

pcProx[®] & AIR ID[®] Enroll

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



*HID, Motorola, Indala, Casi-Rusco, MIFARE,
iCLASS Compatible Readers*

User's Manual

RFIDEAS INC. 

www.RFIDeas.com

pcProx[®] and AIR ID[®] Enroll Readers

END-USER LICENSE AGREEMENT

End-User License Agreement for RF IDEas™ SOFTWARE and HARDWARE - RF IDEas' pcProx®, AIR ID®, and pcProx Proximity Activated Systems.

IMPORTANT-READ CAREFULLY: This End-User License Agreement ("EULA") is a legal agreement between you (either an individual or a single entity) and the manufacturer RF IDEas ("Manufacturer") with which you acquired the RF IDEas software and hardware product(s) identified above ("PRODUCT"). The PRODUCT includes the pcProx Base Unit, AIR ID Enroll reader, computer software, the associated media, any printed materials, and any "online" or electronic documentation. By installing, copying or otherwise using the PRODUCT, you agree to be bound by the terms of this EULA. The SOFTWARE PORTION OF THE PRODUCT includes the computer software, the associated media, any printed materials, and any "online" or electronic documentation. By installing, copying or otherwise using the PRODUCT, you agree to be bound by the terms of this EULA. If you do not agree to the terms of this EULA, RF IDEas is unwilling to license the PRODUCT to you. In such event, you may not use or copy the SOFTWARE PORTION OF THE PRODUCT, and you should promptly contact the vendor you obtained this PRODUCT from for instructions on return of the unused product(s) for a refund.

The products described in this publication are intended for consumer applications. Radio interference can occur in any place at any time, and thus the communications link may not be absolutely reliable. pcProx or RFID1356 must be used so that a loss of communications due to radio interference or otherwise will not endanger either people or property, and will not cause the loss of valuable data. RF IDEas assumes no liability for the performance of product. **RF IDEas products are not suitable for use in life-support applications, biological hazard applications, nuclear control applications, or radioactive areas. None of these products or components, software or hardware, are intended for applications that provide life support or any critical function necessary for the support of protection of life, property or business interests.** The user assumes responsibility for the use of any of these products in any such application. RF IDEas, Inc. shall not be liable for losses due to failure of any of these products, or components of these products, beyond the RF IDEas commercial warranty, limited to the original purchase price.

pcProx® and AIR ID® Enroll Readers

SOFTWARE PRODUCT LICENSE

The PRODUCT is protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. The SOFTWARE PORTION OF THE PRODUCT is licensed, not sold.

1. GRANT OF LICENSE. This EULA grants you the following rights:

* Software. You may install and use one copy of the SOFTWARE PORTION OF THE PRODUCT on the COMPUTER.

* Network Services. If the SOFTWARE PORTION OF THE PRODUCT includes functionality that enables the COMPUTER to act as a network server, any number of computers or workstations may access or otherwise utilize the basic network services of that server. The basic network services are more fully described in the printed materials accompanying the SOFTWARE PORTION OF THE PRODUCT.

* Storage/Network Use. You may also store or install a copy of the computer SOFTWARE PORTION OF THE PRODUCT on the COMPUTER to allow your other computers to use the SOFTWARE PORTION OF THE PRODUCT over an internal network, and distribute the SOFTWARE PORTION OF THE PRODUCT to your other computers over an internal network. However, you must acquire and dedicate a license for the SOFTWARE PORTION OF THE PRODUCT for each computer on which the SOFTWARE PORTION OF THE PRODUCT is used or to which it is distributed. A license for the SOFTWARE PORTION OF THE PRODUCT may not be shared or used concurrently on different computers.

2. DESCRIPTION OF OTHER RIGHTS AND LIMITATIONS.

* Limitations on Reverse Engineering, Decompilation and Disassembly. You may not reverse engineer, decompile, or disassemble the PRODUCT, except and only to the extent that such activity is expressly permitted by applicable law notwithstanding this limitation.

* Separation of Components. The PRODUCT is licensed as a single product. Its component parts may not be separated for use on more than one computer.

* Single COMPUTER. The PRODUCT is licensed with the COMPUTER as a single integrated product. The PRODUCT may only be used with the COMPUTER.

* Rental. You may not rent or lease the PRODUCT without permission from RF IDEas.

