



UHF RFID Library Management

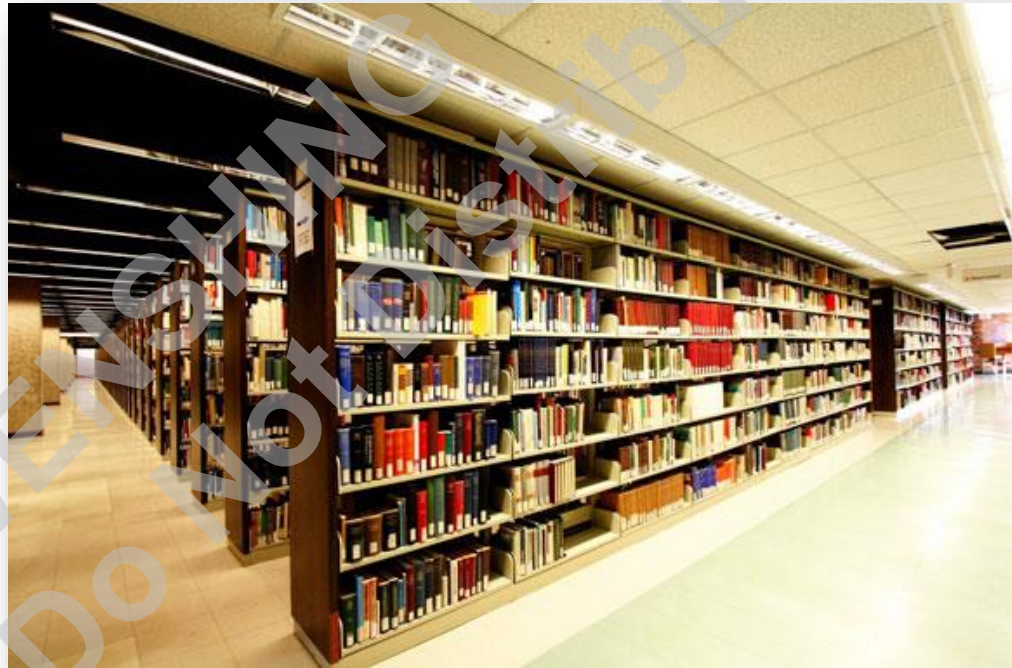
System Construct Presentation

UHF RFID Features

- **WENSHING Electronics Co., Ltd** was established in 1987, our major business line ranges from computer, electronics to communications including the design, manufacturer, production and sales in this related fields. We provide fourth UHF RFID long range readers, including Industrial Reader, Handheld Reader, Out-door Reader and In-door Reader operate in 840~960MHz and complies with industry standard.
- Industrial Reader reading range able to reach 35 meters, 7 meters for Handheld Reader and 30 meters for Out-door and In-door Reader. Suitable in different passive tags and interfaces, complies with the industry standard.
- RFID readers can both write and read the tag, capable of handling above 200 tags, fast processing. Adapt to warehouse management requirement of supply chain. No need for extra human labor cost, it greatly improves tracking quantities and directions, step further for making the cost down and more efficient.
- Passive Tag features highly security, greater storage data capacity compared with traditional bar code and not easily been counterfeited. More than million times of re-write and read functions, it is able to withstand in harsh environment owing to a special-made material of TAG proofing longer product lifetime with additional features as non-directional limitation and cost-effective.

System Introduction

WENSHING electronics applies the UHF RFID technology into “RFID Library system”, it provide comprehensive applications of library management including self-charging, fast inventory, finding fault zone and RF anti-theft detection in all aspects. It greatly simplifies the processes of borrow / return books, reduce loading for inventory and searching, improve security of anti-theft system, change loan management and burglarproof to be disconnected, not only improve the efficiency of the library staff, but also strengthen the reader's satisfaction.



System Structure

Initial-term

- Hardware configuration
 - UHF RFID Industrial Reader
 - UHF RFID Tube Antenna
 - UHF RFID Handheld Reader
 - Android Smartphone
- Software configuration
 - RFID Library management

Middle-term

- Hardware configuration
 - System mainframe
- Software configuration
 - Inventory management software

Final-term

- Hardware configuration
 - UHF RFID Industrial reader equips tube antenna
- Software configuration
 - Book check in/out management software

System Configuration

Initial-term

- Applying RFID system on the existing books
- **Advantages**
 - Immediately improve the old library system' s weakness.
 - Short-established time

Middle-term

- Applying RFID library management system
- **Advantages**
 - System monitoring management report immediately

Final-term

- Applying self-check in/out system
- **Advantages**
 - System monitoring management report immediately
 - Burglar-proof

System Structure

UHF RFID Industrial Reader Equips Tube Antenna

- Connect with system mainframe, immediately monitoring books in/out and inventory.

