

# **i-Collected<sup>TM</sup> Products Catalog**

**(English Version)**



**Shanghai Refine Information Technologies Co., Ltd.**

## Company Profile

Shanghai Refine Information Technologies (REFINE), headquartered in Shanghai, China, provides Active and Semi-Active RFID (radio frequency identification) systems for asset management, physical security and supply chain efficiencies. The battery-powered (active) RFID tags locate, identify, track, monitor, count, and protect people, assets, inventory, and vehicles. REFINE i-Collected™ RFID solutions are supported by patented technologies enable applications including: automatic “hands-free” personnel access control, automatic vehicle access control, automatic asset management, and sensor management.

REFINE patented i-Collected™ RFID systems use small, low cost battery powered tags (generically called “active” or “semi-active” tags) that when activated, transmit a wireless message typically 30 to 300 feet to hidden palm size receivers. The receivers are simultaneously connected (via a standard network) to the enterprise system software, the existing security alarm equipment and standalone management software. The REFINE enterprise software platform provides real-time location displays, automatic inventory counts, custom reports and alerts based on programmable rule-based conditions including automatic e-mail alerting and paging for rapid response.

The i-Collected™ can be used for a variety of enterprise productivity applications including:

- ✧ personnel access control and tracking
- ✧ asset management and protection
- ✧ vehicle access control and payload management
- ✧ supply chain and logistics
- ✧ real time location determination
- ✧ consumer recognition
- ✧ special purpose sensing.

## Vehicle Tag

Product Introduction:

Vehicle tag, also is called long-range transponder, is attached in vehicle as a world-wide unique identification unit. Based on Refine i-Collected™ innovative RFID platform, i-Tag RT-210 vehicle read-only tag can be used to satisfy the requirement for vehicle tracking and identification without any interruption. RT-210 can be widely applied in building intelligence, parking zoo, enterprise and military to automatically control vehicle access, tracking and tracing on road, ETC and more. Especially can help government effectively manage and control urban vehicles as a vehicle electronic certification. With excellent performance, stability and high value-price ratio, RT-210 offers customers a successful solution.



**i-Tag RT-210**

#### Features:

- ◆ Long-range (0~15m) automatic identification, the read range can be digital controlled by customers.
- ◆ A maximum anti-collision quantity is up to 125 tags per second.
- ◆ A maximum automatic identification speed is up to 200 kilometers per hour.
- ◆ Read-only.
- ◆ TDMA and synchronized communication scheme based on HDLC.
- ◆ Design with unique ultra-lower power in nano-watt level.
- ◆ Long life time is up to 5 years.

#### Physical Characteristics:

- ◆ Case Material: ABS Polypropylene with UV inhibitors.
- ◆ Dimensions: 60mm × 35mm × 8mm
- ◆ Weight: 25g
- ◆ Color: black
- ◆ Safety: IP34
- ◆ Install position: vehicle driver room
- ◆ Mounting: appending

#### Micro wave Characteristics:

- ◆ Modulation: GFSK
- ◆ Data rate: bi-directional 1024Kbit/s
- ◆ Frequency: 2.45GHz
- ◆ Maximum output power: -5dbm
- ◆ Sensitivity: -80dbm~-90dbm
- ◆ B.E.R:  $10^{-9}$
- ◆ Air interface: ISO18000-4 compatible

#### Electric Characteristics:

- ◆ Static current: <100nA
- ◆ Operating current: < 2mA
- ◆ Life time: >5years (10years battery optional)

#### Environmental:

- ◆ Operating temperature: -30 °C ~ +65 °C
- ◆ Storage temperature: -40 °C ~ +80 °C
- ◆ Humidity: < 85%
- ◆ Vibration: 10~2000Hz 15g in 3-dimensions
- ◆ Electromagnetism: 10V/m 0.1~1000MHz AM EM

#### Applications:

- ◆ Vehicle access with “Hand Free” mode.
- ◆ Vehicle AIDC system for urban region.

- ◆ ETC.

## Personal Tag

### Product Introduction:

Personal tag, also is called long-range transponder, is attached person body as a world-wide unique identification unit. Based on Refine i-Collect<sup>TM</sup> innovative RFID platform, i-Tag RT-220 personal read-only tag can be used to satisfy the requirement for person monitoring and identification without any interruption. RT-220 can be widely applied in campus, enterprise and military to automatically check work on attendance, tracking and tracing, access control and etc. Especially today security issue is more and more important, the market requirements from important conferences, activities, and professional industrial like coal mining focus on person security management and real time tracking. With excellent performance, stability and high value-price ratio, RT-220 offers customers a successful solution.



**i-Tag RT-220**

### Features:

- ◆ Long-range (0~30m) automatic identification, the read range can be digital controlled by customers.
- ◆ A maximum anti-collision quantity is up to 625 tags per second.
- ◆ Read-only.
- ◆ TDMA and synchronized communication scheme based on HDLC.
- ◆ Design with unique ultra-lower power in nano-watt level.
- ◆ Long life time is up to 8 years.

### Physical Characteristics:

- ◆ Case Material: ABS Polypropylene with UV inhibitors.
- ◆ Dimensions: 70mm × 30mm × 7mm
- ◆ Weight: 30g
- ◆ Color: black and white
- ◆ Safety: IP54
- ◆ Install position: person body
- ◆ Mounting: appending

### Micro wave Characteristics:

- ◆ Modulation: GFSK
- ◆ Data rate: bi-directional 256Kbit/s
- ◆ Frequency: 2.45GHz
- ◆ Maximum output power: -5dbm

- ◆ Sensitivity: -80dbm~-90dbm
- ◆ B.E.R:  $10^{-9}$
- ◆ Air interface: ISO18000-4 compatible

Electric Characteristics:

- ◆ Static current: <100nA
- ◆ Operating current: < 2mA
- ◆ Life time: >8years

Environmental:

- ◆ Operating temperature: -20 °C ~ +45 °C
- ◆ Storage temperature: -30 °C ~ +65 °C
- ◆ Humidity: < 95%
- ◆ Vibration: 10~2000Hz 15g in 3-dimensions
- ◆ Electromagnetism: 10V/m 0.1~1000MHz AM EM

Applications:

- ◆ The bridge between campus and family for student safety access.
- ◆ Automatic check on work attendance for enterprises
- ◆ Employee tracing and tracking in coal mines
- ◆ Person safety management for important conferences and activities

## Container Tag

Product Introduction:

Container tag is used as a digital media integrated container logistics and information flow, implementing effective gate passing, crane picking and transportation with automatic data exchange. Based on Refine full IP owned i-Collected<sup>TM</sup> innovative RFID platform, i-Tag RT-202 container tag can be used to real-time trace container in logistics, erase the personal error in operation, improve the operation efficiency and guarantee the container security in transportation. With the container tag and infrastructure reader network, will implement real digital port, enhance the service of container logistics, and create new value for customers.



