

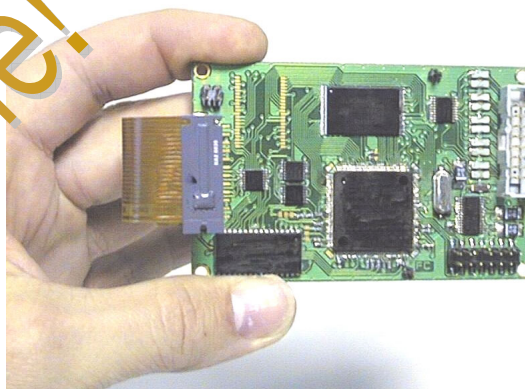
BiMODULE®

GENERAL DESCRIPTION

BIOMODULE® is designed for easy integration of fingerprint recognition functionality in any application.

MAIN FEATURES

- 500 dpi FingerChip™ based imaging system.
- Enrolment and verification processes.
- "1 to 1" verification and "1 to Many" Authentication.
- Reference templates stored inside encrypted FlashEPROM.
- Fingerprint Database Management for 500 up to 5000 users.
- False Rejection Rate (FRR): 1.5% max.
- False Acceptation Rate (FAR): 0,001% max.
- Security functions.
- 5V and 3,3V supply version.
- Easy embedded software upgrade and maintenance.
- Popular Asynchronous or SPI™ Synchronous serial communication interface.
- Full secured communication with host.



APPLICATION DOMAINS

Access control.

Miscellaneous identity verification or authentication.

Any Biometrics secured applications.

INDUSTRIES

INTEGRATORS

INVENTORS

MANUFACTURERS



BASIC OPERATION

Enrolment

First, all users' fingerprints, for one or more fingers, must be registered and stored inside BioModule®. This operation, called "Enrolment" is done by sweeping the chosen finger on the thermal sensor at least one time. Custom secret data can be associated with a user. Enrolment process must be performed by an administrator identified by his own fingerprint or by a special authorization key.

This operation is done only once for new user.

Authentication

When authentication is needed, the user sweeps a finger on the sensor. Then, the BioModule® compares the fingerprint with its internal encrypted fingerprint database. If this fingerprint matches an enrolled fingerprint, then access is granted and the secret data of this user is returned by the BioModule® to his host.

FEATURES

Security

- Encrypted storage for parameters, fingerprint and secret data.
- Encrypted communication between BioModule® and host.

Fingerprint Database

- Up to 500 users per BioModule®.
- Up to 4 fingerprints per user.
- 256 bytes of custom data per user.
- Database management operation.
- Complete encryption of all information.

Human Interface

- Connector for optional bicolour LED (Red/Green) for biometrics operations.

Communication Interface

- Standard Asynchronous serial port (TTL level) at 115200 bauds.
- Standard slave SPI™ Synchronous Serial port with clock up to 4 MHz.
- Standard male HE10 16 pins connector for easy parallel stacking with host board.
- Possible ribbon cable connection (max 20 cm).

Communication Protocol with Host

- Proprietary ID3NET™ protocol.
- Half duplex Master-Slave Multi-Drop protocol.
- Encrypted communication with host.
- Small code and data footprint for low resource microprocessor.

Maintenance

- Easy embedded software upgrade by host using FlashEPROM storage.
- Embedded software encryption in FlashEPROM.

BIOMETRICS

- 500 dpi FingerChip™ based imaging system.
- Finger motion speed : 40 cm/s max.
- False Rejection Rate (FRR): 1.5% max.
- False Acceptation Rate (FAR): 0,001% max.
- Matching time : 50 ms max. per verification.
- Enrolment time : 2s max. after the fourth sweep.

GENERAL SPECIFICATIONS

Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute maximum-rated conditions for extended periods may affect device reliability.

5V power supply

Absolute Maximum Ratings

Signal	Characteristics	Min.	Max.	Unit
VCC	Power supply	-0,5	7	V
Vi	Input voltage range	-0,5	7	V
OT	Operating Temperature	0	+50	°C
ST	Storage Temperature	-10	+70	°C

Recommended Operating Conditions

Signal	Characteristics	Min.	Nom.	Max.	Unit
VCC	Power supply	4,5	5	5,5	V
Vih	High level Input voltage	2,0		VCC+0,7	V
Vil	Low level Input voltage	-0,3		0,8	V

3,3V power supply

Absolute Maximum Ratings

Signal	Characteristics	Min.	Max.	Unit
VCC	Power supply	-0,3	4,5	V
Vi	Input voltage range	-0,3	4,5	V
OT	Operating Temperature	0	+50	°C
ST	Storage Temperature	-10	+70	°C

Recommended Operating Conditions

Signal	Characteristics	Min.	Nom.	Max.	Unit
VCC	Power supply	3,0	3,3	3,6	V
Vih	High level Input voltage	2,0		VCC+0,7	V
Vil	Low level Input voltage	-0,3		0,8	V

5V power supply

Mode	Typical Consumption	Typical Operating Delay
Execution	40mA	Immediate
Stand-by	10mA	3s
Disabled	<1mA	10s
Sensor Heating*	+80mA	Not Applicable

* Must be summed with typical execution consumption.

3,3V power supply

Mode	Typical Consumption	Typical Operating Delay
Execution	40mA	Immediate
Stand-by	10mA	3s
Disabled	<1mA	10s
Sensor Heating*	+80mA	Not Applicable

* Must be summed with typical execution consumption.

Reliability

Electronics : 50,000 hours min / 5 years at 25 °C.

Sensor : >1 million finger sweeps.

Regulatory Approvals

EN55022 class B (conducted noise only).

EN61000-4 level IV (ESD air discharge 15kV / contact 8kV on sensor).

Mechanical specifications

Width 15,0mm

Length 85,6mm

Height 54,1mm

Development TOOLS

Development kit for BioModule® containing a host board and a communication software helps designers to evaluate and develop custom applications. Please refer to separate datasheet for additional information.

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