Embedded
Fingerprint Modules

suprema

suprema
Biometrics & ID Solutions

SUPREMA
Embedded Fingerprint 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 provide 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

Product 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

SFM5000 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
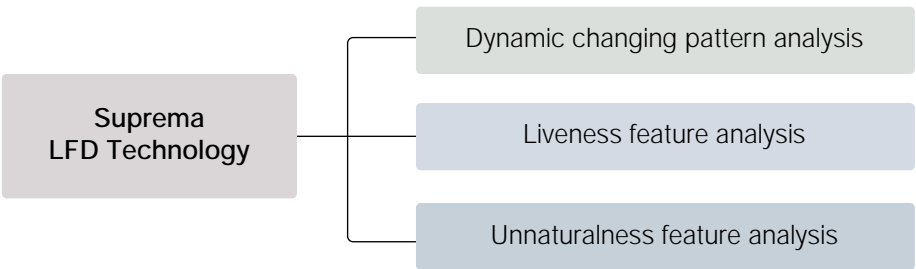- High quality fingerprint image

SFM5060-OH | Optical Sensor with LFD

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

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.

Suprema LFD Technology
- Dynamic changing pattern analysis
- Liveness feature analysis
- Unnaturalness feature analysis

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
Product Feature				
Communication Ports	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
Sensor Options	Optical, Capacitive	Optical, Capacitive	Capacitive (swipe), Optical	Optical

Common Features

On-board Operation	1 x Enroll button 1 x Identify button 1 x Delete button
On-board UI	3 x LED's Multi tone buzzer
Serial Cable	RS232C interface cable
Power Adaptor	DC 5V (DC12V for SFM4000 - TS4)
Software	SFM SDK PC User Interface Program
Documents	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
Sensor Types	Optical, capacitive	Optical, capacitive	Capacitive swipe, optical	Optical
CPU	400 MHz DSP	400 MHz DSP	400 MHz DSP	553 MHz DSP
Flash Memory	1 MB (expandable up to 4 MB)	4MB	Capacitive swipe: 512KB Optical: 1MB	1MB (expandable up to 4MB)
EER	< 0.1%	< 0.1%	< 0.1%	< 0.1%
Enrollment Time	800 msec	800 msec	800 msec	600 msec
1:1 Verification Time	800 msec	800 msec	800 msec	600 msec
1:1000 Identification Time	970 msec	970 msec	970 msec	760 msec
Template Size	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)
Template Capacity	1,900 (9,500 at 4MB)	9,000	Optical : 1,900, Capacitive swipe : 300	1,900 (9,500 at 4MB)
Host Communication	Async. serial (3.3V CMOS level)	RS232 or RS422/485	Async. serial (3.3V CMOS level)	Async. serial (3.3V CMOS level)
Aux Communication	N/A	Async. serial (TTL level) or RS232	N/A	N/A
Wiegand Interface	N/A	1 x input port 1 x output port	N/A	N/A
External I/O	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
Encryption	256 bit AES	256 bit AES	256 bit AES	256 bit AES
Supply Voltage	3.3 Vdc regulated	5 Vdc regulated	3.3Vdc regulated (optical,swipe) 4~10Vdc unregulated (swipe)	3.3 Vdc regulated
Board Size (L x W x H)	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	SFM5060-OH	SFM3050-TC1 SFM3550-TC1	SFM3050-TC2 SFM3550-TC2	SFM3050-TC2S	SFM4000-TS4
Sensor Type	Optical	Optical (waterproof)	Optical (Secugen sensor)	Optical (PIV, LFD)	Capacitive	Capacitive	Capacitive (Steel coated)	Capacitive (Swipe)
Resolution (dpi)	500	500	500	500	508	508	508	508
Sensing Area (mm)	16.0 x 19.0	16.0 x 18.0	12.9 x 15.2	15.5 x 18.8	12.8 x 18.0	10.4 x 14.4	10.4 x 14.4	9.6 x 0.2
Image Size (pixel)	272 x 320	288 x 288	256 x 302	260 x 340	256 x 360	208 x 288	208 x 288	192 x 4

BUSINESS
HIGHLIGHTS

suprema

Our Advantages

Technology
- World's best performing fingerprint algorithm
- Industry-leading international award records and certifications

Quality
- Manufactured by world-class EMS vendors of South Korea
- Made from best quality components and materials

Partnership
- Global partner programs for training, technical supports & upgrades
- Clear offering through authorized distribution channel

Suprema at a Glance

Global Business	Sales network in over 110 countries worldwide with 910 customers
Founded	May 2000
Growth	Average growth rate of 61% per year (CAGR, 2006 ~ 2010)
Business Area	Biometric/RFID IP Access Control
	Fingerprint Embedded Module
	AFIS and Live Scanning Solution
	ePassport Reader and ID Solution
Financial Status	Listed company in South Korea's stock market (KOSDAQ)
	Launched Korea's 1st biometric IPO (2008)
Technology	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

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 Qualifiaction

Business Growth

Revenue growth rate(CAGR) of 61% per year (2006 ~ 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