

DUAL TECHNOLOGY SMART CARD

Hybrid contactless MIFARE[®] smart card embedded with a contact micro/cryptoprocessor smart card chip



(This is a transparent view of a MIFARE card embedded with a contact chip.)

This hybrid smart card is the ultimate smart card solution if you are looking to build a smart card based system infrastructure. The smart card has been around for decades, but has just begun to work its way into technical culture on this side of the Atlantic. The need for increased security and e-identity has been a catalyst for smart card technology in the U.S.

Two smart card technologies are in use today: contact and contactless. Both technologies have their own application niches. To make sure that you develop the most flexible smart card based system, you need to evaluate both contact and contactless technologies.

This hybrid smart card has a powerful micro/cryptoprocessor chip embedded on a contactless MIFARE smart card body. A hybrid card is a combination of two or more card-based technologies built into a single card, operating independently of each other. This combination makes it the most flexible smart card in the industry. Since insertion smart card applications have dominated computer network logical access (automatic PC login), secured email, medical records, and many point-of-sale applications, contact is the technology of choice. However, in environments where the insertion of a smart card is not ergonomically feasible or because of time and durability issues, contactless is the smart card technology of choice.

To help determine if a hybrid smart card is your best solution, first consider whether you plan on using the card for physical access control, time and attendance, and/or in an automatic fare-collection system. These are the three primary card-based systems using contactless smart card technology. If any of the three are in your plan, the ergonomic usage of the smart card must be evaluated: *physically inserting the smart card into a card reader versus merely holding the smart card up near a reader*. If the insertion option is not acceptable in any of the applied smart card solutions, then contactless technology will need to be added to your standard contact smart card configuration.



A hybrid card can also include other card technologies such as bar code and magnetic stripe.

MIFARE

8K MIFARE Smart Card

Each card has two 48-bit diversified keys and its own access conditions to ensure security between different applications. That way, the same card can be used for multiple applications such as physical access, time and attendance, and mass transit automatic fare and toll collections. Additional security features include replay-attack protection and a three-pass handshake, which manages the mutual authentication between the card and the reader. MIFARE's fast anticollision algorithm allows more than one card to be processed by the reader at the same time, avoiding data corruption and fraud. Each card also has a unique serial number so that it can be identified at any moment. MIFARE communicates on the 13.56 MHz carrier frequency according to the ISO 14443-Type A standard and the MIFARE protocol, allowing it to be used with the vast majority of contactless card readers.

Card durability

This MIFARE card has a high-quality laminated polycarbonate (PC) card body with a thermal printable overlay. This combination provides high resistance under harsh environmental conditions while offering enhanced quality printing. The use of PC results in an expanded temperature range that gives this card a further advantage in the contactless card market.

Technical specifications

- 8 Kbit EEPROM memory divided into 16 sectors
- Operating frequency: 13.56 MHz
- ISO 14443-Type A compliant
- ISO 7816 card dimensions
- More than 100,000 write cycles possible per sector
- Typical transaction time: 100 milliseconds (transport standard)
- Distance range: 10 cm with reference reader

Security features

- Up to 16 separately-secured applications
- Each sector has two 48-bit diversified keys and its own access conditions
- Replay-attack protection and mutual 3-pass authentication procedure
- Unique fast anticollision algorithm
- MIFARE protocol

Card body

- High resistance laminated PC card body with thermal printable PVC overlay
- Temperature range: -50°C/-58°F to +110°C/230°F
- Embossing area
- Optional magnetic stripe and signature panel
- Ink-jet or laser-printed personalized numbering
- High-quality offset printing

Cryptoflex® Contact Chip

A unique level of security

The Cryptoflex operating system uses the DES, Triple-DES and RSA algorithms of the cryptoprocessor to protect your application's data. Cryptoflex's highly advanced command set, which includes an authentication process, secret-code management, and electronic signature, ensures total integrity at the heart of your application. The use of 1024-bit RSA keys guarantees fail-safe security. Cryptoflex offers the ideal solution for protecting your electronic transactions.

A major technological advance:

Key management

Cryptoflex comprises a microprocessor and mathematical cryptoprocessor, bringing you all the benefits of the latest generation of smart cards. Cryptoflex offers a secure database – with binary, linear, variable linear and cyclical files – that can be used for applications such as identity or health cards, or for computer network security. Its calculating power enables the latest public key algorithms to be used, greatly facilitating the management of keys at a system level. With its command set compliant with ISO 7816-1/2/3/4 international standards, Cryptoflex offers all the most recent technological advances in smart card technology.

Launch your application

Cryptoflex can adapt entirely to your specifications due to its dynamic and logical-memory management system using directories, sub-directories and so on. Its compliance with the ISO 7814-4 standard makes Cryptoflex the ideal platform for managing several applications in total security.

