

# pcProx<sup>®</sup> , AIR ID<sup>®</sup> Enroll, and Wiegand Converters

*USB & RS-232 Configuration Software for use with  
pcProx<sup>®</sup> Proximity Readers,  
Wiegand to xxx Converters, and  
AIR ID<sup>®</sup> Enroll Contactless Smart Card Read-Only Readers*



**User's Manual**

**RFID**EAS INC. 

[www.RFIDeas.com](http://www.RFIDeas.com)

pcProx<sup>®</sup> and AIR ID<sup>®</sup> Enroll Readers



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## Thank You

Congratulations on the purchase of your pcProx or AIR ID Enroll reader system. We at RF IDEas hope you enjoy using your new reader system as much as we enjoyed creating and developing it! Please share your comments and suggestions for our future solutions!

If you are interested in our OEM or Independent Developer's Programs, please call!

Thank you,  
The Staff at RF IDEas

Need Assistance?

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Fax: (847) 483-1129  
E-mail: [TechSupport@RFIDEas.com](mailto:TechSupport@RFIDEas.com)

Mail to:  
RF IDEas  
4238B Arlington Heights  
#244  
Arlington Heights, IL 60004

## **FCC Compliance Statement**

FCC ID: M9MPCPROXHUSB100 (HID USB model)  
FCC ID: M9MPCPROXH100 (HID RS-232 model)  
FCC ID: M9MPCPROXM101 (Indala model)  
FCC ID: M9MRDR6981 (AWID),  
FCC ID: M9MRDR6881 (Kantech, Indala, Casi-Rusco)  
FCC ID: M9MPCPROXP100 (Pyramid)  
FCC ID: M9MPCPROXC101 (Casi-Rusco model)  
FCC ID: M9MRFID1356I100 (MIFARE/iCLASS models)  
FCCID: M9MRDR6091 (HID Low Power)  
FCC ID: M9MRDR7081 (iCLASS Module based)  
FCC ID: M9MRDR7181 (iCLASS Mifare and Other 13.56Mhz)

“Changes to this product not expressly approved by RF IDEas will void the user's authority to operate the equipment.”

Note: 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 interference. and (2) this device must accept any interference received, including interference that may cause undesired operation. This product complies with FCC radiation exposure limits set forth for an uncontrolled environment.

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## **Proximity Activated Products**

RF IDEAS offers a variety of wireless products for hands-free or contact-less identification and security. Please review the following to choose which product best fits your need. If you do not see a solution, please contact us. There are several software developers licensing our technology and the solution you are looking for may already be developed. We welcome your suggestions!

| <b>Product</b>   | <b>FEATURE - BENEFIT</b>   |
|--|--|
| <b>AIR ID ® LT</b> ( <i>Active Badge</i> )                             | <ul style="list-style-type: none"> <li>◆ Great for multiple users sharing a computer</li> <li>◆ Economical solution</li> <li>◆ Badge transmits, Base Unit receives</li> <li>◆ Audit Trail</li> <li>◆ TD2F™ Two-Factor Authentication</li> </ul>  |
| <b>Wiegand Converters</b>  | <ul style="list-style-type: none"> <li>◆ Wiegand &lt;-&gt; TTL, RS-485, RS-232, USB, Ethernet</li> </ul>   |
| <b>Supervised Reader Extenders</b>                                     | <ul style="list-style-type: none"> <li>◆ RS-485, Ethernet, Wireless (900Mhz, 2.4Ghz)</li> </ul>  |
| <b>AIR ID Enroll<br/>AIR ID Writer<br/>AIR ID Playback<br/>Readers</b> | <ul style="list-style-type: none"> <li>◆ Read-only models read the CSN (card serial number) and Page 0 of the iCLASS cards.</li> <li>◆ Read/Write models are available for iCLASS contactless smart cards from HID.</li> </ul>   |
| <b>pcProx Developer's Kit</b>  | <ul style="list-style-type: none"> <li>◆ Complete API Kit supporting AIR ID, AIR ID LT, and pcProx</li> <li>◆ Platform independent</li> <li>◆ Dynamic range adjustment</li> <li>◆ Read/write ability with AIR ID</li> <li>◆ Private label</li> <li>◆ AIR ID Aware Certification Program</li> </ul> |
| <b>pcProx USB</b>  | <ul style="list-style-type: none"> <li>◆ pcProx desktop proximity reader compatible with USB ports. Configuration application sets devices as a keyboard, or for use with the AIR ID SDK.</li> </ul>   |
| <b>pcProx-232</b>  | <ul style="list-style-type: none"> <li>◆ Serial Port Model</li> </ul>  |
| <b>pcProx-TTL and Keyboard Wedge Readers</b>                           | <ul style="list-style-type: none"> <li>◆ pcProx line of desktop proximity readers compatible with existing software, PLCs, and hardware keyboard wedges (decoders).</li> </ul>   |

### **pcProx Reader Choices**

RF IDEas offers several proximity readers. The pcProx line is made of several output choices: (USB, TTL, RS-232, RS-485, Clock/Data). Within these are several models that support the individual manufacturer's

proprietary technology (ex. HID, Indala/Motorola, Casi-Rusco, and others).

