

**Next-Generation High-Frequency Contactless Smart Card
PVC Cards 300X
Composite PVC/PET cards 305X**

- **Supports Secure Identity Object™ (SIO)** – Multi-layered security beyond the card technology, providing added protection to identity data.
- **Trusted Identity Platform™ (TIP) enabled** – Provides trusted identity within a secure ecosystem of interoperable products.
- **Supports future growth** – iCLASS® 13.56 MHz read/write contactless smart card technology with multiple, securely separated files enables multiple applications for future growth.
- **Flexible configurations** – Available in 2k bit, 16k bit or 32k bit with ability to add a magnetic stripe/barcode and anti-counterfeiting features (custom artwork and photo ID).

HID Global SIOs deliver three key benefits: portability, security and extensibility.

- SIOs are defined using open standards that can support any piece of data, including data for access control, biometrics, PC logon, and many other applications.

Building on the success of the flagship iCLASS® standard for 13.56 MHz contactless smart card technology, HID Global's new access control platform goes beyond the traditional smart card model to offer a secure, standards-based, technology-independent and flexible identity data structure based on Secure Identity Object (SIO), a new HID portable credential methodology.

iCLASS SIO-Enabled (iCLASS® SE™) smart cards are part of the next-generation iCLASS SE access control platform and open ecosystem based on HID's Trusted Identity Platform (TIP) architecture for advanced applications, mobility and heightened security.

iCLASS was specifically designed to make access control more powerful, more versatile, and more secure, with encryption for all radio frequency data transmission between the credential and reader using a secure algorithm. iCLASS SE extends this technology by providing additional key diversification, authentication, encryption and portability for advanced security and performance.

HID's iCLASS SE 13.56 MHz read/write contactless smart card technology can be used for diverse applications such as physical access control, PC logon, biometric verification, time and attendance, cashless vending, public transportation, airline ticketing and customer loyalty programs.



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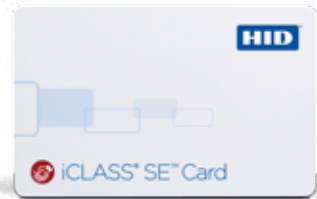
iCLASS® SE™ SMART CARD TECHNOLOGY FEATURES

- 13.56 MHz read/write contactless smart card technology for high-speed, reliable communications with high data integrity.
- Meets ISO 15693/14443B for contactless communications.
- Proven Technology - Offers consistent read range not affected by body shielding or variable environmental conditions.
- Multiple securely separated application areas are each protected by 64-bit diversified read/write keys that allow complex applications and provide for future expansion.
- Durability - Passive, no-battery design allows for an estimated minimum 100,000 reads. Strong, flexible, and resistant to cracking and breaking.
- Ordering Options - Magnetic stripe, external card numbering, custom artwork and contact smart chip module.

- Photo ID Compatible - Print directly to the card with a direct image or thermal transfer printer.

HIGHER SECURITY

- Trusted Identity Platform (TIP) Enabled - Provides trusted identity within a secure ecosystem of interoperable products.
- Multi-Layered Security - Ensures data authenticity and privacy through the multi-layered security of HID's SIO.
- SIO Data Binding - Inhibits data cloning by binding an object to a specific credential.
- Mutual authentication, encrypted data transfer, and 64-bit diversified keys for read/write capabilities.
- Expanded iCLASS Elite™ Program - Extends private security by protecting uniquely keyed credentials, SIOs and programming update keys.