UHF RFID Handheld Reader

- Connect with Android smartphone in order to read and write the information on tag. Also rapid uploading or updating the information during the connection with the mainframe.

Android Smartphone

- Using smartphone to read the barcode on book and connect with UHF RFID handheld reader to write into the corresponding tag.

System Mainframe

- Integrated books position management, inventory check management and check in/out management.

UHF RFID Industrial Reader

- **WS-UHFRFIDANT4 Industrial Reader :**

Size : 160*160*55mm (W*D*H)

Frequency : 902~928MHz (Adjustable)

Sensitivity : -90dBm

RF Output power : 2W (33dBm)

Distance : 35m (MAX.)

Interface : Weigan26/34 、 RS232 、 RS485 、 Wi-Fi 、 Ethernet

Power supply : DC 12V 1A

Protocol : EPC Class 1 Gen 2 ISO18000-6C IS18000-6A/B

Wi-Fi : IEEE802.11b/g standard

UHF RFID Handheld Reader

- **WS-LOOKID Handheld Reader :**

Size : 135*108mm (W*D)

Frequency : 902~928MHz (Adjustable)

Sensitivity : -86dBm

RF Output power : 1W (30dBm)

Distance : 7m (MAX.)

Interface : Wi-Fi 、 Bluetooth (Serial Port Profile)

Memory : Micro SD 32G (MAX.)

Power supply : DC 5V 1A

Protocol : EPC Class 1 Gen 2 ISO18000-6C IS18000-6A/B

Wi-Fi : IEEE802.11b/g

Bluetooth : Bluetooth V2.1+EDR Class2

Wi-Fi : WEP64/WEP128/ TKIP/CCMP(AES) OPEN/WPA-PSK/WPA2-PSK

System Procedure



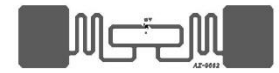
Book's Barcode



Read the barcode from smartphone.



Using Android smartphone to write the information in book's tag as well as upload to mainframe.



Book's Tag



Book with RFID Tag.



Industrial Reader reads the tag by using Tube Antenna to achieve books management and prevent unusual event.

