

# Fingerprint Embedded Modules



[www.suprema.co.za](http://www.suprema.co.za)



Block C, 1st floor, Hurlingham Office Park, Woodlands Avenue, Hurlingham Manor, 2196  
T +27 (0) 11 781 9964 F 088 011 787 8058 E [enquiry@suprema.co.za](mailto:enquiry@suprema.co.za)  
neaMetrics (Pty) Ltd. Approved Suprema Distributor - Africa

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**suprema**  
Biometrics & ID Solutions



# SUPREMA Fingerprint Embedded Modules

## Cutting-edge Technology, Easy Integration

Suprema is the world's leading producer of high performance fingerprint modules. Featuring multi award-winning Suprema Fingerprint Algorithm, SFM Series embedded fingerprint modules provides unrivalled precision and quality. Suprema is committed to develop breakthrough innovations in biometrics for continued excellence.

- World's Best Selling Fingerprint Module
- High Performance for Wet & Dry Fingers
- Suprema Algorithm
- Various Sensor Options

### Major Applications



Access Control



Time Attendance



Safe



Door Lock



ATM



KIOSK



Mobile Device

## Products Overview

Suprema SFM Series fingerprint modules are designed to provide refined biometric security solution to developers and manufacturers for integration with various applications such as access control systems, time attendance terminals, mobile devices, kiosks, safes, door locks and so on. Powered by the world's best, multi-award winning Suprema fingerprint algorithm, SFM Series fingerprint modules offer powerful identification performance and versatile external interfaces.

### SFM3000 Series

Entry-level fingerprint module with essential features

SFM3000 Series is cost effective fingerprint identification module equipped with essential part for fingerprint identification and template storage.



### SFM3500 Series

High-end fingerprint module with versatile interfaces

SFM3500 Series is a high-end standalone fingerprint module equipped with versatile external interface including RS232, RS422/485, Wiegand and LED control.



### SFM4000 Series

Compact fingerprint module with power saving feature

SFM4000 Series features integrated power control circuit for extra power saving and loaded with powerful DSP technology on a compact (half size) board.



### SFM5000 Series

High performance fingerprint module with live finger detection

SFM5000 Series, the latest addition to Suprema's SFM line up, loaded with powerful 533MHz DSP for faster recognition speed and features FBI/FIPS201 certified sensor and LFD technology.



# SFM5000 Series

## Optimized for performance, minimum power consumption

The SFM5000 series is the latest UniFinger module equipped with world's leading fingerprint authentication algorithm, which ranked No. 1 in FVC2004, 2006 and onGoing. The SFM5000 series features powerful 533MHz DSP which optimized for performance while minimizing power consumption.

- Powerful 533 MHz DSP
- 1:1 verification in 600 msec
- Fast power-on time
- User configurable 8 port digital I/O
- 1:1,000 identification in 760 msec
- ISO19794-2, ANSI-378 template standard
- 256bit AES fingerprint data encryption
- Up to 4MB flash memory



### SFM5020-OP | Optical Sensor

- 500 dpi resolution
- Solid sensor surface
- High quality fingerprint image

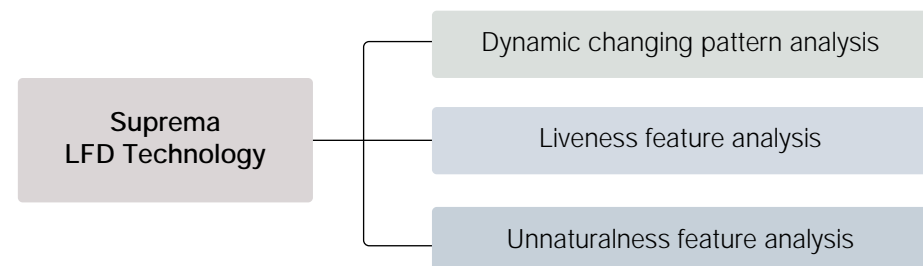


### SFM5060-OH | Optical Sensor with LFD

- 500 dpi resolution
- Hybrid live finger detection technology
- PIV/FIPS 201 certification

## Hybrid Live Finger Detection Technology

Suprema's LFD technology is based on the fact that dynamic and static image characteristics of the fake fingers can be distinguished from those of live fingers. By the advanced analysis algorithm to catch the abnormalities in dynamic changing pattern of fingerprints images, and several static features showing liveness or unnaturalness of fingers, fake fingers are clearly distinguished from those of live fingers. This new LFD technology provides cheap and effective solution to protect the fingerprint system from attack via fake fingerprints.



# SFM4000 Series

## Compact size with power saving features

SFM4000 is a compact, power efficient module that is simple to integrate with various system applications. The module offers flexible supply voltage, integrated power management, small footprint, and voltage detector functions. SFM4000-is specially designed for lock and safe manufacturers look for an inexpensive, reliable biometric solution with extra low power-consumption and compact size.

