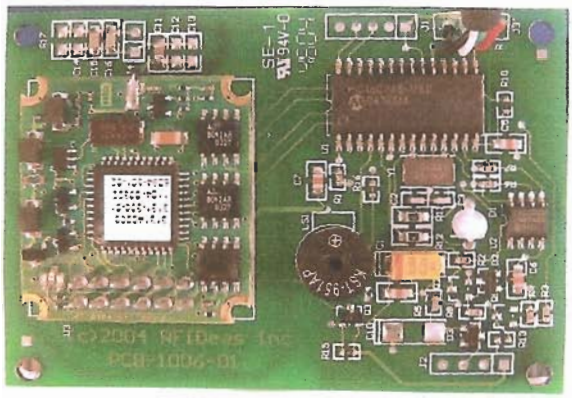
AIR ID®

Configuration Application User's Guide



For use with the
AIR ID® Contactless Read/Write Reader

RF IDEAS INC.

www.RFIDeas.com

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Congratulations on the purchase of your RFID1356i-USB-ID, RFID1356i-USB, or RFID1356i-232 with the Configuration Application.

The Configuration Application included at no charge is for use with the reader/writer to demonstrate the AIR ID features and functionality. The reader/writer is intended to be used with a third party application for any serious purposes. RF IDeas offers a SDK (software developer's kit) for third party software developers to develop more serious applications around the AIR ID platform.

*We at **RF ID**eas hope you enjoy using your new Smart Card Contactless Identification System as much as we enjoyed creating and developing it! Please share your comments and suggestions!*

Thank you,
*The Staff at **RF ID**eas*

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FCC Compliance Statements

AIR ID (formerly RFID1356i) Base Unit(USB or RS-232) FCC ID
iCLASS version M9MRFID1356I100,

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interface, and (2) This device must accept any interference that may cause undesired operation.

CE Mark for European operation

Table of Contents

AIR ID Release Information

Version 3.03 Adding iCLASS Tracker to Configuration Application
Version 2.0.0 - May. 1, 2003
Further pre-release refinement.

Version 1.2.0 - April. 30, 2003
Further pre-release refinement.
Consolidation of some confusing function order and timing.

Version 1.1.0 - April. 19, 2003
Further pre-release refinement.

Version 1.0.0 - April. 12, 2003

Overview

This document will guide the user through the various documents, specifications, and the contents of the AIR ID Writer *Contactless Read/Write Smart Card Reader.*

The *USB* and *RS-232* serial port contactless read/write reader are fully supported in an optional SDK (software developer's kit).

The ***AIR ID Enroll*** read-only reader may access only the serial number on the iCLASS contactless smart card. No ability to write to the memory is supported with this reader.

NOTE: The Configuration Application, included at no charge, is for use with the reader/writer to demonstrate the AIR ID features and functionality. RF IDeas offers a SDK (software developer's kit) for third party software developers to develop more serious applications around the AIR ID platform.

iCLASSAPI.DLL

The ***-USB*** and ***RS-232*** uses drivers supplied with the operating system, however there is a DLL library required that is supplied by RF IDeas. The configuration application makes use of this DLL, **"iClassAPI.dll"**, which is required for use with the device.

The file: "iClassAPI.dll" is the DLL that manages all operations necessary to:

1. Read and Write device configuration items and retrieve a card ID when a card is presented to the reader,
2. It also provides a means to program HID iCLASS smart cards with application data and read it back, and
3. To change master keys in the reader and cards.

The reader's configuration items are grouped according to their general function and are handled through structures defined in this document.

Before the configuration items are accessible, the application must be instructed to 'Connect' to the device and told to 'Read' all configuration items. Once the items have been read into local storage, the user may then access them through the four groups of 'Get' and 'Set' functions. The configuration items are sent back to the device for permanent storage only when the 'Write' function is called.

The device may be reset to factory default values by pressing 'Reset to Defaults' under the Connect tab. This is a fast method to bring the device to a known state.

To read an ID from an iCLASS card/token, it is only necessary to 'Connect' to the device. No configuration is necessary if the user is confident that the device is already configured appropriately.

The majority of the discussion within this document will be focused on using the AIR ID reader with HID iCLASS contactless smart cards.

The iCLASS cards have two primary areas for the user to work with:

- Read-Only card data, typically known as proximity card data used in the building access control world. This information is held in Page 0, Application Area 1 with secure keys known only to HID. There are several 'configuration parameters associated with this data that may be saved within the reader.
- Read/Write card data that is held in Application Areas 2 and above.

The ‘Get ID’ button may be pressed when the ‘Software Developer Kit Mode is checked (Advanced tab). It is independent of configuration activity, except that it should not be called directly (within 1 second) after performing a ‘Write’ to memory function.

When the user application is finished, the ‘Disconnect’ function should be pressed.

The ‘GetLibVersion’ function does not require that a ‘Connect’ be performed first. It only requires that the Library DLL was successfully loaded into memory.

iCLASS Contactless Credentials

This section provides the developer with details about the HID iCLASS credentials. You will find more details at HID’s web site located at www.HIDCorp.com.

Introduction to Application Areas

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.

2kbits (256Bytes) ***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.

16kbits (2kBytes) ***iCLASS*** credentials:

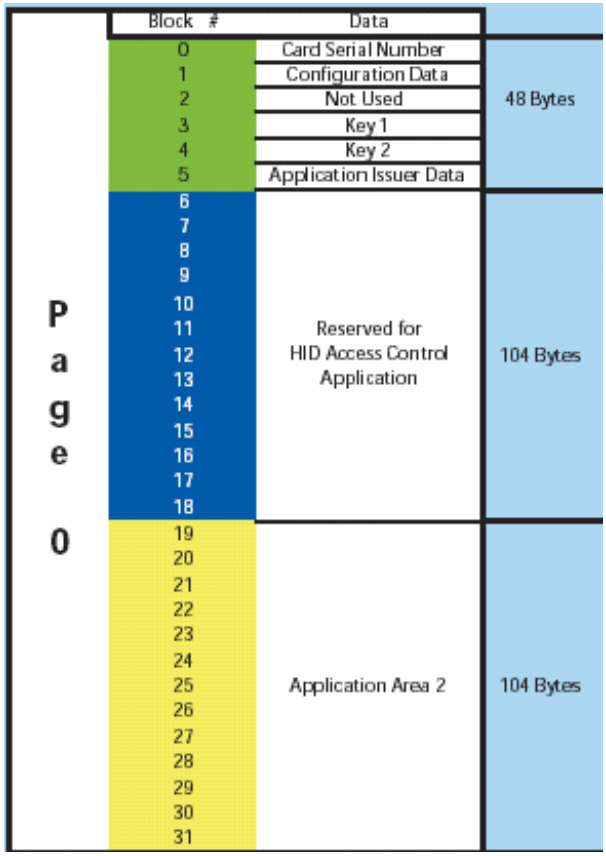
- The 16K is a highly modifiable, multi-application credential with enough memory area to store most common biometric templates.
- Application Area 2 of the 16K/2 credential allows for 1896 bytes of read/write data, all of which can be accessed with a single authentication key.
- The 16K credential can 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.

Will my application fit on an *iCLASS* card? Use this table to find out.