SPECIFICATIONS

	PVC	Composite	Technology
Base Part Number	3000	3050	2k bit (256 Byte) card
	3001	3051	16k bit (2k Byte) card with 2 application areas
	3002	3052	16k bit (2k Byte) card with 16 application areas
	3003	3053	32k bit (4k Byte) 16k/2+16k/1
	3004	3054	32k bit (4k Byte) 16k/16 + 16k/1
Configurations	Available in 2k bit (256 Byte), 16k bit (2K Byte) or 32k bit (4K Byte) configurations.		
*Card Construction	Thin, flexible polyvinyl chloride (PVC) laminate, and Composite PVC/PET		
Dimensions	2.127" x 3.375" x 0.033" max. (5.40 x 8.57 x 0.084 cm)		
Weight	0.20oz (5.7 g)		
Operating Temperature	300X PVC Cards: -40 to 122°F (-40 to 50°C) 305X Composite Cards: -40 to 158°F (-40 to 70°C)		
Operating Humidity	5-95% non-condensing		
Operating Frequency	13.56 MHz		
Transaction Time	<100 ms typical		
Baud Rate	14443 B2 mode - 212 kbps 15693 mode - 26 kbps		
Memory Type	EEPROM, read/write		
Multi-application Memory	2k bit (256 Byte) card - 1 application area 16k bit (2k Byte) card - 2 or 16 application areas 32k bit (4k Byte) card - 16k bits in 2 or 16 application areas plus 16k bits user configurable.		
Write Endurance	Min. 100,000 cycles		
Data Retention	10 years		
Typical Maximum Read Range	R10 2.0-3.0" (5.0-7.6cm) R30/RW300 2.0-3.5" (5.0-8.9cm) R40/RW400 2.5-4.5" (6.3-11.4cm) RK40/RWK400 3.0-4.0" (7.6-10.1 cm). Dependent upon installation conditions		
Options	Magnetic stripe External card numbering (inkjet or laser engraving) Vertical slot punch • Custom artwork (text or graphics)		
Operates With	Any reader that can read iCLASS® SE™ technology		
Warranty	Lifetime warranty. See complete warranty policy for details.		



DuoProx® II Card

ISO-thin, imageable proximity access card with magnetic stripe

Features:

- Offers universal compatibility with all HID proximity readers.
- Provides an external number for easy identification and control.
- Supports formats up to 85 bits, with over 137 billion codes.
- Custom pre-printed artwork available.
- Meets ISO standards for thickness; use with all direct image or thermal transfer printers.
- Accepts either a horizontal or vertical slot punch.
- Using HID's ProxProgrammer™, card vendors can ship graphics-quality proximity cards, custom programmed to their customers' requirements, from their own inventory. Enables smaller order quantities and overnight delivery. (Check with vendor for availability.)

RF-PROGRAMMABLE, 125 KHZ, CUSTOMER-SPECIFIED ID NUMBERS, LOCATIONS MARKED FOR HORIZONTAL AND VERTICAL SLOT PUNCH

- **Proven, Reliable Technology** – Offers extremely consistent read range. Unaffected by body shielding or variable environmental conditions, even when close to keys and coins.
- **Thin** – Can be carried with credit cards in a wallet or purse. Use with a strap and clip as a photo ID badge.
- **Photo ID Compatible**– Print directly to the card with a direct image or thermal transfer printer. Slot punch vertically or horizontally for easy use.
- **Cross-reference** – A cross-reference list correlating the external card number and the programmed ID number is provided for easy system administration.
- **Security** – Offers over 137 billion unique codes.
- **Long Life** – Passive, no-battery design allows for an infinite number of reads.
- **Durability** – Strong, flexible and resistant to cracking and breaking.
- **Custom Artwork** – Custom multicolor graphics and text are available. Note: custom graphics may increase overall card thickness.

