AMIC A9281-A-000

13.56MHz Compact Flash RFID Reader

User Manual

Rev 1.0

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AMIC

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1. Introduction

Thank you for purchasing AMIC A9281-A-000 Compact Flash RFID Reader. AMIC's A9281-A-000 is a user-friendly RFID operating at 13.56MHz frequency range. This RFID reader is to be used with PDA or handheld devices equipped with Compact Flash Type-2 slot. AMIC's A9281-A-000 is a Compact Flash RFID reader is compliant with the international recognized ISO-14443A standard. It has built-in antenna for easy of use. AMIC's A9281-A-000 CF RFID reader supports Microsoft Pocket PC 2003 (WinCE.NET4.2) operation system.

2. Product Contents

Before starting using the A9281-A-000 compact flash RFID reader, please check that the package contains the following items:

- One AMIC A9281-A-000 CF RFID reader unit.
- One CD-ROM containing device driver, user manual, and GUI utility.
- Three ISO-14443A standard RFID ISO cards (RFID tags).

2.1. Installation Requirements

AMIC A9281-A-000 requires the following minimum system environment for proper PDA device driver installation and reader operation:

Minimum System Requirement:

PDA

- Processor: Intel XScale ARM processor running at 400MHz or faster
- Memory: Minimum 2MB SDRAM
- PC interface: USB (supported via PDA cradle interface)
- Type-II Compact Flash slot
- PC synchronization utility software that was included with PDA
- Operation systems:
  Microsoft Pocket PC 2003 (WinCE.NET 4.2) or
  Microsoft Windows Mobile 2003 Second Edition Software for Pocket PC (WinCE.NET 4.2.1)

PC

- Processor: Pentium 133MHz or faster
- Memory: 32MB RAM
- Interface: One USB1.1 compliant port
- Hard Disk Space: 10MB of free disk space
- PDA synchronization utility installed (provided by PDA manufacturer)
- Operation system:
  Windows 2000
  Windows XP

3. Setup Your PC

Before installing AMIC A9281-A-000 device driver onto your PDA, make sure that the PC used to connect to your PDA has the appropriate synchronization software installed. PDA's synchronization software will enable user to install the necessary device driver and GUI utility for AMIC 9281-A-000 CF on to your PDA. For example, Microsoft's Active Sync should be used with PDA running Microsoft Pocket PC 2003 (WinCE.NET 4.2) or Microsoft Windows Mobile 2003 Second Edition Software for Pocket PC. Please refer to your PDA's operational manual for the actual synchronization software designed for your PDA and respective details.

4. Install A9281-A-000 Pocket PC Device Driver

To install A9281-A-000 Pocket PC device driver on your PDA, please follow the following procedures:

1. Make sure that the required PDA synchronization software has been installed on your PC.
2. Turn on your PC and wait for it to boot up completely.
3. Connect your PDA to your PC through PDA manufacturer recommended method. (either through cradle, USB cable, or etc)
4. Establish communication between your PC and your PDA.
5. Put the device driver / GUI utility CD in your PC's CD-ROM drive.
6. Use Windows Explorer to go to the Drivers & Utility directory on the CD-ROM.
7. Double click on **elserialsetup_pocketpc.exe**.
8. The Pocket PC installation screen will pop up as in the figure – 1.

