suprema

INNOVATION IN BIOMETRICS & SECURITY

WHY SUPREMA?

The World's Best Performing Fingerprint Algorithm

Suprema's multi-award winning fingerprint algorithm is at the heart of every Suprema fingerprint module. Suprema's highly sophisticated fingerprint technology has been recognized by numerous competitions and compliances including FBI IQS, STQC, FVC and NIST MINEX. With the world's fastest and most accurate performance, Suprema fingerprint algorithm provides unrivalled reliability and performance.

Market Leadership in Fingerprint Modules

Suprema Fingerprint Module (SFM Series) is the most reliable brand in biometric industry and one of the most widely used technologies in the world by unrivaled performance and problem-free quality. Suprema Fingerprint Module serving over 60% of the market in Americas have been chosen by more than 200 manufacturers including multi-national security companies.

The World's Most Widely Used Biometric Technology

Suprema's biometric technology is used across wide areas of applications including physical access control, public/civil ID projects, fintech, forensic science and smartphone authentication. Suprema's biometrics is one of the most widely used technologies and supports over 1 billion people globally providing protection, security and convenience.

Complete Selection of Fingerprint Sensors

Suprema provides a complete selection of sensors to fulfill different needs in various applications. Suprema Fingerprint Module offers an array of optical & capacitive sensor options providing optical, capacitive, waterproof, PIV and live fingerprint detection features.

Live Fingerprint 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 effective solution to protect the fingerprint system from attack via fake fingerprints.

Technology Leadership

Since the first introduction of SFM for decades ago, Suprema has striven to maintain market leadership by introducing innovative technologies ahead of competitors. As commitment to innovation has always been a key to our success, we invest major portion of turnover to R&D every year. With the years of expertise in biometrics, Suprema owns numerous patents and continuously introduces technology initiatives to the industry.

Product Quality & Reliability

When it comes to the technology components, our focus is on delivering the best quality modules that offers high performance and reliability throughout their lifecycle. At Suprema, our technologies comply most of global biometric standards and our operation complies ISO9001/14001 standards to ensure quality throughout the manufacturing process. Suprema operates South Korea's largest dedicated biometrics research and manufacturing facility to ensure precise quality control.


Financial Stability & Growth

For the last decades, Suprema has achieved phenomenal growth of CAGR with its innovative technologies and products. As one of the largest biometrics powerhouse in the world, Suprema's market capital exceeds US$300 million. (listed company in KOSDAQ)

SFM™ Embedded Fingerprint Module

Adding Cutting-edge Biometrics to Your Applications

Suprema Fingerprint Module is specifically designed to deliver high performance biometrics from various form-factor modules, providing huge design flexibility to manufacturers of devices of all sizes. Powered by renowned Suprema Fingerprint Algorithm and sensor technology, Suprema Fingerprint Module empowers your devices with ability to perform fingerprint recognition with unrivaled precision and efficiency.

· World's Best-selling Fingerprint Module
· Sensor Options to Meet Various Applications