The AIR ID Enroll, pcProx & pcProx USB readers are a more sophisticated design. The reader accepts commands as well as sends output data to the port. Each reader can operate in synchronous (via the software developer's kit - SDK) or asynchronous mode. The SDK supports all readers and is available to developers.

The AIR ID Enroll and pcProx RS-232 serial port readers output in an asynchronous mode outputs data in ASCII format. Data is ASCII formatted and there are models for hardware keyboard wedge devices traditionally found in data capture applications such as bar code readers. This readers output at 9600,N,8,1 with no handshaking.

## Understanding Wireless Identification

### ***What is pcProx<sup>®</sup> Proximity Activated Identification?***

The pcProx Configuration software together with the pcProx proximity reader makes up proximity activated identification system. This is used to identify users by using their existing proximity token.

Typical applications include:

- General identification of badge number into any application,
- Enrollment of new employees or badges,
- Verification that badge ID numbers are written or have the correct information,
- Logon reader that uses the proximity card number as either the entire password or a portion of it,
- Purchase meals in cafeterias,
- And much more.

### **The pcProx Reader**

The USB reader has two primary modes of operation.

First it may be set up to operate as a USB keyboard. In this mode the user's ID from the proximity token is read and is sent as keystrokes as if the user typed in the ID number using the keyboard. This is because the USB reader is actually implemented as a keyboard.

Second, the reader may be set up for operation under the API (application programmer interface) as defined in the pcProx SDK. The pcProx reader attaches to the



computer's USB port. When a proximity token is read, the active application will receive the entire proximity token's data.

The Configuration application allows the user to specify which data bits from the proximity card are used to create an ASCII number. Additionally, the user may specify additional keystrokes to be sent.

### **The RS-232 Reader**

The RS-232 reader has two primary modes of operation.

First it may be set up to operate as a ASCII output device. In this mode the user's ID from the proximity token is read and is sent as a decimal number in ASCII format. RF IDEas offers software (SoftKBWedge) that redirects the data into the keyboard's buffer as if the user typed in the ID number using the keyboard.

Second, the reader may be set up for operation under the API (application programmer interface) as defined in the pcProx SDK. The pcProx reader attaches to the computer's serial port. When a proximity token is read, the active application will receive the entire proximity token's data.

The Configuration application allows the user to specify which data bits from the proximity card are used to create an ASCII number. Additionally, the user may specify additional extra RS-232 characters may be sent.

### ***Why is it necessary?***

With the proliferation of PC's, cash machines, security systems, and electronic locks, users are increasingly burdened with the requirement of entering identification information to gain access or show they have accessed systems.

There are a few reasons for users to investigate the benefits derived by using this system.

### **Identification Entry Errors**

The pcProx reader eliminates the burden and typographical errors associated with manual entry.

### **Magnetic stripe reader and card reliability**

Often times employee identification is done using magnetic stripe technology. This technology is very inexpensive; however it is also prone to read problems due to wear and dirt. The cards have a limited life since they get scratched easily. The readers pick up dirt and oils and this causes damage to the read head itself.

Proximity technology is based on a contact-less interface and therefore is not subject to reliability issues. Users experience a short payback period since help desks and repeated reads are no longer necessary.

### ***How Does the System Work?***

Each time proximity token is read, the LED on the pcProx will change from red to green indicating success.

### ***Who can benefit using the System?***

Companies using proximity card/tokens for building access can immediately benefit since their employee identification cards may be useful outside of building security. The majority of the costs (deployment and enrollment) are already recovered.

### ***What is included with the pcProx or AIR ID Enroll Kit?***

- HID, Indala/Motorola, Casi-Rusco or other compatible proximity reader – or AIR ID Enroll 13.56 contactless smart card reader.

- pcProx Configuration Application for Windows 98 and Windows NT/2000/XP. You may download the latest at [www.RFIDeas.com](http://www.RFIDeas.com) using the 'Support' button.
- Installation and User Manual on CD.

***What are the minimum system requirements?***

- Pentium class PC with CD ROM drive
- 32 MB RAM (25 MB hard disk space available for installation overhead and AIR ID software).
- 1 available RS-232 or USB Port
- Microsoft Windows 98, Windows 2000 or XP

## **Hardware Installation**

Locate an open USB or RS-232 port on the system. Plug the connector into the PC's (or available on any peripheral) port.