Data Type	Size (in bits)	Size (in Bytes)	How many fit on 2kbits (256Bytes) ***iCLASS*** credential?***	How many fit on 16kbits (2kBytes) ***iCLASS*** credential?***
Yes/No (True/False)	1	1/8	832	15168
A single ASCII character	8	1	104	1896
A value less than 65535	16	2	52	948
RSI® (Hand Geometry template)**	72	9	11	210
Bioscrypt® (Fingerprint template)**	2784	348	0	5
LG/Iridian® (Iris template)**	4096	512	0	3
Voice template*	10000	1250	0	1
Low-resolution photo*	12000	1500	0	1

**template sizes are estimated and vary between manufacturers.*
***template sizes provided by manufacturers and are subject to change.*
****these are approximate numbers, actual usage depends on application configuration.*

iCLASS Read/Write Memory
The read/write memory for the iCLASS cards is accessible by using a key you place in one of the reader's 7 key storage memory areas. The key you reference in the reader must agree with the key already in the card in order for access to be granted. If the two keys (card and reader) do not agree, access is denied.



iCLASS Page 0 Memory Map

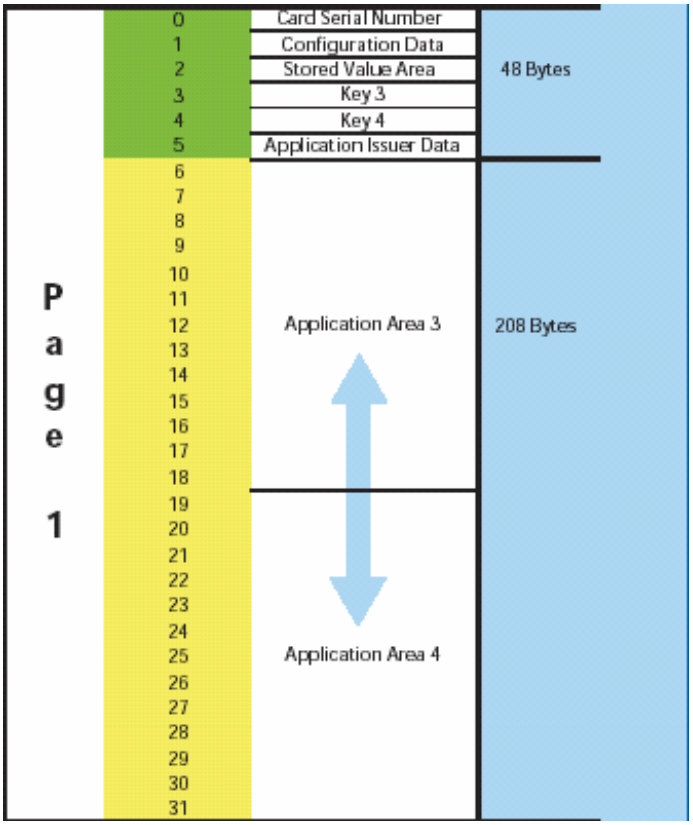
Blocks (8 bytes each) 0 through 5 in each page contain various configuration information. Users should not write to this area as you may render the card useless. Key 1 and Key 2 located in blocks 3 and 4 are used to access what is known as Application Area 1 and Application Area2 for the given page.

Reserved Area HID Access Control Application
Page 0 is a special area of memory for the programmed iCLASS cards. As can be seen above, Application Area 1 is essentially reserved for HID Access Control Application (i.e. proximity card Wiegand data such as parity, site codes, and employee identification numbers).

The building access control industry is an important need being served by the iCLASS cards and readers. A single badge solution for building and computer access is one of the fundamental benefits of contactless smart cards. To better understand how the building access using this reserved area as well as the terms and nomenclature associated with building access, we have included the **pcProx** reader documentation. You will find that the concepts and terms associated with proximity cards are very similar to those used with the read-only data stored in this reserved area. This is allow end users to seamlessly integrate iCLASS technology, in a plug and play fashion, into their building access control equipment.

Open Memory Areas
Application Area 2 in Page 0 is open for users to read and write. To access this area using the supplied demo applications for C++ and Visual Basic you would set the Card Context to:

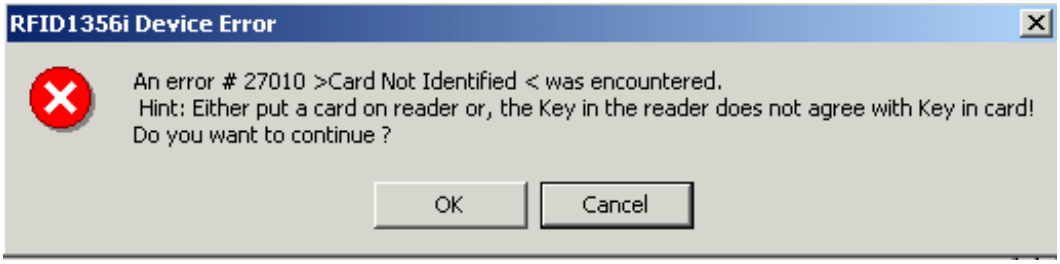
Page = 0
Appl. Area = 2



iCLASS 16 K/ 16 Appl. Memory Map Pages 1 Through 7

For the 16k card, the remaining memory is structured as shown above,

Memory Operations
When you access a given area of memory on the card your reader key must agree with the key in the card. If the keys do not agree, you will receive the error message:



indicating the iCLASS card was not identified. The card was not identified since AIR ID could not gain access using the Key as defined in the reader. To alleviate this problem you need to specify and write the correct key value (identical to the key in the card for this area of memory) to the reader key location that is being used in the Card Context.

IMPORTANT: The reader will hold these Keys you write. Therefore it is very important when your application is finished that you make sure you write new invalid Keys to the reader key locations you use. This guarantees no one can gain access to secure memory locations within the card using a Key already in the reader.

Here are a few macro-type operations you will use in working with the iCLASS cards. Each operation is shown to indicate the proper sequence of events for executing the given task.

Read Operation
When you want to read an area of memory from the card, you must perform the following:

1. Get the Card Configuration,
2. Set the Card Context. This is the area of the card you wish to access. The context includes the Page, Application Area (1 or 2), and the reader location (1-7) which holds the key you wish to use to access this area.
3. Write the correct Key to the reader: *Write to Reader*
4. Perform the Read command using the *Read* button.

Write Operation
When you want to write an area of memory from the card, you must perform the following:

1. Get the Card Configuration,
2. Find a Free are on the card using the Procedure: *Find Free Page*,
3. Place a New Key value into the New Key field,
4. Write this Key to the Card: *Write to Card*
5. Write this new Key to the reader: *Write to Reader*
6. Place the New contents into the Read/Write ASCII box,
7. Issue a *Write ASCII* by pressing this button.

Erase and Free Memory Area

When you want to clear and free an area of memory from the card, you must perform the following in order:

1. Get the Card Configuration: *Get Card Cfg.*
2. Find a Free are on the card using the Procedure: *Find Free Page*,
3. Place the correct Key value into the New Key field unless you are using the Default Key
4. Write this Key to the Card: *Write to Card,* or if using the default Key do nothing
5. Write this new Key to the reader: *Write to Reader* or if using the default Key press the *Write Default to Reader* button
6. Place the New contents into the Read/Write ASCII box,
7. Issue a *Write ASCII* by pressing this button.

Disk Contents

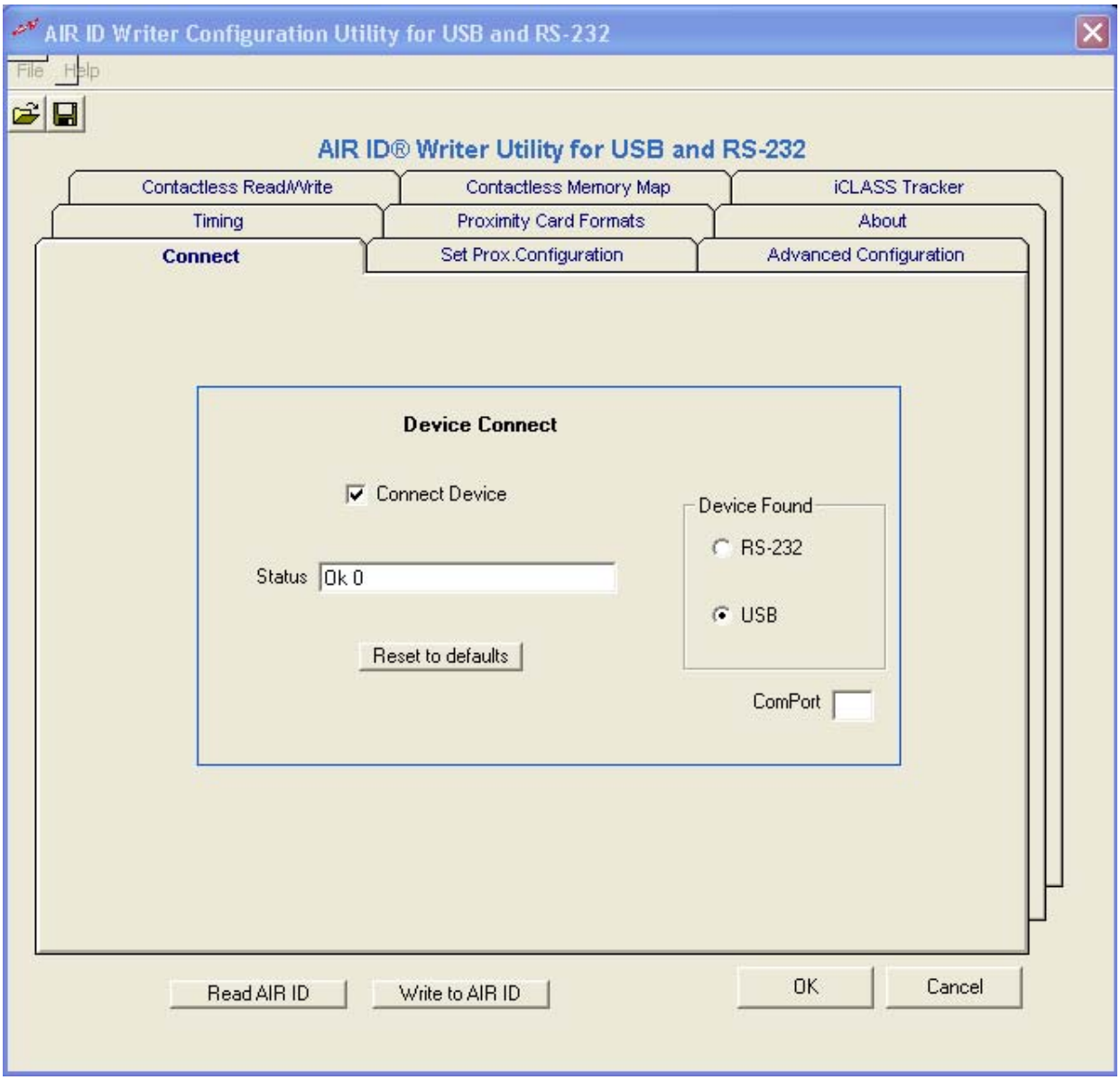
AIRID-Config.pdf – This document.