· Unrivalled Precision and Robustness over Time
· Versatile Interfaces for Easy Integration
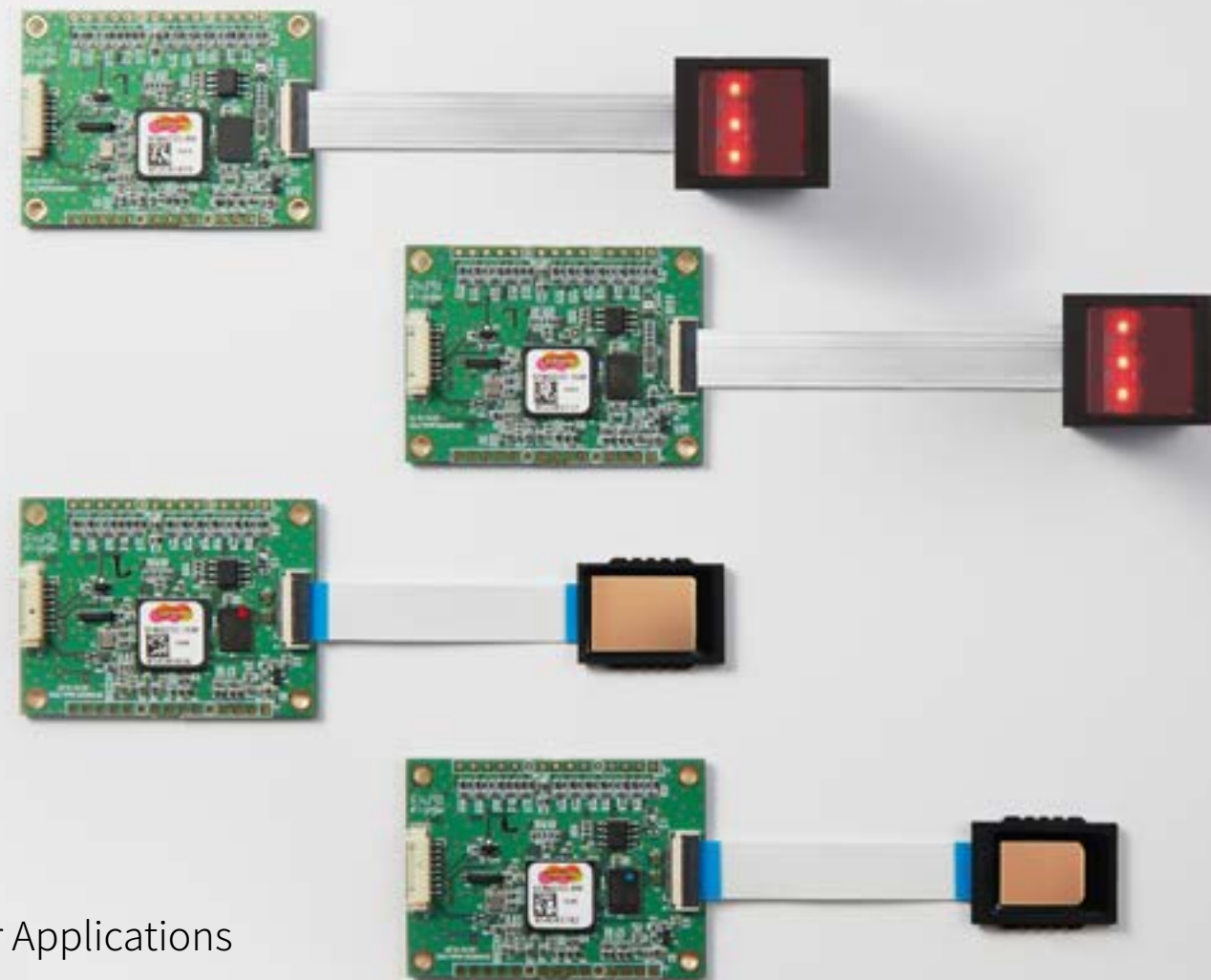
Product Overview

Suprema Fingerprint Module is designed to provide developers and manufacturers with refined biometric security solutions to integrate with various applications such as access control systems, time & attendance terminals, locks, kiosks, safes, door locks and mobile devices. Powered by the world's best multi-award winning Suprema fingerprint algorithm, Suprema Fingerprint Module offers both power and reliability synonymous to Suprema.

Smart Sensor Control	World's Best-selling Fingerprint Module	Unrivaled Precision and Robustness over time	Sensor options to meet various applications	Live Finger Detection	PIV Certified

SFM Slim
World's slimmest FAP20-certified optical module

SFM Slim is world's slimmest FAP20-certified optical module featuring an array of cutting-edge technologies. Along with its 13.5mm-slim optical sensor, SFM Slim offers you flexibility to create a new and innovative system design with its reduced form factor that will distinguish you from your competitors.

SFM6000 Series
High-end fingerprint module with powerful 1.0GHz CPU

SFM6000 Series boasts a powerful 1.0GHz CPU that empowersthe world's fastest authentication and support multiple interfaces including RS232 and USB2.0 that enhances high-speed data transfer.

SFM5500 Series
High performance fingerprint module with versatile interfaces

SFM5500 Series is a high end stand-alone fingerprint module equipped with versatile external interfaces including RS232, RS422, RS485, Wiegand and LED control, featuring a powerful 533MHz DSP for fast authentication.

SFM5000 Series
High performance fingerprint module with live finger detection

SFM5000 Series features a powerful 533MHz DSP for fast authentication and offers an FBI/FIPS201 certified sensor with built-in LFD technology making it the ideal platform for applications that require live finger detection.

SFM4000 Series
Compact fingerprint module with power saving technology

SFM4000 Series hosts Suprema's fingerprint technology in compact form factor. With its advanced power saving feature, it is ideal for applications limited by size and requiring low power consumption.

