AMIC A9280-A-000

13.56MHz Compact Flash RFID Reader

User Manual

Rev 1.0

AMIC Communication Co.
No.2, Li-Hsin 6th Road, SBIP, 300 Hsinchu, Taiwan, R.O.C
TEL: 886-3-5679966
FAX: 886-3-5679977

Trademarks:

Philips, and I · Code SLI are registered trademarks of Philips Semiconductor.
TI, and Tag-It HF-I are registered trademarks of Texas Instruments.
HP and IPAQ are registered trademarks of Hewlett-Parker.
All other trademarks mentioned herein are properties of their respective companies.

1. Introduction

Thank you for purchasing AMIC A9280-A-000 Compact Flash RFID Reader. AMIC's A9280-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-1 or Type-2 slot. AMIC's A9280-A-000 is a Compact Flash RFID reader is compliant with the international recognized ISO-15693 standard. It has built-in antenna for easy of use, and it is capable of 200mW RF power output. AMIC's A9280-A-000 CF RFID reader supports Microsoft Pocket PC 2003 (WinCE.NET4.2) operation system.

2. Product Contents

Before starting using the A9280-A-000 compact flash RFID reader, please check that the package contains the following items:

- One AMIC A9280-A-000 CF RFID reader unit.
- One CD-ROM containing device driver, user manual, and GUI utility.
- Three ISO-15693 standard RFID ISO cards (RFID tags).

2.1. Installation Requirements

AMIC A9280-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)
- One Type-I or 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 9280-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 9280-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 A9280-A-000 Pocket PC Device Driver

To install A9280-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.

