iCLASS® Tag

Contactless Smart Adhesive Tag • 2060, 2061, 2062, 2063, 2064

ASSA ABLOY

HID

ACCESS flexibility.

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 Tag provides the convenience of iCLASS technology in a coin-sized, disk-shaped transponder that can be simply attached to any nonmetallic card or device to instantly have 13.56 MHz read/write contactless smart card technology to utilize as a transition device during the rebadging process. You can seamlessly upgrade from Wiegand, magnetic stripe or barium ferrite technologies and can easily and cost-effectively turn an existing plastic ID badge or contact smart card into a contactless proximity credential.

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.

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 and 14443B for contactless communications.

* Due to variations in card and reading devices, HID does not claim that the iCLASS Tag will work in every situation. Functional and nonfunctional iCLASS Tags are available for compatibility testing with existing credential and reader technologies. Compatibility should be confirmed prior to ordering.

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Features

Specifications

Read/write Functionality for Multi-functional Memory Applications

iCLASS® was specifically designed to make access control more powerful, more versatile, and more secure. All radio frequency data transmission between the tag and reader is encrypted using a secure algorithm. By using industry standard encryption techniques, iCLASS reduces the risk of compromised data or duplicated tags. For even higher security, the tag 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.

Proven, Reliable Technology

Offers extremely consistent read range. Unaffected by body shielding or variable environmental conditions.

Long Life

Passive, no-battery design allows for an estimated minimum 100,000 reads.

Durability

Strong, flexible, and resistant to cracking and breaking.

Options

• External card numbering (inkjet or laser engraving)
• Custom artwork (text or graphics)
• Color - Textured, matte, gray, or black
(Please see "How To Order Guide" for a description of the options and associated part numbers.)

Warranty

Lifetime Warranty. See complete warranty policy for details.

Base Part Numbers

• 2060 for 2k bit (256 Byte) card with 2 application areas
• 2061 for 16k bit (2k Byte) card with 2 application areas
• 2062 for 16k bit (2k Byte) card with 16 application areas
• 2063 for 32k bit (4k Byte) 16k/2+16k/1.
• 2064 for 32k bit (4k Byte) 16k/16 + 16k/1.

Description

13.56 MHz contactless smart adhesive tag.

Typical Maximum Read Range*
R10 1.0" (2.5 cm)
R30/RW300 1.0" (2.5 cm)
R40/RW400 1.0" (2.5 cm)
RK40/RWK400 1.0" - 1.5" (2.5 cm - 3.8 cm)
*Dependent upon installation conditions.

Dimensions
Diameter: 1.285" (3.264 cm)
Thickness: 0.070" (0.178 cm)

Weight
0.04 oz. (1.18 g)

Outer Shell Material
Lexan

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:
14443B read/write (16k only)
15693 read/write

Transaction Time
<100 ms typical

Baud Rate
14443B mode - 106 kbps
15693 mode - 26 kbps

Memory Type
EEPROM, read/write

Multi-application Memory
2k bit (256 Byte) tag – 2 application areas
16k bit (2k Byte) tag – 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

ACCESS experience.

hidcorp.com

An ASSA ABLOY Group brand

ASSA ABLOY

iCLASS™ Reference Guide

13.56 MHz Read/Write Contactless Smart Card Technology

iCLASS
by
HID®

Smart • Powerful • Trusted

iCLASS

SMART • POWERFUL • T

Optimized to make physical access control more powerful, HID's *iCLASS*™ 13.56 MHz read/write contactless smart card technology can be used to store biometric templates and useful data. Implement new applications at any time without issuing new credentials. Powerful and cost-effective, *iCLASS* meets industry standards, making it possible for equipment and application developers to create a broad range of uses for the card. Experience just how powerful and cost-effective *iCLASS* can be!

Be secure in knowing:

iCLASS meets industry standards, making it possible for equipment and application developers to create a broad range of uses for the card. The ISO standards include:

- 15693 - read/write; 2K bits (256 Bytes) and 16K bits (2K Bytes) *iCLASS* credentials
- 14443A - read only; MIFARE® (serial number)
- 14443B2 - read/write; 16K bits (2K Bytes) *iCLASS* credentials

Experience enhanced versatility:

- Use one reader to read standard proximity format data from HID *iCLASS* credentials, or unique serial numbers from MIFARE® cards.

- Confidently install the reader! The Wiegand output easily interfaces with most existing Wiegand protocol access control panels. Use the bi-directional RS-232 serial port to connect to a PC or microcontroller for read/write applications.

Appreciate advanced security:

- All RF data transmission between the card and reader is encrypted using a secure algorithm.

- Industry-standard encryption techniques and advanced key management systems reduce the risk of compromised data or duplicated cards.

Want to see more?
Watch the *iCLASS* video at
www.hidcorp.com/iclass/video

HVAC Automation & Billing

IT

One Cred

Access Control

Time & Attendance

iCLAS
by

Endless Pos

Medical Records

Multi-Authentication Access
Store Biometric Templates On Your Card!

RUSTED

Secure Authentication

ential

Digital Cash & Vending

Photo ID

ssibilities

Parking Control

Mobile Verification & Guard Tour

YOUR APPLICATION
WITH
iCLASS

Need read/write technology to manage multiple applications in your organization?

Use the **Software Developer's Kit** to unlock the power of *iCLASS!*

HID

HID is the leading manufacturer of contactless readers and cards to the access control market. Why trust anyone else with your contactless smart card needs? Partner with HID to realize the potential of *iCLASS!*

HID Provides You With:
- An organization that is friendly and easy to do business with!
- Global sales, customer service, and technical support.
- Multilingual brochures, installation manuals, and websites.
- Lifetime product warranties!
- Cost-effective solutions to help maximize investments in existing systems while providing a migration path to new applications and technology platforms.
- Access to third-party hardware and software to support use of your single credential for multiple read/write applications throughout the organization.
- Advanced technology to meet the need for increased security and use of new applications.

From proximity to 13.56 MHz read/write contactless smart cards, use the Trusted Brand!