You may place the Base Unit next to your monitor, beside your PC, or where you feel it is appropriate.

### **pcProx Badge (*Passive badge users*)**

The pcProx badge is the same as your supplied passive proximity badge for your facility access control system. Since the pcProx reader is independent of bit length, it is capable of reading any existing proximity badge format. This is a passive badge and therefore requires no battery. Energy required for the badge is supplied by the pcProx Base Unit once the badge comes within range (approximately 1-4 inches)

## Software Installation

If there is a problem with the installation, allow the setup program to uninstall. Should you need to reinstall or remove the software, always use the Control Panel's Add/Remove Programs icon so the system is successfully removed, and **reboot**.

Perform the usual entries associated with installing software.



## Software Configuration

**In this section you will:**

Configure any pcProx settings.

## **Configure pcProx Templates**

The application allows you to save templates (.HWG files) representing your configuration choices for retrieval at a later time. The templates may also be used to auto-run the application. To use the auto-run mode you need to save a template file and specify this as a command line parameter (See Auto-Run Operation section below).

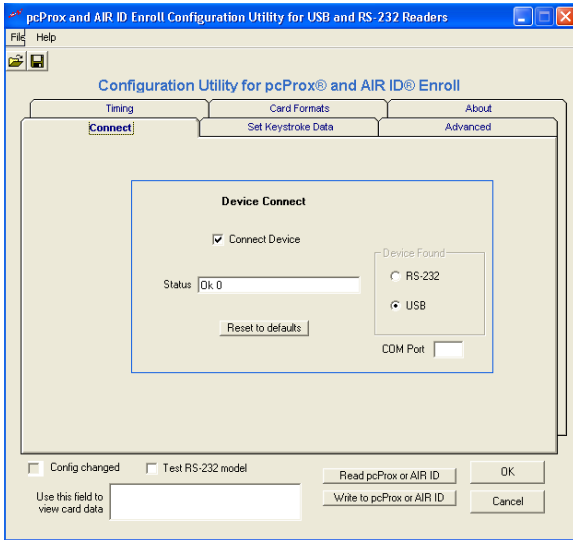
## ***Configuration Choices***

There are many configuration setting choices in Allows the user to

1. Choose between the pcProx operating as a keyboard or as an embedded device requiring the SDK,
2. Specify which bits read from the pcProx reader are used to construct the ASCII number,
3. Specify if any additional keystrokes are added to the ASCII number when it is sent to the keyboard buffer,
4. Set the data to a fixed length, and
5. Set various timing parameters.

## Connect Tab

### Device Connect



### Connect Device

This check box is used to connect the Configuration application to the internal storage in the device. Once selected, you can read, modify, and write to the device. Once selected, the application will go out and retrieve the device's current configuration.

If you have a connect problem make sure the reader is connected. If you are using the USB model, make sure you are running a version of Windows that supports the USB port. Check the [www.RFIDeas.com](http://www.RFIDeas.com) web site for up to date support information.

### Status

This field is used to display any error messages.

*Device Found*

This indicates the type of pcProx or AIR ID Enroll reader found (RS-232 or USB). The configuration program automatically checks for a USB reader first, and if it does not find one, it scans COM ports 1 through 8 for a serial port model.

*Reset to defaults*

This button is used to put the device back into a known state. All configuration settings are set back to their factory defaults.

*Config changed*

This checkbox is selected by the program to indicate to the user any modifications made to the configuration which have not been written to the device.

*Test RS--232*

Check this box to view ASCII card data in the field below. Note selecting this checkbox disables the configuration from working with the device's flash memory. De-select this checkbox in order to continue configuring the reader.

*Read pcProx*

Use this button to read the device's current configuration.

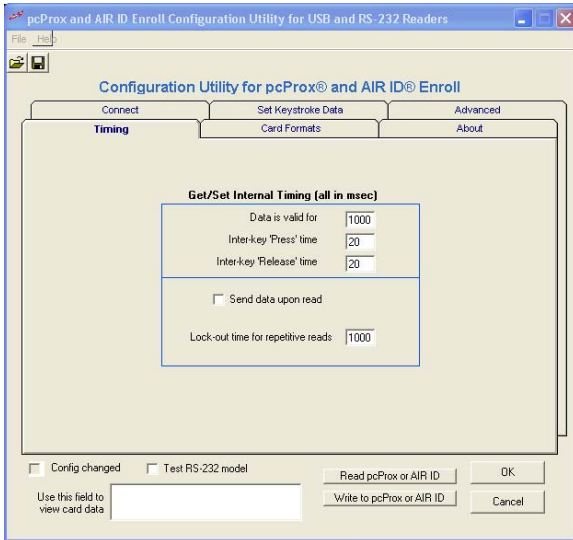
*Write to pcProx*

This button is used to write the configuration settings displayed to the device.