**i-Tag RT-202**

Features:

- ◆ Long-range (2~50m) automatic identification, the read range can be digital dynamic controlled by customer.
- ◆ A maximum anti-collision quantity is up to 60 tags per second.

- ◆ Capability of AIDC in multiple channels concurrently, support high speed identification with 100kilometer per hour.
- ◆ Support Read and Write with 32K bytes storage.
- ◆ Design with unique ultra-lower power in nano-watt level.
- ◆ Industrial package.
- ◆ Long life time is up to 8 years.

Physical Characteristics:

- ◆ Case Material: ABS Polypropylene with UV inhibitors.
- ◆ Dimensions: 150mm × 38mm × 20mm
- ◆ Weight: 45g
- ◆ Color: grey
- ◆ Safety: IP65
- ◆ Install position: container surface
- ◆ Mounting: bolt mounting

Micro wave Characteristics:

- ◆ Modulation: GFSK
- ◆ Data rate: bi-directional 512Kbit/s
- ◆ Frequency: 2.45GHz
- ◆ Maximum output power: 0dbm
- ◆ Sensitivity: -80dbm~-90dbm
- ◆ B.E.R:  $10^{-9}$
- ◆ Air interface: ISO18000-4 compatible

Electric Characteristics:

- ◆ Static current: <100nA
- ◆ Operating current: < 2mA
- ◆ Life time: >8years

Environmental:

- ◆ Operating temperature: -40 °C ~ +80 °C
- ◆ Storage temperature: -60 °C ~ +85 °C
- ◆ Humidity: < 95%
- ◆ Vibration: 10~2000Hz 15g in 3-dimensions
- ◆ Electromagnetism: 10V/m 0.1~1000MHz AM

Applications:

- ◆ Container logistics in road, railway and sea.

## Equipment Tag

Product Introduction:

Equipment tag, also called device electronic tag, is installed on the surface of equipment with world-wide unique digital ID and store the related data information. Based on Refine full IP owned i-Collected™ innovative RFID platform, i-Tag RT-240 read/write equipment tag can be used to real-time trace equipments and maintenance. Working with the fixed reader and portable reader, RT-240 can be widely applied in equipment maintenance, inspection, product tracking and tracing, working in progress and etc.



**i-Tag RT-240**

**Features:**

- ◆ Long-range (0~100m) automatic identification, the read range can be digital dynamic controlled by customer.
- ◆ A maximum anti-collision quantity is up to 60 tags per second.
- ◆ TDMA and synchronized communication scheme based on HDLC.
- ◆ Support Read and Write with 4K bytes storage.
- ◆ Design with unique ultra-lower power in nano-watt level.
- ◆ Long life time is up to 8 years.

**Physical Characteristics:**

- ◆ Case Material: ABS Polypropylene with UV inhibitors.
- ◆ Dimensions: 70mm × 30mm × 7mm
- ◆ Weight: 25g
- ◆ Color: blue
- ◆ Safety: IP65
- ◆ Install position: equipment surface
- ◆ Mounting: bolt mounting

**Micro wave Characteristics:**

- ◆ Modulation: GFSK
- ◆ Data rate: bi-directional 512Kbit/s
- ◆ Frequency: 2.45GHz
- ◆ Maximum output power: 0dbm
- ◆ Sensitivity: -80dbm~-90dbm
- ◆ B.E.R:  $10^{-9}$
- ◆ Air interface: ISO18000-4 compatible

**Electric Characteristics:**

- ◆ Static current: <100nA
- ◆ Operating current: < 2mA

- ◆ Life time: >8years

Environmental:

- ◆ Operating temperature: -40 °C ~ +70 °C
- ◆ Storage temperature: -50 °C ~ +85 °C
- ◆ Humidity: < 95%
- ◆ Vibration: 10~2000Hz 15g in 3-dimensions
- ◆ Electromagnetism: 10V/m 0.1~1000MHz AM

Applications:

- ◆ Power equipments inspection.
- ◆ Pipelines and devices intelligent maintenance and check.
- ◆ High value-added product tracing and tracking.
- ◆ WIP in manufactures.
- ◆ Pallets and containers management in warehouses.

## Animal Tag

Product Introduction:

Animal tag is hung up on the body of animals with world-wide unique digital ID and store the related data information. Based on Refine full IP owned i-Collected<sup>TM</sup> innovative RFID platform, i-Tag RT-230 read/write animal tag with handheld reader can be used to real-time trace animal and identify animals. In traditional way, animal identification uses implanted passive tag to instead barcode, but the read distance is only 10mm and with very limited storage. Implanted passive tag cannot enhance the operation and management efficiency for government, but with Refine innovative RT-230 animal tag, combined advanced long-range RF identification technologies to implement real efficiency and automatic animal management for related government administration. RT-230 can be widely applied in urban pet management and animal tracing.



**i-Tag RT-230**

Features:

- ◆ Long-range (0~30m) automatic identification, the read range can be digital dynamic controlled by operators.
- ◆ A maximum anti-collision quantity is up to 125 tags per second.
- ◆ TDMA and synchronized communication scheme based on HDLC.
- ◆ Support Read and Write with 8K bytes storage.
- ◆ Design with unique ultra-lower power in nano-watt level.
- ◆ Long life time is up to 5 years.

#### Physical Characteristics:

- ◆ Case Material: ABS Polypropylene with UV inhibitors.
- ◆ Dimensions: can be customized
- ◆ Weight: 20g
- ◆ Color: blue
- ◆ Safety: IP54
- ◆ Install position: animal body
- ◆ Mounting: hung up

#### Micro wave Characteristics:

- ◆ Modulation: GFSK
- ◆ Data rate: bi-directional 512Kbit/s
- ◆ Frequency: 2.45GHz
- ◆ Maximum output power: -5dbm
- ◆ Sensitivity: -80dbm~-90dbm
- ◆ B.E.R:  $10^{-9}$
- ◆ Air interface: ISO18000-4 compatible

#### Electric Characteristics:

- ◆ Static current: <100nA
- ◆ Operating current: < 2mA
- ◆ Life time: >5 years

#### Environmental:

- ◆ Operating temperature: -20 °C ~ +45 °C
- ◆ Storage temperature: -30 °C ~ +65 °C
- ◆ Humidity: < 95%
- ◆ Vibration: 10~2000Hz 15g in 3-dimensions
- ◆ Electromagnetism: 10V/m 0.1~1000MHz AM

#### Applications:

- ◆ Urban pets tracing and management.
- ◆ Wild animal tracing and tracking.
- ◆ Animal zoo management.

