

## FS83 FS84 General Operation Description v2.0

### 05-Jun-2014

All the command described below, please refer to **FS83 sFAM command description2.0.pdf**

User template type:

1. VIP User: User does not need to provide user ID or group ID when doing fingerprint identification (VIP matching)
2. Ordinary: User needs to provide user ID/group ID when doing fingerprint identification.(1-to-1 matching or group matching )

**MAX number of VIP templates is 800.** If the number of VIP templates is larger than 800, FS83/FS84 will return error flag 0x5B "RESULT\_TOO\_MANY\_VIP" for VIP recognition.

**MAX number of templates with same Group ID is 800.** If this number is larger than 800, FS83/FS84 will return error flag 0x5D "RESULT\_TOO\_BIG\_GROUP" for Group recognition.

#### **A) Steps to enroll a fingerprint template of a VIP user/an ordinary user**

Steps of these two are the same. The only difference is the command flag of 0x41(Please check **B.9. Store the fingerprint template to FAM flash memory**)

Procedure of enrolling a user template:

- 1) Sample N=0
- 2) check finger(command 0x4B) until the return error flag is not 0x40 to make sure no finger is pressed on the scanner
- 3) check finger(command 0x4B) until the return error flag is 0x40. i.e. finger is pressed.
- 4) wait around 1 to 2 second to allow the finger place stably
- 5) capture finger(command 0x49). **For PIV image, Param1 = 0x00000008.** If return error flag is not 0x40, go back to step 3.
- 6) process image to sample(command 0x50). If return error flag is not 0x40, go back to step 3.
- 7) Store the sample to RAM(command 0x53). Increase sample N by one.
- 8) repeat 2 to 7 according to how many samples you wanted. In the demo program, we use 3 samples.
- 9) Store the template to flash memory. (command 0x41). We assume user use security level = 3, then **For VIP user, command flag for command 0x41 is b00000111**  
**For ordinary user, command flag for command 0x41 is b00000011**

Note: For enrollment, after the image process, we need to push the sample to RAM. (Please note that it is **NOT** flash memory)

We use the command 0x53 (B. Basic commands for fingerprint registration and recognition->10. Store the sample in FAM RAM)

For current example, we use 3 samples.

For first sample, sample N=0. i.e. 40 53 00 00 00 00 00 00 00 00 93 0D

For second sample, sample N=1. i.e. 40 53 01 00 00 00 00 00 00 00 94 0D

For third sample, sample N=2. i.e. 40 53 02 00 00 00 00 00 00 00 93 0D

**About Flag of command 41(Store the fingerprint template to FAM flash memory):**

bit[1:0] - security level for individual user(0 - minimum,1,2,3 - maximum);

Higher the Security Level, more accurate the fingerprint verification but higher verification failure rate.

bit[2] - VIP / ordinary user: if bit[2] ==1 – VIP, bit[2] == 0 ordinary;

1 - VIP(Do not need to enter user ID before fingerprint verification) i.e. "B5. Find the fingerprint of a VIP user (1 to many matching)"

0 - Ordinary user(Need to enter user ID or Group ID for fingerprint verification) i.e. "B4. Find the fingerprint of an ordinary user (1 to 1 matching)" and "B8. Find the fingerprint in group (1 to many matching)"

bit[3] - Suspend user. If bit[3]==1 – User suspended by matching(return error RESULT\_USER\_SUSPENDED). If bit[3]==0, normal

bit[4..6] - reserved for future use;

bit[7] - if bit[7] == 0, then template add to database with ID, security level, VIP/ordinary, as set in current command; (normal registering process use bit[7]==0)

bit[7] - if bit[7] == 1, then template stored with default parameters (use this bit equal one only after command "Upload individual template") and ID, security level, VIP/ordinary, in current command ignored;

## B) Steps to recognize a user with Database in FS83/FS84

- 1) check finger(command 0x4B) until the return error flag is not 0x40 to make sure no finger is pressed on the scanner
- 2) check finger(command 0x4B) until the return error flag is 0x40. i.e. finger is pressed.
- 3) wait around 1 to 2 second to allow the finger place stably
- 4) capture finger(command 0x49). For PIV image, Param1 = 0x00000008. If return error flag is not 0x40, go back to step 2.
- 5) process image to sample(command 0x50). If return error flag is not 0x40, go back to step 2.
- 6) For VIP recognition, use command 0x52 and flag=0x01(Please check **B5. Find the fingerprint of a VIP user (1 to many matching)**)

For Group recognition, use command 0x52 and flag=0x05 and the corresponding Group ID(Please check **B8. Find the fingerprint in group (1 to many matching)**) Group ID must be filled at GID field. Please check **page 1 of FS83 sFAM command description2.0.pdf**.

For 1-to-1 recognition, use command 0x52, flag=0x00 and the corresponding User ID(Please check **B4. Find the fingerprint of an ordinary user (1 to 1 matching)**)

## C) Send Raw image to PC

use command 0x44 (Please check **D2 Download RAW image**). In current example, PC ask FS83/FS84 to send 1600byte data each time..

For example:

Host(PC): 40 44 C0 06 02 00 40 06 00 00 00 92 0D

FAM(FS83/FS84): 40 00 00 00 00 00 40 06 00 00 40 C6 0D

0x206c0 is the offset of image data. 0x640(1600) is the length of data will be sent.

After FS83/FS84 has sent 40 00 00 00 00 00 40 06 00 00 40 C6 0D, FS83/FS84 will keep on sending out 1600 byte image data plus one byte CheckSum and one stop byte 0x0D. i.e. total 1602 bytes

As the image is 320X480, total number of byte is 153600. i.e. PC need to ask FS83/FS84 to send data 96 times. You can note that the offset is added by 0x640(1600) each time.

## D) send stored template to PC

Use command 0x54(Please check **D3. Download individual template**) with **command flag 0x00** to get the template from FS83/FS84 to PC.

Please note that you **MUST** know the user ID,FID and GID of the template which you want to send.

### **E) send template from PC and do recognition**

- 1) Use command 0x55(Please check **D7. Upload individual template**) with **command flag 0x00** to send template from PC to FS83/FS84. You can select RamSlotN from 0 to 3. In this example, we select RamSlotN =0.
- 2) check finger(command 0x4B) until the return error flag is not 0x40 to make sure no finger is pressed on the scanner
- 3) check finger(command 0x4B) until the return error flag is 0x40. i.e. finger is pressed.
- 4) wait around 1 to 2 second to allow the finger place stably
- 5) capture finger(command 0x49). **For PIV image, Param1 = 0x00000008**. If return error flag is not 0x40, go back to step 3
- 6) process image to sample(command 0x50). If return error flag is not 0x40, go back to step 3.
- 7) use command 0x52 with RamSlotN=0 and command flag=0x02 (Please check **B6. Compare current sample with template in RAM**) If return flag is 0x40, recognition is successful.