* Software Transfer. You may permanently transfer all of your rights under this EULA only as part of a sale or transfer of the COMPUTER, provided you retain no copies, you transfer all of the PRODUCT (including all component parts, the media and printed materials, any upgrades, this EULA and, if applicable, the Certificate(s) of Authenticity), AND the recipient agrees to

the terms of this EULA. If the PRODUCT is an upgrade, any transfer must include all prior versions of the PRODUCT.

* Termination. Without prejudice to any other rights, RF IDEas may terminate this EULA if you fail to comply with the terms and conditions of this EULA. In such event, you must destroy all copies of the SOFTWARE PORTION OF THE PRODUCT and all of its component parts.

3. UPGRADES. If the SOFTWARE PORTION OF THE PRODUCT is an upgrade from another product, whether from RF IDEas or another supplier, you may use or transfer the PRODUCT only in conjunction with that upgraded product, unless you destroy the upgraded product. If the SOFTWARE PORTION OF THE PRODUCT is an upgrade of a RF IDEas product, you now may use that upgraded product only in accordance with this EULA. If the SOFTWARE PORTION OF THE PRODUCT is an upgrade of a component of a package of software programs which you licensed as a single product, the SOFTWARE PORTION OF THE PRODUCT may be used and transferred only as part of that single product package and may not be separated for use on more than one computer.

4. OEM COPYRIGHT. All title and copyrights in and to the PRODUCT (including but not limited to any images, photographs, animations, video, audio, music, text and "applets," incorporated into the PRODUCT), the accompanying printed materials, and any copies of the SOFTWARE PORTION OF THE PRODUCT, are owned by RF IDEas or its suppliers. The PRODUCT and SOFTWARE PORTION OF THE PRODUCT is protected by copyright laws and international treaty provisions. You may not copy the printed materials accompanying the PRODUCT.

5. DUAL-MEDIA SOFTWARE. You may receive the SOFTWARE PORTION OF THE PRODUCT in more than one medium. Regardless of the type or size of medium you receive, you may use only one medium that is appropriate for your single computer. You may not use or install the other medium on another computer. You may not loan, rent, lease, or otherwise transfer the other medium to another user, except as part of the permanent transfer (as provided above) of the SOFTWARE PORTION OF THE PRODUCT.

6. OEM PRODUCT SUPPORT. Product support for the PRODUCT is NOT provided by RF IDEas Inc. or its subsidiaries. For product support, please refer to the OEM suppliers support number provided in the documentation. Should you have any questions concerning this EULA, or if you desire to contact OEM for any other reason, please refer to the address provided in the documentation provided.

FOR THE LIMITED WARRANTIES AND SPECIAL PROVISIONS PERTAINING TO YOUR PARTICULAR JURISDICTION, PLEASE REFER TO YOUR WARRANTY BOOKLET INCLUDED WITH THIS PACKAGE OR PROVIDED WITH THE SOFTWARE PRODUCT PRINTED MATERIALS.

Limited Warranty

RF IDEas, Inc. warrants to the original buyer of this product, that the hardware and related disk(s) are free of defects in material and workmanship for a period of one year from date of purchase from RF IDEas or from an authorized RF IDEas dealer. Should the RF IDEas products fail to be in good working order at any time during the one-year period, RF IDEas will, at its option, repair or replace the product at no additional charge, provided that the product has not been abused, misused, repaired or modified. This warranty shall be limited to repair or replacement and in no event shall RF IDEas be liable for any loss of profit or any commercial or other damages, including but not limited to special, incidental, consequential or other similar claims.

No dealer, distributor, company, or person has been authorized to change or add to the terms of this agreement, and RF IDEas will not be bound by any representation to the contrary. RF IDEas SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS OF PURPOSE. Since some states do not allow such exclusion of limitation of incidental or consequential damages for consumer products, check the statute of the state in which your business resides. This warranty gives you the specific legal rights in addition to any rights that you have under the laws of the state in which your business resides or operates.

Returns

RF IDEas products which require Limited Warranty service during the warranty period shall be delivered to the nearest authorized dealer or sent directly to RF IDEas at the address below with proof of purchase and a Return Materials Authorization (RMA) Number provided by RF IDEas technical support Dept. Replacement parts or complete boards become the property of RF IDEas.

If the returned board or unit is sent by mail, the purchaser agrees to pre-pay the shipping charges and insure the board or unit or assume the risk of loss or damage which may occur in transit. The purchaser is expected to employ a container equivalent to the original packaging.