### **Beep-light located Tag**

#### Product Introduction:

General speaking, RF identification is the first step, after that people always want to find their target object. Therefore, how to fast and personalized locate the target object is very important for many applications, like warehouse management VMI.

To implement RFID real time location system, there are two typical ways. One is to use at least

three base station readers to decide three dimensions data of target tag, it's similar with GPS satellites location system to adopt TOA or RSS algorithms. Another is to take advantage of human being perceive function with beep or light alarm.

In theory, to calculate the data of 3-dimensions is the best way, but in fact 3-dimensions data cannot be transferred to target position via human being brain easily and rapidly. In additional, accurately location data cannot be obtained in real environment, so that in applications which have human being involved 3-dimensions location method is not reasonable. With fully understand customers' location requirements and based on Refine i-Collected™ innovative RFID platform, i-Tag RT-301 beep-light located tag can be widely used in warehouse, enterprises and more fields to implement AIDC, fast and personalized looking for target.



**i-Tag RT-301**

#### Features:

- ◆ Long-range (0~100m) automatic identification, the read range can be digital dynamic controlled by customer.
- ◆ A maximum anti-collision quantity is up to 625 tags per second.
- ◆ Support personalized beep and light alarm.
- ◆ Support Read and Write with 4K bytes storage.
- ◆ Design with unique ultra-lower power in nano-watt level.
- ◆ Long life time is up to 2 years (2 times alarm per day).
- ◆ Support low battery alarm and battery exchangeable.

#### Physical Characteristics:

- ◆ Case Material: ABS Polypropylene with UV inhibitors.
- ◆ Dimensions: 48mm × 30mm × 12mm
- ◆ Weight: 35g
- ◆ Color: white
- ◆ Safety: IP34
- ◆ Install position: equipment surface
- ◆ Mounting: bolt mounting

#### Micro wave Characteristics:

- ◆ Modulation: GFSK
- ◆ Data rate: bi-directional 512Kbit/s
- ◆ Frequency: 2.45GHz
- ◆ Maximum output power: 0dbm

- ◆ Sensitivity: -80dbm~-90dbm
- ◆ B.E.R:  $10^{-9}$
- ◆ Air interface: ISO18000-4 compatible

Environmental:

- ◆ Operating temperature:  $-10\text{ }^{\circ}\text{C} \sim +60\text{ }^{\circ}\text{C}$
- ◆ Storage temperature:  $-20\text{ }^{\circ}\text{C} \sim +70\text{ }^{\circ}\text{C}$
- ◆ Humidity:  $< 85\%$
- ◆ Vibration:  $10\sim 2000\text{Hz}$  15g in 3-dimensions
- ◆ Electromagnetism: 10V/m 0.1~1000MHz AM

### Move sensor Tag

Product Introduction:

Active RFID technology brings a great chance for building wherever wireless sensor networks. Wireless sensor network device, also called MOTE, can be constructed by active RFID and sensor unit, including network and application software supported circuits, sensor interfaces with detecting temperature, pressure, humidity, light, sound and magnetic; and RF unit which can transfer data via wireless.

Move sensor tag, also called move detected tag, can be installed in the object surface with world wide unique ID, and be used to detect object move status and store specific information. Based on Refine i-Collected<sup>TM</sup> innovative RFID platform, i-Tag RT-310 move sensor read-only tag can be widely used in security department, specific industrials to monitor important targets and avoid the intended loss.



**i-Tag RT-310**

Features:

- ◆ Long-range (0~50m) automatic identification, the read range can be digital dynamic controlled by customer.
- ◆ A maximum anti-collision quantity is up to 125 tags per second.
- ◆ Support move detected, sensitivity can be adjusted by software.
- ◆ Read only.
- ◆ TDMA and synchronized communication scheme based on HDLC.
- ◆ Design with unique ultra-lower power in nano-watt level.
- ◆ Long life time is up to 8 years.

#### Physical Characteristics:

- ◆ Case Material: ABS Polypropylene with UV inhibitors.
- ◆ Dimensions: 70mm × 30mm × 7mm
- ◆ Weight: 25g
- ◆ Color: deep blue
- ◆ Safety: IP54
- ◆ Install position: equipment surface
- ◆ Mounting: bolt mounting

#### Micro wave Characteristics:

- ◆ Modulation: GFSK
- ◆ Data rate: bi-directional 1024Kbit/s
- ◆ Frequency: 2.45GHz
- ◆ Maximum output power: 0dbm
- ◆ Sensitivity: -80dbm~-90dbm
- ◆ B.E.R:  $10^{-9}$
- ◆ Air interface: ISO18000-4 compatible

#### Electric Characteristics:

- ◆ Static current: <100nA
- ◆ Operating current: < 2mA
- ◆ Life time: >8 years

#### Environmental:

- ◆ Operating temperature: -20 °C ~ +60 °C
- ◆ Storage temperature: -40 °C ~ +80 °C
- ◆ Humidity: < 85%
- ◆ Vibration: 10~2000Hz 15g in 3-dimensions
- ◆ Electromagnetism: 10V/m 0.1~1000MHz AM

### Temperature sensor Tag

#### Product Introduction:

Active RFID technology brings a great chance for building wherever wireless sensor networks. Wireless sensor network device, also called MOTE, can be constructed by active RFID and sensor unit, including network and application software supported circuits, sensor interfaces with detecting temperature, pressure, humidity, light, sound and magnetic; and RF unit which can transfer data via wireless.

Temperature sensor tag, also called temperature wireless tag, can be installed in the target environment with world wide unique ID, and be used to detect target temperature status and store specific information. Based on Refine i-Collecte<sup>TM</sup> innovative RFID platform, i-Tag RT-320

temperature detected read-only tag can be widely used in food security transportation, specific industrials to monitor environment.