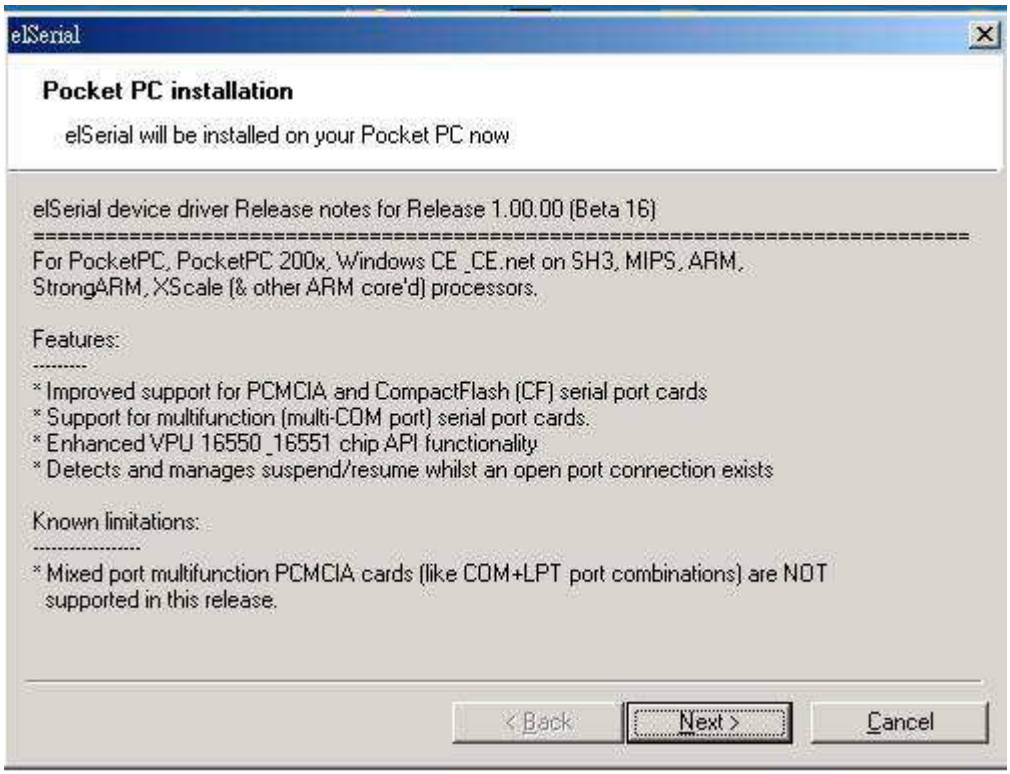


Figure - 1

9. Click on Next button

10. The License Agreement screen will be displayed as in Figure - 2

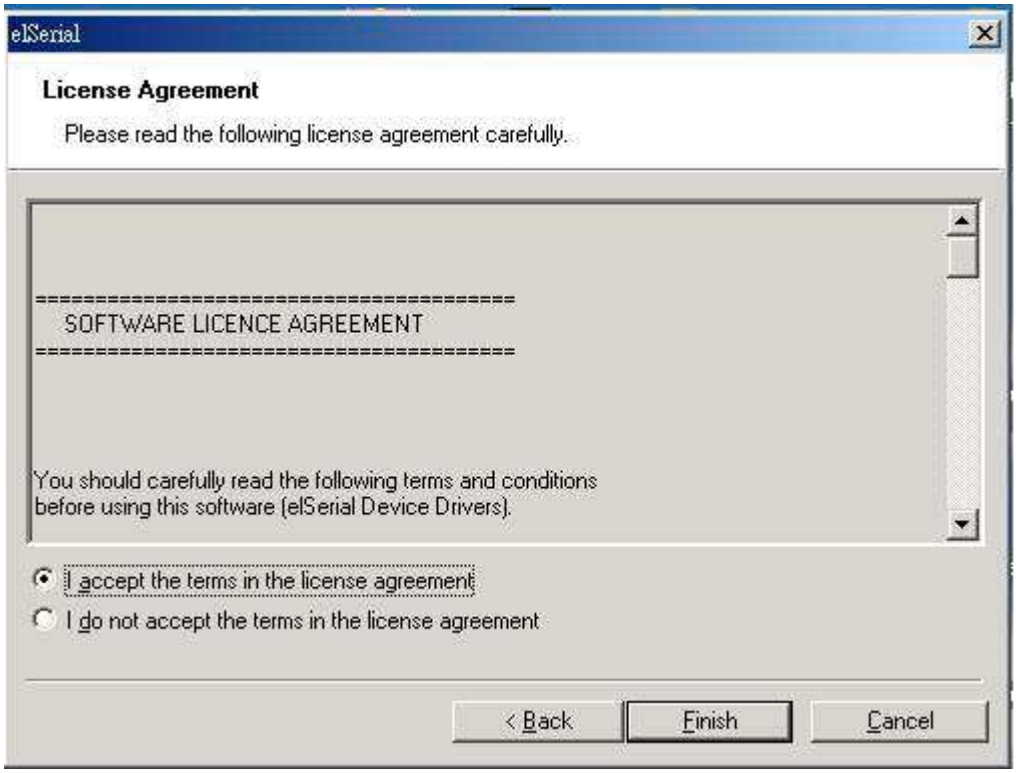


Figure - 2

11. Select “I accept the terms in the license agreement”
12. Click on the Finish button

The A9281-A-000 Pocket PC device driver is now installed on your PDA.

For detail operating instructions on how to establish communication link between PC and PDA, please refer to PDA manufacturer’s operating manual.