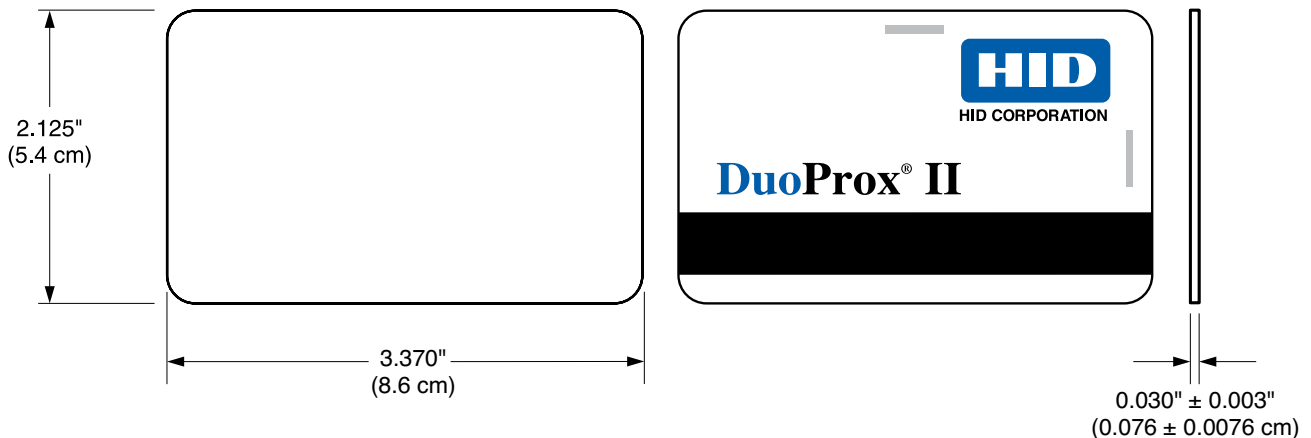
The RF-programmable DuoProx® II multiple technology proximity card offers proximity, magnetic stripe and photo identification technologies on a single access control card.

SPECIFICATIONS

DuoProx® II Card

Base Part Number	1336
Typical Maximum* Read Range	ProxPoint® Plus reader-up to 2.5" (6.35 cm) MiniProx® reader-up to 5" (12.7 cm) ThinLine II® reader-up to 5" (12.7 cm) ProxPro® reader-up to 7" (17.8 cm) ProxPro® II reader-up to 8" (20 cm) Prox80™ Card reader-up to 5" (12.7 cm) MaxiProx® reader-up to 20" (50.8 cm) EntryProx™ reader-up to 2.5" (6.35 cm) pcProx™ Desktop reader-up to 2.5" (6.35 cm)
Dimensions	2.125" x 3.370" x 0.030" ± 0.003" nominal (5.4 x 8.6 x 0.076 ± 0.0076 cm)
Construction	Thin, flexible polyvinyl chloride (PVC) laminate with an ABA standard, high coercivity magnetic stripe rated 4000 Oersted.
Operating Temperature	-50° to 160° F (-45° to 70° C)
Options	External card numbering (inkjet or laser engraving) Slot punch (horizontal or vertical) Custom artwork (text or graphics) A variety of magnetic stripe type
Weight	0.24 oz. (6.8 g)
Magnetic Stripe	Ready to be encoded by the customer. (See card construction.)
Warranty	Lifetime

NOTES:
*Dependent on local installation conditions.



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iCLASS SE® Platform

HIGH FREQUENCY SOLUTION FOR INCREASED SECURITY, PRIVACY AND PORTABILITY

- **Data confidentiality and strong authentication** – State-of-the-art cryptography providing mutual authentication and data encryption for additional protection of contactless communications between card and reader.
- **Strong privacy** – No traceable identifier exchanged during card sessions, preventing data associated to a given card from being divulged or cloned.
- **Increased interoperability** – Open, standards-based solution that supports future technologies; is portable to smartphones and other media; and can store data for multiple applications on a single card or device.
- **Technology-independent security** – Provides multi-layered security beyond the device technology with support for multiple SIOs in a single credential for individual protection of each application's identity data.
- **Trusted management and distribution of secure identities** – Provides trusted identity within iCLASS SE® platform of interoperable products.

HID Global's iCLASS® Seos™ smart card is based on a secure, standards-based technology to manage and authenticate identities. As part of the iCLASS SE platform, the card delivers enhanced security and stronger authentication for user data.

iCLASS Seos cards are ideal for organizations with stringent security requirements for their credential solution, as well as enterprise and government organizations whose identity management policies are driven by regulatory compliance. The cards deliver superior data integrity and privacy protection by leveraging the latest cryptographic algorithms. iCLASS Seos cards also utilize a secure messaging protocol to protect data transmission with the off-card applications.

