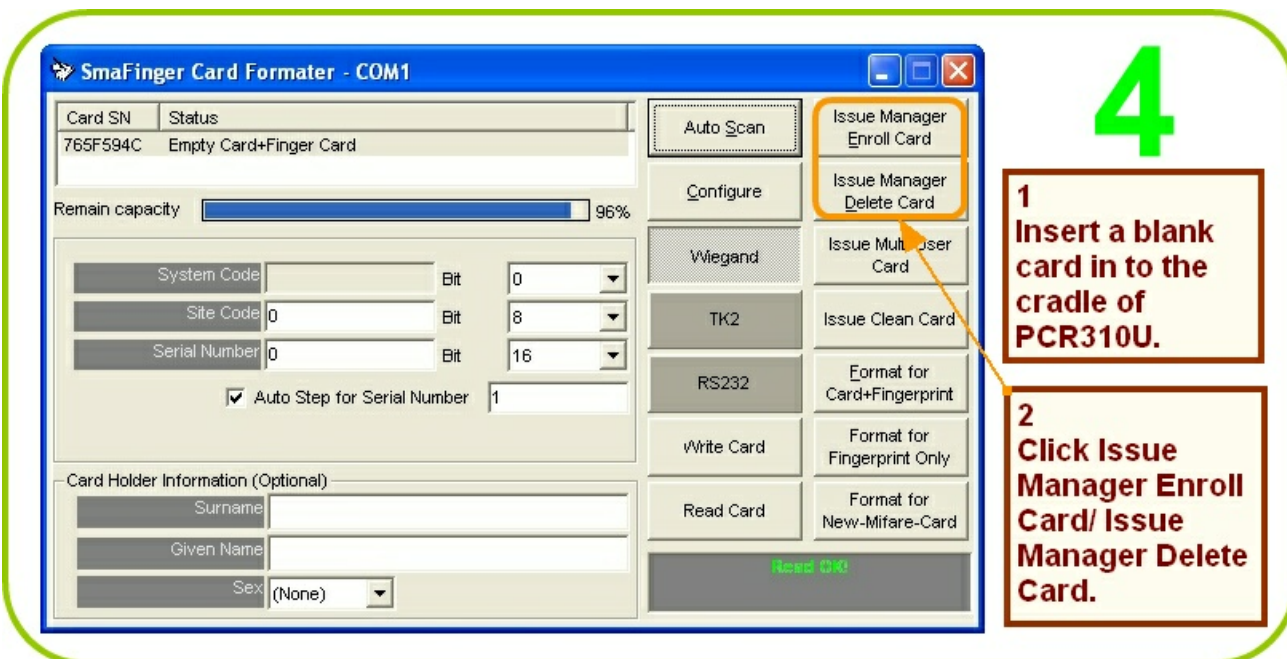
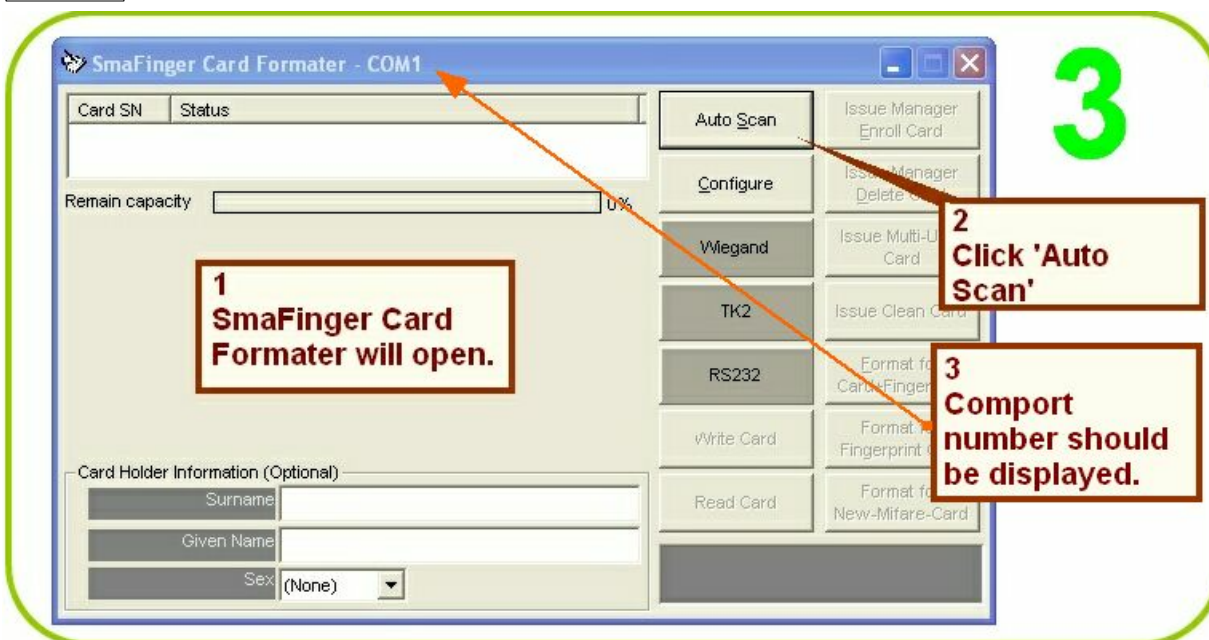
Connect Card Issuer PCR310U to PC, a green light will turn on.