**WARNING:** Do not write the configuration while a card is being read on the reader. This may cause a connect error. If you receive this error, you may need to detach the reader and plug it back in to cure the error.



## 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 msec. This is how long the key is held down.

### *Inter-key 'Release' time*

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

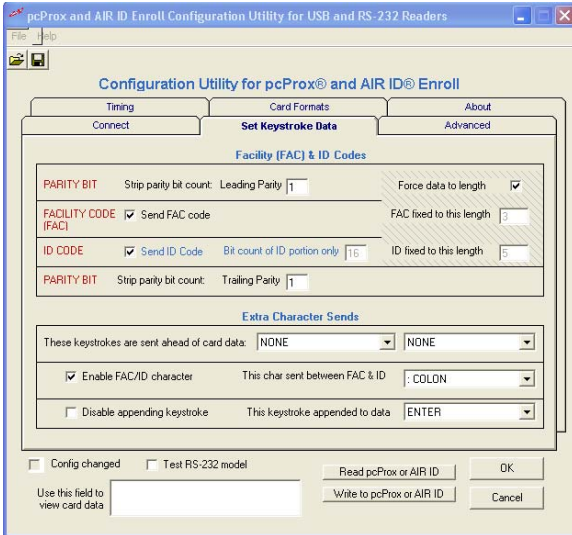
### *Send Data Upon Read*

Immediately sends the card data otherwise it is held based on the lock-out time below.

*Lock-out Time for Repetitive Reads*

This parameter can prevent the card's data from being sent continuously if the card is left on the reader.

## Set Keystroke Data



### FAC & ID Data

This top section of this tab is organized in a manner consistent with the way the card data is organized on generic proximity cards; Leading parity + facility code+ ID code + trailing parity code.

The bottom section allows the user to specify keystrokes to be added at the beginning, in the middle, or at the end of the card's data.

#### *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.

#### *Send FAC code*

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

*Force data to length*

This applies to both Facility and ID code data fields. 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.

*FAC fixed to this length*

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

*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.

*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.

*ID fixed to this length*

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

*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.

*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.

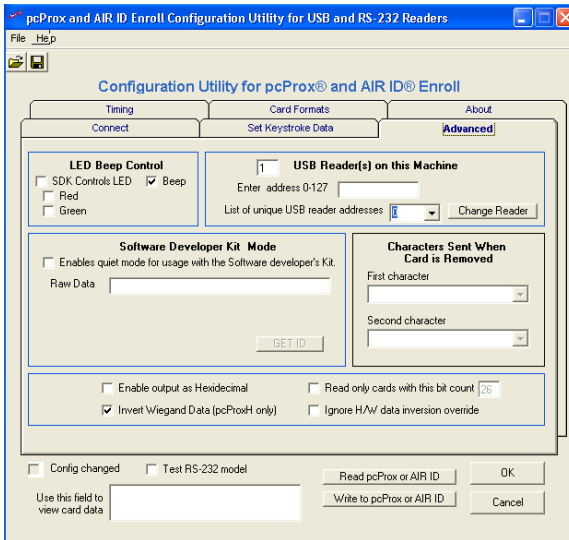
*Disable appending keystroke*

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 Tab



### LED Control *SDK Controls LED*

Using the SDK 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. a proximity card being read by a pcProx or AIR ID Enroll 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.

## **Multiple USB Readers on a PC**

This section does not apply to the RS-232 readers since these are attached to individual COM ports.

This field will show how many readers are attached to the PC.

User may attach up to 16 different pcProx-USB or AIR ID Enroll USB devices on their PC at one time. End users may determine the card reads from the various readers by configuring a 'Leading Character' to be inserted in front of the card data. 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**

The Unique Address is for software developers who intend to attach more than one reader to a given system at a time. This feature allows the developer to talk to individual reader and determine which reader the card data came from.

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.

### **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](http://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

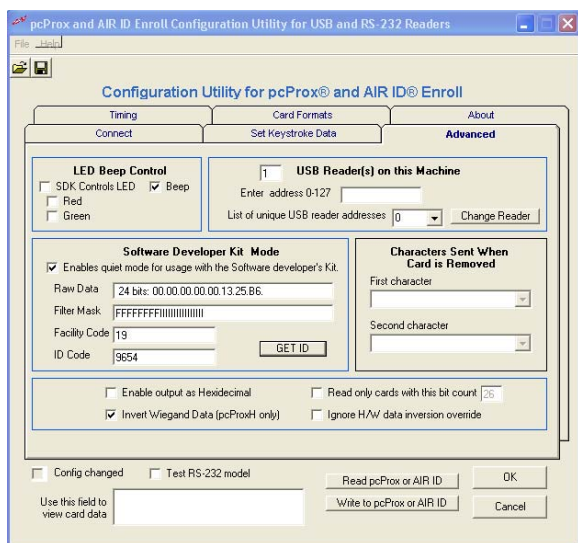
If the Filter Mask field is empty, the program will try to 'guess' at the format for the card. Since there are literally thousands of formats, this truly a guess.