CREDENTIALS

iCLASS™ Card
13.56 MHz Contactless Smart Card
Base Model Numbers: 2000, 2001, and 2002
- Offers the ability to add a magnetic stripe, barcode, anti-counterfeiting feature, custom artwork, or photo ID.
- Meets ISO standards for thickness for use with direct image and thermal transfer printers.[1]

iCLASS™ Prox Card
13.56 MHz Contactless Smart Card and 125 kHz HID Proximity Card
Base Model Numbers: 2020, 2021, and 2022
- 13.56 MHz *iCLASS* read/write technology and HID 125 kHz proximity technology in a single ISO standard thickness card.
- Enables contactless smart card applications to be added to an existing HID proximity technology access control system.
- Offers the ability to add a magnetic stripe, barcode, anti-counterfeiting feature, custom artwork, or photo ID.
- Meets ISO standards for thickness for use with direct image and thermal transfer printers.[1]

iCLASS™ embeddable Card and *iCLASS*™ Prox embeddable Card
13.56 MHz Contactless Smart Card with or without 125 kHz HID Proximity and an Optional Contact Smart Chip Module
Base Model Numbers: 2010, 2011, 2012 (without HID Proximity) and 2030, 2031, 2032 (with HID Proximity)
- Designed to be embedded with an optional contact smart chip module of your choice.
- Enables contact smart chip applications to be added to *iCLASS* or *iCLASS* Prox cards in a single ISO standard thickness card.
- Offers the ability to add a magnetic stripe, barcode, anti-counterfeiting feature, custom artwork, or photo ID.
- Meets ISO standards for thickness for use with direct image and thermal transfer printers.[1]

iCLASS™ Wiegand Card
13.56 MHz Contactless Smart Card and Wiegand Technology
Base Model Numbers: 2040, 2041, and 2042
- Offers a one-card solution combining *iCLASS* and Wiegand technologies.
- Ideal for companies transitioning from Wiegand technology to an HID *iCLASS*-based system.
- Offers the ability to add a magnetic stripe, barcode, anti-counterfeiting feature, custom artwork, or photo ID.
- Card thickness is suitable for use with all Wiegand readers, and most direct image printers[1] and magnetic stripe readers (nominal thickness .037").

iCLASS™ Key
Convenient 13.56 MHz Contactless Smart Key
Base Model Numbers: 2050, 2051, and 2052
- Incorporates *iCLASS* contactless read/write technology into a convenient device approximately the size of an automotive key.
- Molded plastic enclosure provides durability in harsh environments.
- Provides an external number for easy identification and control.
- Can be placed on a key ring or clipped to a lanyard for convenient entry.

iCLASS™ Tag
13.56 MHz Contactless Smart Tag with Adhesive Back
Base Model Numbers: 2060, 2061, and 2062
- Provides the convenience of HID's *iCLASS* contactless read/write technology in a small disk-shaped package.
- Seamlessly upgrade from Wiegand, magnetic stripe, barium ferrite, or proximity technologies by adhering the Tag to an existing access card.[2]
- Allows users to easily and cost-effectively turn a plastic ID badge or contact smart chip card into a contactless smart card.
- Attaches easily to cell phones, PDAs, and other non-metallic objects.

Please see complete reader and reader/writer feature comparisons and specifications in this brochure.

[1] Some printing methods can affect the thickness of the credentials, taking them out of ISO 7816 compliance.

[2] Sample placement shown in diagram to the right; actual placement will depend on application. Consult HID for specific guidelines. Not for use with cards used with tractor feed (full insertion) readers.

iCLASS™

ntials Offer:

- 13.56 MHz read/write contactless smart card technology, providing high-speed, reliable communications with superior data integrity.
- The ability to store biometric templates and useful data using read/write capabilities.
- Communications between card and reader that include high security with mutual authentication, encrypted data transfer, and 64-bit diversified keys for read/write.
- Advanced key management systems to reduce the risk of compromised data or duplicated cards.
- Supports all existing HID card formats, including Corporate 1000.
- The ability to factory or field* program any existing HID format into the secure HID access control application area.
- A choice of a 2K bits (256 Bytes) or 16K bits (2K Bytes) configuration (see below).

All iCLASS credentials offer a lifetime warranty!

*Consult factory for availability of the iCLASS Card Programmer, **CP400**

All 2K bits (256 Bytes) iCLASS credentials:	All 16K bits (2K Bytes) iCLASS credentials:
• Are available in a two application area configuration only. • Provide the HID standard access control application area and one other application area for user customization. • Meet ISO 15693 standards for read/write contactless communications. • Provide a cost-effective way to enhance the security of your access control installation.	• Offer sufficient read/write memory to store multiple biometric templates. • Are available in a two or sixteen application area configuration. • Offer multiple, securely separated areas to enable numerous applications, including the HID standard access control application. • Support future growth for new read/write applications. • Meet ISO 15693 and 14443B2 standards for read/write contactless communications.

Choose the iCLASS credential that best meets your requirements in the areas of:
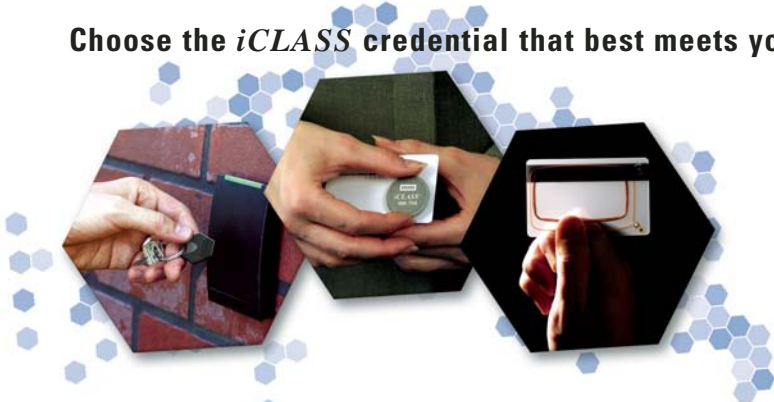
- **Form Factor:** Card, Key, or Tag
- **Memory Size:** 2K bits (256 Bytes) or 16K bits (2K Bytes)
- **Application Areas:** 2 or 16
- **Multi-Technology Configurations**

UPGRADE

Want to upgrade to iCLASS?

Now you can easily transition from card technologies such as barium ferrite, barcode, magnetic stripe, Wiegand, or proximity to iCLASS contactless smart card technology! Simply attach the adhesive-backed iCLASS Tag to your existing credential or any non-metallic device such as a PDA or cell phone to experience the added security, versatility, and power of iCLASS!
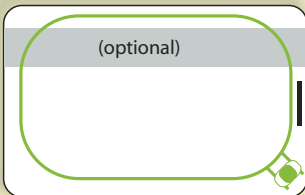
(Sample placement shown.)