SFM3000 Series
Entry-level fingerprint module

SFM3000 Series provides a cost-effective fingerprint identification solution for developers seeking the bare essentials for fingerprint authentication and template storage.

SFM Slim · World's Slimmest FAP20 Optical Module

SFM Slim is the slimmest FAP20-certified optical fingerprint module featuring an array of cutting-edge technologies.
Along with its 13.5mm-slim optical sensor and Suprema's CDE (Conformance Decision Engine) technology that captures an optimal fingerprint image for all the finger types, SFM Slim offers you flexibility to create a new and innovative system design with its reduced form factor at a whole new level of performance that will distinguish you from your competitors. Powered by a state-of-the-art 1GHz CPU, MINEX-certified algorithm and 256-bit AES fingerprint data encryption, SFM Slim also features best-in-class performance (5,000 match/ sec) and FBI PIV-compliance with the highest level security. SFM Slim provides new and advanced Live Finger Detection (LFD) technology by applying a machine-learning method that analyzes and categorizes image patterns according to optical characteristics.

Key Features

- 13.5mm super slim size formfactor
- Powerful 1.0GHz (MIps) CPU and matching speed (5,000 Template match/Second)
- FBI PIV FAP20-certified optical fingerprint sensor
- Storing max 22,000 templates
- UART, USB 2.0 high speed support
- Operates under direct sunlight by Suprema CDE (Conformance Decision Engine)
- Enhanced fingerprint data security (Private key assignable to template and database)
- Windows, Linux, and Android OS support
- SFM SDK for easy application development
- Live Fingerprint Detection (LFD) technology by Deep Learning Technology

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SFM6000 Series · Ultra High-end performance powered by 1.0GHz CPU

SFM6000 Series boasts a powerful 1.0GHz CPU that empowers the worlds' fastest authentication, supporting multiple interfaces including RS232 and USB2.0 that allows high-speed data transfer. With enlarged template capacity up to 25,000 templates, SFM6000 Series is the perfect solution for a large-scaled yet fast authentication.

- Powerful 1.0Ghz CPU
- Storing Max 25,000 Templates (16MB version)
- USB 2.0 Support
- Fast Power-on Time

- 8 Configurable Digital I/O Ports
- 1:1,000 Identification in 400ms and / 1:1 Verification in 330ms
- Android OS Support

- Suprema, ISO19794-2, ANSI378
- WSQ Image Compression Algorithm certified by FBI
- 256-bit AES Fingerprint Data Encryption

SFM6020-OP l Optical Sensor

- IP65 rated optical fingerprint sensor
- Waterproof and scratch-free sensor surface
- Reliable High quality fingerprint image for wet & dry fingers
- Sensor surface optimized to capture the ideal fingerprint image
- Backward compatible to SFM5020-OP

SFM6030-OC l Optical Sensor

- IP65 rated optical fingerprint sensor
- Waterproof and scratch-free sensor surface
- Reliable High quality fingerprint image for wet & dry fingers
- Sensor surface optimized to capture the ideal fingerprint image
- Backward compatible to SFM5030-OC

SFM6050-T2S l SteelCoated Capacitive Sensor

- Capacitive type sensor
- IP67-rated sensor surface with high durability
- 3 time-stronger abrasion resistance compared to TC2S sensor
- Reliable high quality fingerprint image
- Backward compatible to SFM3050-TC2S

SFM5500 Series Engineered to perfection, unrivaled performance

SFM5500 Series is a high-end standalone fingerprint module equipped with versatile external interface including RS232, RS422/485, Wiegand, Digital I/O and LED Control, readily applicable to access control applications. SFM5500 Series offers comprehensive functionalities and interfaces to be used as a complete standalone fingerprint access reader by itself.

· Powerful 533MHz DSP
· 1:1 Verification in 550ms
· Fast Power-on Time
· Configurable Digital I/O and LED Control Ports

· Wiegand Input & Output Ports
· Auxiliary Communication Ports
· 1:1,000 Identification in 700ms
· Suprema, ISO19794-2 and ANSI 378 Template Options

· WSQ Image Compression Algorithm certified by FBI
· 256-bit AES Fingerprint Data Encryption
· 8MB Flash Memory Option
· RS232, RS422/RS485 Host Communication

SFM5520-OP | Optical Sensor

· IP65 rated optical fingerprint sensor
· Waterproof and scratch-free sensor surface
· Reliable High quality fingerprint image for wet & dry fingers
· Sensor surface optimized to capture the ideal fingerprint image