### 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.



### Example:

NOTE: Any stripped parity bits will not be delivered using the GET ID function. Example: For a 26-bit card, if you have 1 leading and 1 trailing parity bit set to be stripped (see Set Keystroke Data tab), the GET ID will return 24 bits.

The button calls a SDK (software developer's kit) function and shows how an application would use and see data if the SDK were implemented.

Example: Filter for a popular 26-bit Wiegand card format is: "PFFFFFFFFIIIIIIIIIIIIIP". This has:

2 "P" - parity bits,

8 "F" - facility code bits, and

16 "I" - ID code bits.

This will split the bit-stream into the facility and ID codes.

### **Characters Sent When Card is Removed**

This applies only to the RS-232 reader.

The RS-232 device is capable of 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.

The SDK is a separate product from RF IDEas.

#### *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.

#### *Invert Wiegand Data*

This feature is primarily for those using the HID version of pcProx-U versions 2.2.1 as they will need to invert the Wiegand data lines.

### *Ignore H/W data inversion override*

This feature is set only if the user needs to override the invert the Wiegand data lines. Most users should use this feature unless their data is inverted.

## **About Tab**

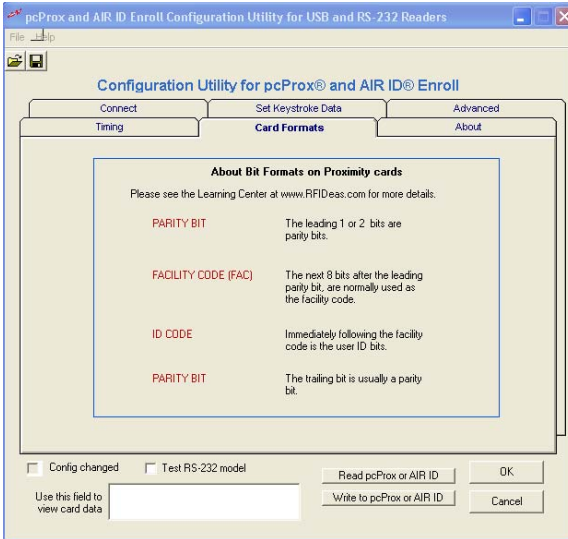
### **Version Information**

This screen describes the version and copyright information.



This area shows the version of the firmware (device's software) as well as the version of the SDK library.

## Card Formats Tab



There are several bits constructed together which make up the data sent from the proximity token to the reader. The 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 1-3 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         |
|------------------------------|-------------|
| 1000100110001110100000111110 | (144238654) |
| 11000111010000011111         | (816159)    |

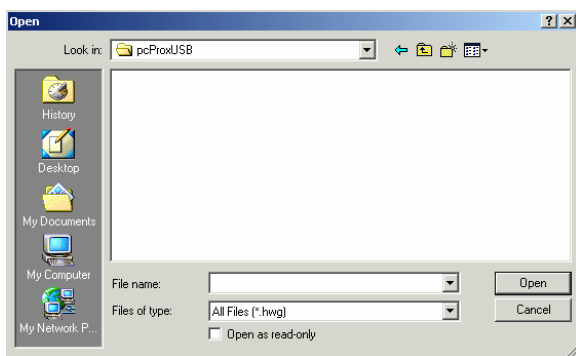
Notice how deselecting the 1<sup>st</sup> 7 bits and the last parity bit results in the same binary number! Select bits 2

through 21 and deselect all others will provide the result desired for this customer's format and example.

## **File Open**

This allows the user to retrieve a configuration previously saved. The HWG file is useful when more than one template is helpful.

All data associated with the configuration selections are saved.



## **File Save**

All data associated with the configuration selections are saved to the *Default.HWG* file.