Copyright

Copyright by RF IDEas, Inc. 1997-2004. All rights reserved. Reproduction or distribution of this document in whole or in part or in any form is prohibited without express written permission from RF IDEas, Inc.

pcProx® and AIR ID® Enroll Readers

Trademarks

All RF IDEas products are trademarks of RF IDEas, Inc. All other product names or names are trademarks or registered trademarks of their respective holders.

Disclaimer

This User's Guide is printed in the U.S.A. Any resemblance mentioned in the User's guide to persons living or dead, or to actual corporations or products is purely coincidental. RF IDEas believes that the information contained in this manual is correct. However, RF IDEas does not assume any responsibility for the accuracy of the content of this User Manual, nor for any patent infringements or other rights of third parties. RF IDEas reserves the right to make any modifications in either product or the manual without giving prior written notification.

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?

Call: (847) 870-1723
Fax: (847) 483-1129
E-mail: 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: M9MPCPROXC101 (Casi-Rusco model)
FCC ID: M9MRFID1356I100 (MIFARE/iCLASS models)

According to FCC part 15.21, "The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment."

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an output on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

TABLE OF CONTENTS

END-USER LICENSE AGREEMENT	iii
SOFTWARE PRODUCT LICENSE	iv
Limited Warranty	vii
Thank You	1
FCC Compliance Statement	2
TABLE OF CONTENTS	1
Proximity Activated Products	4
AIR ID ® LT (<i>Active Badge</i>)	5
Wiegand Converters	5
pcProx Reader Choices	5
Understanding Wireless Identification	7
What is pcProx® Proximity Activated Identification?	7
The pcProx Reader	7
The RS-232 Reader	8
Why is it necessary?	9
Identification Entry Errors	9
Magnetic stripe reader and card reliability	9
How Does the System Work?	9
Who can benefit using the System?	10
What is included with the pcProx or AIR ID Enroll Kit?	10
What are the minimum system requirements?	10
Hardware Installation	11
pcProx Badge (<i>Passive badge users</i>)	11
Software Installation	12
Software Configuration	12
Configure pcProx Templates	13

Configuration Choices _____	13
Connect Tab _____	14
Device Connect _____	14
Get/Set Internal Timing _____	16
Set Keystroke Data _____	18
FAC & ID Data _____	18
Advanced Tab _____	21
LED Control _____	21
Multiple USB Readers on a PC _____	22
Enter Unique Address _____	22
Software Developer Kit Mode _____	23
Characters Sent When Card is Removed _____	26
About Tab _____	27
Version Information _____	27
Card Formats Tab _____	28
How to determine your format and masking _____	29
File Open _____	31
File Save _____	31
Save As _____	31
Auto-Run Operation _____	32
Application Note: Log-on Reader _	34
Overview _____	34
Configuration Utility _____	35
Usage under Windows 98, 2000 and XP _____	36
Change Password _____	37
Log-on _____	37
Unlocking the WorkStation _____	38
Increasing Security _____	39
Security Due to Lost/Stolen Cards _____	39
Security of the Card Data _____	40
Auto-Locking the Workstation _____	42
What is Sonar Proximity Detection? _____	43
How Does the System Work? _____	43
Who Can Benefit Using the System? _____	44
Troubleshooting _____	45
No Device Attached _____	45
Index _____	46

pcProx® and AIR ID® Enroll Readers

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!

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

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

pcProx® and AIR ID® Enroll Readers

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[®] 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 a 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.

pcProx[®] and AIR ID[®] Enroll Readers

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 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.

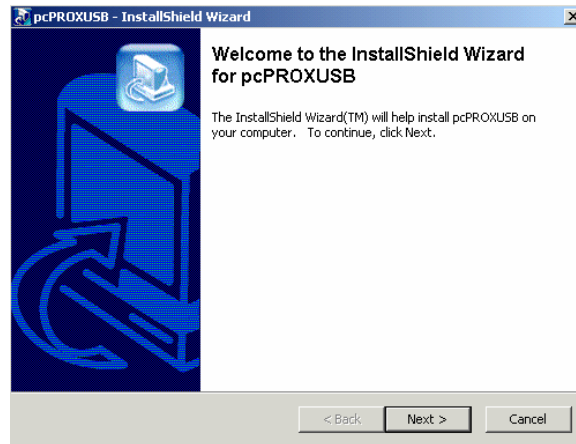
pcProx Badge (*Passive badge users*)

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).