Delivering maximum interoperability, iCLASS Seos cards include a standards-based application that offers a generic, universal card edge (card command interface) that is portable to multiple platforms. The solution also supports an ISO/IEC 7816-4 command set and data model that defines the supported interfaces between an iCLASS Seos card and the physical access reader.

For optimum mobility, iCLASS Seos credentials are based on an open software architecture and they are also portable to a range of micro processors and mobile devices including Near

Field Communication (NFC) smartphones. The credential is based on industry-accepted standards for contactless communication (ISO/IEC 14443). Additionally, the product can be delivered as multi-technology card that combines 125 KHz Proximity and high frequency technologies.

iCLASS Seos cards continue to raise the bar for security by leveraging HID's iCLASS SE platform (based on HID's Secure Identity Object™ [SIO] data model and Trusted Identity Platform® [TIP™]) allowing multiple SIOs to be embedded into a single credential/device. This enables applications to provide individual protected data sets for each application's identity data, in addition to high security already provided in HID's iCLASS SE platform. The credential works with HID's iCLASS SE and multiCLASS SE reader lines that can process SIO enabled data formats.

As with existing iCLASS and iCLASS SE credentials, iCLASS Seos cards are based on 13.56 MHz read/write contactless technology and can be used for multiple applications on a single credential, including physical access control, PC logon, biometric verification, time and attendance, cashless vending, public transportation, airline ticketing, customer loyalty and NFC smartphone applications.

SEOS

TECHNOLOGY FEATURES

- Secure data storage with flexible data model (file system based) using a firewalled architecture for data separation between applications.
- Supports ISO/IEC standards: 7810, 7816 and contactless cards (14443 A).
- Contactless unique identifier: 7 bytes.
- Contactless communication of speed up to 848 Kbps in the fastest ISO 14443 transmission mode.
- Generic command set based on ISO/IEC 7816-4.
- Hardware chip integrating co-processor with high performance for cryptographic calculations with symmetric keys.
- Mutual authentication protocol with either AES128/DES3 with generation of diversified session key to protect each card session.
- Card customization available (magnetic stripe, custom artwork text or graphics: Requires minimum volume quantity).

SECURITY

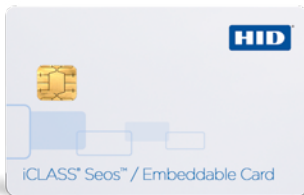
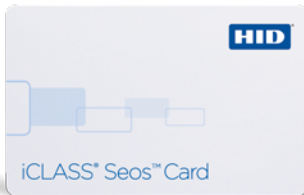
- Programmable with one or several Secure Identity Objects (SIOs) for each application.
- High resistance to common attacks (man in the middle, replay attacks and others).
- Available with anti-counterfeiting features such as holograms, holographic foil, OVI (Optical Variable Ink).

SINGLE TECHNOLOGY CONTACTLESS

- iCLASS® Seos™ with extended memory for multi-application support.
- Optionally available with other technologies such as HID Prox for simple migration.
- Leverages SIO data model and security.