pcProx.pdf - Page 0, Application Area 1 of the iCLASS contactless smart card is holding information typically associated with the Access Control Industry's proximity card. This file documents the read-only identification configuration parameters.

license.txt – License Agreement for AIR ID hardware and software**.**

Configuration Application

Included is a complete application exerciser.



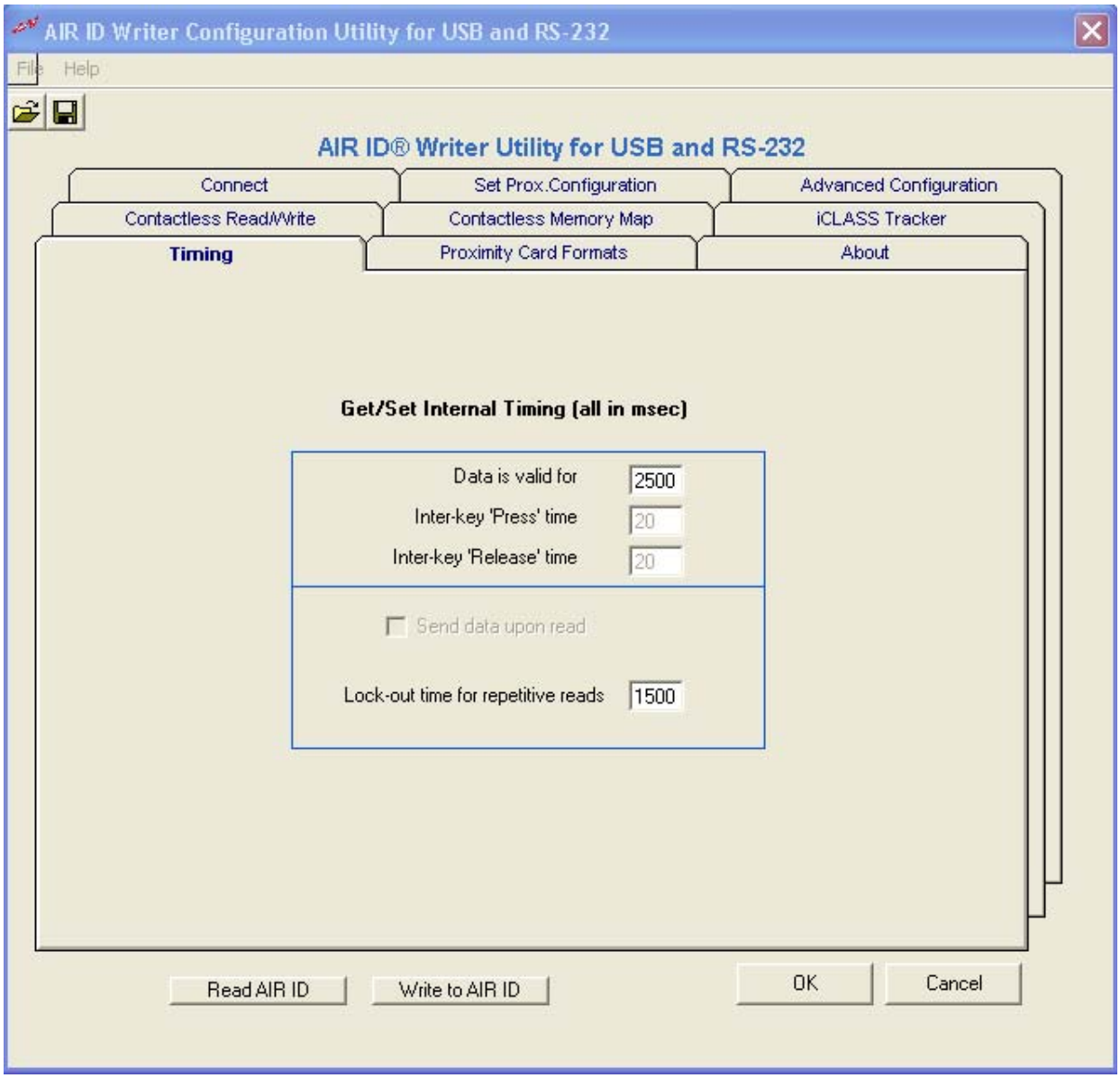
Connect

The DLL auto-detects the AIR ID first on the USB, and then if no reader is found it searches on communications ports 1 through 8.

Device Found
When the connection is successful, the Device Found checkbox will indicate which device was found.

Reset To Defaults
Applies to the read-only access control data stored as configuration information.

Timing



Get/Set Internal Timing

Data is valid for

The time the card ID remains valid in the device. Once this time elapses, the card data is discarded. The minimum value is 900.

Inter-key 'Press' time

Sets USB inter-key Press' time delay in msecs. This is how long the key is held down.

Inter-key 'Release' time

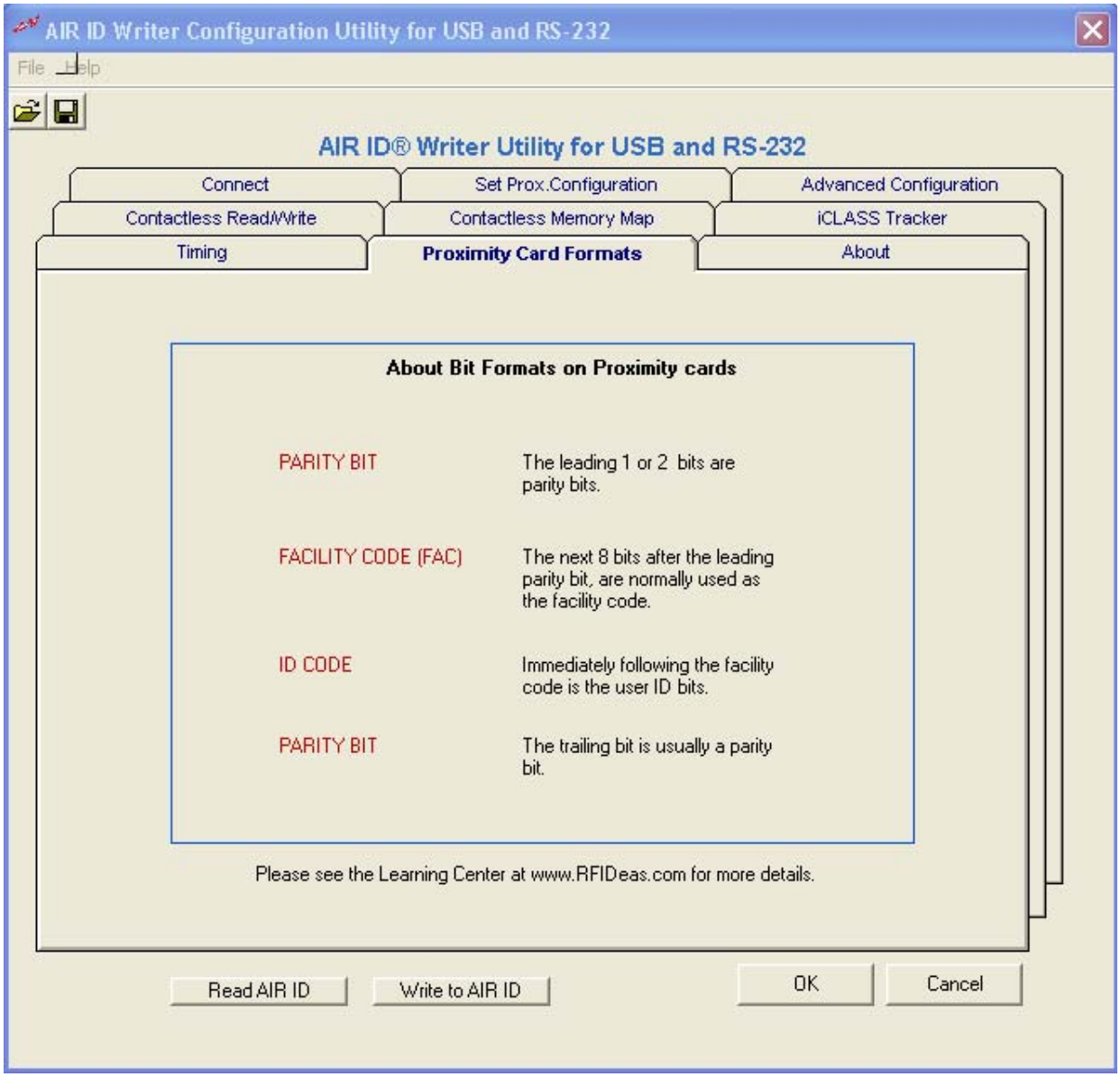
Sets USB inter-key 'Release' time delay in msecs. This is the delay between keystrokes.