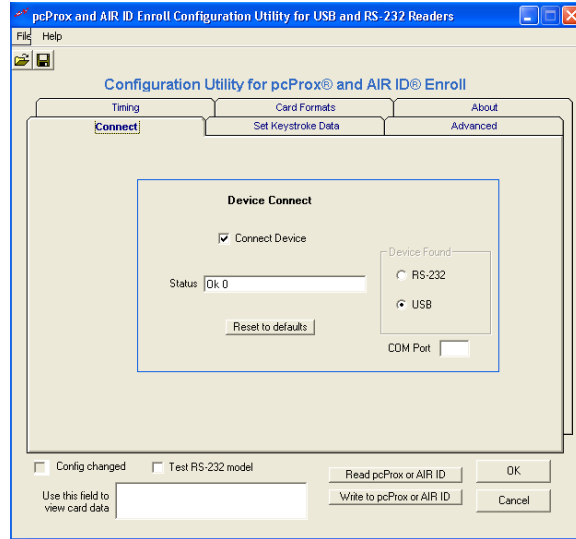
Configuration Choices

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 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 know 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 devices flash memory. De-select this checkbox in order to continue configuring the reader.

Read pcProx

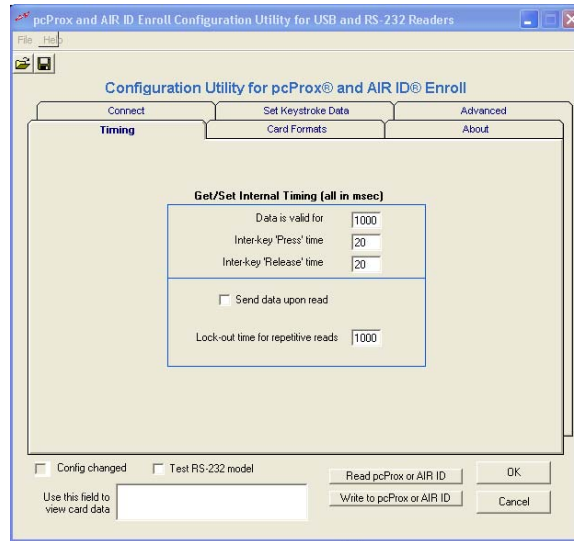
Use this button to read the device's current configuration.

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.

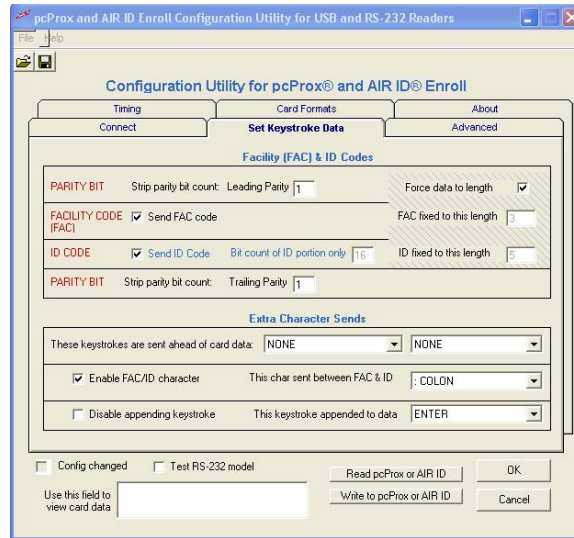
Send Data Upon Read

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.

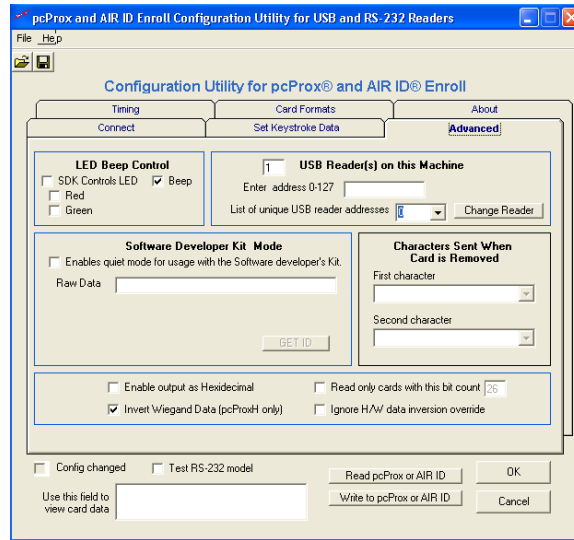
Disable appending keystroke

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 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

