pcPROX®USB

Configuration Software for use with pcPROX ® USB Proximity Readers

User's Manual

RFIDEAS INC.

www.RFIDeas.com

pcPROX USB

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pcPROX USB

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Thank You

Congratulations on the purchase of your
pcPROX USB system. We at RF IDeas hope
you enjoy using your new USB 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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pcProx Base Unit FCC Compliance Statement

FCC ID(s)
HID version M9MBUPCPROXH100,
AWID version M9MBUPCPROXA100,
Casi-Rusco (now GE/Interlogix)version
M9MBUPCPROXC100, or
Indala (formerly Motorola) version
M9MBUPCPROXM100

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

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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!

Product	FEATURE - BENEFIT
AIR ID ® LT *(Active Badge)*	♦ Great for multiple users sharing a computer ♦ Economical solution ♦ Badge transmits, Base Unit receives ♦ Audit Trail ♦ TD2F^{TM} Two-Factor Authentication
AIR ID for pcPROX *(Passive Badge)*	♦ Great for multiple users sharing a computer ♦ Passive badges, no batteries contact-less range is 1 - 2 inches. ♦ Economical solution ♦ Uses existing passive HID RFID proximity technology ♦ Unique learn mode reads ID from HID or badges ♦ Audit Trail ♦ TD2F^{TM} Two-Factor Authentication
Enterprise Management Software	♦ Centralized Management of all users ♦ Lowers cost of ownership
AIR ID Developer's Kit	♦ 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	♦ pcPROX desktop proximity reader compatible with USB ports. Configuration application sets devices as a keyboard, or for use with the AIR ID SDK.
pcPROX-KW Keyboard Wedge Readers	♦ pcPROX line of desktop proximity readers compatible with existing software and hardware keyboard wedges (decoders).

pcPROX Reader Choices

RF IDeas offers several proximity readers. The pcPROX line is made of three primary choices: two for the serial port (pcPROX and pcPROX-KW), and one for the USB port (pcPROX USB). Within these three groups there are several models that support the individual manufacturers proprietary technology (ex. HID, Motorola, AWID).

The pcPROX & pcPROX USB readers are a more complicated interactive design. The reader accepts commands as well as sends output data to the port. The serial port reader can operate in synchronous or asynchronous mode. The USB port reader may only operate in a asynchronous fashion. The SDK (software developer's kit) supports all readers and is available to developers.

The pcPROX-KW is an output-only device operating in only an asynchronous mode. Data is ASCII formatted and there are models for hardware keyboard wedge devices traditionally found in data capture applications such as bar code readers. RF IDeas offers models with decoded and un-decoded output. If a very large number (>2147483647) is encountered, the output is a concatenated set of two 4 byte numbers that are converted to decimal.

Understanding Wireless Identification

What is pcPROX® USB Proximity Activated Identification?

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

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 AIR ID 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.

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 a proximity token is read, the LED on the pcPROX USB will change from red to green indicating success.

The data is then sent to the computer through the existing USB drivers. For the pcPROX reader the data is sent once the card enters the read range. This software will then create an ASCII number based on settings specified by the user in the Configuration application.

The device then sends this number directly to the computer. The user may also specify additional keystrokes as allowed.
Since the card data is not known ahead of time, it is impossible for the system to perform any data integrity checks.

About the number being delivered

pcPROX Reader
If a very large number (>2147483647) is encountered, the output is a concatenated set of two 4 byte numbers that are converted to decimal.

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 Kit?

- HID, Motorola or AWID compatible Base Unit reader.
- pcPROX USB Configuration Application for Windows 98 and Windows NT/2000/XP
- 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 USB Port
- Microsoft Windows 98, Windows 2000 or XP

Hardware Installation

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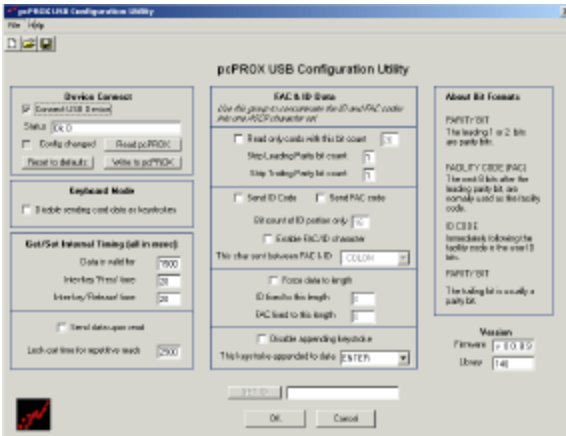

Software Configuration

In this section you will:
1. Configure any pcPROX settings.