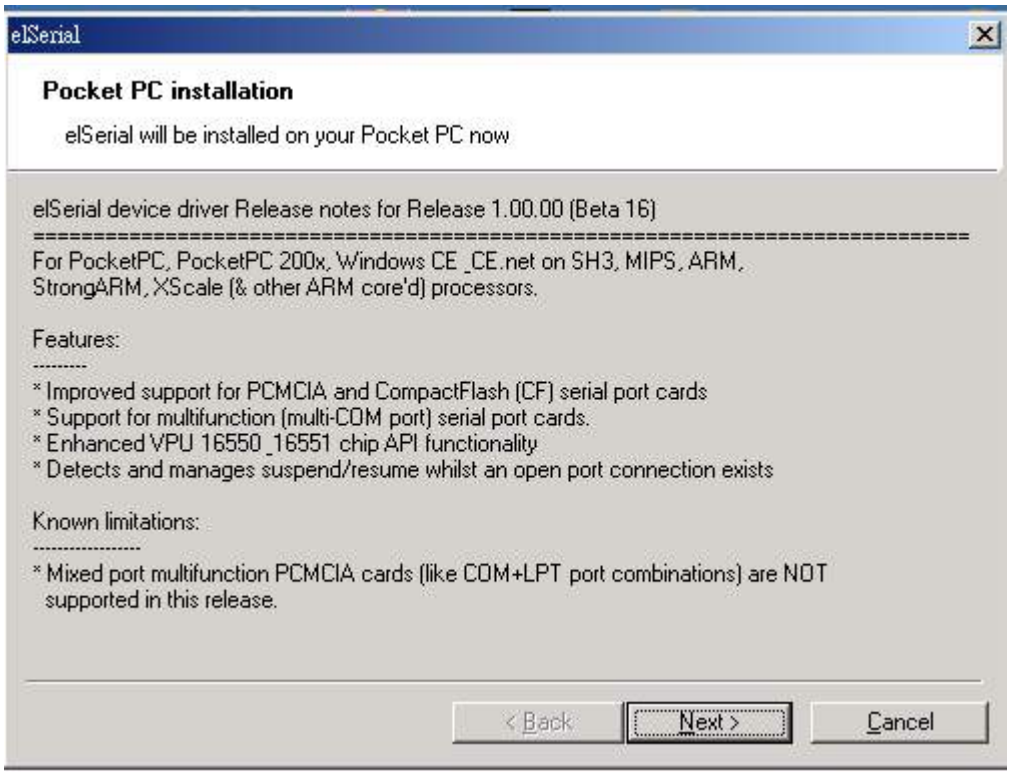

Figure - 1

9. Click on Next button

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

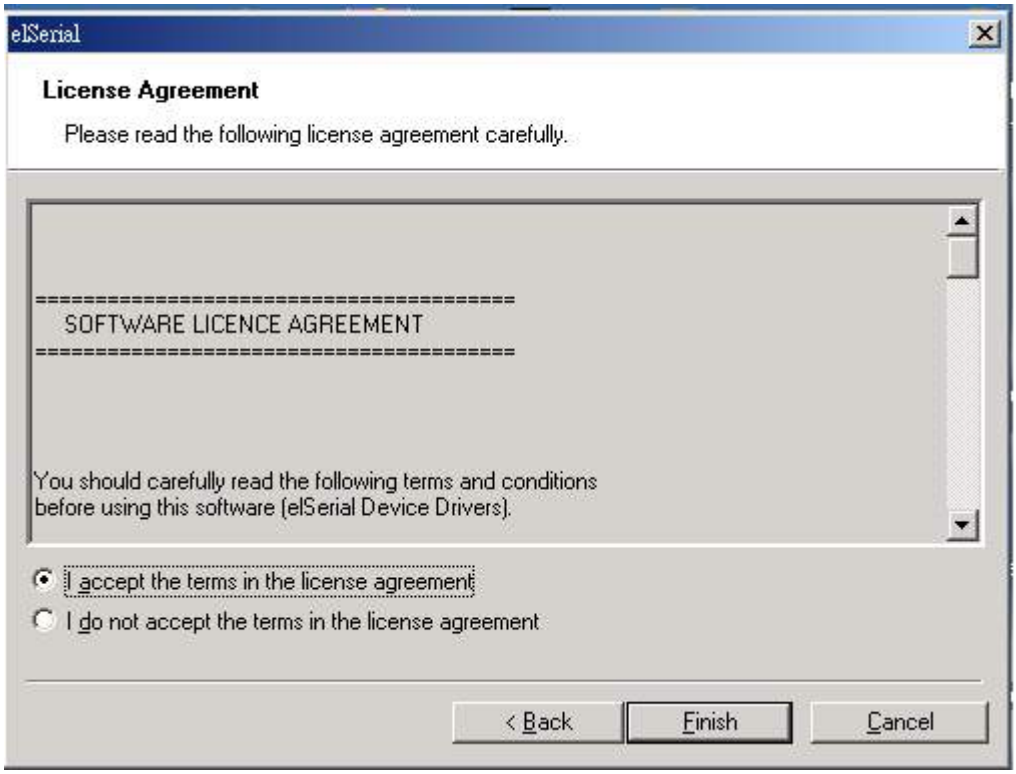

Figure - 2

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

The A9280-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 A9280-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 Rfid15693Demo.exe from the Demo Software directory on the CD-ROM to the Mobile Device directory.
8. After Rfid15693Demo.exe is copied from PC to the PDA, you should be able to see the file, Rfid15693Demo.exe, listed on PDA's File Explorer.