Lock-out time for repetitive reads

The lock-out time is the time, in milliseconds, that a subsequent output is prevented. The reader checks to see if the same card remains on the reader, If it is the same card, the reader will wait this period of time before allowing the identification number to be released to the port.

Proximity Card Formats

This tab section is included since the Page 0 Application Area 1 of the iCLASS contactless smart card is holding information typically associated with the Access Control Industry's proximity card. This screen shot shows how the typical proximity card bit-stream is presented.



Background information: Proximity Cards

To better understand this reserved area of read-only card memory, we are including this discussion of proximity cards and formats.

There are several bits constructed together which make up the data sent from a proximity card or token to the access control reader. The AIR ID reader reads all bits for any format card produced.

The proximity token has several bits, and these will vary from customer to customer. There are literally hundreds of bit formats and lengths for proximity cards! The most popular is the 26-bit format card.

There are actually 24 bits of usable information as the first and last bits are really parity bits to ensure data integrity.

This is typical layout for a 26-bit card.

PARITY BIT
The leading and trailing 1-3 bits are usually the parity bits. For a 26-bit card, only 1 leading and 1 trailing parity bit is used.

IDENTIFICATION CODE
Immediately following is the identification code. For a 26-bit card this is 16 bits.

FACILITY CODE
The next bits are normally used as the facility code. For a 26-bit card there are 8 bits.

PARITY BIT
The trailing 1-3 bits are usually a the parity bit(s).

The software does not perform any data validation checking. This is due to the fact that the data must be known before the read in order to verify its validity.

How to determine your format and masking
Rule1: 1st Convert to Binary
Rule 2: Card data format in binary is typically something like:

parity + facility code + employee ID + parity

You may have 1-15 parity bits at either end. It looks like you have 1 at the far end.

As an example let's assume you have a card and expect to receive the following number: 816159

If all bits are selected you find waving the card results in the following number:
144238654

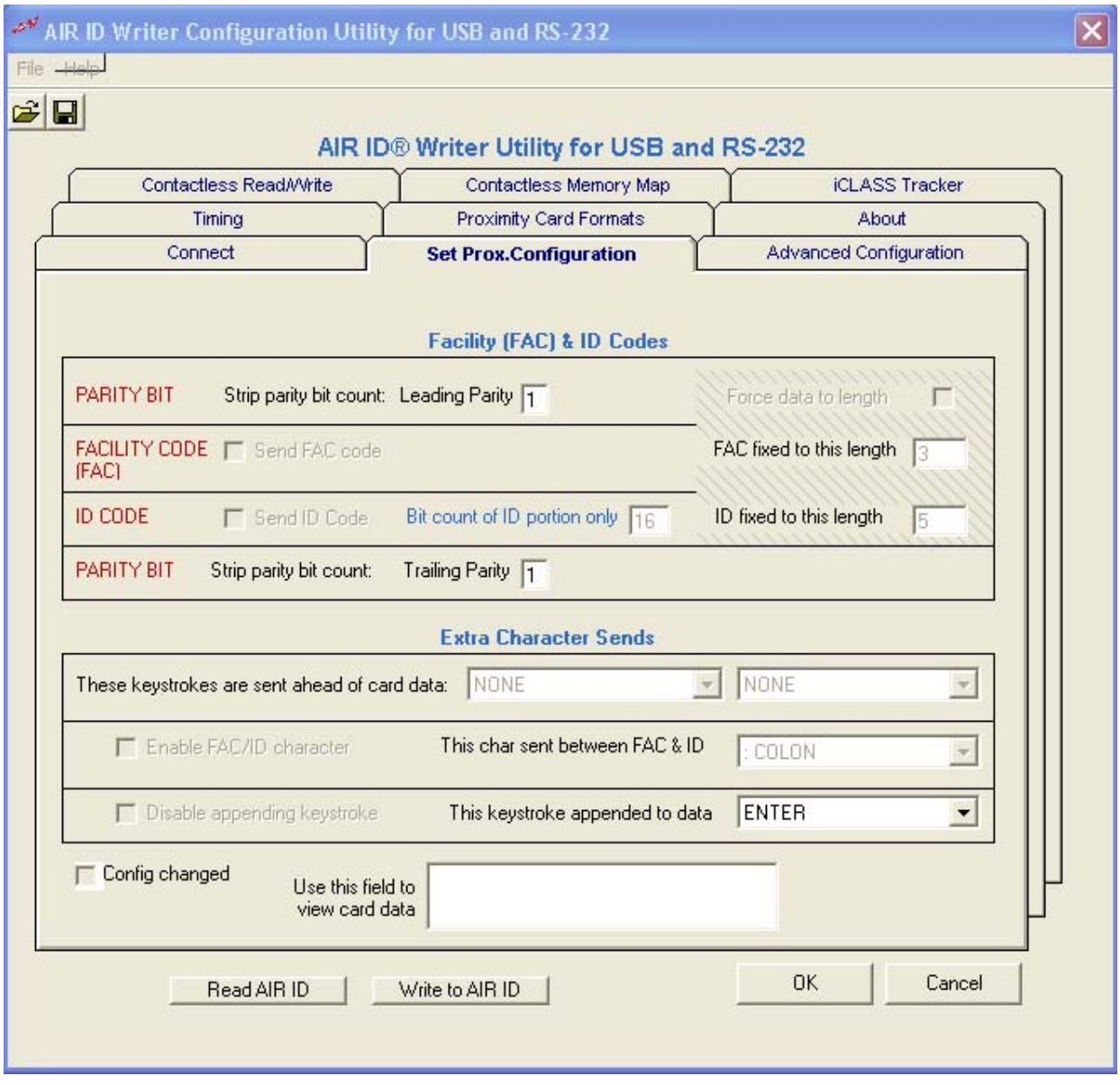
Using the Calculator supplied with Windows, select the scientific mode and find the binary equivalents for each of the above decimal numbers.
MSB LSB
10001001100011101000001111 10 (144238654)
11000111010000011111 (816159)

Notice how deselecting the 1st 7 bits and the last parity bit results in the same binary number! Select bits 2 through 21 and deselect all others will provide the result desired for this customer's format and example.

Set Proximity Configuration

The next two tabs ‘Set Proximity Configuration’ and ‘Advanced’ manage the traditional proximity card data.

This tab section is included since the Page 0 Application Area 1 of the iCLASS contactless smart card is holding information typically associated with the Access Control Industry’s proximity card. Specifically, the iCLASS identification number is also known as the proximity card number (see Proximity Card Formats above). This screen shot shows various AIR ID reader configuration settings associated with this identification number.