SFM5530-OC | Optical Sensor

· IP65 rated optical fingerprint sensor
· Waterproof and scratch-free sensor surface
· Reliable High quality fingerprint image for wet & dry fingers
· Sensor surface optimized to capture the ideal fingerprint image

SFM5550-TC | Capacitive Sensor

· TouchChip Capacitive sensor
· PerfectPrint Technology
· Reliable high quality fingerprint image

SFM5000 Series Optimized for performance, minimizing power consumption

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

· Powerful 533MHz DSP
· 1:1,000 Identification in 760ms
· 1:1 Verification in 600ms

· Suprema, ISO19794-2 and ANSI 378 Template Options
· Fast Power-on Time
· 256-bit AES Fingerprint Data Encryption

· 8 Configurable Digital I/O Ports
· 4MB Flash Memory Option

SFM5020-OP | Optical Sensor

· IP65 rated optical fingerprint sensor
· Waterproof and scratch-free sensor surface
· Reliable High quality fingerprint image for wet & dry fingers
· Sensor surface optimized to capture the ideal fingerprint image

SFM5030-OC | Optical Sensor

· IP65 rated optical fingerprint sensor
· Waterproof and scratch-free sensor surface
· Reliable High quality fingerprint image for wet & dry fingers
· Sensor surface optimized to capture the ideal fingerprint image

SFM5060-OH | Optical Sensor with LFD

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

Suprema LFD Technology
- Dynamic changing pattern analysis
- Liveness feature analysis
- Unnaturalness feature analysis
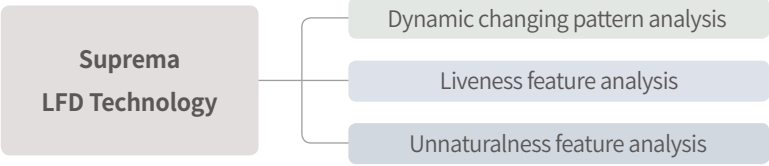
SFM4000 Series
Compact size with power saving features

SFM4000 Series 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 Series is specially designed for lock and safe manufacturers who look for an inexpensive, reliable biometric solution with extra low power-consumption and compact size.

· Integrated Power Control Circuit
· Suprema, ISO19794-2 and ANSI 378 Template Options
· Serial Interface with Simple Protocol
· 4 Configurable Digital I/O Ports
· Single 3.3 VDC Regulated Power Source
· 256-bit AES Fingerprint Data Encryption

SFM4020-OP | Optical Sensor

· IP65 rated optical fingerprint sensor
· Waterproof and scratch-free sensor surface
· Reliable High quality fingerprint image for wet & dry fingers
· Sensor surface optimized to capture the ideal fingerprint image

SFM3000 Series Core features, world class technology

SFM3000 Series is a cost effective fingerprint identification module equipped with essential part for fingerprint identification and template storage. SFM3000 Series 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 Series and host controller is done by packet protocol through serial interface.

· High Performance 400MHz DSP
· Fast Power-on Time
· Suprema, ISO19794-2 and ANSI 378 Template Options
· 8 Configurable Digital I/O Ports

· Low Power Consumption
· 256-bit AES Fingerprint Data Encryption
· Serial Interface w / Simple Protocol

SFM3050-TC | Capacitive Sensor

· TouchChip Capacitive sensor
· PerfectPrint Technology
· Reliable high quality fingerprint image

SFM3050-TC2S | SteelCoated Capacitive Sensor

· IP67 rated dust and water protection
· TouchChip 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 models.

SPECIFICATIONS

	SFM6000/5000/3000 EVK		SFM5500 EVK	SFM4000 EVK
Product				
Communication Ports	RS232 and USB2.0 (SFM6000 only)		RS232 or RS422/485 for PC interface Auxiliary Communication Port Multiple external I/O test terminals	RS232 for PC interface Multiple external I/O test terminals
Sensor Options	Optical, Capacitive		Optical, Capacitive	Optical

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
Cable	RS232/USB2.0 (SFM6000 only) interface
Power Adaptor	5 VDC
SDK and Utilities	Unifinger SFM SDK, PC user interface program, UniFinger application UI source code
Documents	Firmware revision notes, Datasheets for modules/EVK, Protocol reference manual SFM SDK reference manual, EVK user guide