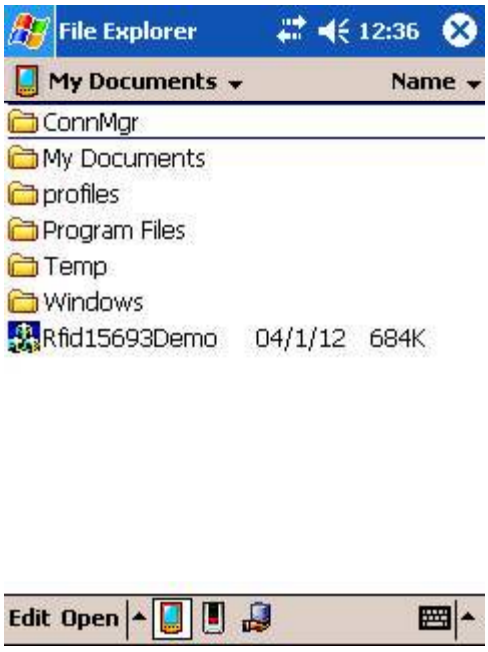

Figure – 3

6. AMIC A9280-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.

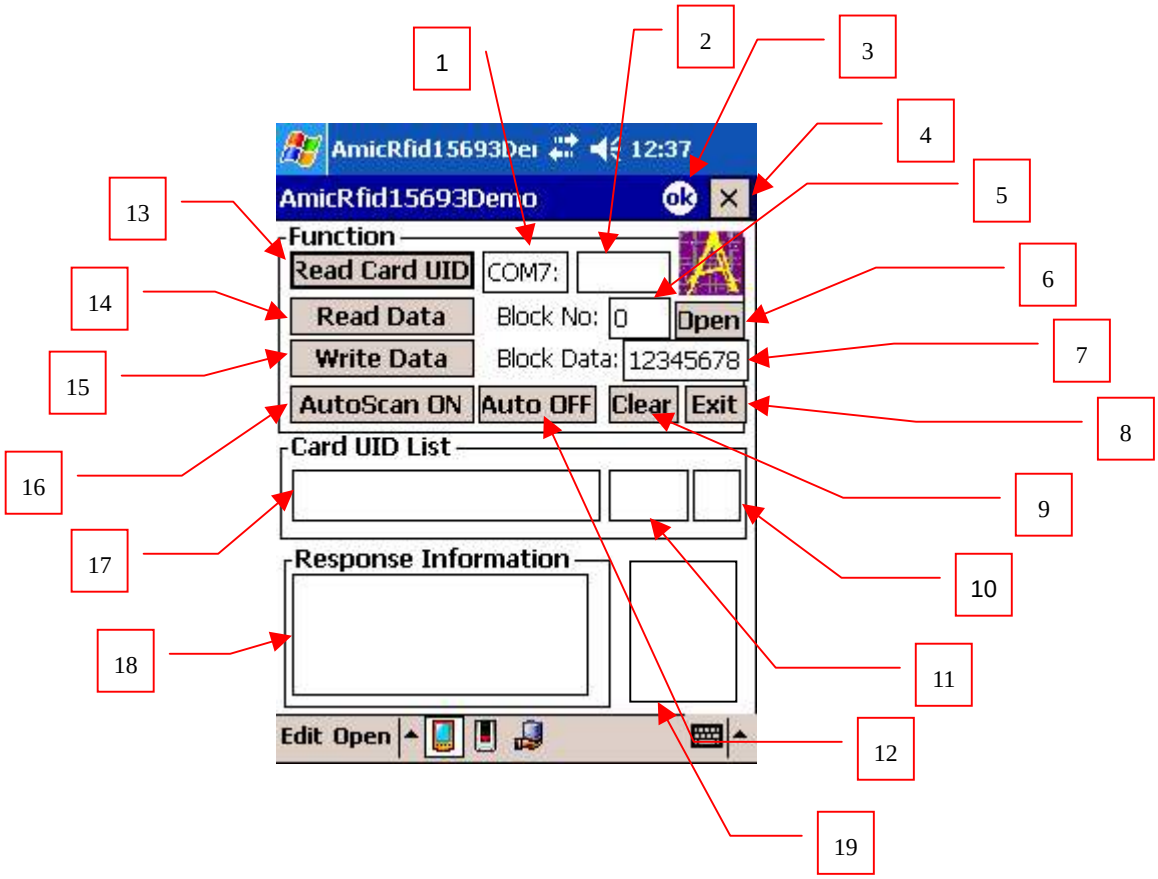

Figure - 4

1. COM Port Setting
2. Status Dialog Box
3. OK button
4. Close Program button
5. Block Number
6. Open Reader button
7. Block data
8. Exit button
9. Clear button
10. Auto Scan Counter
11. Auto Scan Status
12. Auto Off button
13. Read Card UID button
14. Read Data button
15. Write Data button
16. Auto Scan button
17. CARD UID Read history window
18. Response Information window
19. Operation OK / Fail Display

Launch the GUI Utility on PDA

1. Make sure that the AMIC A9280-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 Rfid15693Demo.exe
6. The following screen should be displayed