Configure pcPROX USB
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
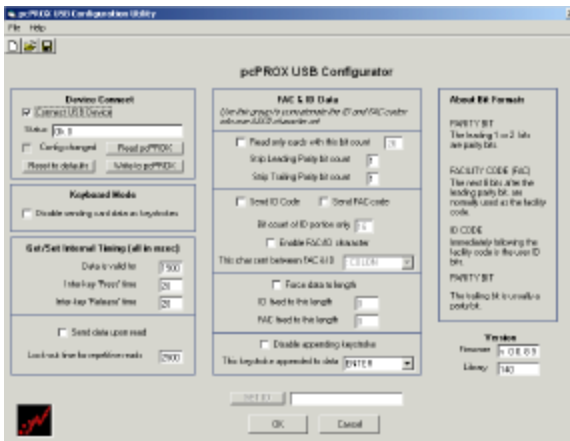
There are many configuration setting choices in Allows the user to

1. Choose between the pcPROX operating as a keyboard or as an embedded device requiring the AIR ID SDK,
2. Specify which bits read from the pcPROX reader are used to construct the ASCI number,
3. Specify if any additional keystrokes are appended to the ASCII number when it is sent to the keyboard buffer,

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4. Set the data to a fixed length, and
5. Set various timing parameters.

Device Connect

Connect USB 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.

Status
This field is used to display any error messages.

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.

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.

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.

Keyboard Mode

Disable sending card data as keystrokes
This checkbox is used to set the device for operation as either a keyboard (deselected), or for use with the SDK (Software Developer's Kit).

The SDK allows software developers to use the pcPROX USB device as a vehicle to deliver the proximity card data directly to the user created software application. The SDK gives the programmer complete control over the configuration and data received from the device.

Get/Set Internal Timing
Data is valid for
The time the card ID remains valid in the device. Once this time elapses, the card data is discarded. The minimum value is 900.

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

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

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

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.

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

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

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

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

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

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

This char sent between FAC & ID
This field holds the character that will be placed between the FAC and ID codes.

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

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

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

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

This keystroke appended to data
If the previous checkbox is not selected, this character will be appended to the data.

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. The button calls a SDK function and shows how and application would use and see data if the SDK were implemented.

The SDK (software developer's kit) is a separate product from RF IDeas.

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

About Bit Formats
There are several bits constructed together which make up the data sent from the proximity token to the pcPROX reader. The pcPROX

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 1-2 bit are usually the parity bits. For a 26 bit card, only 1 leading parity 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 bit is usually a single parity bit.

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
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.
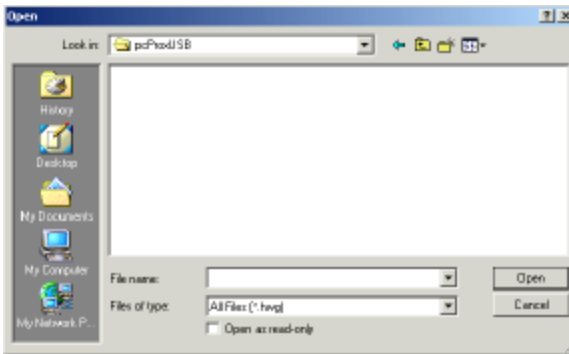
File Save

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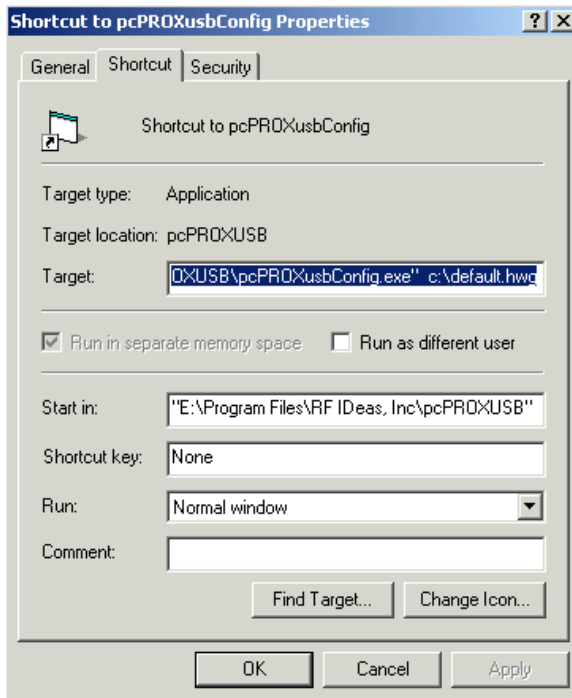
Third, the user need to create a shortcut link and specify the (.HWG) configuration file in this link. Shortcut links can be created using the Windows Explorer, selecting the pcPROXusbConfig.exe

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.

About

This screen describes the version and copyright information.

There is also a 'System Info' button that may be helpful to determine Windows system information.

Troubleshooting

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

No pcProx USB Device Attached

1. Check to be sure the pcPROX unit is plugged into the USB 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. Verify you have the correct model (pcPROX USB) and the software configuration screen agrees with the reader attached.

3. Verify the USB Port agrees with the connector on the PC.

4. 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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