FAC & ID Data

Use this group to concatenate the ID and FAC codes into one ASCII character set. This is useful when you need to see the card data is a special fashion, or format the data for a given application.

Strip Leading Parity bit count
The indicated number of Leading Parity bit(s) are ignored. There are typically only 1 or 2 leading parity bits.

Strip Trailing Parity bit count
The indicated number of Trailing Parity bit(s) are ignored. There is typically only 1 trailing parity bit.

The following keystrokes are sent ahead of card data
You may specify up to 2 keystroke characters that will be inserted in front of the card data. Note there are 3 special characters (hex 01, 02, 03) that can be specified. These add an extra measure of difficulty in reproducing card data directly from the keyboard. It may be useful when using the proximity reader as a logon device. Please see application note for more details.

Send ID Code
Since there are two fields of data (ID and FAC) and sending at least one is necessary, this field really implies send the ID and not the FAC data. If both fields need to be sent, you need to select the 'Send the FAC code' checkbox.

Send FAC code
Selecting this checkbox will cause the FAC code to be sent.

Bit count of ID portion only
This field is used to define the bit count of ID portion of the card data. To retrieve this data properly, you will need to also indicate and strip the Leading and Trailing parity bits.

Enable FAC/ID character
This checkbox indicates that a separator character will be used between the FAC and ID codes.

This char sent between FAC & ID
This field holds the character that will be placed between the FAC and ID codes. Note there are 3 special characters (hex 01, 02, 03) that can be specified. These add an extra measure of difficulty in reproducing card data directly from the keyboard. It may be useful when using the proximity reader as a logon device. Please see application note for more details.

Force data to length
Zeroes are added to the front of the data to create a specific length. For example, if the data were 567 and the length is set to 6, the output will be 000567.

ID fixed to this length
Zeroes are added to the front of the ID portion of the data to create a specific length.

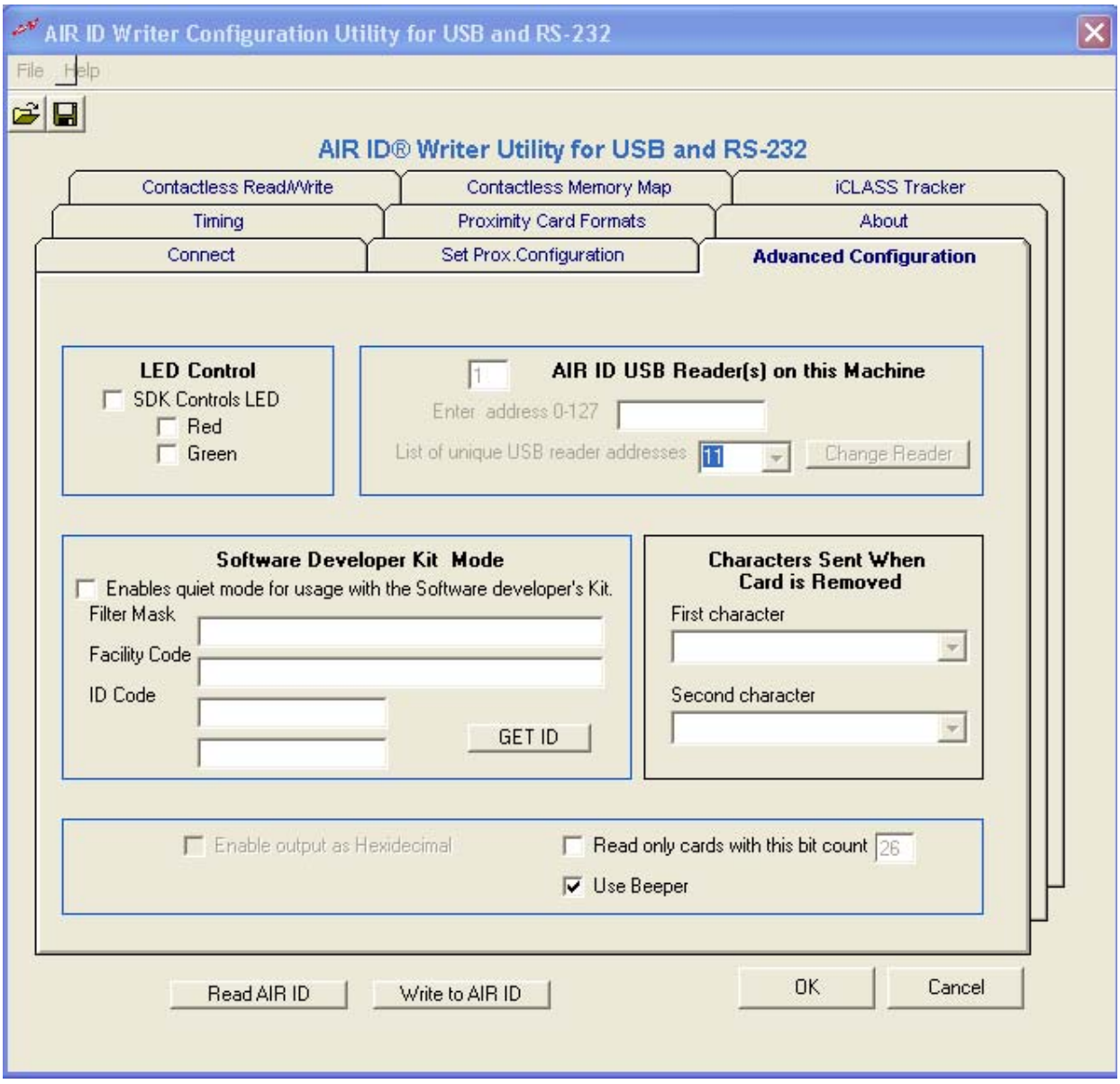
FAC fixed to this length
Zeroes are added to the front of the FAC portion of the data to create a specific length.

Disable appending keystroke
This checkbox tells the device to not append a character to the end of data.

This keystroke appended to data
If the previous checkbox is not selected, this character will be appended to the data. Note there are 3 special characters (hex 01, 02, 03) that can be specified. These add an extra measure of difficulty in reproducing card data directly from the keyboard. It may be useful when using the proximity reader as a logon device. Please see application note for more details.

Advanced Configuration

The AIR ID reader has a memory storage area that holds configuration information related to how to handle the card's Wiegand ID that is used for building access control. Wiegand cards usually have a parity bit(s) at each end of the data stream. Often users want to strip these bits and simply retrieve the site-code or ID code from the card.



LED Control

SDK Controls LED

Using the optional SDK (software developer's kit) the software developer has the ability to control the red/green/amber colors of the LED on the top of the reader.

Normally, the reader goes from red to green when a proximity card is read (i.e. HID proximity card being read by a pcProxH reader). This can be restricted by the bit count. For example, if the user configures the reader to 'read only 26 bit cards' the LED will go green when any HID 26 bit card is placed on the reader. A HID 34 bit card, will not turn green.

Selecting this feature will cause the LED colors to come under the control of the SDK, not the independent card reading function.

Red LED
When selected, the SDK has control of the RED state.

Green LED
When selected, the SDK has control of the GREEN state.

AIR ID USB Readers on this Machine
This field will show how many AIR ID USB readers are attached to the PC.

User may attach up to 16 different AIR ID USB devices on their PC at one time. You will need to attach one reader at a time in order to preset this particular's reader 'Leading Characters'. There is no way to use the unique addressing without working with the SDK (the software developer's kit).

Enter Unique Address
If you are a software developer, and have purchased SDK, you will need to write a unique address into the reader. Once you have written the unique address, you can selectively communicate with each device to learn which reader sent the card data stream.

SDK users will use this address field to enter the address for the attached reader. NOTE: Only 1 reader may be attached when this feature is used.

List of Unique Reader Addresses
This drop down list box will show all attached readers that have a unique address.

Characters Sent When Card is Removed
This applies only to the RS-232 reader.

The RS-232 device is capable is sending two 'Card Gone' characters whenever the card is removed. Use the pull-down character selector boxes to choose the desired ASCII characters. These characters will be sent once the Lifetime hold (see Timings Tab) has elapsed.

Software Developer Kit Mode
If you are a software developer, and have purchased SDK, you can change the mode of operation of the pcProx reader.

For the USB reader this means from 'keyboard' to SDK.

For the RS-232 reader this means from direct ASCII output asynchronously to the SDK's synchronous mode of polling.