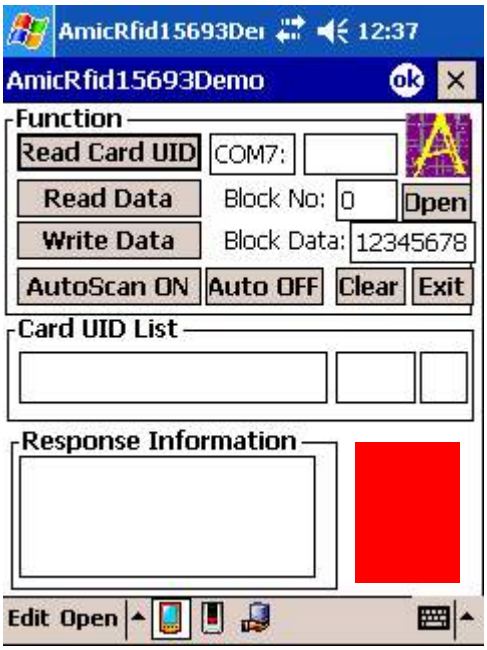

Figure - 5

7. AMIC A9280-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 "OPEN" button.
8. After applying single tap to the "OPEN" 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 AM9280-A-000 CF reader is ready for user access.

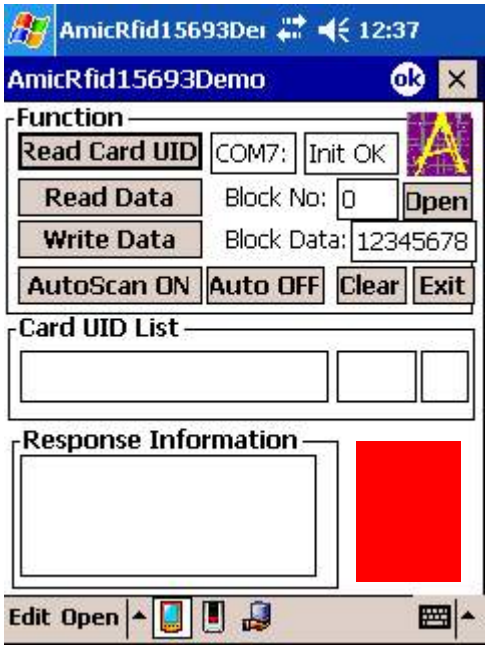

Figure - 6

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 another available COM port on the PDA. The available COM port for CF reader is dependent on the type of PDA that you used. Please select another available COM port and initialize the reader again.

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 such that the distance between the tag and the CF reader is no longer than 7 cm.
2. Single click on **ReadCardUID** button to read tag's UID
3. The **Operation OK / Fail Display** box on the lower right hand corner should become green
4. The UID from the tag just read should be displayed in the Response Information box
5. If ErrorCode = 02 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.

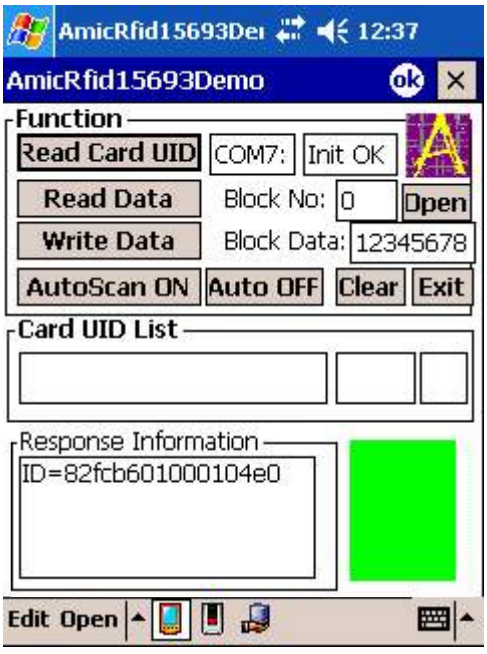

Figure – 7

Read Block Data

Each RFID tag has user accessible memory blocks. Typically each memory block contains 4 bytes of data for tags complying with ISO-15693 standard. Please refer to RFID tag manufacturer's data sheet for details. AMIC's A9280-A-000 CF reader will read 4 bytes of data per block from RFID tags at a time. Please follow the steps below for Read Block Data.