## **Save As**

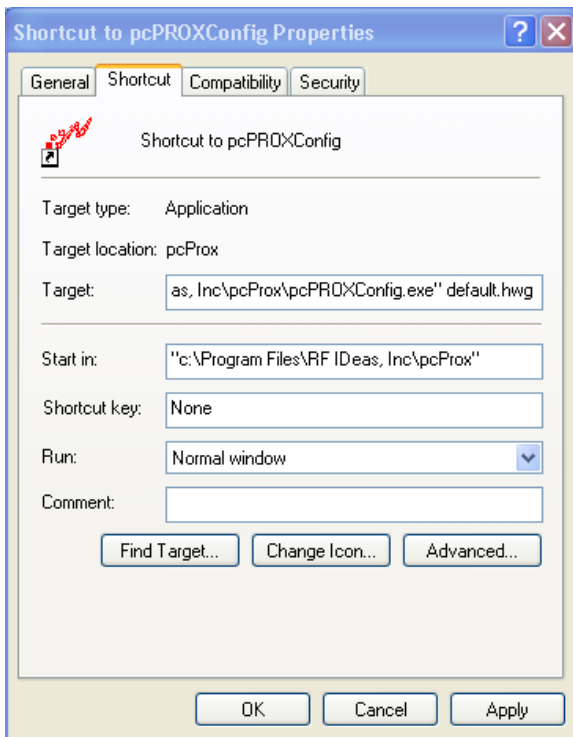
All data associated with the configuration selections are saved to the *user specified filename (.HWG)* file.

## Auto-Run Operation

In auto mode, the user specifies a configuration file (ex. Default.hwg) using a shortcut properties link as defined in the Windows environment.

*First*, the user makes all desired configuration settings.

*Second*, once the settings are defined, the user creates a (.HWG) by using the Save As selection under the File menu system.



*Third*, the user needs to create a shortcut link and specify the (.HWG) configuration file in this link. Shortcut links can be created using the Windows Explorer, selecting the pcProxConfig.exe file and then



using a right-click of the mouse. You will see a 'Create Shortcut' menu item.

*Fourth*, once the shortcut is created, the Properties need to be modified by adding the filename of the (.HWG) file after the quote in the target field as shown below.

## **Application Note: Log-on Reader**

### **Overview**

This document describes how the pcProx or AIR ID Enroll USB proximity reader may be used as a log-on or automatic password entry device without the need to install software at the client or server. The card can automatically enter passwords into the operating system, login applications which require passwords and even password protected web sites.

**NOTE:** *If you need a log-on solution that provides both the username and password, please see RF IDEas AIR ID Playback reader.*

This application is possible under Windows 98, 2000, and XP since Microsoft provides the necessary drivers to recognize and work with the USB interface of the proximity reader. Since Microsoft does not provide USB support for Windows NT, this approach will not work under NT.

To the operating system, the reader is a USB keyboard. This is the basis for using it as a password entry device.

In building access systems, the proximity card is used as a password to unlock a door and permit entry. This relieves the burden of the user having to type a password or PIN in order to gain entry to a building. The concept for computer access is the same. The proximity card data will serve as either part of, or the entire password.

When the user is presented with a dialog field requesting a password entry, the user will wave their proximity card over the reader and the password field will be filled in by the information read from the card or token.

If higher security is desired, the password can be made up of the proximity token data plus a user supplied PIN. This creates a two-factor authentication system

(something you have and something you know) and protects against lost or stolen password.

## ***Configuration Utility***

The following screen shot shows the configuration program supplied with the reader. This program simply configures the reader. Once the configuration information is set and written to the device, the device is ready for deployment. The device will hold this information until it is updated.

Please refer to the User's Guide for details on the usage of this application.

The reader has internal storage memory that may be configured using the supplied configuration utility. This may be useful in sending additional keystrokes such as a TAB, or ENTER either before or after the card data. However, it is best to have no appending keys configured until you have reset all of your desired passwords using the card.

## ***Usage under Windows 98, 2000 and XP***

In order to use the pcProx-USB reader as a logon device under Windows there are a few considerations to review.

### *Administrator Considerations*

The issues the administrator will face include:

**Automatic Change Password.** To increase security several company have adopted a policy that requires users to change password every xx number of days. To keep this policy in place, you will need to have users password include both the proximity data as well as a user supplied PIN. The PIN is the portion that the user will change periodically.

**Complex Passwords.** To keep this policy in place, you will need to have users password include both the proximity data as well as a user supplied PIN. In this case, since the proximity data is completely numeric, any alpha and upper/lower case letter constraints will be handled in the user supplied PIN portion of the password.

**User Password Knowledge.** If the policy requires that the user have difficulty learning their entire password, the administrator may configure parameters in the reader to make it more difficult to re-produce the password. See the section labeled '*Increasing Security*' below.

### *User Considerations*

The user will first need to perform a change password-see *below*.

## **Change Password**

To use the pcProx reader as a password device the user must first change their password. This operation is

performed differently for each operating system and application. Please refer to your User's Manual for detail.