Technical specifications

Components

- Microprocessor and Cryptoprocessor
- 4Kbytes EEPROM
- Single 5V-power supply
- 10-year data retention

Card body

- High-resistance laminated PC card body with thermal printable PVC overlay
- Temperature range: -50°C/58°F to +110°C/230°F
- Embossing area
- Optional magnetic stripe and signature panel
- Ink-jet or laser-printed personalized numbering
- High-quality offset printing



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PHYSICAL ACCESS CONTROL READER

Programmable MIFARE[®] Contactless
Smart Card Technology



The IDenticard Programmable MIFARE (IPM) reader is designed for the organization that is planning to harness the power of smart card technology today.

An indoor/outdoor smart card reader, it uses contactless programmable MIFARE technology to communicate with a MIFARE-compatible smart card.

The programmable features of this IPM reader allow it to be set up in a variety of Wiegand formats as well as ABA. It reads a unique number that is programmed on the card and protected by a very secure set of encryption keys.

Security is the number one benefit of programmable MIFARE technology, and ergonomics is a close second. With programmable MIFARE, the reader and cards are programmed with a unique site code. Only MIFARE readers with the same set of encryption keys and site code can read the card number. MIFARE technology does not require the smart card to come in contact with the reader, and the card is read in milliseconds.

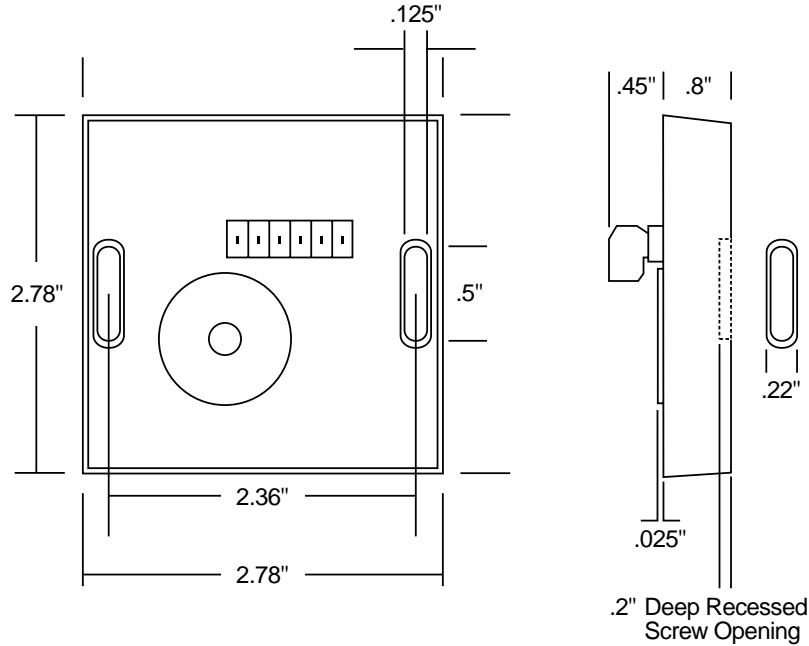
For applications requiring both MIFARE and contact smart card technologies, a hybrid smart card that combines both formats on a single card can be used.



PROGRAMMABLE MIFARE® CONTACTLESS SMART CARD READER

Description

The IDenticard® Programmable MIFARE (IPM) Contactless Smart Card Reader is programmed with encrypted keys and a site code. **Contactless** technology means that the card does not need to actually come in physical contact with reader, much like a standard proximity reader. The IPM reader reads a unique number that is programmed on the card and is protected by a very secure set of encryption keys.



There are three LEDs and a buzzer in the unit. A yellow LED and a buzzer indicate a successful card read. A green LED indicates access granted, while a red LED indicates that access is denied.

Specifications

Outputs	Programmable in specified Wiegand and ABA formats
Cable requirements	6-conductor, 20 AWG, stranded, maximum diameter of individual wire: 0.059 inch (1.5 mm). The cable is connected to a 6-pin connector that plugs into the back of the reader.
Power requirements	The reader uses 5.0 VDC at 50-80 mA
Temperature	Operating temperature: 0-50°C (32-122°F) Storage temperature: 10-70°C (50-158°F)
Reading distance	Minimum: 0.394 inch (10 mm) Maximum: 1.181 inch (30 mm) Typical: 0.787 inch (20 mm)
Operating frequency and speed	13.56 MHz at 106k baud
Data structure	In accordance with ISO 781112-1986, Track 2; data is encrypted and protected against recording and "replay-attack."
Reader housing	Black ABS plastic housing; dimensions without connectors: 2.795" W x 2.795" H x 0.827" D (71 mm x 71 mm x 21 mm)



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