**i-Tag RT-320**

#### Features:

- ◆ Long-range (0~50m) automatic identification, the read range can be digital dynamic controlled by customer.
- ◆ A maximum anti-collision quantity is up to 125 tags per second.
- ◆ Support temperature detected, sensitivity can be adjusted by software.
- ◆ Read only.
- ◆ TDMA and synchronized communication scheme based on HDLC.
- ◆ Design with unique ultra-lower power in nano-watt level.
- ◆ Long life time is up to 5 years.

#### Physical Characteristics:

- ◆ Case Material: ABS Polypropylene with UV inhibitors.
- ◆ Dimensions: 70mm × 30mm × 7mm
- ◆ Weight: 25g
- ◆ Color: white and black combined
- ◆ Safety: IP54
- ◆ Install position: equipment surface
- ◆ Mounting: bolt mounting

#### Micro wave Characteristics:

- ◆ Modulation: GFSK
- ◆ Data rate: bi-directional 1024Kbit/s
- ◆ Frequency: 2.45GHz
- ◆ Maximum output power: 0dbm
- ◆ Sensitivity: -80dbm~-90dbm
- ◆ B.E.R:  $10^{-9}$
- ◆ Air interface: ISO18000-4 compatible

#### Electric Characteristics:

- ◆ Static current: <100nA
- ◆ Operating current: < 2mA
- ◆ Life time: >5 years
- ◆ Temperature detected range: -10 °C ~ +50 °C
- ◆ Precision: 0.5 °C
- ◆ Interval: 5mins

#### Environmental:

- ◆ Operating temperature: -20 °C ~ +65 °C
- ◆ Storage temperature: -40 °C ~ +80 °C
- ◆ Humidity: < 85%
- ◆ Vibration: 10~2000Hz 15g in 3-dimensions
- ◆ Electromagnetism: 10V/m 0.1~1000MHz AM

#### Electronic Seal

##### Product Introduction:

Active RFID technology brings a great chance for building wherever wireless sensor networks. Wireless sensor network device, also called MOTE, can be constructed by active RFID and sensor unit, including network and application software supported circuits, sensor interfaces with detecting temperature, pressure, humidity, light, sound and magnetic; and RF unit which can transfer data via wireless.

Electronic seal, also called electronic lead tag, can be installed in the seal of container door, with world wide unique ID, and can be used to detect door open or close status and store specific information. Based on Refine i-Collect<sup>TM</sup> innovative RFID platform, i-Tag RT-300 electronic seal can be widely used in logistics surveillance and transportation security. Due to advanced technologies, state-of-art design and high value-price ratio, RT-300 will create great value for customers and improve customer-care services.



**i-Tag RT-300**

##### Features:

- ◆ Long-range (0~50m) automatic identification, the read range can be digital dynamic controlled by customer.
- ◆ A maximum anti-collision quantity is up to 60 tags per second.
- ◆ Support door status, temperature, light, humidity and vibration detected, uninstall alarm.
- ◆ Read only with 1M byte flash, maximum store 5000 records.
- ◆ TDMA and synchronized communication scheme based on HDLC.
- ◆ Design with unique ultra-lower power in nano-watt level.
- ◆ Industrial design
- ◆ Long life time is up to 3 years.
- ◆ Support low battery alarm and battery exchangeable.

##### Physical Characteristics:

- ◆ Case Material: stainless steel and ABS Polypropylene with UV inhibitors.
- ◆ Dimensions: U-type
- ◆ Weight: 520g
- ◆ Color: black
- ◆ Safety: IP65
- ◆ Install position: the door seal of container
- ◆ Mounting: self-mounting

#### Micro wave Characteristics:

- ◆ Modulation: GFSK
- ◆ Data rate: bi-directional 1024Kbit/s
- ◆ Frequency: 2.45GHz
- ◆ Maximum output power: 0dbm
- ◆ Sensitivity: -80dbm~-90dbm
- ◆ B.E.R:  $10^{-9}$
- ◆ Air interface: ISO18000-4 compatible

#### Electric Characteristics:

- ◆ Static current: <100nA
- ◆ Operating current: < 2mA
- ◆ Life time: >3 years

#### Environmental:

- ◆ Operating temperature: -40 °C ~ +80 °C
- ◆ Storage temperature: -50 °C ~ +85 °C
- ◆ Humidity: < 95%
- ◆ Vibration: 10~2000Hz 15g in 3-dimensions
- ◆ Electromagnetism: 10V/m 0.1~1000MHz AM

## Fixed Reader

#### Product Introduction:

Based on Refine i-Collected™ innovative RFID platform, i-Reader RR-508 fixed reader can be installed in the gate to read passing tags with external power supply and wire communication to backup system. RR-508 mainly monitors the tags in controlled region, at the same time safety transfer or receives commands and data from back system, to implement the automatic read or write for controlled tag. i-Reader RR-508 can offer long-range and bi-directional communication with tags, and monitor hundreds of tag in hundreds feet radius.



**i-Reader RR-508**

**Features:**

- ◆ Support RS232/485/Wiegand interfaces to communicate with host computer.
- ◆ Encrypted calculate and authentication with i-Detector innovative algorithm, guarantee data security and avoid link leakage or data destroy.
- ◆ Maximum support 512 channels with channel insulation technology and coordination scheme between multiple readers.
- ◆ Advanced i-Detector anti-collision algorithm to support maximum concurrent 625 tags per second.
- ◆ Read range is digital controlled by software with maximum 128 level
- ◆ Support reader firmware on-line upgrade.
- ◆ Support on-line and off-line work modes, offer internal RTC and up to 6 local I/O interfaces.
- ◆ With local storage memory, maximum support 512K byte storage for customer specific defined
- ◆ Industrial design

**Physical Characteristics:**

- ◆ Case Material: ABS Polypropylene with UV inhibitors and aluminum.
- ◆ Weight: 2.2kg
- ◆ Color: black
- ◆ Safety: IP54, IP65
- ◆ Mounting: specific installation kits

**Micro wave Characteristics:**

- ◆ Modulation: GFSK
- ◆ Data rate: bi-directional 1024Kbit/s
- ◆ Frequency: 2.45GHz
- ◆ Maximum output power: 8dbm
- ◆ Read range: 0~100meters
- ◆ Communication CRC: CRC 32 loop redundancy verify
- ◆ Communication encryption: i-Detector private encrypted algorithm
- ◆ Sensitivity: -80dbm~-90dbm
- ◆ B.E.R:  $10^{-9}$
- ◆ Air interface: ISO18000-4 compatible