In the SDK mode, all data are inhibited. The card's data may be read using functions included in RF IDeas' SDK. The SDK is sold separately and is useful to software developer's to tightly integrate their software with the card reader. Please visit www.RFIDeas.com to learn more.

The following features are useful to those who have purchased the SDK.

Get ID
This button is active when the 'Disable Sending keystrokes as data' is selected. Pressing this button, while a proximity card is present on the reader, will read the card's data and display the result in the field next to the button.

Raw Data
This field will contain the number of bits read from the card (less the parity bits stripped) and show the card's data in hexadecimal format.

Filter Mask
If the Filter Mask field is empty, the program will try to 'guess' at the format for the card. Since there are literally thousands of formats, this truly a guess.

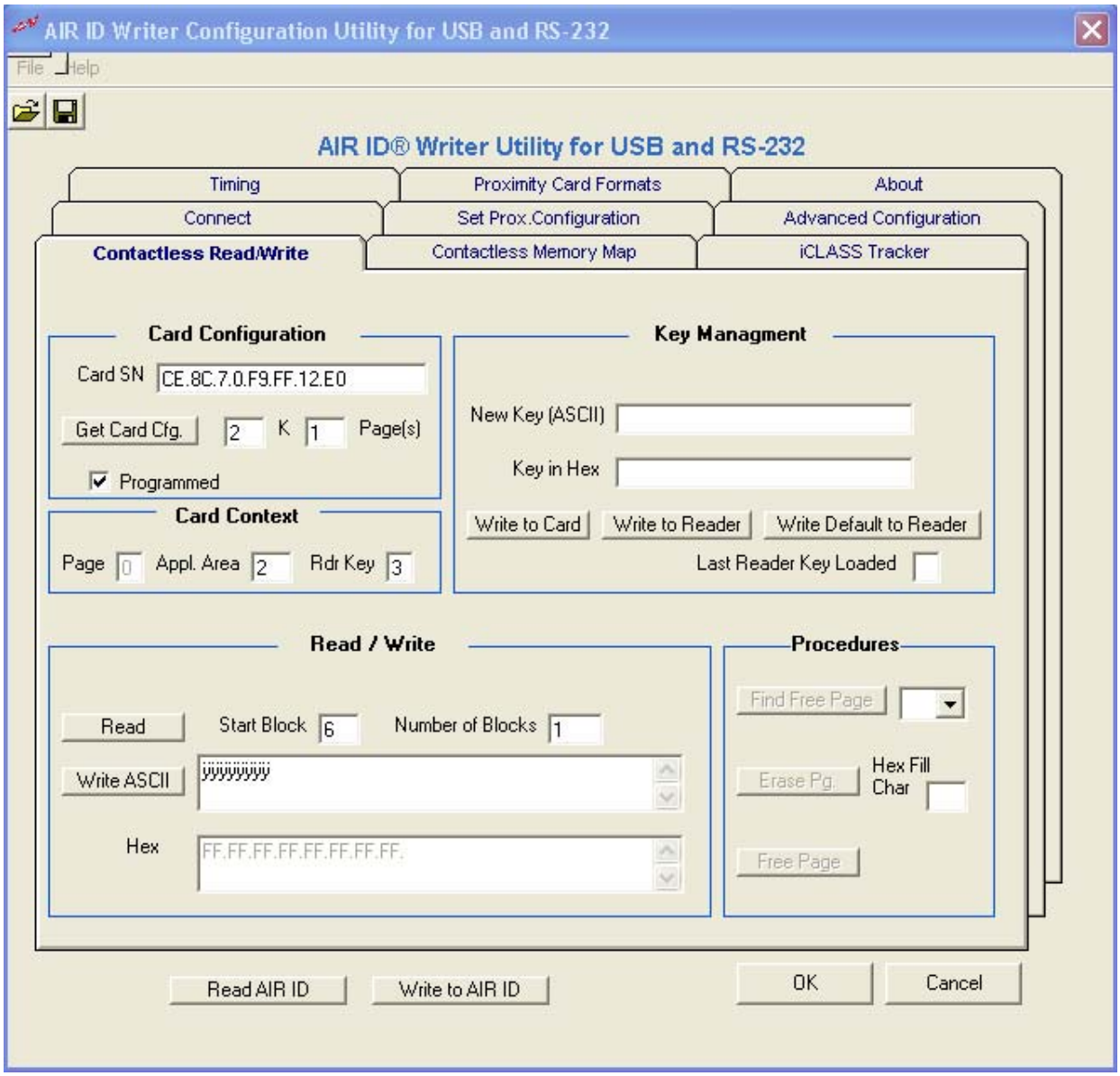
Facility Code
The Facility Code will represent the decimal equivalent of the bits defined by an 'F' in the Filter Mask.

ID Code
The ID Code will represent the decimal equivalent of the bits defined by an 'I' in the Filter Mask.

Enable Output as Hexadecimal
This checkbox allows the user to select a hexadecimal keystroke data output as opposed to the standard decimal.

Read only cards with this bit count
No data is sent from the device unless the bit count is matched. The total bits received from the card must match this bit count, parity bits included. If you select this checkbox and set the field for 26, the reader will only respond to 26 bit cards.

Read only cards with this bit count
No data is sent from the device unless the bit count is matched. The total bits received from the card must match this bit count, parity bits included. If you select this checkbox and set the field for 26, the reader will only respond to 26 bit cards.



Contactless Read/Write

To begin to work with the read/write section, you must 1st place the iClass contactless card on the reader and perform a 'Get Card Cfg.' by pressing this button. This will retrieve the cards complete configuration and memory.

Card Configuration

Get Card CFG

Pressing the Get Card Cfg button will read the entire card's configuration and memory. The application will read and determine the free pages (those pages that are using the default keys) as well as the memory size and number of application areas.

Anytime you change cards you must press this button.

The Card Configuration area is used for internal segmentation and other card specific usage. This area is located in block 00 right beneath the card's SN, as well as in each of the memory Pages. See the iCLASS Memory map for more details.

Card SN
Each iCLASS contactless smart card has a unique serial number. When you press the Get Card Cfg button, this number is retrieved.

Card Context
This section describes the area of memory on the card you intend to work with along with the specific key location (1-7) in the reader that will be used to attempt to gain access. See Memory Map above for additional details.

Key Management
In order to successfully read or write to an iCLASS card the correct security key must be written to the reader. If the key being used in the reader does not agree with the key in the card (for the area of the card you are trying to work with), you will not be allowed access.

The reader is capable of holding up to 7 keys, although one of these areas is used by the system as a key swap area. You may write either default keys or specify your own keys and write these to any of the reader key locations (1-7). We caution you using location 7 as this is used by the reader internally as a swap register. As mentioned above, please write an invalid key back to the location once you are finished with the memory operation so as not to leave an access key for someone else to use.

New Key (ASCII)
Enter a new Key in this field that you will send to either the card, reader, or both. Pressing either the *Write Key to Card* or *Write Key to Reader* will cause this key to be sent to the corresponding unit.

Key in Hex
The value entered above will be converted to hex and shown in the *Key in Hex* field.

Write to Card
Writes the New Key (ASCII) value to the iCLASS contactless smart card.

Write to Reader
Writes the New Key (ASCII) value to the AIR ID reader.

Write Default to Reader
Write the default key value to the AIR ID reader.

Read / Write
This section of the screen works with the read/write portion of the iCLASS contactless smartcard's storage area. There are three different iCLASS cards:

1. 2k 2 Application areas
2. 16k 2 Application areas
3. 16k 16 Application areas

The memory size and partitions are different for each of the card style.

To familiarize you with the memory organization, please see the Memory Map above, or on the Memory Map tab, or visit HID's web site at www.HIDCorp.com. Part numbers and ordering information may be found at: www.RFIDeasStore.com.

The following six items are grouped together as they deal with read or writing a specific number of blocks in the cards memory space.

Start Block
Please refer to the memory map above to determine which blocks are restricted.

Number of Bytes
Set to write 8 bytes. If you enter less than 8 bytes, the VB application will append " " spaces, to fill in 8 bytes worth of data to write.

Write ASCII
Press this button to write the data shown in the ASCII field to the memory area designated by the Card Context and Starting Block field.

HEX
Shows the hex value of the data entered in the ASCII field.

Procedures
This section contains useful, higher level, procedures.

Find Free Page
This routine is valid for 16k cards only. It searches each page 1-7 for memory pages that are protected with the default key. When a page is discovered, it adds it to the drop down combo box adjacent to the button. This is useful to find an open area on the card to work with.