5. Install AMIC A9281-A-000 GUI Utility on PDA

1. Make sure that the required PDA synchronization software has been installed on your PC.
2. Turn on your PC and wait for it to boot up completely.
3. Connect your PDA to your PC through PDA manufacturer recommended method. (either through cradle, USB cable, or etc)
4. Establish communication between your PC and your PDA.
5. Put the device driver / GUI utility CD in your PC's CD-ROM drive.
6. Use Window's Explorer on PC to go to the Demo Software directory on the CD-ROM.
7. Copy Rfid14443Dv1.0.exe from the Demo Software directory on the CD-ROM to the Mobile Device directory.
8. After Rfid14443Dv1.0.exe is copied from PC to the PDA, you should be able to see the file, Rfid14443Dv1.0.exe, listed on PDA's File Explorer.

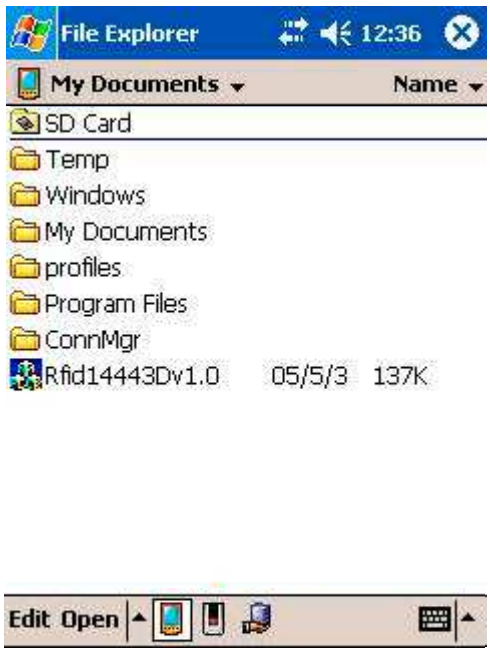


Figure – 3

6. AMIC A9281-A-000 GUI Utility Software

Introduction

The GUI Utility software is a user-friendly graphical-user-interface which enables its users to have full access to their RFID tags. These functionalities include reading data from tags, accessing specific memory location within tags' memory space, and writing data on to the tag. For detail tag memory structure, please see respective tag manufacturer's datasheet.

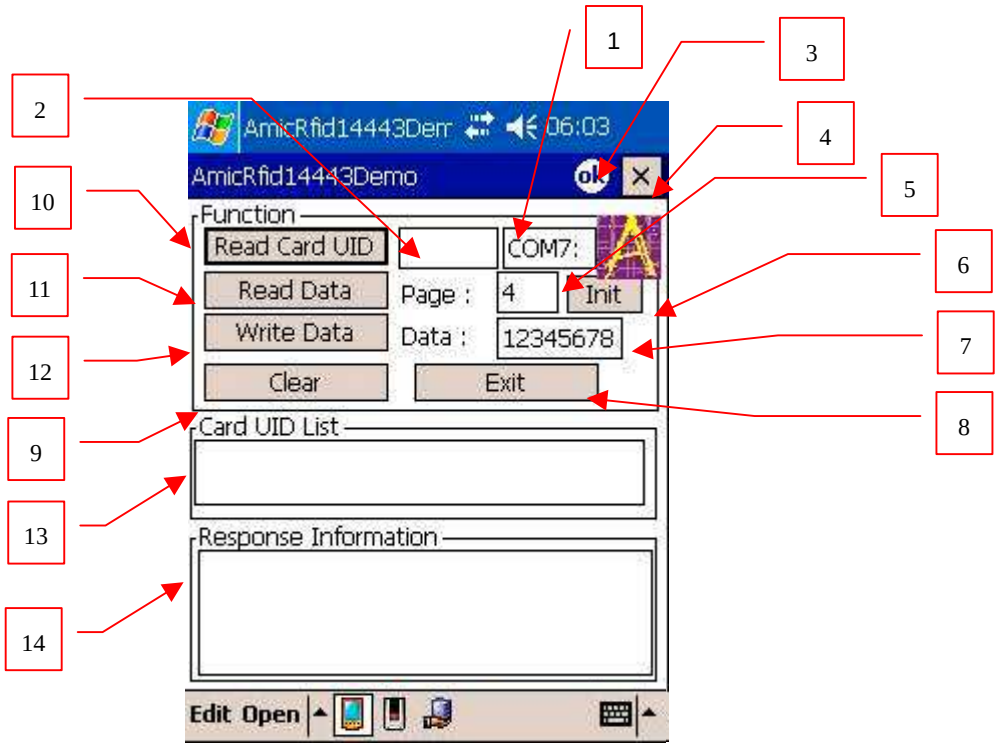


Figure – 4

1. COM Port Setting
2. Status Dialog Box
3. OK button
4. Minimum Program button
5. Page Number
6. Initialize Reader button
7. Page data
8. Exit button
9. Clear button
10. Read Card UID button
11. Read Data button
12. Write Data button
13. CARD UID Read history window
14. Response Information window