Multi-Technology Card Guide

iCLASS™

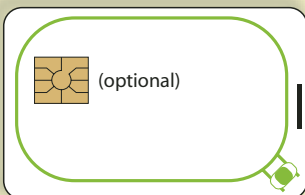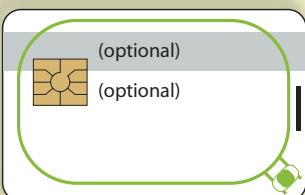1. 13.56 MHz *iCLASS* contactless smart chip and antenna

(optional)

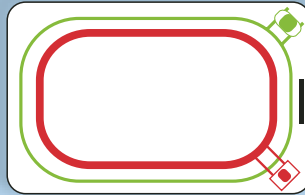1. 13.56 MHz *iCLASS* contactless smart chip and antenna
2. Magnetic Stripe (optional)

(optional)

1. 13.56 MHz *iCLASS* contactless smart chip and antenna
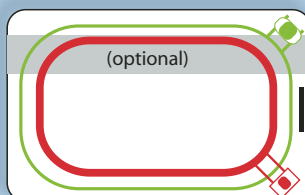2. Contact Smart Chip Module (optional)

(optional)
(optional)

1. 13.56 MHz *iCLASS* contactless smart chip and antenna
2. Magnetic Stripe (optional)
3. Contact Smart Chip Module (optional)

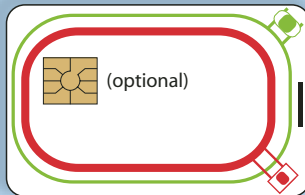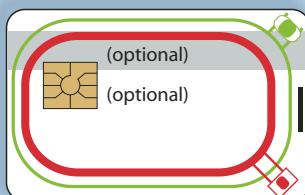## iCLASS™ PROX

1. 13.56 MHz *iCLASS* contactless smart chip and antenna
2. 125 kHz HID Proximity

(optional)

1. 13.56 MHz *iCLASS* contactless smart chip and antenna
2. 125 kHz HID Proximity
3. Magnetic Stripe (optional)

(optional)

1. 13.56 MHz *iCLASS* contactless smart chip and antenna
2. 125 kHz HID Proximity
3. Contact Smart Chip Module (optional)

(optional)
(optional)

1. 13.56 MHz *iCLASS* contactless smart chip and antenna
2. 125 kHz HID Proximity
3. Magnetic Stripe (optional)
4. Contact Smart Chip Module (optional)

iCLASS™ Wiegand*
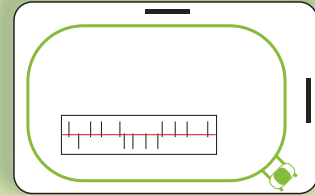
1. 13.56 MHz *iCLASS* contactless smart chip and antenna
2. Wiegand Strip
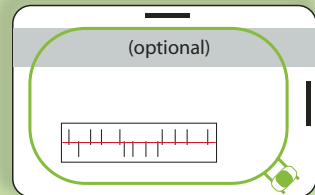
(optional)

1. 13.56 MHz *iCLASS* contactless smart chip and antenna
2. Wiegand Strip
3. Magnetic Stripe (optional)

COMPONENTS

13.56 MHz *iCLASS* Contactless Smart Chip and Antenna

125 kHz Proximity Chip and Antenna

Optional Contact Smart Chip Module

Optional Magnetic Stripe (1, 2 or 3 track; low or high coercivity)

Wiegand Strip

Durable thin card with optional vertical slot punch and high quality printing surface for photo ID, anti-counterfeiting options, and barcode.

Optional horizontal slot punch is available on *iCLASS* Wiegand cards*.

iCLASS Wiegand Card nominal thickness .037"

MEMORY MAPPING
iCLASS™

2K/2 Memory

	Block #	Data
48 Bytes	0	Card Serial Number
	1	Configuration Data
	2	Not Used
	3	Key 1
	4	Key 2
	5	Application Issuer Data
104 Bytes	6–18	Reserved for HID Access Control Application
104 Bytes	19–31	Application Area 2

Note: There are always 8 Bytes (64 bits) in a block.

- ▇ Manufacturer, configuration, and key storage area
- ▇ HID Application Area on all credentials
- ▇ Read/write area for application developers

iCLASS credentials:
- *iCLASS*, the most powerful read/write contactless smart card available today, features multiple memory sizes, form factor options, and configurations.
- All other application areas are open to developer read/write data applications.
- To learn more about the amount of memory used to store various applications, visit **www.hidcorp.com/iclass** and click on Memory Mapping.

2K bits (256 Bytes) *iCLASS* credentials:
- The 2K is a highly secure credential optimized for standard access control applications.
- Application Area 2 is limited to 104 Bytes of read/write data. The key that secures the data cannot be updated.

16K bits (2K Bytes) *iCLASS* credentials:
- The 16K is a highly modifiable, multi-application credential with enough memory area to store most common biometric templates.
- Application Area 2 of the 16K/2 credential allows for 1896 Bytes of read/write data, all of which can be accessed with a single authentication key.
- The 16K credential can be configured for either 2 or 16 application areas. Note: Once configured, the credential cannot be reconfigured.
- The configuration block (block 1) of pages 1 through 7 on a 16K/16 credential is modifiable. This allows for the additional configuration of the Application Limit on these pages.

16K/2 Memory

	Block #	Data
48 Bytes	0	Card Serial Number
	1	Configuration Data
	2	Not Used
	3	Key 1
	4	Key 2
	5	Application Issuer Data
104 Bytes	6–18	Reserved for HID Access Control Application
1896 Bytes	19–255	Application Area 2

16K/16 Memory

Page 0
	Block #	Data
48 Bytes	0	Card Serial Number
	1	Configuration Data
	2	Not Used
	3	Key 1
	4	Key 2
	5	Application Issuer Data
104 Bytes	6–18	Reserved for HID Access Control Application
104 Bytes	19–31	Application Area 2

Page 1
	Block #	Data
48 Bytes	0	Card Serial Number
	1	Configuration Data
	2	Stored Value Area
	3	Key 3
	4	Key 4
	5	Application Issuer Data
208 Bytes	6–18	Application Area 3
	19–31	Application Area 4