Erase Pg.
The Erase Page procedure is useful to clean out the memory contents of the page specified in Card Context. The page is filled with the value found in the *Hex Fill Char* field.

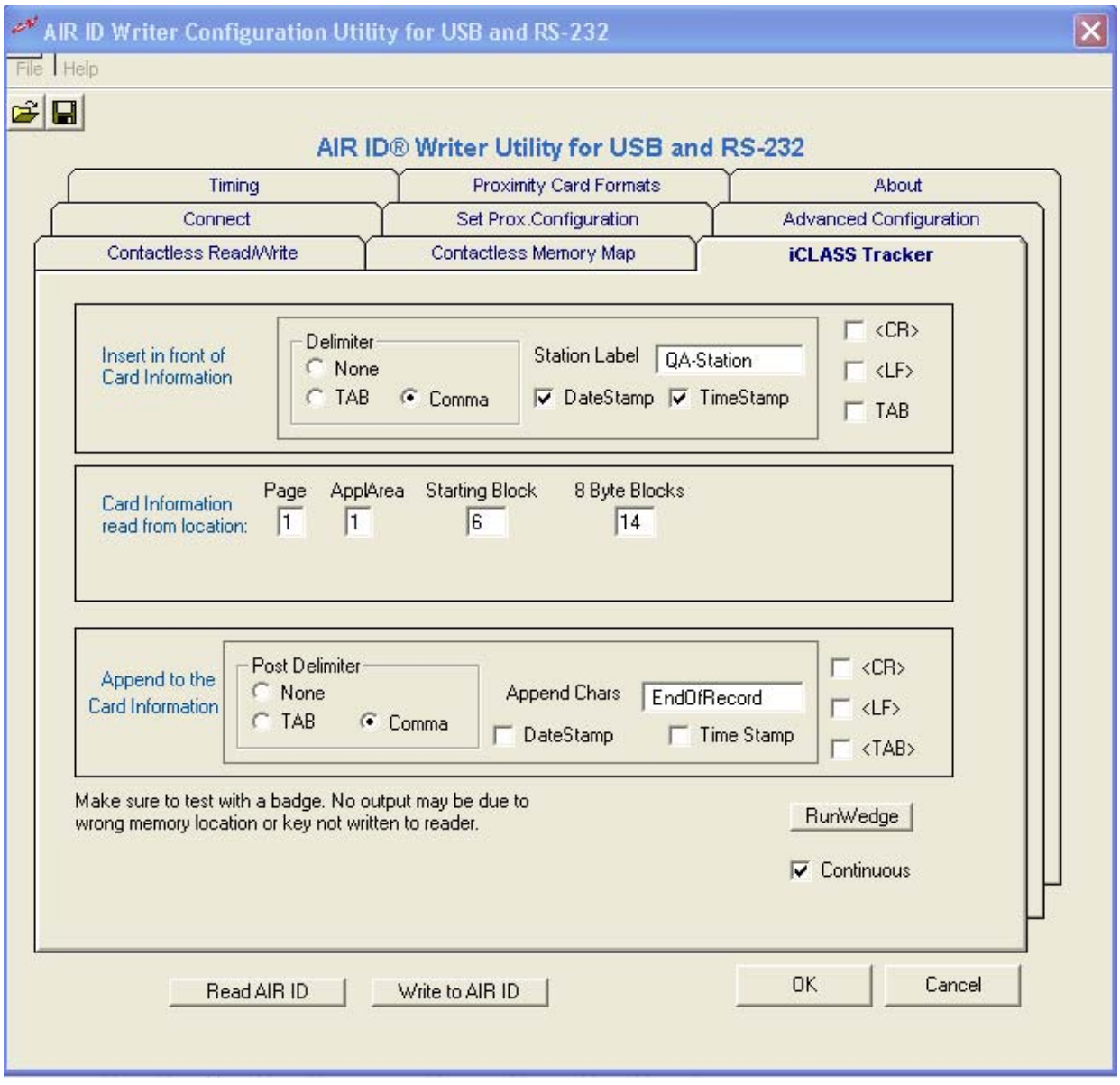
Hex Fill Char
See above.

Free Page
This procedure frees the page defined in the Card Context.

ICLASS Tracker

The iCLASS Tracker Tab allows the user to use the iCLASS cards to automatically keystroke data to any application by reading the memory from specific areas of the card. The iCLASS Tracker supports only the iCLASS 16k/16 Application area cards – part number: BDG-2002.

The iCLASS Tracker screen layout shows information the station (PC) can insert before (top section) or after (bottom section) the data read from a specific area (middle section of the screen below) of the card's memory.



The concept is to have a series of machines along a process line each be able to read user card information, add station information or date/time stamps in a comma or tab delimited structure, and place this into a standard text file. The text file can then be imported into any application such as Microsoft Excel or Access Database for data capture. This can be accomplished without custom programming.

Productivity Tracker Example
In a manufacturing environment the stations would collect user information from various workers throughout the day. At the end of the day, the text files from each station would be imported into an application such as MS Access. The Access application macros could calculate and report on User time durations between events on a given station as well as time durations between stations as a way to measure productivity.
For the setting above the following is key stroked at the location of the cursor:

QA-Station, 10-15-2003, 17:55:11, CardData, EndOfRecord

Where **"**CardData" is the information read from the iCLASS card.

Insert in Front of Card Information
The settings in this section describe what data is inserted as keystrokes, to the data read from the user's iCLASS card.

Delimiter:
The user can choose delimiters: None, Comma, or Tab. The delimiter is inserted after each field or date/time stamp.

Station Label
The user may type in any identifier. The first information key stroked is the Station Label.

Date Stamp Time Stamp
These fields are inserted after the Station Label.

<CR> <LF> <TAB>
Use these check boxes to add these keystrokes before the card information is read.

Card Information Read from Location
The following fields describe the precise location of the iCLASS card's memory that will be read and key stroked. The information may be records into the card using the "Contactless Read/Write" Tab of this application. The user is free to add any ASCII characters. For example to add a LineFeed, hold the ALT key and press 010.

The following fields refer to the same fields described in the "Contactless Read/Write" Tab above.

