

RFID TRAINING KIT

HBE-RFID-REX



- Signal-measuring practice to understand the RFID System's basic principles
- LF 125kHz & HF 13.56MHz RFID Reader
- Air-interface standardization practice
- RFID application software practice (MFC example)
- Embedded System-combined Reader's application practice

■ FEATURE

Signal Level's RFID Principle Practice

- Data Coding-Modulation-Demodulation-De-Coding's operation principle practice
- Data Coding mode-RZ, NRZ, Miller, Bi-phase, Manchester
- Modem mode-ASK, FSK, PSK

Various band's RFID Reader & Tag Practice

- 125KHz Reader : Corresponding to ISO 18000-2 (Measuring each part's signals through self circuit configuration)
- 13.56MHz Reader : Corresponding to ISO 14443-A / ISO 15693-A
- USB interface

RFID Embedded Practice Part

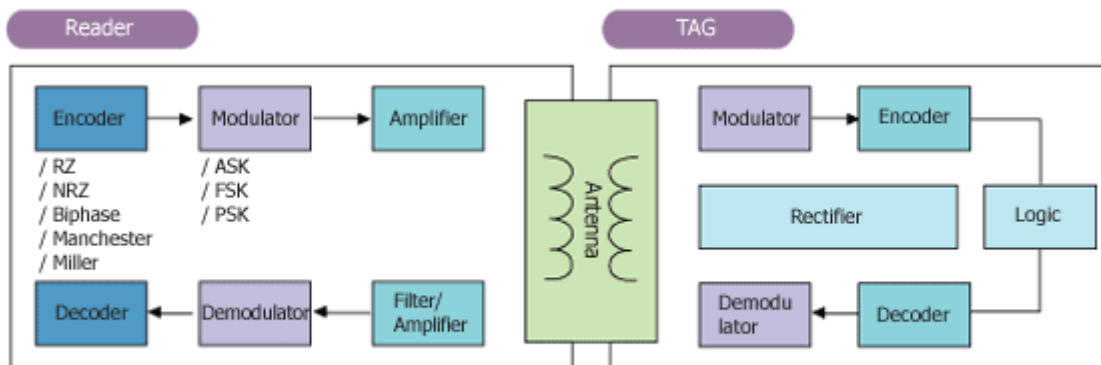
- Implemented the embedded system (Intel XScale PXA255)- Handheld type RFID Reader.
- WinCE 5.0 applied
- Adopted the Touch Pad-supported 4 °±wide TFT LCD

Various Applications Practice

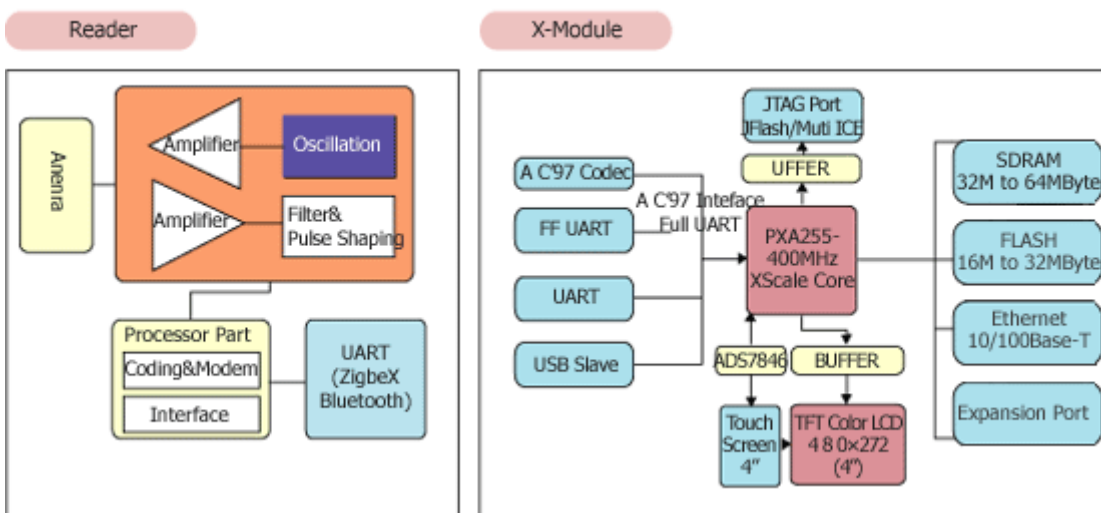
- Interworking with ZigbeX, USN practice unit of this company
- Embedded system's extensive applications