Pages 2 thru 6

Page 7
	Block #	Data
48 Bytes	0	Card Serial Number
	1	Configuration Data
	2	Stored Value Area
	3	Key 15
	4	Key 16
	5	Application Issuer Data
208 Bytes	6–18	Application Area 15
	19–31	Application Area 16

CREDENTIALS
Specifications

	Base Part Number	iCLASS 13.56 MHz	Memory Size	Number of Application Areas	HID Proximity 125 kHz	Contact Smart Chip Module Embeddable	Wiegand Strip	Magnetic Stripe	Direct Image Print
iCLASS™ Card	2000	Yes	2K bits (256 Bytes)	2	No	No	No	Optional	Yes
	2001	Yes	16K bits (2K Bytes)	2	No	No	No	Optional	Yes
	2002	Yes	16K bits (2K Bytes)	16	No	No	No	Optional	Yes
iCLASS™ Card embeddable	2010	Yes	2K bits (256 Bytes)	2	No	Optional	No	Optional	Yes
	2011	Yes	16K bits (2K Bytes)	2	No	Optional	No	Optional	Yes
	2012	Yes	16K bits (2K Bytes)	16	No	Optional	No	Optional	Yes
iCLASS™ PROX	2020	Yes	2K bits (256 Bytes)	2	Yes	No	No	Optional	Yes
	2021	Yes	16K bits (2K Bytes)	2	Yes	No	No	Optional	Yes
	2022	Yes	16K bits (2K Bytes)	16	Yes	No	No	Optional	Yes
iCLASS™ PROX embeddable	2030	Yes	2K bits (256 Bytes)	2	Yes	Optional	No	Optional	Yes
	2031	Yes	16K bits (2K Bytes)	2	Yes	Optional	No	Optional	Yes
	2032	Yes	16K bits (2K Bytes)	16	Yes	Optional	No	Optional	Yes
iCLASS™ Wiegand	2040	Yes	2K bits (256 Bytes)	2	No	No	Yes	Optional	Yes*
	2041	Yes	16K bits (2K Bytes)	2	No	No	Yes	Optional	Yes*
	2042	Yes	16K bits (2K Bytes)	16	No	No	Yes	Optional	Yes*
iCLASS™ Key	2050	Yes	2K bits (256 Bytes)	2	No	No	No	No	No
	2051	Yes	16K bits (2K Bytes)	2	No	No	No	No	No
	2052	Yes	16K bits (2K Bytes)	16	No	No	No	No	No
iCLASS™ Tag	2060	Yes	2K bits (256 Bytes)	2	No	No	No	No	No
	2061	Yes	16K bits (2K Bytes)	2	No	No	No	No	No
	2062	Yes	16K bits (2K Bytes)	16	No	No	No	No	No

*iCLASS Wiegand Card nominal thickness .037"

iCLASS™ Read Ranges[2]