**Electric Characteristics:**

- ◆ Operating voltage: +9~+12V
- ◆ Operating current: < 20mA

- ◆ M.T.B.F: >70000hours
- ◆ Life time: >15 years

Environmental:

- ◆ Operating temperature: -40 °C ~ +80 °C
- ◆ Storage temperature: -60 °C ~ +85 °C
- ◆ Humidity: < 95%
- ◆ Vibration: 10~2000Hz 15g in 3-dimensions
- ◆ Electromagnetism: 10V/m 0.1~1000MHz AM

### Handheld PDA Reader

Product Introduction:

Refine i-Reader RR-80x series handheld reader is the first long-range PDA RFID reader with SD/CF interface of the world. Based on Refine i-Collecte<sup>TM</sup> innovative RFID platform, i-Reader RR-80x handheld reader has smaller, light, portable and computer-enable features. With i-Reader RR-80x ultra flexibility, brings up a great break for RFID applications exploration.

i-Reader RR-80x series reader offers third-party SDK tools, customers can freedom develop different specific application or system upon RR-80x reader. With taken by operator, i-Reader RR-80x reader can automatically implement RF tags data collection in target region, and then restore information in PDA local memory or transfer data to backend system via 802.11b wireless network or GPRS mobile network. Under control of security, RR-80x reader can execute information write operation in long distance range.



**i-Reader RR-801**



**i-Reader RR-802**

Features:

- ◆ Support Microsoft WinCE 4.0 embedded operation system or up.
- ◆ Adopt Intel XScale micro-processor with 400MHz.
- ◆ CF/SD reader interface supported with “Plug and Play”.
- ◆ Support 64MB memory under 100MHz.

- ◆ Extend high capacity and performance CF/SD memory stick to restore OS, application and data.
- ◆ Offer Wi-Fi 802.11b interface.
- ◆ Support 320\*240 resolving ability TFT color touchable screen.

Micro wave Characteristics:

- ◆ Modulation: GFSK
- ◆ Data rate: bi-directional 1024Kbit/s
- ◆ Frequency: 2.45GHz
- ◆ Maximum output power: 0dbm
- ◆ Read range: 0~100meters
- ◆ Communication CRC: CRC 32 loop redundancy verify
- ◆ Communication encryption: i-Detector private encrypted algorithm
- ◆ Sensitivity: -80dbm~-90dbm
- ◆ B.E.R:  $10^{-9}$
- ◆ Air interface: ISO18000-4 compatible

Electric Characteristics:

- ◆ Power supply: standard 900mAH rechargeable lithium battery
- ◆ M.T.B.F: > 30000 hours
- ◆ Life time: >10 years

Environmental:

- ◆ Operating temperature: -20 °C ~ +60 °C
- ◆ Storage temperature: -40 °C ~ +70 °C
- ◆ Electromagnetism: 10V/m 0.1~1000MHz AM

## Portable Reader

Product introduction:

Based on Refine i-Collected™ innovative RFID platform, i-Guide portable reader offers creative development method for automatic identification system. With i-Guide advanced technology, personalized design and high value-price ratio will be competitive in automatic guide fields such as travel scenes, museums, theme parks, galleries and other exhibitions. In the meantime, i-Guide portable reader creates new value for customers.



**i-Guide**

Features:

- ◆ ISM unlicensed band 2.45GHz in worldwide, effective read range can be digital controlled.
- ◆ Encrypted calculate and authentication with i-Detector innovative algorithm, guarantee data security and avoid link leakage or data destroy.
- ◆ Maximum support 125 channels with channel insulation technology and coordination scheme between multiple readers.
- ◆ Advanced i-Detector anti-collision algorithm to support maximum concurrent 64 tags per second.
- ◆ Based on digital silence audio locking technology, without noise disturb.
- ◆ High quality play tone with MP3 format.
- ◆ With local storage memory, standard memory storage is 128M flash, maximum support 512M bytes storage for customer specific defined
- ◆ Rechargeable battery power supply, support 8hours usage without interval.
- ◆ USB fast recharge mode.
- ◆ Contents update via USB connection with PC synchronizes software.
- ◆ System users no limitation.
- ◆ Support multiple languages.
- ◆ Support reader firmware on-line upgrade.

Physical Characteristics:

- ◆ Dimensions: 75mm \* 30mm \* 16mm
- ◆ Weight: 55g
- ◆ Case: alnico
- ◆ Color: red and grey combination
- ◆ Mounting: hung up

Micro wave Characteristics:

- ◆ Modulation: GFSK
- ◆ Data rate: bi-directional 1024Kbit/s
- ◆ Frequency: 2.45GHz
- ◆ Maximum output power: 0dbm
- ◆ Read range: 0~15meters
- ◆ Communication CRC: CRC 32 loop redundancy verify
- ◆ Communication encryption: i-Detector private encrypted algorithm
- ◆ Sensitivity: -80dbm~-90dbm

- ◆ B.E.R:  $10^{-9}$
- ◆ Air interface: ISO18000-4 compatible

Electric Characteristics:

- ◆ Power supply: +3V rechargeable battery
- ◆ Continue operating times: > 8hours
- ◆ Communication interface: USB1.1/2.0

Environmental:

- ◆ Operating temperature:  $-20\text{ }^{\circ}\text{C} \sim +60\text{ }^{\circ}\text{C}$
- ◆ Storage temperature:  $-40\text{ }^{\circ}\text{C} \sim +80\text{ }^{\circ}\text{C}$
- ◆ Humidity: < 75%
- ◆ Vibration: 10~2000Hz 15g in 3-dimensions
- ◆ Electromagnetism: 10V/m 0.1~1000MHz AM

### Tag Location Finder: i-Guard

Product introduction:

Based on Refine i-Collected<sup>TM</sup> innovative RFID platform, i-Guard is equipped with an RS-232/485 interface that allows easy programming, and firmware upgrades. The RS-232/485 interface also allows real-time control of the i-Guard functions including power level and tag commands. It also provides the ability to load information into a i-Guard for transmission to the RTLS infra-structure for process control applications.

i-Guard is a proximity communication device that is used to trigger a i-Tag to transmit an alternate "blink" pattern. When a i-Tag device passes through the i-Guard field, the tag can initiate a pre-programmed and (typically) faster blink rate to allow more location points as a tagged asset passes through a critical threshold, such as a shipping/receiving dock door or from one zone to another. When the i-Guard is sending i-Guard initiated blinks, the tag includes the identification number of the i-Guard. More than 36,000 unique identification numbers are available. The i-Guard emits a field is nearly spherical and its range is adjustable from approximately 1 m (3 ft) to 9 m (27 ft) with proper orientation. For especially large thresholds (such as very large dock doors) or areas where there may be signal blockage, multiple i-Guards can be interconnected to provide a larger coverage area. Additionally, i-Guard can be used to delineate between adjacent doors or lanes when a tag may pass through one of multiple openings. Each i-Guard includes an adjustable mounting bracket and requires only AC or DC power. Data cables are not required for basic functions, but can be utilized for more complex applications.