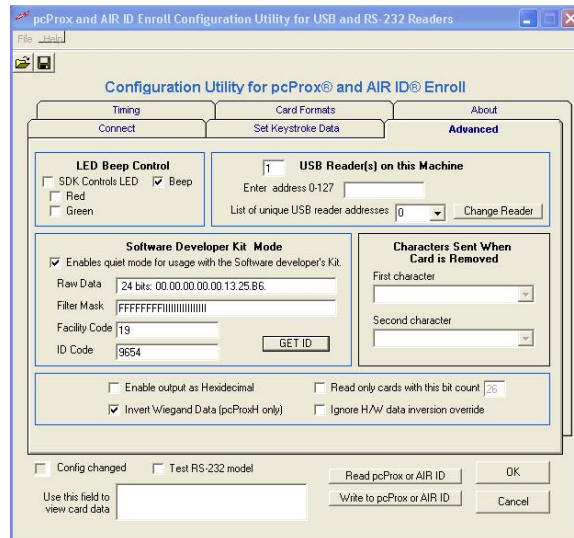
If the Filter Mask field is empty, the program will try to 'guess' at the format for the card. Since there are literally thousands of formats, this truly a guess.

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 and application would use and see data if the SDK were implemented.

Example: Filter for a popular 26-bit Wiegand card format is: "PFFFFFFFFFFFFFFFFIIIP". 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.

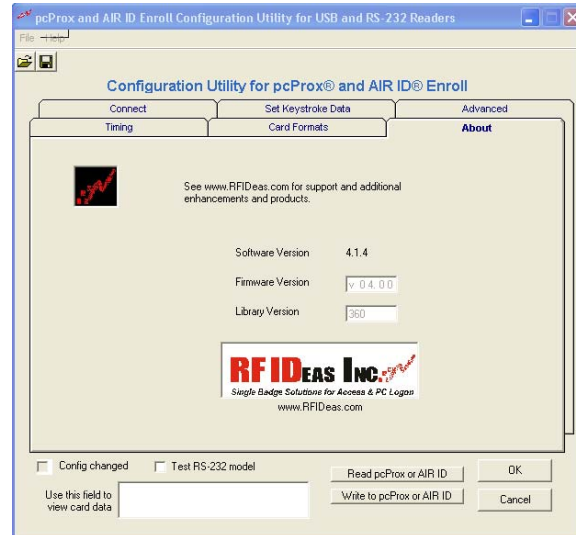
Ignore H/W data inversion override

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

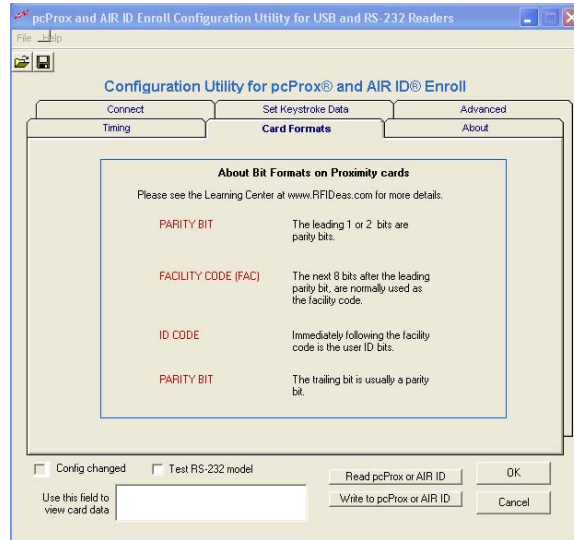
This screen describes the version and copyright information.



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

pcProx® and AIR ID® Enroll Readers

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.

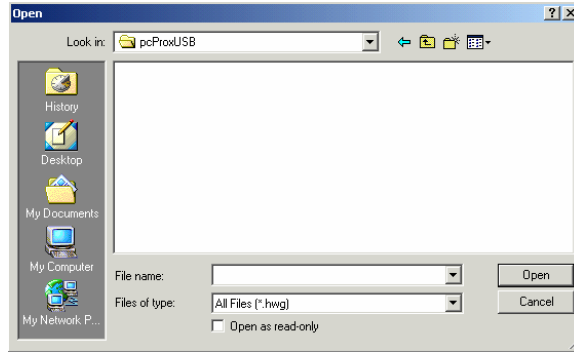
MSB		LSB	
1000100110001110100000111110	(144238654)		
		11000111010000011111	(816159)

Notice how deselecting the 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.