1. Single click on the **Block No.** box, and input the desired memory block number to be read by the reader (default value is 0). 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 such that the distance between the tag and the CF reader is no longer than 7 cm.
3. Single click on **Read Data** button to read the specified tag's memory block.
4. The **Operation OK / Fail Display** box on the lower right hand corner should turn green
5. The data read from the tag should be displayed in the Response Information box

If ErrCode=02 is displayed in the Response Information box, the CF reader did not read the tag memory correctly. Please follow steps 1 through 3 again.

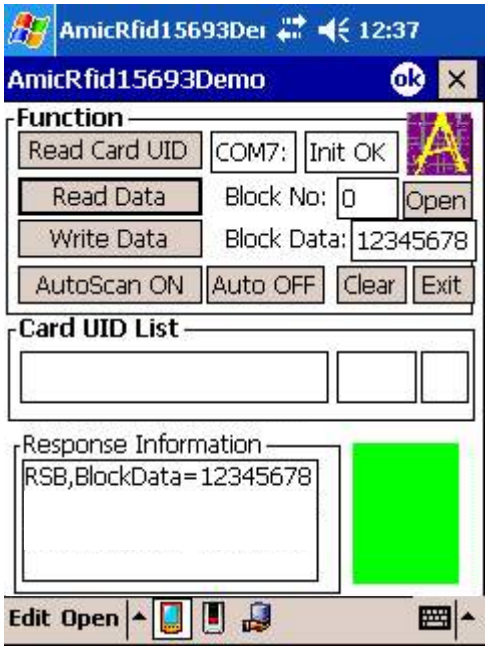

Figure – 8

Write Block Data

Each RFID tag has user accessible memory blocks. Typically each memory block contains 4 bytes of data for tags complying with ISO-15693 standard. Please refer to RFID tag manufacturer's data sheet for details. AMIC's A9280-A-000 CF reader will write 4 bytes of data per block to RFID tags at a time. Please follow the steps below for Read Block Data.

1. Single click on the **Block No.** box and input the desired memory block number to be written by the reader (default value is 0). 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. 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 **Operation OK / Fail Display** box on the lower right hand corner should turn green.
6. The data written to the tag should be displayed in the **Response Information** box.

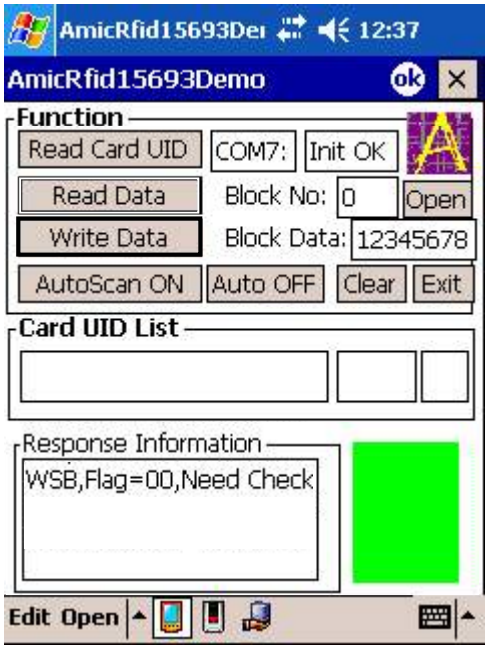

Figure – 9

7. If ErrCode=02 is displayed in the **Response Information** box, the CF reader did not read the tag memory correctly. The **Operation OK / Fail Display** box will turn red. 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.

AutoScan ON

The AutoScan ON function enables the user to let the CF reader automatically perform Read Card UID function. Once enabled, the reader will perform Read Card UID at 0.3 second interval. Each time the CF reader performs the Read Card UID function, a red or green box should be displayed depends on the result of the Read Card UID operation.

If the CF reader successfully reads a tag's UID, a green box will be displayed at the lower right hand corner and its UID will be displayed in the **Response Information** box. If the CF reader did not successfully read a tag's UID, a red box will be displayed at the lower right hand corner and **ErrCode=02** will be displayed in the **Response Information** box. A counter will be displayed in the counter box to show the number of times the CF reader has performed the **Read Card UID** function.

When using AutoScan ON, the PDA can be moved around to read different tags located at different places.