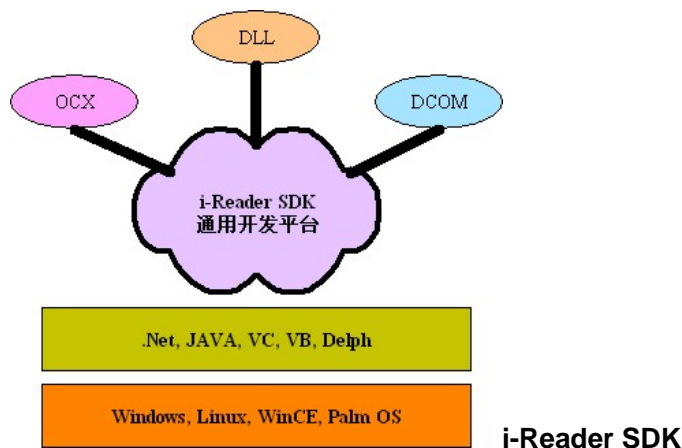
**i-Guard**

## i-Reader SDK

### Production Introduction:

Enterprises deploy RFID system to retrieve all kinds of data for business procedure use. First of all, customers always face how to connect front-end data with back-end system without any intervals. Secondly, the question is how to guarantee all collected data being transferred to meaningful business information, and how to guarantee the data security and more. The basic problem of those questions is the interface between enterprise application and AIDC hardware system. Therefore, transparent is the key of whole application, also include to retrieve data correctly, guarantee data reliability, and effective transfer data to backend system. Based on Refine i-Collected™ innovative RFID platform, i-Reader SDK can rapidly help customer implement legacy system connecting with Refine RFID hardware seamlessly.

i-Reader SDK adopts message-oriented work scheme, which means information is transferred via message type, from one program procedure to another or more. The transfer mode could be asynchronous; no response will be needed from sender. The i-Reader SDK not only includes third-party development APIs and passing flow, but also data mapping, information security, data broadcast, error recovery, resource finding, optimal path, service priority, extended debug tools and more.



### Features:

- ◆ Offer no interval interfaces for customer application system.
- ◆ Support data filter and transfer functions.
- ◆ Can be used to manage, monitor and configure RFID readers or tags.
- ◆ Concurrently support RFID data requirements from multiple host platforms or applications.
- ◆ Offer multiple call interface types, such as OCX, DLL, DCOM and etc.
- ◆ Support multiple operation systems like Windows, Linux, WinCE and Palm.
- ◆ Support multiple development environments such as .NET, JAVA, VC, VB, DELPH and more.

i-Reader SDK compatible hardware:

- ◆ Reader RR-50x series fixed reader.
- ◆ Reader RR-80x series handheld reader.
- ◆ Reader RR-60x series wireless reader.
- ◆ Guide portable reader.
- ◆ Tag RT-2xx series RFID tag.
- ◆ Tag RT-3xx series RFID tag.

### **i-ParkControl™ intelligent parking system**

System Introduction:

The vehicles RFID tag technology for the security, stops and the turnover management provides the independence, the uninterrupted system equipment, may realize to the business district and community's convenience management, guarantees the vehicles which only then the process permitted to enter. The system also may provide the vehicles to come in and go out regularly and to stop the expense management data.

System advantages:

- ◆ i-ParkControl vehicles RFID tags may adhere to stick cohere on the automobile, realization community, barracks area, parking lot vehicles difference automated intelligence management;
- ◆ The tag installs which through the vehicle in does not stop to the vehicles implementation the turnover control, pass through and the estate management for the vehicle owner provides enormously has been convenient, causes the vehicle owner to enjoy to the vehicles access VIP rank service;
- ◆ The field area management operation department can promptly control the vehicles and its the loading cargo difference jurisdiction, grasps the vehicles and its the loading cargo difference situation, reduces or ceases the security hidden danger which causes by the vehicles, the safeguard cargo security, the optimized field area vehicles order, finally enhances the field area the management level;
- ◆ Keeps abreast of the vehicles dynamic situation, analyzes the vehicles utilization rule, takes the effective guard measure, realizes vehicles dispatch no paper the turnover field area recognition automation;
- ◆ i-Reader may start the surveillance camera or the camera manages the region to the turnover the vehicles to carry on the monitoring as necessary;
- ◆ i-Reader device or the main engine database can record the vehicles each time to pass in and out the situation, the retention historic record, through the i-ParkControl management software to, each week, each month pays expenses every day, service and so on going out on duty carries on the management

## **i-RoadControl™ vehicle on-road inspection system**

### System Introduction:

With digital compute technologies and embedded intelligent system development, through the deeply analysis of national vehicle management system and related policies, we propose to build urban vehicle on-road intelligent inspection system based on advanced RFID technologies. This system takes advantage of Refine innovative active RFID technology, use active RFID tag instead of traditional vehicle driving certificate; policemen effectively execute AIDC and inspection for those transportation tools on road with advanced handheld PDA RFID reader; front-end device can communicate with backend system via public mobile network or urban area network such as GPRS/CDMA/SDH/X.25/DDN/PSTN. i-RoadControl system adopts client/server architecture, front-end devices automatically identify and inspect driving vehicles, depend on newest computer network, communication, database, and radio frequency identification technologies, finally implement a end-to-end dynamic monitor and inspect system for all of urban vehicles. It will extremely promote the control of urban vehicle and transportation for government administrations.

Reform the traditional vehicle manage mode with advanced digital RFID technologies, create extremely effective, flexibility, extendibility and safety vehicle monitor and management system.