Slot Punch	Standards Compliance	Format Range	Credential Material	Finishes	Inkjet Numbering	Laser Engraving	Operating Temperature	Operating Humidity	Weight	R10	R30 RW300	R40 RW400	RK40 RWK400
Vertical Only	ISO 7810; 7811-2,4,5; 10373-1; 15693	iCLASS: All HID Formats	PVC	Gloss White	Yes	Optional	-40 to 158 F -40 to 70 C	5-95% non-condensing	0.24 oz. 6.8 g	2.0" - 3.0" (5.0 cm - 7.6 cm)	2.0" - 3.0" (5.0 cm - 7.6 cm)	2.5" - 4.5" (6.3 cm - 11.4 cm)	3.0" - 4.0" (7.6 cm - 10.1 cm)
Vertical Only	ISO 7810; 7811-2,4,5; 10373-1; 14443B; 15693	iCLASS: All HID Formats	PVC	Gloss White	Yes	Optional	-40 to 158 F -40 to 70 C	5-95% non-condensing	0.24 oz. 6.8 g	2.0" - 3.0" (5.0 cm - 7.6 cm)	2.0" - 3.0" (5.0 cm - 7.6 cm)	2.5" - 4.5" (6.3 cm - 11.4 cm)	3.0" - 4.0" (7.6 cm - 10.1 cm)
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Vertical Only	ISO 7810; 7811-2,4,5; 10373-1; 15693	iCLASS: All HID Formats; Prox up to 84 bits	PVC	Gloss White	Yes	Optional	-40 to 158 F -40 to 70 C	5-95% non-condensing	0.24 oz. 6.8 g	1.0" - 1.5" (2.5 cm - 3.8 cm)	1.5" - 2.0" (3.8 - 5.0 cm)	1.5" - 2.0" (3.8 cm - 5.0 cm)	1.5" - 2.5" (3.8 cm - 6.3 cm)
Vertical Only	ISO 7810; 7811-2,4,5; 10373-1; 14443B; 15693	iCLASS: All HID Formats; Prox up to 84 bits	PVC	Gloss White	Yes	Optional	-40 to 158 F -40 to 70 C	5-95% non-condensing	0.24 oz. 6.8 g	1.0" - 1.5" (2.5 - 3.8 cm)	1.5" - 2.0" (3.8 - 5.0 cm)	1.5" - 2.0" (3.8 cm - 5.0 cm)	1.5" - 2.5" (3.8 cm - 6.3 cm)
Vertical Only	ISO 7810; 7811-2,4,5; 10373-1; 14443B; 15693	iCLASS: All HID Formats; Prox up to 84 bits	PVC	Gloss White	Yes	Optional	-40 to 158 F -40 to 70 C	5-95% non-condensing	0.24 oz. 6.8 g	1.0" - 1.5" (2.5 cm - 3.8 cm)	1.5" - 2.0" (3.8 - 5.0 cm)	1.5" - 2.0" (3.8 cm - 5.0 cm)	1.5" - 2.5" (3.8 cm - 6.3 cm)
Vertical Only	ISO 7810; 7811-2,4,5; 7816-1,2; 10373-1; 15693	iCLASS: All HID Formats; Prox up to 84 bits	PVC	Gloss White	Yes	Optional	-40 to 158 F -40 to 70 C	5-95% non-condensing	0.24 oz. 6.8 g	1.0" - 1.5" (2.5 cm - 3.8 cm)	1.5" - 2.0" (3.8 - 5.0 cm)	1.5" - 2.0" (3.8 cm - 5.0 cm)	1.5" - 2.5" (3.8 cm - 6.3 cm)
Vertical Only	ISO 7810; 7811-2,4,5; 7816-1,2; 10373-1; 14443B; 15693	iCLASS: All HID Formats; Prox up to 84 bits	PVC	Gloss White	Yes	Optional	-40 to 158 F -40 to 70 C	5-95% non-condensing	0.24 oz. 6.8 g	1.0" - 1.5" (2.5 cm - 3.8 cm)	1.5" - 2.0" (3.8 - 5.0 cm)	1.5" - 2.0" (3.8 cm - 5.0 cm)	1.5" - 2.5" (3.8 cm - 6.3 cm)
Vertical Only	ISO 7810; 7811-2,4,5; 7816-1,2; 10373-1; 14443B; 15693	iCLASS: All HID Formats; Prox up to 84 bits	PVC	Gloss White	Yes	Optional	-40 to 158 F -40 to 70 C	5-95% non-condensing	0.24 oz. 6.8 g	1.0" - 1.5" (2.5 cm - 3.8 cm)	1.5" - 2.0" (3.8 - 5.0 cm)	1.5" - 2.0" (3.8 cm - 5.0 cm)	1.5" - 2.5" (3.8 cm - 6.3 cm)
Vertical or Horizontal	ISO 7811-2,4,5; 10373-1; 15693	iCLASS: All HID Formats; Wiegand up to 52 bits	PVC	Gloss White	Yes	Optional	-40 to 158 F -40 to 70 C	10-95% non-condensing	0.24 oz. 6.8 g	2.0" - 3.0" (5.0 cm - 7.6 cm)	2.0" - 3.0" (5.0 cm - 7.6 cm)	2.5" - 4.5" (6.3 cm - 11.4 cm)	1.5" - 2.5" (3.8 cm - 6.3 cm)
Vertical or Horizontal	ISO 7811-2,4,5; 10373-1; 14443B; 15693	iCLASS: All HID Formats; Wiegand up to 52 bits	PVC	Gloss White	Yes	Optional	-40 to 158 F -40 to 70 C	10-95% non-condensing	0.24 oz. 6.8 g	2.0" - 3.0" (5.0 cm - 7.6 cm)	2.0" - 3.0" (5.0 cm - 7.6 cm)	2.5" - 4.5" (6.3 cm - 11.4 cm)	1.5" - 2.5" (3.8 cm - 6.3 cm)
Vertical or Horizontal	ISO 7811-2,4,5 10373-1; 14443B; 15693	iCLASS: All HID Formats; Wiegand up to 52 bits	PVC	Gloss White	Yes	Optional	-40 to 158 F -40 to 70 C	10-95% non-condensing	0.24 oz. 6.8 g	2.0" - 3.0" (5.0 cm - 7.6 cm)	2.0" - 3.0" (5.0 cm - 7.6 cm)	2.5" - 4.5" (6.3 cm - 11.4 cm)	1.5" - 2.5" (3.8 cm - 6.3 cm)
Key Ring Hole/Badge Clip Slot	ISO 15693	iCLASS: All HID Formats	Polycarbonate	Textured, Matte, Black	Yes	No	-40 to 158 F -40 to 70 C	5-95% non-condensing	0.17 oz. 4.9 g	1.0" (2.5 cm)	1.0" (2.5 cm)	1.0" (2.5 cm)	1.0" - 1.5" (2.5 cm - 3.8 cm)
Key Ring Hole/Badge Clip Slot	ISO 14443B; 15693	iCLASS: All HID Formats	Polycarbonate	Textured, Matte, Black	Yes	No	-40 to 158 F -40 to 70 C	5-95% non-condensing	0.17 oz. 4.9 g	1.0" (2.5 cm)	1.0" (2.5 cm)	1.0" (2.5 cm)	1.0" - 1.5" (2.5 cm - 3.8 cm)
Key Ring Hole/Badge Clip Slot	ISO 14443B; 15693	iCLASS: All HID Formats	Polycarbonate	Textured, Matte, Black	Yes	No	-40 to 158 F -40 to 70 C	5-95% non-condensing	0.17 oz. 4.9 g	1.0" (2.5 cm)	1.0" (2.5 cm)	1.0" (2.5 cm)	1.0" - 1.5" (2.5 cm - 3.8 cm)
No	ISO 15693	iCLASS: All HID Formats	Lexan	Textured, Matte, Gray or Black	Yes	No	-40 to 158 F -40 to 70 C	5-95% non-condensing	0.04 oz 1.18 g	1.0" (2.5 cm)	1.0" (2.5 cm)	1.0" (2.5 cm)	1.0" - 1.5" (2.5 cm - 3.8 cm)
No	ISO 14443B; 15693	iCLASS: All HID Formats	Lexan	Textured, Matte, Gray or Black	Yes	No	-40 to 158 F -40 to 70 C	5-95% non-condensing	0.04 oz 1.18 g	1.0" (2.5 cm)	1.0" (2.5 cm)	1.0" (2.5 cm)	1.0" - 1.5" (2.5 cm - 3.8 cm)
No	ISO 14443B, 15693	iCLASS: All HID Formats	Lexan	Textured, Matte, Gray or Black	Yes	No	-40 to 158 F -40 to 70 C	5-95% non-condensing	0.04 oz 1.18 g	1.0" (2.5 cm)	1.0" (2.5 cm)	1.0" (2.5 cm)	1.0" - 1.5" (2.5 cm - 3.8 cm)

READERS/WRITERS

All *iCLASS* Readers

Choose the *iCLASS* reader or reader/writer that best meets your application and mounting requirements. Need a keypad for dual verification of identity? No problem; just choose our RK40 or RWK400!