Launch the GUI Utility on PDA

1. Make sure that the AMIC A9281-A-000 RFID CF reader is inserted into PDA's CF slot securely
2. "New Hardware Found" window will be displayed as in figure – 5
3. Use PDA's stylus and single tap on "OK" button
4. Use PDA's File Explorer to list application files available
5. Use PDA's stylus and single tap on Rfid14443Dv1.0.exe
6. The following screen should be displayed

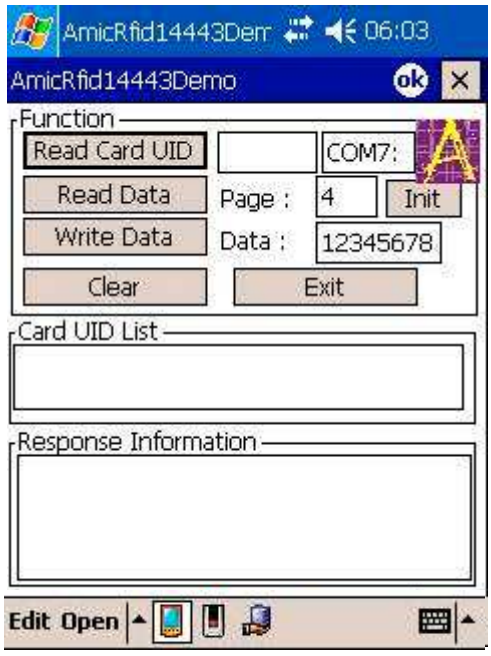


Figure - 5

7. AMIC A9281-A-000 RFID CF reader needs to be opened before any reader functionality can be made available to its user. This can be done by single tap on the "Init" button.
8. After applying single tap to the "Init" button, if the specified COM port is initialized successfully, "Init OK" will be displayed to the box to the right of COM port setting. At this time, the AM9281-A-000 CF reader is ready for user access.

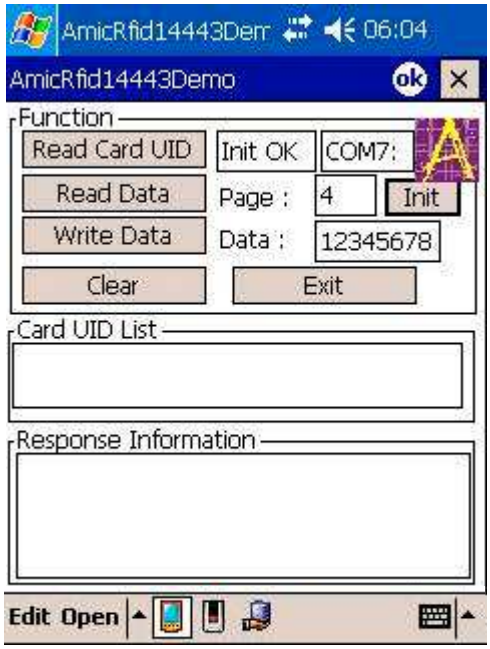
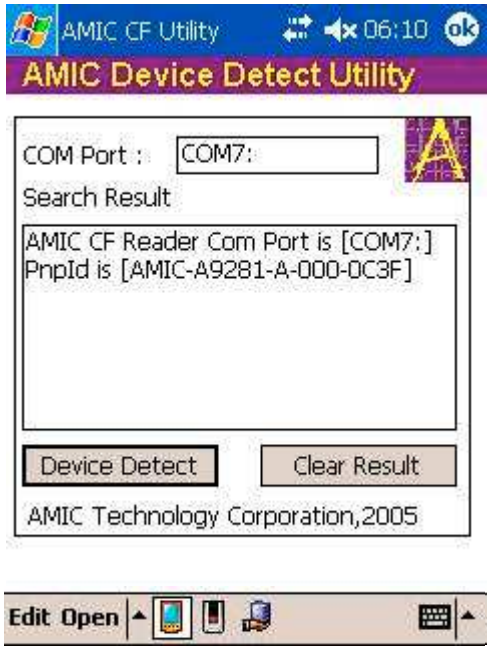


Figure - 6

9. If “Init Fail” is being displayed in the dialog box to the right of the COM port setting, the PDA has failed to initialize the CF reader through the specified COM port. This could be caused by several reasons: a) the CF reader is not positioned correctly in the CF slot. b) COM port conflict has occurred. Please use the correct COM port designated for the CF slot on the PDA. The available COM port for CF reader is dependent on the type of PDA that you are using.