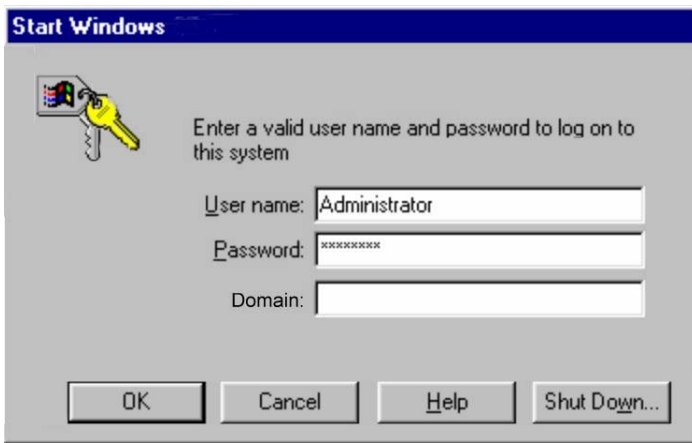
In general, you will enter your *Old Password*, and wave the proximity token to fill in the *New Password* and if applicable, the *Confirmation Password* fields. If the new password is made up of the card data + a user supplied PIN, you will need to add this PIN in both the *New Password* and *Confirmation Password* fields.

If the pcProx reader is configured to append the ENTER keystroke, you will have difficulty since the ENTER keystroke will complete the operation before both fields are filled in. To avoid this, it will be necessary to re-configure the device for this Change Password operation.

Once the user performs this operation, the card may now be used as the password.

### **Log-on**

The operating system loads the USB driver prior to logon, leaving the device ready to function as a logon device.

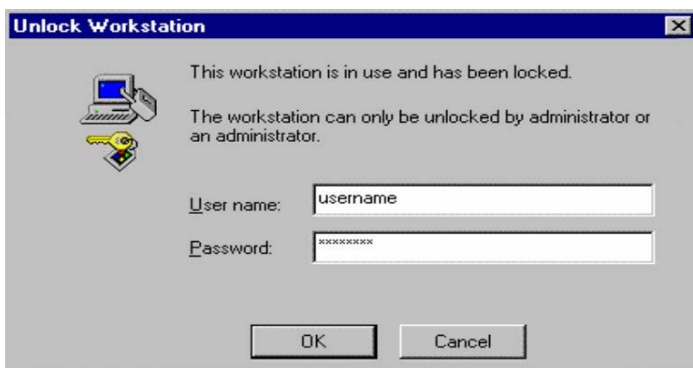


As with the Change Password operation described above, the user first makes sure the cursor is in the Password field. Once the cursor is located, the user waves the proximity token to fill in the *Password* field. If the password is made up of the card data + a user supplied PIN, you will need to add this PIN prior to pressing the ENTER key.

### **Unlocking the WorkStation**

The following screen will appear slightly different for each of the operating systems (W98, 2000, and XP).

The user should make sure the cursor is in the *Password* field. If this dialog box comes up and the cursor is normally on the username field, you may have the user enter the TAB key, or define one of the pre-card data keystrokes in the pcProx reader to send the TAB keystroke for you.



Once the cursor is in the Password field, the user may safely wave their proximity token over the pcProx reader and the field is stuffed with the password. The user may finish off the operation by pressing the ENTER key, or the reader may be configured to add the ENTER keystroke as an appended keystroke.

If the password is valid for this username account, the user will be logged on.

## ***Increasing Security***

### **Security Due to Lost/Stolen Cards**

If there is concern for logon impersonation as a result of a lost or stolen proximity token, you may set up the usage as a two-factor authentication system.

A two-factor authentication system is made up of

1. Something you have (the proximity token), and
2. Something you know (a PIN)

The pcProx reader may be configured to allow operation under either a one- or two-factor authentication system.

### *One-Factor*

In a one-factor system, the user simply waves the proximity token. Therefore the reader may be configured to add TAB keystrokes ahead of the data as well as a TAB or ENTER keystroke behind the data.

### *Two-Factor*

In a one-factor system, the user may enter the PIN either before or after the proximity token data is inserted into the field. If the user adds the PIN before the token data, the reader may be configured to append the ENTER keystroke.