R10 Reader
13.56 MHz Mullion Mount Contactless Smart Card Reader (Read Only)
Base Model Number: 6100
- Slim design is perfect for metal mullions or any other space-limited installation.
- Provides a standard Wiegand output.
- Dimensions: 1.90" x 4.04" x .80" (4.83 cm x 10.26 cm x 2.03 cm)

R30 Reader and RW300 Reader/Writer
13.56 MHz EU/Asian Back Box Contactless Smart Card Reader (Read Only or Read/Write)
R30 Base Model Number: 6110 Read Only
RW300 Base Model Number : 6111 Read/Write
- Designed to cover 80 mm x 80 mm square European back boxes.
- Slotted mounting plate also provides for Asian back box spacing.
- Both the R30 and RW300 provide a standard Wiegand output.
- The RW300 also provides a bi-directional RS-232 serial port to provide connection to a PC or microcontroller.
- Dimensions: 3.30" x 3.30" x .75" (8.38 cm x 8.38 cm x 1.91 cm)

R40 Reader and RW400 Reader/Writer
13.56 MHz U.S./EU/Asian Back Box Contactless Smart Card Reader (Read Only or Read/Write)
R40 Base Model Number: 6120 Read Only
RW400 Base Model Number : 6121 Read/Write
- Designed to cover standard U.S. single-gang back boxes
- Slotted mounting plate also provides for European and Asian back box spacing.
- Both the R40 and RW400 provide a standard Wiegand output.
- The RW400 also provides a bi-directional RS-232 serial port to provide connection to a PC or microcontroller.
- Dimensions: 3.30" x 4.80" x .85" (8.38 cm x 12.19 cm x 2.16 cm)

RK40 Reader with Keypad and RWK400 Reader/Writer with Keypad
13.56 MHz U.S./EU/Asian Back Box Contactless Smart Card Reader with Keypad (Read Only or Read/Write)
RK40 Base Model Number: 6130 Read Only
RWK400 Base Model Number: 6131 Read/Write
- Designed to cover standard U.S. single-gang back boxes
- Slotted mounting plate also provides for European and Asian back box spacing.
- Both the RK40 and RWK400 provide a standard Wiegand output.
- The RWK400 also provides a bi-directional serial port configurable for RS-232 or RS-485 operation to provide connection to a PC or microcontroller.
- The PIN can be verified either at the access control panel or locally by the keypad reader. When verified locally, the PIN must be programmed into the *iCLASS* card.
- The *iCLASS* Keypad reader offers the same options for keypad data output as the 5355 ProxPro®. For more information, download the *iCLASS* Keypad Reader Application Note (#31) at www.hidcorp.com/iclass/docs.
- Dimensions: 3.30" x 4.80" x .90" (8.38 cm x 12.19 cm x 2.286 cm)

Please see complete reader and reader/writer feature comparisons and specifications in this brochure.

Reader/Writer OEM Modules
Allows for easy integration of *iCLASS* read/write contactless smart card technology into third-party manufactured products.
OEM100[1]
Base Model Number: 3100
- Provides Wiegand and TTL output formats in a compact package.
- Dimensions: 3.600" x 1.450" x .454" (9.144 cm x 3.683 cm x 1.153 cm).

OEM300
Base Model Number: 3111
- Provides Wiegand and RS-232 output formats in a compact package.
- Dimensions: 2.850" x 2.700" x .446" (7.239 cm x 6.858 cm x 1.133 cm).

[1] Available with optional RS-232 output format; consult factory for availability.

iCLASS™

and Reader/Writers Offer:

- A multi-technology 13.56 MHz interface that meets ISO 14443A (MIFARE®), 14443B2[1], and 15693 standards.
- The ability to read 32-bit MIFARE serial numbers.
- Highly secure 64-bit diversified keys for mutual authentication.
- Encrypted data transfer between the card and the reader through the use of secure algorithms.
- Advanced key management systems to reduce the risk of compromised data or duplicated cards.
- A Wiegand output that easily interfaces with most existing Wiegand protocol access control panels.
- Crisp architectural styling with an elegantly curved faceplate.
- An easy-to-install, three-part reader, compatible with global electrical back boxes, and made more secure with the addition of a tamper magnet[2] and security screw.
- A factory or field configurable tri-color light bar and multi-tone speaker that provides distinguishable indicators for both the visually and hearing impaired.
- A choice of two colors (black or gray) with a standard 18" (.5 m) cable pigtail.[3]

▶ *Lifetime warranty provided for all iCLASS readers and reader/writers!*

[1]R40, RW400, RK40, and RWK400 only.
[2]Tamper magnet is built into all models except the R10.   [3] Detachable wire terminals are optionally available on the RK40 and standard on the RWK400.

BIOMETRICS
with *iCLASS*™

HID Combines *iCLASS* and Biometric Technologies

To meet the demand for higher security and one-to-one biometric template authentication, HID's biometric partners offer practical and affordable new solutions for access control. These solutions combine the high security of biometrics with the versatility and power of *iCLASS* contactless smart cards.

Biometric templates are securely stored on *iCLASS* credentials, not in the biometric readers, making *iCLASS* smart cards portable databases that are well-suited for installations spanning multiple sites. Storing the template on the card simplifies system start-up and enables the support of unlimited populations. It also eliminates the redundant wiring requirement for biometric template management, significantly lowering implementation costs.

Biometric readers incorporate *iCLASS* technology to provide security managers the peace of mind that comes with identifying the individual, not just the card. *iCLASS*-compatible biometric readers provide one security credential and only one person who can use it, supporting the markets' requirement for individual privacy and fast throughput.

For more information, visit HID's biometric partner site at **www.hidcorp.com/iclass/bio**

Photo courtesy of Recognition Systems.