### System components:

- ◆ handheld PDA RFID reader
- ◆ vehicle RFID tag
- ◆ Police communication network
- ◆ i-RoadControl real-time management platform

## **i-SealControl™ smart container logistics security system**

### System Introduction:

Based on Refine i-Collected™ innovative RFID platform, Refine's advanced electronic seals ensure that ever-increasing cargo loads also have far greater protection. These seals, combining active RFID technologies and mechanical parts with sophisticated sensors, deliver a highly cost-effective solution for the cargo industry. They can be used in both a one-time (open loop) and re-usable (closed loop) application.

Refine i-SealControl system ensures that cargoes can be monitored in real time, both in transit and storage, from dispatch to final delivery. The RT-300 is a reusable electronic seal that makes every cargo load responsive throughout its journey. At close range, it sends and receives data to readers via low frequency transmissions. At long range, it uses high frequency to verify whether seals have remained uncompromised. All data is collected automatically. The compact size of RT-300 electronic seal belies its powerful features. It includes a transmitter and receiver unit, real-time clock, processor, memory and sensing circuitry for sealing verification. The special door detecting scheme will alert the security system and record any attempt at opening, bypassing, shielding or

tampering with the seal. Fitted to any cargo container or facility at modest cost, Refine electronic seal and reader have an enormous security advantage over the conventional mechanical seal that it replaces. Because the Refine all series RFID reader can interrogate the RT-300 at long range, containers are continuously 'connected' to the security network. This tracking and sealing verification process is undertaken at every potential data collection point: at exit/entry gates, transit stations, storage areas and more. Automatic data collection from RT-300 electronic seal 'on the move' ensures maximum security even at times of high-density cargo traffic.

System components:

- ◆ Container electronic seal
- ◆ Fixed reader
- ◆ Handheld reader
- ◆ i-SealControl smart container security logistics platform

### **i-GuideControl™ automatic guide system**

System Introduction:

i-GuideControl is a unique personal automatic audio touring system that makes every visitor feel as if your venue was built exclusively for them. With information that you control and trigger wirelessly from identifier unit attached to exhibit. People can customize tours, presentations, live events in virtually any environment, indoors and out. All to give your visitors what they value most.

The i-GuideControl system is designed to not only be simple for visitors to use, but also easy for exhibitors to operate. Refine advanced ACTIVE RFID technologies behind the i-GuideControl system allow you to quickly and easily setup your facility by simply placing guide tag near selected exhibits. These identifiers, whose parameters are configured and mapped well in advance, can trigger i-Guide receiver to play audio streams associated with that exhibit.

Based on Refine i-Collected™ innovative RFID platform, Refine i-GuideControl system provides exhibitions marketing a comprehensive and cost-efficient solution which can benefit a wide variety of businesses in their quest for productivity and effectiveness.

System components:

- ◆ RFID tag
- ◆ Portable MP3 reader
- ◆ Content management software

### **i-LocationControl™ real-time location system**

System Introduction:

RTLS (Real-Time Location System) is a wireless radio frequency solution that continually monitors and reports real-time locations of tracked resources. As society becomes more hectic by

the moment and the overall speed of business increases, there is a growing need for a reliable, efficient positioning and tracking system. People on the move need to be found quickly. In places such as hospitals or warehouses, valuable time can be saved by knowing exactly where the nearest available wheelchair or forklift can be found. The Refine i-LocationControl Real-Time Location System is a wireless radio frequency solution that continually monitors and reports real-time locations of tracked resources. Refine solution based on Time Difference of Arrival (TDOA) technology, takes advantages of active RFID, can now work as the backbone and sensor network for a real-time location system. This quickly translates into faster deployment and improved cost-effectiveness.

Based on Refine i-Collected<sup>TM</sup> innovative RFID platform, Refine i-LocationControl RTLS system provides comprehensive and cost-efficient solutions which can benefit a wide variety of businesses in their quest for productivity and effectiveness. A reliable tracking system helps minimize downtime, which easily accumulates in waiting and searching for people and property. And, as i-LocationControl solutions can be implemented within an existing Wi-Fi network, no extra infrastructure costs are involved. Our positioning and tracking tool is a fully automated system that continually monitors the location of assets and personnel. i-LocationControl RTLS uses a combination of client software, RFID tags, readers and system software to locate, track and monitor assets and personnel in real time.

i-LocationControl system brings substantial benefits to many industry segments. Experience has shown that especially healthcare, manufacturing and logistics are areas which can well reach new heights in productivity and convenience. However, there are still many opportunities to take advantage of outside these industries. Feel free to contact Refine to learn how our solutions can be tailored to your specific requirements. We are certain that your business can benefit from a reliable tracking solution.

System components:

- ◆ Fixed readers (3~8units)
- ◆ RFID tags
- ◆ i-LocationControl location engine

### **i-InspectControl<sup>TM</sup> equipment inspection system**

System Introduction:

i-InspectControl system for enterprise's inspecting with the overhaul system take the factory level information system platform as the shoring of foundation platform, divides into the intelligence to inspect with based on the standardized ABC documents overhaul system two major parts. Former mainly applies in the power supply enterprise transmission line and the transformer substation inspects the management, the intelligent terminal equipment uses copies the table machine; Latter mainly uses in the equipment overhaul system which carries on based on the standardized ABC documents, the intelligent equipment uses PDA generally, also may for the plate computer (Tablet PC) or the ordinary notebook computer.

The i-InspectControl enterprise intelligence inspects with the overhaul system main technical characteristic as follows:

**Electronic tag (RFID) application:** The electronic tag took the present most advanced identification code, had has not been easy to damage, the data reliably, the use cycle is long, the effective communication is away from and so on the characteristic long, was substitutes the bar code, the infrared marking best choice. Installs it after the line pole tower, the transformer substation, may carry on as equipment only marking inspects.

**Standard ABC documents transformation:** Documents carry on the territory form Word the documents form standardized ABC the definition, then its transformation is the XML form. XML is the W3C recommendation international standard, in Windows, Windows CE and Pocket PC and so on the many kinds of operating system has all provided the XML support, thus obtains in on PC machine and PDA data sharing.

**Consummation flaw often terminology management:** The intelligence inspects the system take the flaw often the terminology as the simplification work method, the flaw often the terminology maintains in the backstage information system platform, can act according to the actual demand, often the terminology carries on to the flaw increases the deletion the operation, and carries on the renewal to the intelligent equipment. At the same time, the user also may carry on to the equipment flaw from the definition description.