1. Single click on the **AutoScan On** button. Note: please single click on the AutoScan On button only. Do not double click to prevent malfunction.
2. The CF reader will start reading tags at 0.3 second interval.
3. Hold the PDA containing the CF reader near the tag to be read.
4. RFID tag's UID read by the reader should be displayed in the **Response Information** box.

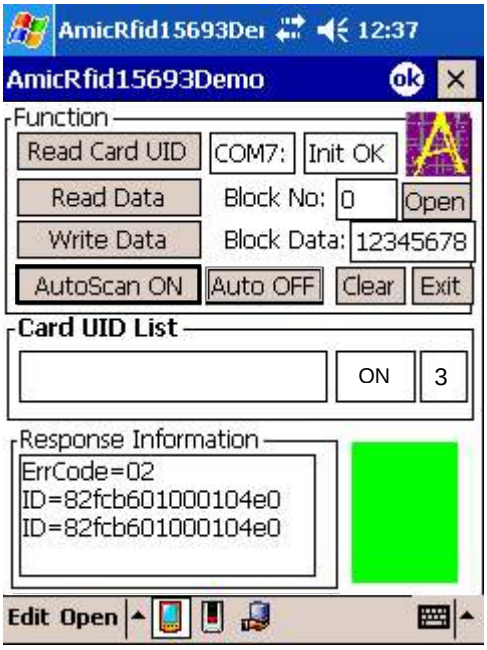

Figure – 10

Auto OFF

The Auto OFF function disables the AutoScan ON function. To turn-off the AutoScan ON function of the CF reader, please follow the steps below:

1. Single click on the **Auto OFF** box.
2. The reader shall stop reading RFID tags.

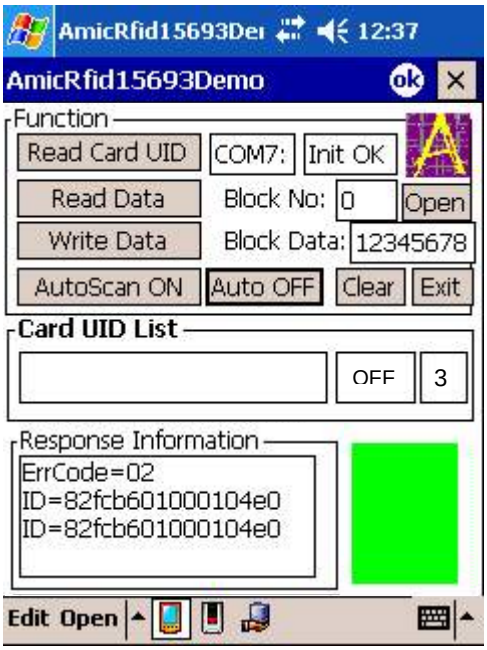

Figure – 11

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.

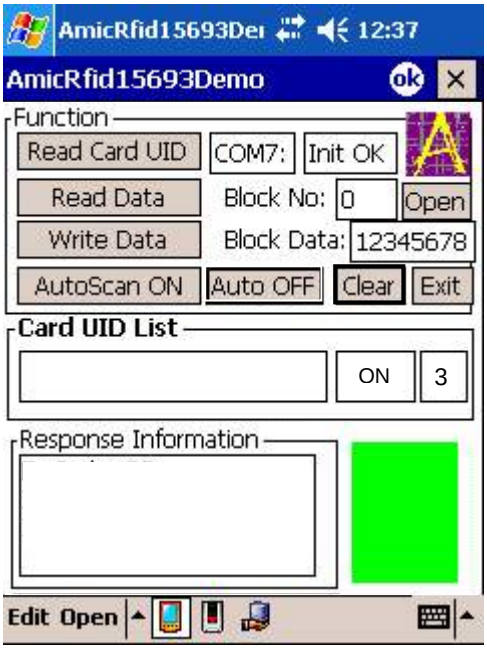

Figure – 12

Exit

The **Exit** button allows the user to close and exit the GUI utility. User should turn-off **AutoScan ON** function by single click on the **Auto Off** button first before exiting from 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	12/30/2004	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 Communication Co. Modification could void authority to use this equipment.