Reader/Writer Feature Comparison

Product	Base Model Number	Technology	Additional Technologies	Device Type	Other Features	Keypad	Colors	iCLASS Card Formats Supported	Output Formats	Mounting	Indoor/ Outdoor	Warranty[1]	Certifications/ Approvals
R10 Reader	6100	13.56 MHz *iCLASS* contactless smart card	MIFARE® (card serial number read only)	Reader	Small size	No	Black, Gray	All existing HID formats	Wiegand	Mullion or standard wall	Both	Lifetime	UL, FCC, CE, VdS*, New Zealand, Canada Radio, Australia, Singapore*, Japan*, Taiwan*, Korea*
R30 Reader	6110	13.56 MHz *iCLASS* contactless smart card	MIFARE (card serial number read only)	Reader	Tamper magnet	No	Black, Gray	All existing HID formats	Wiegand	European/ Asian or standard wall	Both	Lifetime	UL, FCC, CE, VdS*, New Zealand, Canada Radio, Australia, Singapore*, Japan*, Taiwan*, Korea*
R40 Reader	6120	13.56 MHz *iCLASS* contactless smart card	MIFARE (card serial number read only)	Reader	Tamper magnet	No	Black, Gray	All existing HID formats	Wiegand	U.S., European, Asian or standard wall	Both	Lifetime	UL, FCC, CE, VdS*, New Zealand, Canada Radio, Australia, Singapore*, Japan*, Taiwan*, Korea*
RK40 Keypad Reader	6130	13.56 MHz *iCLASS* contactless smart card	MIFARE, Standard, Ultralite, and DESFIRE (card serial number read only)	Reader with Keypad	Tamper magnet; vandal resistant keypad	Yes	Black, Gray	All existing HID formats	Wiegand	U.S., European, Asian or standard wall	Both	Lifetime	UL, FCC, CE, VdS*, New Zealand, Canada Radio, Australia, Singapore*, Taiwan*
RW300 Reader/Writer	6111	13.56 MHz *iCLASS* contactless smart card	MIFARE (card serial number read only)	Reader/Writer	Tamper magnet; open collector output	No	Black, Gray	All existing HID formats	Wiegand; RS-232	European/ Asian or standard wall	Both	Lifetime	UL, FCC, CE, VdS*, New Zealand, Canada Radio, Australia, Singapore*, Japan*, Taiwan*, Korea*
RW400 Reader/Writer	6121	13.56 MHz *iCLASS* contactless smart card	MIFARE (card serial number read only)	Reader/Writer	Tamper magnet; open collector output	No	Black, Gray	All existing HID formats	Wiegand; RS-232	U.S., European, Asian or standard wall	Both	Lifetime	UL, FCC, CE, VdS*, New Zealand, Canada Radio, Australia, Singapore*, Japan*, Taiwan*, Korea*
RWK400 Keypad Reader/Writer	6131	13.56 MHz *iCLASS* contactless smart card	MIFARE, Standard, Ultralite, and DESFIRE (card serial number read only)	Reader/Writer with Keypad	Tamper magnet; vandal resistant keypad; open collector output	Yes	Black, Gray	All existing HID formats	Wiegand; RS-232 RS-485	U.S., European, Asian or standard wall	Both	Lifetime	UL, FCC, CE, VdS*, New Zealand, Canada Radio, Australia, Singapore*, Taiwan*
OEM100 OEM Module	3100	13.56 MHz *iCLASS* contactless smart card	MIFARE (card serial number read only)	Reader/Writer OEM Module	Open collector output	No	N/A	All existing HID formats	Wiegand; TTL or RS-232[2]	N/A	N/A	One year	UL Recognized
OEM300 OEM Module	3111	13.56 MHz *iCLASS* contactless smart card	MIFARE (card serial number read only)	Reader/Writer OEM Module	Open collector output	No	N/A	All existing HID formats	Wiegand; RS-232	N/A	N/A	One year	UL Recognized

[1] See HID's Sales Policy for complete warranty details.   [2] Consult factory for availability.   *submitted/pending

	Base Model Number	Dimensions	Material	Power Supply	Current Requirements	Operating Temperature	Operating Humidity	Weight	Transmit Frequency	Termination
R10 Reader	6100	1.90" x 4.04" x .80" (4.83 cm x 10.26 cm x 2.03 cm)	Polycarbonate UL94	10 - 16 VDC	65 mA avg. 225 mA peak at 12 VDC	-30° to 150° F (-35° to 65° C)	5 - 95% non-condensing	3.2 oz. (90.7 g)	13.56 MHz	18" (0.5 m) Pigtail
R30 Reader	6110	3.30" x 3.30" x .75" (8.38 cm x 8.38 cm x 1.91 cm)	Polycarbonate UL94	10 - 16 VDC	80 mA avg. 260 mA peak at 12 VDC	-30° to 150° F (-35° to 65° C)	5 - 95% non-condensing	4.0 oz. (113.4 g)	13.56 MHz	18" (0.5 m) Pigtail
R40 Reader	6120	3.30" x 4.80" x .85" (8.38 cm x 12.19 cm x 2.16 cm)	Polycarbonate UL94	10 - 16 VDC	80 mA avg. 260 mA peak at 12 VDC	-30° to 150° F (-35° to 65° C)	5 - 95% non-condensing	8.8 oz. (249.5 g)	13.56 MHz	18" (0.5 m) Pigtail
RK40 Keypad Reader	6130	3.30" x 4.80" x .90" (8.38 cm x 12.19 cm x 2.286 cm)	Polycarbonate UL94	10 - 16 VDC	72 mA avg. 244 mA peak at 12 VDC	-30° to 150° F (-35° to 65° C)	5 - 95% non-condensing	10 oz. (283.49 g)	13.56 MHz	18" (0.5 m) Pigtail or Wire Terminal
RW300 Reader/Writer	6111	3.30" x 3.30" x .75" (8.38 cm x 8.38 cm x 1.91 cm)	Polycarbonate UL94	10 - 16 VDC	80 mA avg. 260 mA peak at 12 VDC	-30° to 150° F (-35° to 65° C)	5 - 95% non-condensing	4.0 oz. (113.4 g)	13.56 MHz	18" (0.5 m) Pigtail
RW400 Reader/Writer	6121	3.30" x 4.80" x .85" (8.38 cm x 12.19 cm x 2.16 cm)	Polycarbonate UL94	10 - 16 VDC	80 mA avg. 260 mA peak at 12 VDC	-30° to 150° F (-35° to 65° C)	5 - 95% non-condensing	8.8 oz. (249.5 g)	13.56 MHz	18" (0.5 m) Pigtail
RWK400 Keypad Reader/Writer	6131	3.30" x 4.80" x .90" (8.38 cm x 12.19 cm x 2.286 cm)	Polycarbonate UL94	10 - 16 VDC	72 mA avg. 244 mA peak at 12 VDC	-30° to 150° F (-35° to 65° C)	5 - 95% non-condensing	10 oz. (283.49 g)	13.56 MHz	18" (0.5 m) Wire Terminal
OEM100 OEM Module	3100	3.600" x 1.450" x .454" (9.144 cm x 3.683 cm x 1.153 cm)	FR-4	10 - 16 VDC	60 mA avg. 225 mA peak at 12 VDC	-30° to 150° F (-35° to 65° C)	5 - 95% non-condensing	.582 oz. (16.511 g)	13.56 MHz	N/A
OEM300 OEM Module	3111	2.850" x 2.700" x .446" (7.239 cm x 6.858 cm x 1.133 cm)	FR-4	10 - 16 VDC	80 mA avg. 260 mA peak at 12 VDC	-30° to 150° F (-35° to 65° C)	5 - 95% non-condensing	.883 oz. (25.038 g)	13.56 MHz	N/A

Reader/Writer Specifications

$iCLASS$™

$iCLASS$™ **Card Programmer**

HID's $iCLASS$ Card Programmer* provides custom programmed $iCLASS$ cards, keys, and tags on demand! End-users and system integrators can create and secure their own custom keys on-site, as well as encode and encrypt personalized data into each card. With the $iCLASS$ Card Programmer, lead times and minimum order quantities can be eliminated by stocking non-programmed credentials.