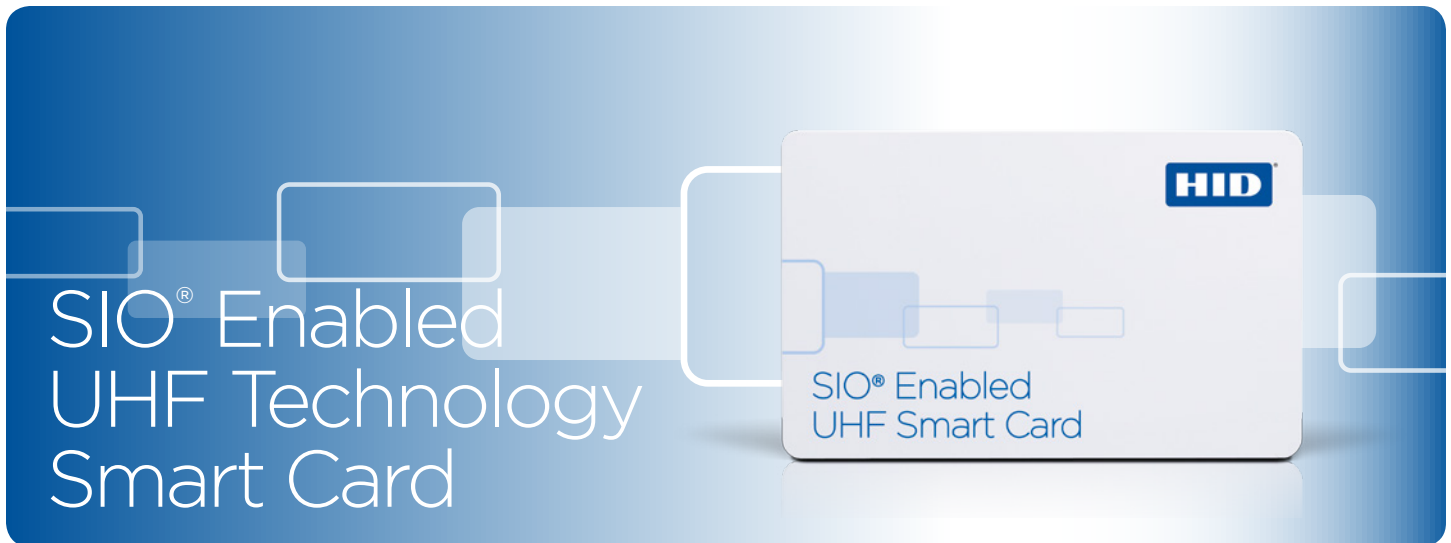
INTEROPERABILITY

- Fully supported by iCLASS SE Readers (after revision E) that can process SIO-enabled data formats.



SPECIFICATIONS

iCLASS Seos	
Base Part Number	500 for standard card 501 for embeddable card
Operating frequency	13.56 MHz with ISO/IEC 14443 Type A
Typical Maximum Read Range	3-4" (depending the reader used)
Dimensions	2.127" x 3.375" x 0.033" max (5.40 x 8.57 x 0.084 cm)
Construction	Composite with 60% PET/40% PVC
Operating Temperature	-40° to 158° F (-40° to 70° C)
Weight	0.20 oz (5.5g)
Memory Size/ Application Areas	Flexible memory allocation: 16 KB available space
Privacy Mode	Privacy-preserving mode (with encryption of device identifiers)
Secure Messaging	EN 14890-1 using AES or DES3
Mutual Authentication Mechanism	Based on ISO/IEC 24727-3 2008 with NIST SP800-56A (for session key derivation)
Write Endurance	Min 500,000 cycles
Data Retention	Min 20 years
HID Proximity	No
Contact Smart Chip Embeddable	Yes
Printable	Yes (white/white card) Usable with direct imaging and thermal transfer printers (from HID but also from other suppliers) Exclusion areas for printing may apply in some areas of the card plastic
Slot Punch	Not available
Secure Identity Services	Customized cards are available through HID Identity on demand
Visual Security Options	Optional including hologram, anti-counterfeiting, holographic foil...
Additional Security Options	Corporate 1000, Secure Identity Object (SIO) programming with SE-Elite
Warranty	Lifetime, see complete warranty policy for details



HIGHLY SECURE UHF LONG RANGE SMART CARD FOR PARKING & GATE APPLICATIONS

- FEATURES:**
- EPC Class-1 Generation-2 and ISO18000-6C compliant
 - Supports frequency ranges from 860 MHz to 960 MHz
 - Card memory has a 50-year data retention capability and 100,000 cycle endurance

- **Impressive read range** - Ultra high frequency (UHF) technology can be read from a distance of up to five meters depending on frequency, reader and environment.
- **Highly secure** - Secure Identity Object® (SIO®) enabled, for multi-layered security beyond the card technology, protecting identity data from unauthorized access.
- **Reliable** - Able to withstand 100,000 write cycles for high read/write reliability and a long use life.
- **Cost effective** - Passive no-battery design does not require maintenance

The SIO Enabled UHF Smart Card is an extension of the iCLASS SE® platform, providing a secure ultra high frequency (UHF) long range parking and gate control solution. The UHF card can be read from distances of up to five meters for long range identification.