RFID-REX Product Configuration

RFID Principle



RFID Embedded



Item	Q'ty	Remark
Encoding part	1	Data Encoding
Decoding part	1	Data Decoding
ASK Module	1	ASK Modem
FSK Module	1	FSK Modem
PSK Module	1	PSK Modem
RFID Reader	2	Reader Module – 125KHz/13.56MHz (option : 900MHz Reader)
LCD Module	1	4"wide TFT LCD
PXA Module	1	Intel PXA255 / WinCE 5.0
Base	1	Power, I/O

■ HBE-RFID REX PARTS SPECITICATIONS

Coding Part - Signal Encoding/Decoding	
- Signal coder-encoder & Decoder : - 64bit format Monitoring - 8bit format Monitoring - Coding Data : NRZ/RZ/Manchester :Manchester1/Biphase/Miller - Device : - CPU : Atmega128 - CPLD : MAX II	
Modulation & Demodulation Part	
- ASK, FSK, PSK Modulation & Demodulation - ASK, FSK, PSK Modulation Signal Monitoring - Implementing test points for each part practice - NRZ / RZ / Manchester / Biphase / Miller - Tag Back scattering Check - Course of supplying power to TAG (Indicate LED)	
RFID Reader & Antenna	
- Antenna - Data transmission practice through inductive coupling - Data transmission through RLC resonance - Impedance matching practice - TAG recognition distance practice - Feature practice according to antenna types - RFID Reader - Reader Practice : - 125Khz-nstructin Circuit - 13.56Mhz-EM4094 - USB Interface - Various Application Practice - Fixed Reader practice - Extend Application practice(ZigbeX or Bluetooth interworking)	
Embedded part	
- LCD Module 4" Wide LCD With Touchpad - UART : ZigbeX/Bluetooth module - PXA-255 Module - CPU : intel PXA-255 - OS : WinCE - Connection Wired LAN/Full UART	 

■ HBE-RFID REX PRODUCTS SPECIFICATIONS

Part name	Main Component	Specifications
Coding part (Encoding/Decoding)	- 10 KEYPAD - 16*2 Text LCD - JTAG Port - ISP Port - Test Port Array - Status Led *8	- Processor & Controller : ATMEL A tmega128, MA X II (570 Logic) - Operation Volt : +5Vdc, +3Vdc
Modem part (ASK/FSK/PSK)	- 2*2 Transformer - ISP Port - Active/Logic/Discrete Component	- Processor : ATMEL A Tmega128 - Operation Volt : +12Vdc, +5Vdc
125KHz Reader	- Coil Antenna - Atmega128 - JTAG Port - ISP Port - USB Client Port - Test Port Array - DC Adaptor	- 125Khz Baseband - Max 15cm Detection range (dependent on Air-Interface protocols and Tag brands) - Protocols (Air Interface) : ISO18000-2 - Controller : ATMEL Atmega128 - Communication port : USB 2.0 Support - Operation Voltage : +3Vdc, +5Vdc
13.56Mhz Reader	- PCB Antenna - Atmega128 - JTAG Port - ISP Port - USB Client Port - Test Port Array - DC Adaptor	- 13.56Mhz Baseband - Max 15cm Detection range (dependent on Air-Interface protocols and Tag brands) - Protocols (Air Interface) : ISO1443-A/ ISO 1569-3 - Controller : Atmel Atmega128 - RFID IC : EM4094 - Communication port : USB 2.0 Support - Operation Voltage : +3Vdc, +5Vdc
LCD module	- TFT Graphic LCD - UART (with ZigbeX & Bluetooth)	- 4"wide TFT LCD - Touch PAD - Operation Voltaget: +3Vdc, +5Vdc
X-Module	- Intel PXA255 - Main Memory - AC97 Codec - Ethernet Controller - USB 2.0 Client port - RS232 port - JTAG	- Intel XScale PXA255 (400Mhz) - Flash 32MByte, SDRAM 128MByte - CS4202 Audio Code - SMSC LAN91C111 - Expansion Connector : Supported TFT Graphic LCD Etc UART (ZigbeX...) - OS : WinCE 5.0
Base	- Power Supply - USB - LAN - Socket :8ea	- Input : AC115~230V/60~50Hz - Output : +5Vdc(5A), +12Vdc(1A)

■ Accessories

Accessory	- AC to DC Adaptor : 220V AC input +5VDC(1A) Output - Stylus Pen
Cable	- Power Cable : AC85~264 Free Voltage input - USB Cable : A to B Type - Ethernet Cable : Crossover Type
Etc	- User's Manual : Paper - CD : Manual, Datasheet, Application SW
TAG	Card type : ISO 18000/ISO1443

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RFID Reader

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16. Handheld RFID Reader Software

■ HBE-RFID REX Handheld Practice Example (Optional)



HBE-RF ID-REX (13.56MHz)
Example of Using Handheld Reader Types



WinCE Driving Screen



Practice Example