Specifications						
Model	SFM Slim	SFM6000 Series	SFM5500 Series	SFM5000 Series	SFM4000 Series	SFM3000 Series
Sensor Option	Optical	Optical, Capacitive	Optical, Capacitive	Optical	Optical	Capacitive
CPU Performance	1.0Ghz (MIPs)	1.0GHZ(MIPs)	533MHz	533MHz	400MHz	400MHz
Flash Memory	16MB	8MB/16MB	4MB (8MB Option)	1 MB (4MB Option)	1 MB	1 MB (4MB Option)
EER	< 0.08%	< 0.08%	< 0.1%	< 0.1%	< 0.1%	< 0.1%
Enrollment Time (Sensor Dependent)	< 500 ms	< 300 ms (Optical) < 250 ms (CapacitiveT2S)	< 550 ms (Optical) < 600 ms (Capacitive TC1) < 410 ms (Capacitive TC2)	< 600 ms (Optical)	< 800 ms (Optical)	< 800 ms (Capacitive TC1)
1:1 Verification Time (Sensor Dependent)	< 530 ms	< 330 ms (Optical) < 250 ms (CapacitiveT2S)	< 550 ms (Optical) < 600 ms (Capacitive TC1) < 410 ms (Capacitive TC2)	< 600 ms (Optical)	< 800 ms (Optical)	< 500 ms (Capacitive TC2 & TC2S)
1:1000 ID Time* (Sensor Dependent)	< 550 ms	< 400 ms (Optical) < 320 ms (CapacitiveT2S)	< 700 ms (Optical) < 740 ms (Capacitive TC1) < 550 ms (Capacitive TC2)	< 760 ms (Optical)	< 970 ms (Optical)	< 970 ms (Capacitive TC1) < 640 ms (Capacitive TC2 & TC2S)
Template Type	Suprema, ISO19794-2, ANSI 378	Suprema, ISO19794-2, ANSI 378	Suprema, ISO19794-2, ANSI 378	Suprema, ISO19794-2, ANSI 378	Suprema, ISO19794-2, ANSI 378	Suprema, ISO19794-2, ANSI 378
Template Size	Default: 384 Bytes 256- 384 (Configurable)	Default: 384 Bytes 256- 384 (Configurable)	Default: 384 Bytes 256 - 384 Bytes (Configurable)	Default: 384 Bytes 256 - 384 Bytes(Configurable)	Default: 384 Bytes 256 - 384 Bytes (Configurable)	Default: 384 Bytes 256 - 384 Bytes (Configurable)
Template Capacity	22,000 @ 16MB Flash	5,000 @ 8MB Flash 25,000 @ 16MB Flash	9,000 @ 4 MB Flash 19,000 @ 8MB Flash	1,900 @ 1MB Flash 9,500 @ 4MB Flash	1,900 @ 1MB Flash	1,900 @ 1MB Flash 9,500 @ 4MB Flash
Log Capacity	N/A	N/A	12,800	N/A	N/A	N/A
Host Communication	Asynchronous serial: CMOS level(3.3V) up to 921600 bps USB2.0 (up to 2M bps)	Asynchronous serial: CMOS level(3.3V) up to 921600 bps USB2.0 (up to 2M bps)	RS232 or RS422/485 up to 460800 bps	Asynchronous serial: CMOS level (3.3V) up to 460800 bps	Asynchronous serial: CMOS level (3.3V) up to 460800 bps	Asynchronous serial: CMOS level (3.3V) up to 460800 bps
Aux Communication	N/A	N/A	Async. Serial: RS232 or CMOS level up to 460800 bps	N/A	N/A	N/A
Wiegand Interface	N/A	N/A	1x Wiegand Input, 1x Wiegand Output	N/A	N/A	N/A
External I/O	N/A	8x Digital I/O	3x Digital Inputs, 3x Digital Outputs, 3x LED Outputs	8x Digital I/O	4x Digital I/O	8x Digital I/O
Encryption (Fingerprint Data)	256-bit AES	256-bit AES	256-bit AES	256-bit AES	256-bit AES	256-bit AES
Supply Voltage	3.3/5.0VDC Regulated	3.3/5.0VDC Regulated	5 VDC Regulated	3.3 VDC Regulated	3.3 VDC Regulated	3.3 VDC Regulated
Board Size (L x W x H) (mm)	59x32x13.5 (On-Board)	55x40x8	63 x 43 x 10	55 x 40 x 8	26 x 26 x 6.4	55 x 40 x 8

* Average genuine identification time including feature extraction

MEMO

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