The two-factor approach is especially useful when using a policy that insists on password construction rules or periodic changing of passwords

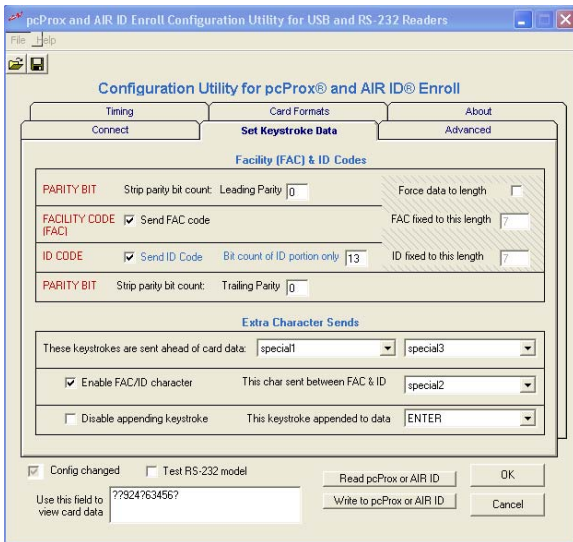
## **Security of the Card Data**

If there is a concern about individuals being able to read the contents of the proximity token, and thereby reproduce the password, there are some additional measures that can be taken.

During the configuration process you may add additional keystroke characters to the card information that are difficult to re-produce. These additional characters are labeled special1, special2, and special3.

As an example, here is a screen shot that configures the reader to insert non-printable keystroke characters at the beginning, in the middle, and at the end of the card's unique data.





The reader factory default, without the special configuration, you would see: 15202752 in any application.

In pcProx and most text-based applications you would see:  
 ??0007423?0000448?

In Microsoft Word or Notepad it looks like:  
 ♥♥0007423 ☹ 0000448 ♥ or depending on settings:  
 □□0000975□0062336□

The login screen sees:  
 \*\*\*\*\*

This makes it much more difficult for an end user to *learn* or *share* their password with another. In addition, you can have the password includes ALL measures:

Prox Card + User Supplied PIN + Reader Configuration

### ***Auto-Locking the Workstation***

To increase security when the user steps away, you can use a screen saver but of course this can be a problem since:

1. If the time is set too short, it is annoying because if you get on a phone call or speak to someone without leaving the station it will lock. Users grow tired of this since it can cause them to enter their password 20 times more than necessary.
2. If you set it too long, there is no security since someone can come up within a minute or two of you leaving and jump onto the open system.

To improve the security the best solution is to use the **pcProx-Sonar**. This is a presence detector that usually mounts to the top lip of the monitor. It sends the keystrokes the user needs sent every time.



**1.7x1.7 inch**

### **What is Sonar Proximity Detection?**

This is an ultra-sonic proximity detector functioning as a USB keyboard. The primary purpose is for detecting users stepping away from a computer terminal they have

un-locked (log-in active), and issuing keystrokes to lock or log-off the session on the computer.

Now when you walk away from your system, you will benefit from a hands-free means of locking your computer.

### **How Does the System Work?**

The concept of the pcProx-Sonar is easy to understand. The unit incorporates a sophisticated ultrasonic sensor to detect the presence of the user.

Your computer simply 'thinks' that the pcProx-Sonar is a USB keyboard that is attached to your system. The device sends programmable keystrokes to lock your computer when you leave the workspace. It's that simple. No more unattended and unlocked computers. The unit will lock the system for you...and you can now do this *hands-free!*

The objective is to detect two events. The most important is the detection of you leaving the defined work zone of your computer. When the pcProx-Sonar detects that you have left the work zone, the unit sends the keystrokes necessary to lock your systems. For example, when Windows 2000 users leave their workstations, they would normally hit the CTL-ALT-DEL-Enter key sequence to lock their systems. With the pcProx attached, the CTL-ALT-DEL-Enter keystrokes are automatically sent for the user.

The second event is when you return to your work zone. The pcProx can now detect this event and send some preparatory keystrokes for you. For example, on return to their computer, Windows 2000 users must hit the CTL-ALT-DEL key sequence to prepare the computer for the password entry. Again, with the pcProx attached, it will now send those keystrokes for you.

**Who Can Benefit Using the System?**

Any company, institution, or hospital using passwords, biometrics or any form of computer access control that needs to secure stations without reliance on users of cumbersome time-outs.

## Troubleshooting

If your system is not working it could be for one of the following reasons:

### ***No Device Attached***

1. Check to be sure the reader is plugged into the USB or RS-232 port. When the PC is on and no card being read, you will see the LED is red. A valid proximity card will cause the led to turn green, provided you have not set the configuration to read only certain bit lengths.
2. If you are using the RS-232 model, make sure you do not have another COM port software running – this prevents our software from seeing the reader. Only one COM port application can own the RS-232 port at a time.
3. Verify you have the correct model (pcProx) and the software configuration screen agrees with the reader attached.
4. Verify the Port agrees with the connector on the PC.
5. If trouble continues, unplug the pcProx unit, use the Control Panel's Add/Remove Hardware to remove 'General USB Device', and reboot the PC. When your system is started, re-attach the pcProx USB and the OS should re-install the Windows driver automatically.

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