Take advantage of the enhanced security and read/write features that $iCLASS$ technology offers. The Card Programmer will program and secure any existing HID format within the HID application area on $iCLASS$ cards, keys, and tags.

- Provide an extra level of security to foil lost or stolen credentials: data stored within the HID application area can be encrypted Triple-DES before being written to the $iCLASS$ credential.

- Achieve the highest possible level of $iCLASS$ security: the $iCLASS$ Card Help text guides end-users through custom key generation. The custom key is then used to program site-specific credentials and readers.

- Additional information such as a PIN, password, anti-passback status, and four user-defined areas can be programmed into the HID application area. The user-defined areas are 16 Bytes long, and available for any data (e.g., employee name and ID) the user chooses to store in the $iCLASS$ credential.

To learn more about $iCLASS$ Application Areas and Key Management, please review HID's Application Note #28 and Key Management white paper. Both can be found at **www.hidcorp.com/iclass**.

*Consult factory for availability.

$iCLASS$™ **Software Developer's Kit**

The $iCLASS$ Software Developer's Kit (SDK) allows the experienced software programmer to develop read/write applications that are compatible with $iCLASS$ readers/writers (RW300, RW400, and RWK400) and $iCLASS$ OEM modules (OEM100 and OEM300).

The SDK* includes:

- An RW400 reader/writer mounted to a desktop stand
- Universal power supply
- Serial interface cable
- Software CD that includes the DLL, documentation, and a demonstration program with complete source code
- Sample $iCLASS$ Credentials

Use the Software Developer's Kit to unlock the power of $iCLASS$!

*Consult factory for availability.

SERVICES

iCLASS™ *Elite*

As an extension of the HID Corporate 1000 Program, HID is pleased to introduce the *iCLASS* **Elite** Program, offering end-users the highest level of card-to-reader security available today!

When using *iCLASS* contactless smart card technology, the *iCLASS* **Elite** Program provides security professionals the ability to standardize on a "single credential" solution that can be used for all applications and locations throughout the enterprise worldwide. The mutual authentication and encryption features of the technology enhance the "peace of mind" offered by this solution.

Like the Corporate 1000 Program, the *iCLASS* **Elite** Program offers end-users their own proprietary 35 bit format. This format includes a Company ID Code that is unique to each individual end-user. For added security, HID tracks card numbers to insure that no duplications occur. Since the format is identical to formats offered by the Corporate 1000 Program, providers of access control hardware and software will have no difficulty programming systems to use the format.

Security is further enhanced through the use of an encrypted authentication (security) key. This key authenticates the card and reader. Two types of authentication keys will be offered:

- **The HID standard authentication key** is offered and secured by HID.   Although many end-users may choose to use the HID standard authentication key, the unique Company ID Code in the format itself keeps the format proprietary to each end-user, regardless of which security key is chosen.

- **A custom authentication key*** is a unique, randomly generated key for each individual end-user. A custom authentication key provides the end-user with the highest level of security:

  (1) a format that uses a unique Company ID Code in the format itself, making the format proprietary to the end-user; and
  (2) an authentication key that is also unique to the end-user.

*Consult factory for availability.

Personalize and Secure Your Credential -
Inside and Out

Start with Raw Materials.

Add Technologies to the Inside.
iCLASS™ • **HID Proximity**
Optional Contact Smart Chip Module

Add Security to the Outside.
Holograms • UV Fluorescent Inks
Corporate Logos • Personalized Photo IDs

Your Finished Credential!

Craig Davis
ID# 50832-200
Sales Marketing

Use HID's Card Personalization Service to create custom credentials.

Turn your HID card into a credential by having HID personalize each card with the required ID badge information. For greater security, economically add a custom anti-counterfeiting feature. Only HID can provide one-stop shopping for your complete credential needs!

HID's ID Badge Service:

- Enables the security department to manage security, not ID badge production.

- Reduces overall costs associated with ID badge production.[1] Wear and tear on in-house badge production equipment is minimized.

- Eliminates costs associated with cards destroyed or disfigured during the badging process.

- Use HID Connect, a web-based service usable by any size company. Take advantage of technological advances with little or no capital investment!

- Create your ID badge layout to meet all your requirements. No in-house graphics capabilities are required!

- Use an existing photo ID database for the creation of new, personalized ID badges.

To learn more about HID's ID badging service or anti-counterfeiting offering, please visit our website at **www.hidcorp.com/cps**.

HID's Anti-Counterfeiting Offering:

When you secure and manage your facility with *iCLASS*™ by HID, you are using a technology that offers the highest level of security ever offered for physical access control, biometrics, digital cash, and other applications. Now enhance the security on the outside of your card by incorporating anti-counterfeiting and personalization features!

HID's Standard Anti-Counterfeiting Offering Includes:

Ultra-violet (UV) Fluorescent Inks: Invisible to the naked eye, these inks can verify the authenticity of a card when placed under a black ultra-violet light.

Holograms: The accepted security measure in the financial and banking world, holograms are easily recognizable by security personnel, allowing for quick identification of counterfeit cards.

Corporate Logo: Enhance corporate identity and brand recognition by creating a unique hologram or UV fluorescent ink design using your company's logo. Easily identified by security personnel, the exclusive logo will visibly demonstrate your company's commitment to security.
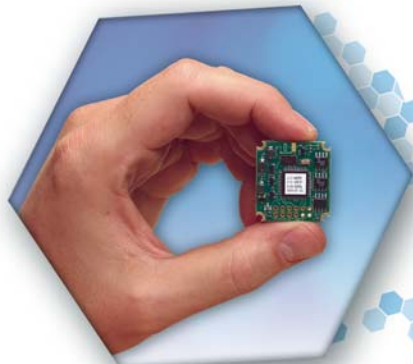
[1] For a cost comparison study done by ST&D Magazine, see "ID Badging Cost Analysis" at www.hidcorp.com/cps.

ROAD MAP

OEM50 Module

Card Programmer

Software Developer's Kit (SDK)

Read/Write LCD Terminal

b*ioCLASS* Biometric Module

b*ioCLASS* Biometric Terminal

www.hidcorp.com/iclass

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