The SIO Enabled UHF Smart Card is the most secure UHF credential available. The reader issues a password to obtain access to protected areas of the tag's memory for safe storage of confidential or business-sensitive data in the tag's user memory.

In addition to this security measure, HID Global's Secure Identity Object (SIO) data model adds a layer of encryption and authentication for advanced security and performance.

The smart card is cost effective, due to the underlying passive UHF technology. The card does not contain a battery. Powered by the reader, the SIO Enabled UHF Smart Card eliminates the need for battery maintenance.

The solution offers secure contactless read/write smart card technology along with the ability to add anti-counterfeiting features. These features include custom artwork or photo identification imprinted directly on the card.

The SIO Enabled UHF Smart Card meets strict ISO standards for thickness and can be used with high definition printers. It is strong, flexible and resistant to cracking and breaking.

UHF CARD FEATURES:

- Ultra high frequency read/write contactless smart card technology for long range, reliable communications with high data integrity.
- Based on EPC (Electronic Product Code) Radio Frequency Identity Protocols Class-1 Generation-2 UHF RFID Protocol for Communications at 860 MHz - 960 MHz
- Uses logical protection (access password) to prevent unauthorized access to the memory.
- Passive, no-battery design allows for large number of reads. Strong and resistant to damage.

SPECIFICATIONS

Base Part Number	600 - Composite PET/PVC Card
Description	UHF Contactless Smart Card
Card Construction	Composite 40% Polyester / 60% PVC
Dimensions	2.127" x 3.375" x 0.033" max. (5.40 x 8.57 x 0.084 cm)
Weight	0.20 oz (5.7 g)
Operating Temperature	-40° to 158° F (-40° to 70° C)
Operating Humidity	5 - 95% non-condensing
Operating Frequency	860 - 960 MHz
RF Interface	As suggested by ISO18000-6C and EPC Class-1 Gen-2
Baud Rate¹	Reader to card data rate: 26.7Kbit/s ->128Kbit/s Card to reader data rate: 40Kbits/s -> 640Kbit/s
Memory Type	Non-volatile memory (NVM), read/write
Data Retention	100,000 cycles
Write Endurance	50 years
SIO Enabled Memory Specification	512 bit of user memory to store a PACS SIO
Typical Read Range	Up to 5 meters - depends on installation conditions
Card Marking²	Laser engraving
Custom Graphics	Optional
Operates with	iCLASS SE U90 Reader
Warranty	Lifetime warranty. See complete warranty policy for details.

1 Encoding choice and data rate are configured by the reader.

2 High definition re-transfer printing is the ONLY recommended print process for the SIO enabled UHF Technology Smart Card. Use of direct to card or other printing processes will not produce acceptable results.