Note: You can use the supplied utility software, AmicCFUtility.exe, located in the directory, Drivers & Utility, on the supplied CDROM to detect the appropriate

COM port. Make sure that the CF reader is already inserted into PDA's CF slot. Copy the utility, AmicCFUtility.exe, from the CDROM on to your PDA. Single tap on AmicCFUtility.exe and single tap the detect device button.
The utility shows the available communication port on your PDA used by AMIC's RFID reader.



Read Card UID

Each RFID tag has an unique identification number (UID). You can use AMIC CF reader to read UID from RFID tags. Make sure the GUI screen displays Init OK in the System Status Dialog Box. To read UID from tags follow the steps listed below:

1. Hold the PDA at a reasonable distance from the tag. Reasonable distance depends on the type of tag you are using. Generally speaking, the bigger the size of the tag, the greater the distance.
2. Single click on **ReadCardUID** button to read tag's UID
3. The UID from the tag just read should be displayed in the Response Information box
4. If ErrorCode = 01 is displayed in the Response Information box, the CF reader did not read the tag's UID correctly. Please follow steps 1 through 3 again.

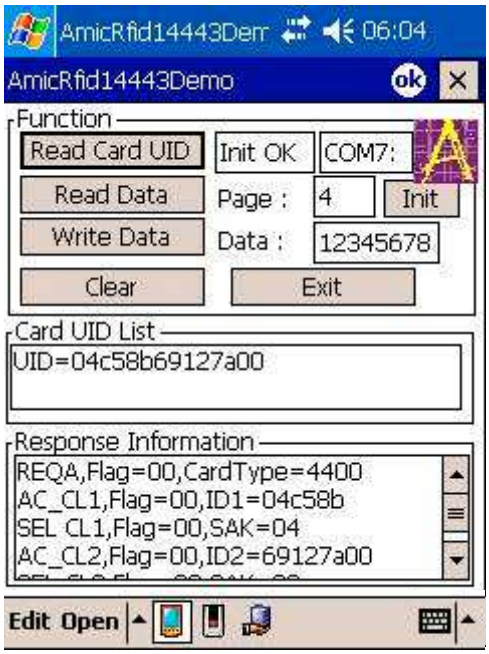


Figure – 7

Read Page Data

Each RFID tag has user accessible memory blocks. Typically each memory page contains 16 bytes of data for tags complying with ISO-14443A standard. Please refer to RFID tag manufacturer's data sheet for details. AMIC's A9281-A-000 CF reader will read 16 bytes of data per page from RFID tags at a time. Please follow the steps below for Read Block Data.

1. Single click on the **Page** box, and input the desired memory page number to be read by the reader (default value is 4). The range of the block number available for user access depends on the tag itself. Please refer to RFID tag manufacturer's data sheet for details.
2. Hold the PDA at a reasonable distance from tag.
3. Single click on **Read Data** button to read the specified tag's memory page.
4. The data read from the tag should be displayed in the Response Information box

If ErrCode=01 is displayed in the Response Information box, the CF reader did not read the tag memory correctly. Please follow steps 1 through 3 again.

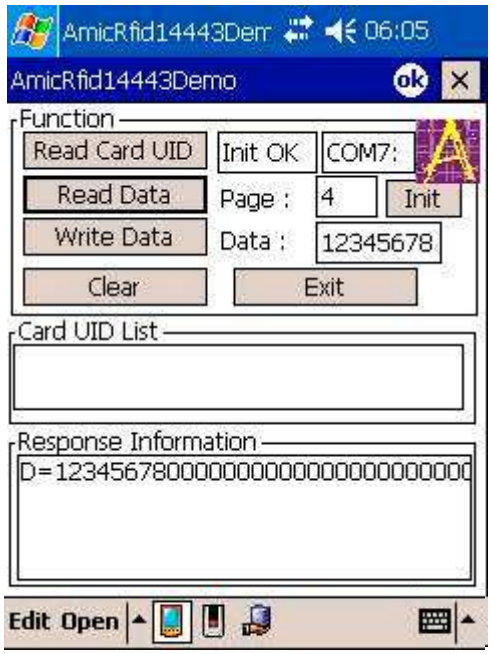


Figure – 8

Write Page Data

Each RFID tag has user accessible memory pages. Typically each memory page contains 16 bytes of data for tags complying with ISO-14443A standard. Please refer to RFID tag manufacturer's data sheet for details. AMIC's A9281-A-000 CF reader will write 4 bytes of data per block to RFID tags at a time. Please follow the steps below for Write Page Data.