- Integrated Power Control Circuit
- ISO19794-2, ANSI-378 template standard
- Serial Interface with Simple Protocol
- User-configurable 8 port digital I/O
- Single 3.3 Vdc or unregulated power source
- 256bit AES fingerprint data encryption



### SFM4000-TS4 | Capacitive Swipe Sensor

- 508 dpi resolution
- Compact sensor & board size

### SFM4020-OP | Optical Sensor

- 500 dpi resolution
- Solid sensor surface
- High quality fingerprint image





# SFM3500 Series

## Engineered to perfection, unrivaled performance

SFM3500 is a high-end standalone fingerprint module equipped with versatile external interface including RS232, RS422/485, Wiegand and LED control, readily applicable to access control applications. SFM3500 offers comprehensive functionalities and interfaces to be used as a complete standalone fingerprint access reader by itself.

- Serial Interface w/ Simple Protocol
- User-configurable I/O & LED Control
- Wiegand Input & Output
- RS232/RS422/RS485 Interfaces
- Auxiliary Communication Port



### SFM3520-OP | Optical Sensor

- 500 dpi resolution
- Solid sensor surface
- High quality fingerprint image



### SFM3530-OD | Waterproof Optical Sensor

- IP65 rated waterproof front side
- Solid and scratch-free sensor surface
- High quality fingerprint image for both dry and wet fingers



### SFM3540-OL | Secugen Optical Sensor

- 500 dpi resolution
- Solid sensor surface
- High quality fingerprint image



### SFM3550-TC | UPEK TouchChip Sensor

- Capacitive type sensor
- PerfectPrint Technology
- Reliable high quality fingerprint image

# SFM3000 Series

## Core features, world class technology

SFM3000 is a cost effective fingerprint identification module equipped with essential part for fingerprint identification and template storage. SFM3000 is suitable for most of the applications where it processes fingerprint recognition and host controller is used to handle other operations. The communication between SFM3000 and host controller is done by packet protocol through CMOS level serial interface.

- High Performance 400MHz DSP
- Fast Power-on Time
- ISO19794-2, ANSI-378 template standard
- User-configurable 8 Port Digital I/O
- Low Power Consumption
- 256bit AES fingerprint data encryption
- Serial Interface w/ Simple Protocol



### SFM3020-OP | Optical Sensor

- 500 dpi resolution
- Solid sensor surface
- High quality fingerprint image



### SFM3030-OD | Waterproof Optical Sensor

- IP65 rated waterproof front side
- Solid and scratch-free sensor surface
- High quality fingerprint image for both dry and wet fingers



### SFM3040-OL | Secugen Optical Sensor

- 500 dpi resolution
- Solid sensor surface
- High quality fingerprint image



### SFM3050-TC | UPEK TouchChip Sensor

- Capacitive type sensor
- PerfectPrint Technology
- Reliable high quality fingerprint image



### SFM3050-TC2S | UPEK StealCoat TouchChip Sensor





- IP67 rated dust and water protection
- Capacitive sensor
- Perfect Print Technology
- Reliable high quality fingerprint image

# Evaluation Kit(EVK)

Evaluation Kit is a demonstration system to enable users to evaluate the core functionality of standalone modules quickly and easily. Moreover, the Evaluation Kit provides software tools and technical documents to help users in developing application systems. The evaluation kits are available for all SFM modules.







## Evaluation Kits Specifications

	SFM3000 Series EVK	SFM3500 Series EVK	SFM4000 Series EVK	SFM5000 Series EVK
<b>Product</b>				
<b>Feature</b>				
<b>Communication Ports</b>	1 x RS232C port for PC interface	2 x RS232C ports for PC interface RS422/485 port Wiegand input/output ports User external test terminals	1 x RS232C port for PC interface	1 x RS232C port for PC interface
<b>Sensor Options</b>	Optical, Capacitive	Optical, Capacitive	Capacitive (swipe), Optical	Optical

## Common Features

<b>On-board Operation</b>	1 x Enroll button 1 x Identify button 1 x Delete button
<b>On-board UI</b>	3 x LED's Multi tone buzzer
<b>Serial Cable</b>	RS232C interface cable
<b>Power Adaptor</b>	DC 5V ( DC12V for SFM4000 - TS4)
<b>Software</b>	SFM SDK PC User Interface Program
<b>Documents</b>	Firmware Revision Notes Datasheets for modules/EVK Protocol Reference Manual SFM SDK Reference Manual EVK User Guide