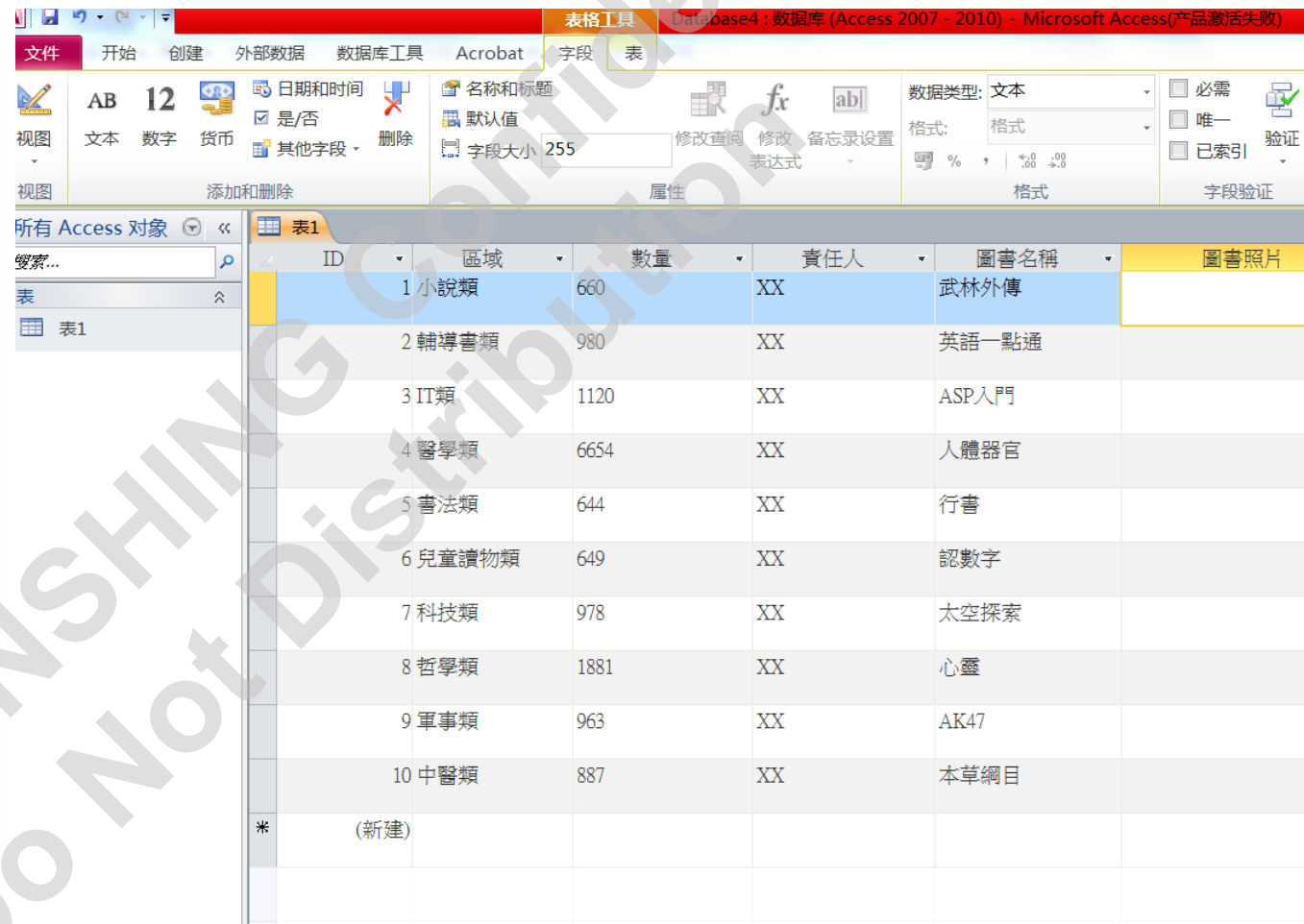


System Mainframe, using Industrial Reader to manage the books and inventory.



System Description

Upload book's information into **【System Mainframe】** and edit the information such as : bookshelf ID, area, quantity, picture or person in charge...etc.



The screenshot shows the Microsoft Access interface for a database named 'Database4: 数据库 (Access 2007 - 2010)'. The 'Table Tools' ribbon is active, showing the 'Fields' group. The 'Table1' table is displayed in Datasheet view. The table has the following columns: ID, 區域, 數量, 責任人, 圖書名稱, and 圖書照片. The data is as follows:

ID	區域	數量	責任人	圖書名稱	圖書照片
1	小說類	660	XX	武林外傳	
2	輔導書類	980	XX	英語一點通	
3	IT類	1120	XX	ASP入門	
4	醫學類	6654	XX	人體器官	
5	書法類	644	XX	行書	
6	兒童讀物類	649	XX	認數字	
7	科技類	978	XX	太空探索	
8	哲學類	1881	XX	心靈	
9	軍事類	963	XX	AK47	
10	中醫類	887	XX	本草綱目	
*	(新建)				

System Description

Stick the Tag with complete information on it's corresponding book, and place the book on it's belonging position.



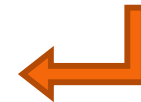
Tag with complete information inside



Stick the tag on it's corresponding book



Place the book on it's position



System Description

Install the 【Tube Antenna】
on the back of shelf then put
the books back.



Tube Antenna



Unusual event management

The 【System Mainframe】 would prompt the user if there's book has been pulled out or inserted. If the book has changed without permission, the mainframe will send the alert.



Inventory Management

Library books inventory check only needs to click the 【Inventory check button】 on the system mainframe, to ensure the books are in the correct position. It is effective to avoid mistake from manual check, to achieve best performance and save time.



Library books inventory check only needs to click the 【Inventory check button】 on the system mainframe, to ensure the books are in the correct position.



Tube Antenna

Technical Specifications	
Frequency (MHz)	900~960
Bandwidth (MHz)	26
VSWR	≤ 2.5
Outline dimension (mm)	980*55.4*25
Max Input Power (W)	5
RF connector	SMA Female 180°
Antenna Cover Material	aluminium alloy
Temperature	-40°C to +85°C
Humidity	10% to 95% RH

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