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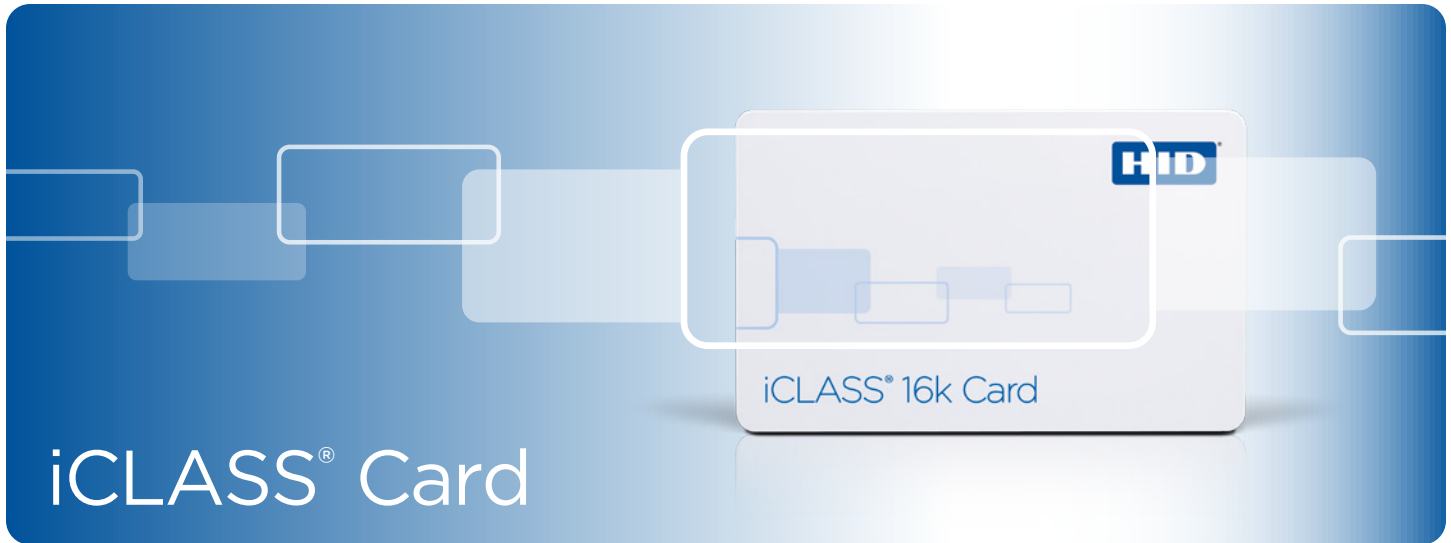
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**CONTACTLESS SMART CARD
PVC CARDS 2000, 2001, 2002, 2003, 2004
COMPOSITE PVC/PET CARDS 2100, 2101, 2102, 2103, 2104**

- **Proven, Reliable Technology** – Offers extremely consistent read range. Unaffected by body shielding or variable environmental conditions.
- **Thin** – Can be carried with credit cards in a wallet or purse. Use with a strap and clip as a photo ID badge.
- **Long Life** – Passive, no-battery design allows for an estimated minimum 100,000 reads.
- **Durable** – Strong, flexible, and resistant to cracking and breaking.

HID's iCLASS® 13.56 MHz read/write contactless smart card technology can be used for diverse applications such as access control, biometrics, cashless vending, public transportation, airline ticketing and customer loyalty programs. Multiple, securely separated files enable numerous applications and support future growth.

The iCLASS Card offers iCLASS 13.56 MHz contactless read/write smart card technology along the ability to add a magnetic stripe, barcode, and anti-counterfeiting features including custom artwork or a photo identification directly on the credential. Your iCLASS Card can now be utilized for such diverse applications including access control, network log-on security, automotive vehicle identification, cashless vending, time and attendance, and biometric verification. Multiple securely separated files enable numerous applications and can support future capabilities. The iCLASS Card meets strict ISO thickness standards for use with direct image and thermal transfer printers.

iCLASS® was specifically designed to make access control more powerful, more versatile, and more secure. All radio frequency data transmission between the card and reader is encrypted using a secure algorithm. By using industry standard encryption techniques, iCLASS reduces the risk of compromised data or duplicated cards. For even higher security, the card data may also be protected with DES or triple DES encryption. Multiple securely separated application areas are each protected by 64-bit diversified read/write keys which allow complex applications and provide for future expansion.

Security mechanisms such as mutual authentication and encryption are efficiently combined with fast processing and data communication, resulting in transaction times of less than 100 milliseconds for a typical secure e-purse transaction.