## Specifications

	SFM3000 Series	SFM3500 Series	SFM4000 Series	SFM5000 Series
				
<b>Sensor Types</b>	Optical, capacitive	Optical, capacitive	Capacitive swipe, optical	Optical
<b>CPU</b>	400 MHz DSP	400 MHz DSP	400 MHz DSP	553 MHz DSP
<b>Flash Memory</b>	1 MB (expandable up to 4 MB)	4MB	Capacitive swipe: 512KB Optical: 1MB	1MB (expandable up to 4MB)
<b>EER</b>	< 0.1%	< 0.1%	< 0.1%	< 0.1%
<b>Enrollment Time</b>	800 msec	800 msec	800 msec	600 msec
<b>1:1 Verification Time</b>	800 msec	800 msec	800 msec	600 msec
<b>1:1000 Identification Time</b>	970 msec	970 msec	970 msec	760 msec
<b>Template Size</b>	256 ~ 384 bytes (configurable, 384 bytes default)	256 ~ 384 bytes (configurable, 384 bytes default)	256 ~ 384 bytes (configurable, 384 bytes default)	256 ~ 384 bytes (configurable, 384 bytes default)
<b>Template Capacity</b>	1,900 (9,500 at 4MB)	9,000	Optical : 1,900, Capacitive swipe : 300	1,900 (9,500 at 4MB)
<b>Host Communication</b>	Async. serial (3.3V CMOS level)	RS232 or RS422/485	Async. serial (3.3V CMOS level)	Async. serial (3.3V CMOS level)
<b>Aux Communication</b>	N/A	Async. serial (TTL level) or RS232	N/A	N/A
<b>Wiegand Interface</b>	N/A	1 x input port 1 x output port	N/A	N/A
<b>External I/O</b>	8 ports configurable digital I/O	3 x TTL input 3 x TTL output 3 x LED output	8 ports configurable digital I/O	8 ports configurable digital I/O
<b>Encryption</b>	256 bit AES	256 bit AES	256 bit AES	256 bit AES
<b>Supply Voltage</b>	3.3 Vdc regulated	5 Vdc regulated	3.3 Vdc regulated or 4 ~ 10 Vdc unregulated	3.3 Vdc regulated
<b>Board Size (L x W x H)</b>	55 x 40 x 8 mm	63 x 43 x 10 mm	26 x 26 x 6.4 mm	55 x 40 x 8 mm

## Sensor Selection Guide

Model	SFM3020-OP SFM3520-OP SFM4020-OP SFM5020-OP	SFM3030-OD SFM3530-OD	SFM3040-OL SFM3540-OL	SFM3050-TC1 SFM3550-TC1	SFM3050-TC2 SFM3550-TC2	SFM3050-TC2S	SFM4000-TS4	SFM5060-OH
<b>Sensor Type</b>	Optical	Optical (waterproof)	Optical (Secugen sensor)	Capacitive	Capacitive	Capacitive (Steel coated)	Capacitive (Swipe)	Optical (water proof)
<b>Resolution (dpi)</b>	500	500	500	508	508	508	508	500
<b>Sensing Area (mm)</b>	16.0 x 19.0	16.0 x 18.0	12.9 x 15.2	12.8 x 18.0	10.4 x 14.4	10.4 x 14.4	9.6 x 0.2	15.5 x 18.8
<b>Image Size (pixel)</b>	272 x 320	288 x 288	256 x 302	256 x 360	208 x 288	208 x 288	192 x 4	260 x 340

# BUSINESS HIGHLIGHTS

# SUPREMA

## Suprema at a Glance

<b>Global Business</b>	Sales network in over 110 countries worldwide with 910 customers
<b>Founded</b>	May 2000
<b>Growth</b>	Average growth rate of 61% per year (CAGR, 2006 ~ 2010)
<b>Business Area</b>	Biometric/RFID IP Access Control Fingerprint Embedded Module AFIS and Live Scanning Solution ePassport Reader and ID Solution
<b>Financial Status</b>	Listed company in South Korea's stock market (KOSDAQ) Launched Korea's 1st biometric IPO (2008)
<b>Technology</b>	Ranked top in Fingerprint Verification Competition(FVC) in 2004, 2006 and onGoing (2010) Best results at NIST MINE tests for fingerprint extractor and matcher category

## Our Advantages

- |                    |  |
|--------------------|--|
| <b>Technology</b>  | <ul style="list-style-type: none"><li>• World's best performing fingerprint algorithm</li><li>• Industry-leading international award records and certifications</li></ul>                  |
| <b>Quality</b>     | <ul style="list-style-type: none"><li>• Manufactured by world-class EMS vendors of South Korea</li><li>• Made from best quality components and materials</li></ul>                         |
| <b>Partnership</b> | <ul style="list-style-type: none"><li>• Global partner programs for training, technical supports &amp; upgrades</li><li>• Clear offering through authorized distribution channel</li></ul> |

## Awards & Certifications

Frost & Sullivan's Biometrics Company of the Year 2009  
Top Prize at Detektor International Award 2009 and 2010  
Top result in NIST MINEX tests (2008)  
FBI certification for live-scanners  
UL294 certification for access control product  
ISO 9001/14001 Qualification

## Business Growth

Revenue growth rate (CAGR) of 45% during 2007-2010  
Launched the first biometric IPO in Korea (Jul 2008)  
57% market share in the domestic market  
Named to Deloitte's Technology Fast 500 Asia Pacific in 2008 & 2009  
Shipped over 1,000,000 fingerprint products worldwide