Page

Application Area

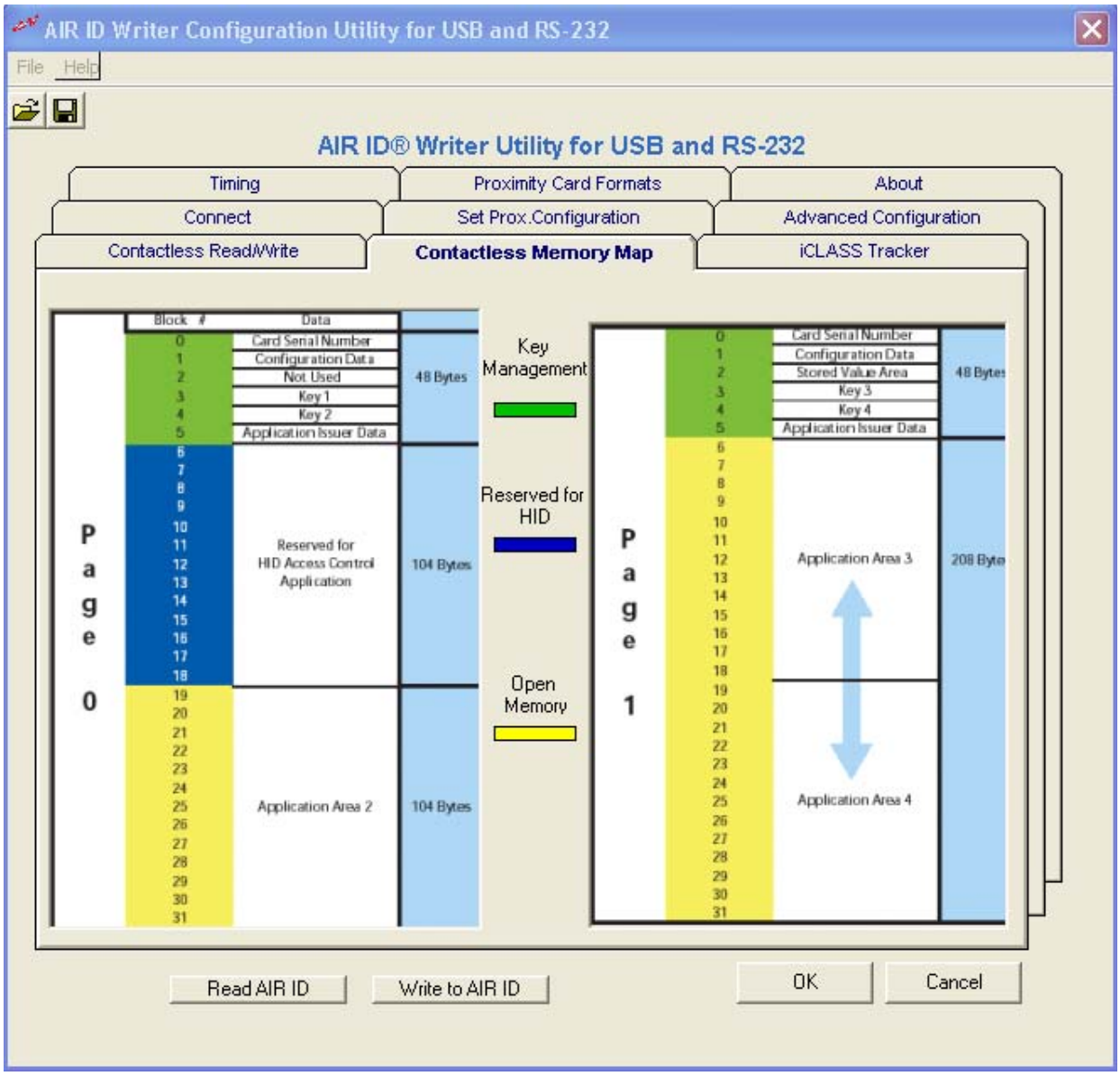
Starting Block

8 Byte Blocks

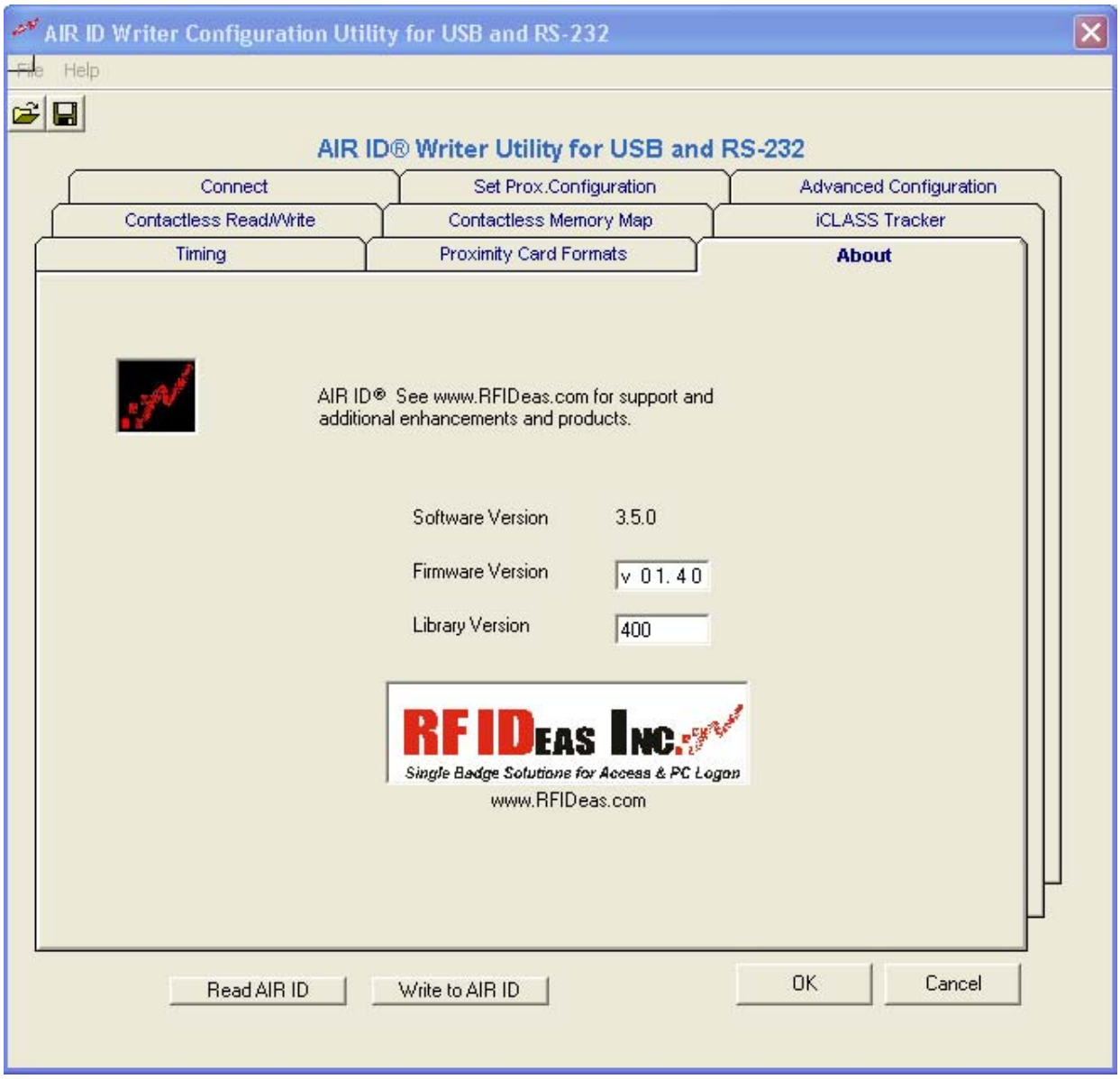
Append to Card Information
Same as "Insert in Front of Card Information" above except this is appended to the data read from the card.

ICLASS Memory Map

Please refer to the iCLASS Memory Map discussion above.



About



OK
Leave the AIR ID Dialog Screen.

Library Error Codes

Returned from GetLastLibErr()

Public Interface Error bits:

USBConnect	0x0001xxxx
ReadCfg	0x0002xxxx
WriteCfg	0x0004xxxx
ResetFactoryDflts	0x0008xxxx
Get(Structure)	0x0010xxxx
NULL Pointer	0x00100001
ReadCfg not called	0x00100002
Set(Structure)	0x0020xxxx
NULL Pointer	0x00200001
GetActiveID	0x0100xxxx
CommCnct	0x0200xxxx

where ‘xxxx’ represents Private Interface Error Bits.

Private Interface Error bits:

```
  USBDeviceConnect    0x00xx, xx=
       1:Couldn't open SETUPAPI.DLL
       2:Unresolved SETUPAPI.DLL entry point
       3:Couldn't open HID.DLL
       4:Unresolved HID.DLL entry point
       5:Unresolved DLL entry point
       6:SetupDiGetClassDevs returned INVALID_HANDLE_VALUE
       7:SetupDiEnumDeviceInterfaces failed or ran out of devices
       8:SetupDiGetDeviceInterfaceDetail: ERROR_INSUFFICIENT_BUFFER != GetLastError()
       9:Failed pDevIFDetail LocalAlloc
      10:VendorID and/or ProductID not found
      11:CreateFile failed
      12:SetupDiGetDeviceInterfaceDetail returned 0
  GetUSBDevFeatureRep 0x01xx, xx=
       0:device not open
       1:NULL module call reference
       2:module call returned FALSE
  SetUSBDevFeatureRep 0x02xx, xx=
       0:device not open
       1:NULL module call reference
       2:module call returned FALSE
  CheckUserFlags      0x100x, x= [will never fail]
  CheckUserBitCnts    0x101x, x=
       0:iLeadParityBitCnt > 15
       1:iTrailParityBitCnt > 15
       2:(iIDBitCnt < 1) OR (iIDBitCnt > 64)
       3:(iTotalBitCnt < 26) OR (iTotalBitCnt > 64)
  CheckUserDispParms  0x102x, x=
       0:iFACIDDelim > 255
       1:iELDelim > 255
       2:iIDDispLen > 10
       3:iFACDispLen > 10
  CheckUserTimeParms  0x103x, x=
       0:iBitStrmTO > 1020
       1:iIDHoldTO > 12750
       2:iIDLockOutTm > 12750
       3:iUSBKeyPrsTm > 1020
       4:iUSBKeyRlsTm > 1020
  CheckUserFlags2     0x0000104x, x= [will never fail]
  CheckUserDispParms2 0x0000105x, x=
       0:iLeadChrCnt > 3
```