FEATURES:

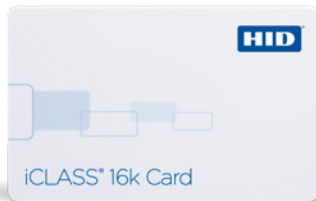
- 13.56 MHz read/write contactless smart card technology provides high-speed, reliable communications with high data integrity.
- iCLASS technology ensures high security with mutual authentication, encrypted data transfer, and 64-bit diversified keys for read/write capabilities.
- Any existing HID format can be factory or field programmed into the secure HID access control application area.
- Available in 2k bit (256 Byte), 16k bit (2K Byte) or 32k bit (4K Byte) configurations.
- Meets ISO standards for thickness for use with all direct image and thermal transfer printers
- Add a magnetic stripe, barcode, anti-counterfeiting, or photo ID.

ALL 2K BIT (256 BYTE) ICLASS CREDENTIALS HAVE THE FOLLOWING FEATURES:

- Available in two application area configuration only.
- Provides the HID standard access control application area and one other application area for user customization.
- Meets ISO 15693 standard for contactless communications.
- Provides a cost effective way to improve the security of your access control installation.

ALL 16K BIT (2K BYTE) AND 32K BIT (4K BYTE) ICLASS CREDENTIALS HAVE THE FOLLOWING FEATURES:

- Sufficient read/write memory to store multiple biometric templates.
- 16k available in a two or sixteen application area configuration. 32k available with 16k memory configured in either 2 or 16 application areas, plus an additional 16k user configurable memory.
- Multiple securely separated files enable numerous applications, including the HID standard access control application, and support future growth.
- Meets ISO 15693 for contactless communications.



OPTIONS

- Magnetic stripe
- External card numbering (inkjet or laser engraving)
- Vertical slot punch
- Custom artwork (text or graphics)
(Please see "How To Order Guide" for a description of the options and associated part numbers.)

SPECIFICATIONS

Base Part Number	2000 for 2k bit (256 Byte) card 2001 for 16k bit (2k Byte) card with 2 application areas 2002 for 16k bit (2k Byte) card with 16 application areas 2003 for 32k bit (4k Byte) 16k/2+16k/1. 2004 for 32k bit (4k Byte) 16k/16 + 16k/1.
Description	13.56 MHz contactless smart card.
Card Construction	Thin, flexible polyvinyl chloride (PVC) laminate.
Dimensions	2.127" x 3.375" x 0.033" max. (5.40 x 8.57 x 0.084 cm)
Weight	0.20oz (5.7 g)
Operating Temperature	-40° to 158° F (-40° to 70° C)
Operating Humidity	5-95% non-condensing
Operating Frequency	13.56 MHz
RF Interface	As suggested by ISO/IEC:15693 read/write
Transaction Time	<100 ms typical
Baud Rate	15693 mode - 26 kbps
Memory Type	EEPROM, read/write
Multi-application Memory	2k bit (256 Byte) card - 2 application areas 16k bit (2k Byte) card - 2 or 16 application areas 32k bit (4k Byte) card - 16k bits in 2 or 16 application areas plus 16k bits user configurable.
Write Endurance	Min. 100,000 cycles
Data Retention	10 years
Typical Maximum Read Range	R10 2.0-3.0" (5.0-7.6cm) R30/RW300 2.0-3.5" (5.0-8.9cm) R40/RW400 2.5-4.5" (6.3-11.4cm) RK40/RWK400 3.0-4.0" (7.6-10.1 cm) *Dependent upon installation conditions.
Card Marking	Print directly to the card with a direct image or thermal transfer printer. Slot punch vertically for easy use. *
Custom Graphics	Optional
Operates With	iCLASS® readers
Warranty	Lifetime warranty. See complete warranty policy for details.

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* When customizing cards using Re-Transfer Printers that fuse images to the surface of the card by applying heat and pressure (such as the FARGO HDP5000) we recommend the use of composite cards, which are better able to withstand the higher application temperatures.