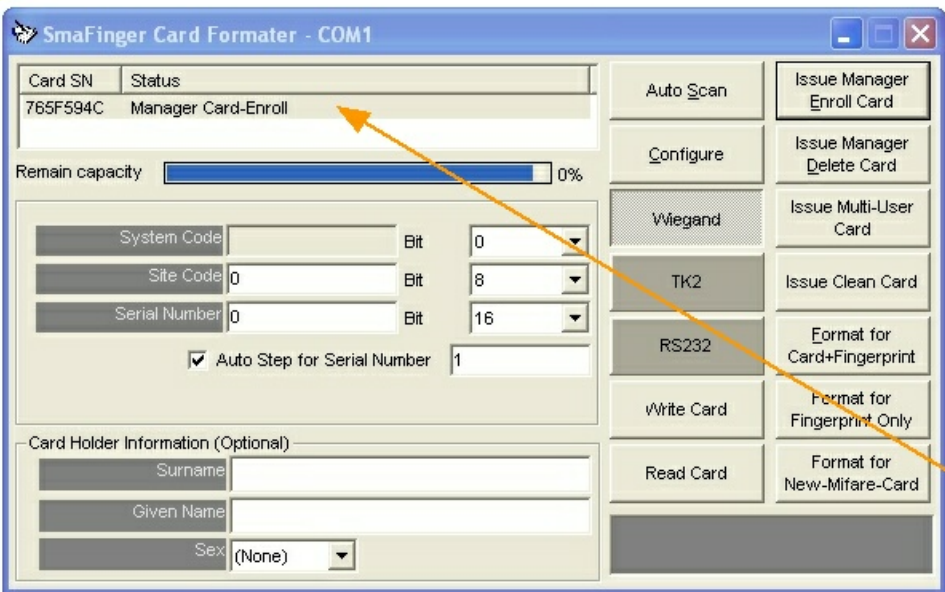
2

On PC Desktop click Start/All Programs/GIGA-TMS/SmaFinger Formater





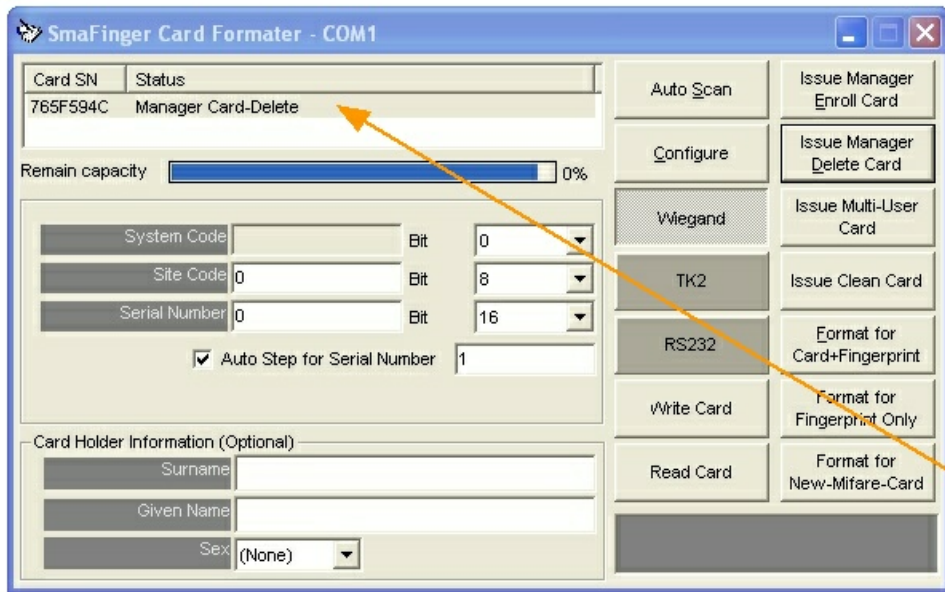
5



The screenshot shows the SmaFinger Card Formatter interface. The 'Card SN' is 765F594C and the 'Status' is 'Manager Card-Enroll'. The 'Remain capacity' is 0%. The 'System Code' is 0, 'Site Code' is 0, and 'Serial Number' is 0. The 'Auto Step for Serial Number' is checked. The 'Card Holder Information' section is empty. The 'Write Card' button is highlighted with an orange arrow.

Manager Enroll Card is ready. Remove card.

6



The screenshot shows the SmaFinger Card Formatter interface. The 'Card SN' is 765F594C and the 'Status' is 'Manager Card-Delete'. The 'Remain capacity' is 0%. The 'System Code' is 0, 'Site Code' is 0, and 'Serial Number' is 0. The 'Auto Step for Serial Number' is checked. The 'Card Holder Information' section is empty. The 'Write Card' button is highlighted with an orange arrow.

Manager Delete Card is ready. Remove card.

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