1. Single click on the **Page** box and input the desired memory page number to be written by the reader (default value is 4). The range of the page number available for user access depends on the tag itself. Please refer to RFID tag manufacturer's data sheet for details.
2. Single click on the **Block Data** box and input the desired data to be written on to the tag.
3. Hold the PDA as close as possible to the tag.
4. Single click on **Write Data** button to write the specified tag's memory block.
5. The data written to the tag should be displayed in the **Response Information** box.

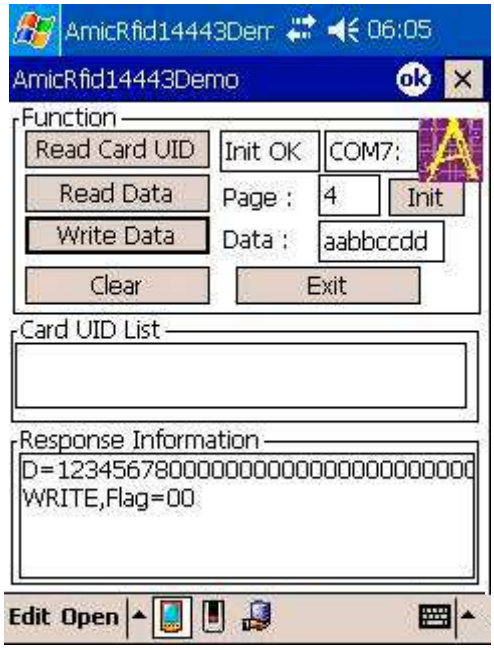


Figure – 9

7. If ErrCode=01 is displayed in the **Response Information** box, the CF reader did not read the tag memory correctly. Please follow steps 1 through 3 again.
8. It is at user's discretion that Read Data should be performed after writing data on to the tag to verify that Write Data has been performed successfully and correctly. Please refer to Read Block Data for how to read data from RFID tags.

Clear

The Clear button enables the user to clear the **Response Information** box any time during CF reader operation. Clear button can be tapped any time to clear the **Response Information** display.

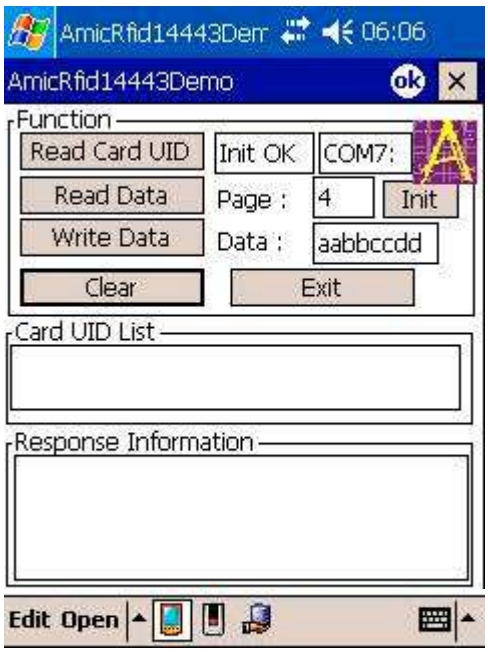


Figure – 10

Exit

The **Exit** button allows the user to close and exit the GUI utility.

1. Single click on the **Exit** box.
2. The GUI utility should be closed and return to your previous PDA display screen.

Revision History

Revision	Date	Description	By
1.0	05/09/2005	Initial creation	H. Yu

NOTE: The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

To comply with the FCC RF exposure compliance requirements, this device and its antenna must not be co-located or operating to conjunction with any other antenna or transmitter.

FCC INFORMATION

The Federal Communication Commission Radio Frequency Interference Statement includes the following paragraph:

The 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 instruction, may cause harmful interference to radio communication. However, there is no grantee that interference will not occur in a particular installation. If this equipment dose 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 outlet on a circuit different from that to which the receiver is connected.
--Consult the dealer or an experienced radio/TV technician for help.

The user should not modify or change this equipment without written approval Form **AMIC Technology Corporation**.Modification could void authority to use this equipment.