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

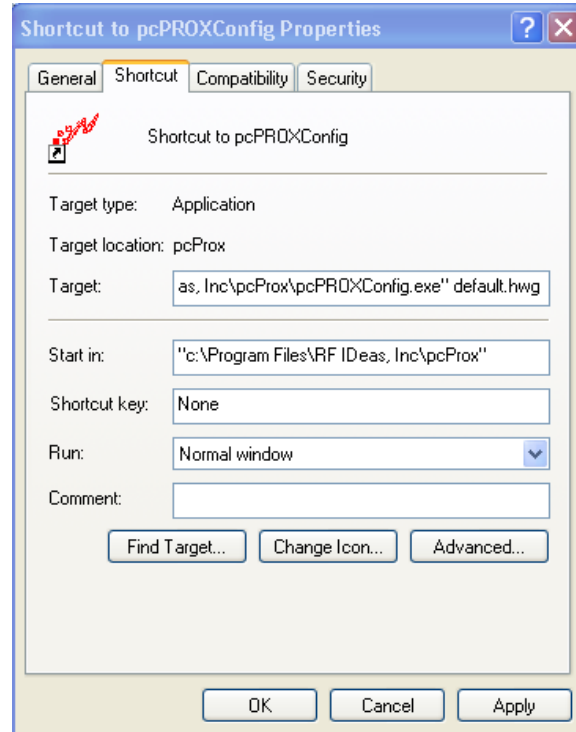
All data associated with the configuration selections are saved to the *user specified filename (.HWG)* file.

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.

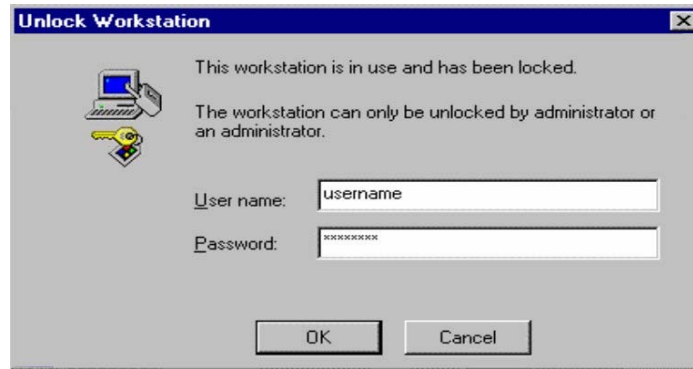


As with the Change Password operation described above, the user first makes sure the cursor is in the Password field. Once the cursor is located, the user waves the proximity token to fill in the *Password* field. If the password is made up of the card data + a user supplied PIN, you will need to add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

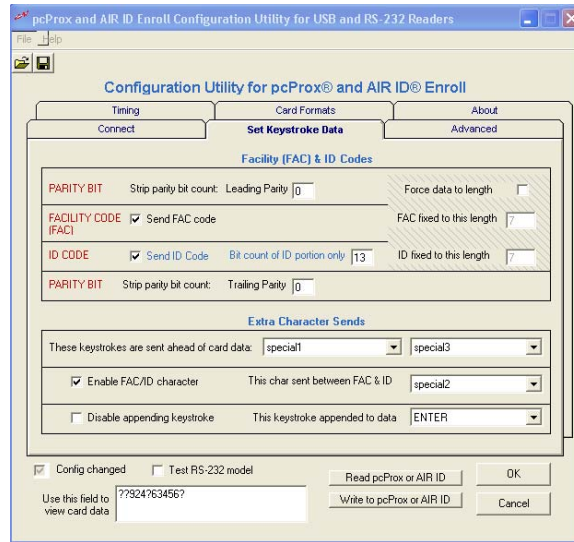
The two-factor approach is especially useful when using a policy that insists on password construction rules or periodic changing of passwords

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

pcProx® and AIR ID® Enroll Readers

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.

Index

- AIR ID ® LT, 4
- AIR ID Developer's Kit, 4
- AIR ID SDK, 12
- API, 7
- ASCII number, 12
- ASCII number, 12
- auto mode, 31
- auto-run, 12
- factory defaults, 14
- HID, 9
- HWG, 30
- HWG files, 12
- inter-key, 15
- internal storage, 13
- Keyboard Wedge Readers, 4
- Leading Parity, 17
- log-in, 42
- log-off, 42
- Motorola, 9
- PARITY BIT, 27
- passive badge, 10
- pcPROX Badge, 10
- requirements, 9
- SDK, 5, 24
- Shortcut, 32
- templates, 12
- Trailing Parity, 19
- uninstall, 11
- Windows 98, 9
- Windows driver, 44
- Windows NT/2000/XP, 9