The terminal device and the production management system already may carry on the wired data transmission through the data line, also may and so on the wireless connection way carry on the data transmission through GPRS.

**Nimble flaw processing flow:** Through wired or wireless transmission data, may start the corresponding flaw processing flow immediately, automatically completes the majority of contents filling in.

**Complete inquiry, inspection mechanism:** May make concrete to each work, each pole tower, each transformer substation patrol the overhaul situation, assists by works arranges in groups the information, may work to the staff carries on the detailed inspection

## **Food security logistics system**

System Introduction:

Combining Refine i-Collected™ innovative RFID platform and products can develop new RFID applications for the food production industry. The reasoning behind this application is that food producers have become increasingly preoccupied with the task of ensuring the safety and integrity of the food chain. On the other hand, supply chain participants are constantly seeking ways to improve quality, limit spoilage and increase yield. With Refine RFID products capacity to monitor temperature, shock, humidity and chemical reactions dovetails, will offer food logistics traceability and temperature monitoring solutions.

The added value each technology will bring to customers in materials handling, food and beverage systems will significantly improve the efficiency, reliability and effectiveness of new and existing food safety and traceability systems.

Refine is specializing in delivering RFID-based business efficiency solutions that include asset tracking, temperature monitoring and quality control methodologies for the food industry. Refine designs, develops and produces patented real-time wireless technology, proprietary sensors and integrates handheld computers and data management software to produce and display information that monitors production and transportation logistics of the food chain. Its applications are designed to enable clients to monitor their supply chain processes in order to detect harmful aspects in processing and handling or to receive verification that all systems are running satisfactorily.

### **Communication bridge system between campus and home**

#### **System Introduction:**

Our country's each place educational department in abundance started the use school to pass the system recently to keep abreast of the situation which the elementary student went to school and is on vacation from school. The family school passes the system by the electronic school insignia (RFID tag) technical and the motion short note platform constitution, can cause teacher and the guardian knew as necessary the child locates position. Our country big or media-sized cities average each household had the handset to surpass, the handset popular rate already extremely is high, the handset short note (SMS) served already becomes the user communities commonly used means of communication, in particular in Chinese youth population, but these population were the crowds exactly which the elementary and middle schools guardian was at. Therefore, chose take the electronic school insignia (RFID) and the mobile communication short note (SMS) as the main technical method family school passes is precisely the very good solution strengthened the student safety control, the satisfied guardian cared about and the school management, prevented injures the elementary student event and so on the demand, the family school passes this method now day by day to arouse people's interest.

The electronic school insignia (electronic tag RFID) places in student's book bag, the school gate installment has the receiving antenna, may receive comes from the electronic school insignia information. The student goes to school when and is on vacation from school, the electronic school insignia system through the motion short note system automatically the student enters a school the information which and is on vacation from school by the short note way transmission for the guardian, therefore regardless of is the school student guardian is clear to student's whereabouts. Especially, makes up for a missed lesson in view of on supplementary class goes home the late child, will pass the system guardian with the aid of the family school to be possible in darkness later as necessary to understand child's situation, the exemption worried very much.

"The family school passes" mainly faces the elementary and middle schools (including vocational school), at the same time may give dual attention to the kindergarten the application. System itself does not involve the campus the management, the teaching work, but is provides the service platform for the campus and the family to student's safety and the management. At present, the family school passes as well as obtains the government department, the school, the teacher and the general guardians' approval in each place, positively is advancing.

Refine's RFID application system already passed in the system in the domestic many cities

campus school to obtain the successful application.

## Military logistics visibility system

System Introduction:

The RFID technology is a technology at first which uses by the American Department of Defense, subverted Saddam in America and Britain the regime Iraqi war period US Savi Corporation to use this technology to save several 1 billion US dollars in the logistics support for the United States military. After the Gulf War, the various countries' army rear service system all positively is studying uses the RFID technology to serve for the national defense.

In the army logistics support the most common pattern is the ordnance machine shop and the army (wartime is front) between the commodity ships the question. The peace period these commodities transporting velocities possibly request not to be high, but in the wartime, whether the military supplies was accurate, promptly transports to the front is a very important question, in certain extreme situations even might affect the war.

Took the United States military in 1990 the Gulf War period rear service management is the example, at that time because has not used the RFID technology, the front did not know under oneself in order form commodity whether already did deliver goods, because the war was urgent, therefore appeared the repetition application frequently the situation. On the other hand, the rear ordnance machine shop did not know before sends out whether the commodity already did deliver the front, after received the repetition the order form redundant delivering goods. This part exceeded the quota the application to create the huge waste to the military expenses expenditure, according to the postwar statistics, the light was repairs the components to exceed the quota the application partially to reach as high as 2.7 billion US dollars.

Using the RFID technology, the union modern computer communications network, may the accurate tracing military supplies goods position and the whereabouts. On each military supplies or in each batch of military supplies vessel all may paste on a RFID tag, causes these goods is can only recognize. Ships in the process in the commodity, when the transport team (freighter or freight vehicle, train trailer) passes through every time some RFID recognition base depot, on these goods RFID tag on the read-write equipment which occupies reading, its information is passed to through the wireless network uses for specially on the network server which manages the military supplies to flow, is recorded to the database in. Thus, any has the corresponding jurisdiction the human, in any time, in front of any military terminal all may look up to it feels the way which the interest the commodity position, the whereabouts as well as passes through. Such front and rear area had all understood the military supplies ship the situation, definitely may avoid the possibility which duplicates applies.

RFID recognition base depot establishment, also has very many methods. Regarding the marine transportation, may in along the route various harbors establishment recognition base depot, when the freighter enters port or pause time may reading on the ship all commodities information. But regarding the road traffic (automobile, train and so on), may in march forward on the road which must pass through to set up the movement identification base depot, the implementation reading and the transmission passed by the military supplies team in some goods

information, also may in the cargo collection and distribution center establishment recognition base depot, tracing at the same time complete cargo inventorying.

Causes the military supplies transporting velocity slow other reason is the cargo collection and distribution place inventorying work too is tedious. The wartime near front military supplies collection and distribution storage yard (or wharf and so on) often piles up the massive commodities, if carries on artificial inventorying and the distribution, work load extremely huge, needs the time can be very long inevitably. This slowed the military supplies to arrive the front obviously the speed.

Regarding has the RFID tag has marked the commodity, this process changes extremely simply. Inventories the personnel only to need read-write to carry the handheld RFID tag to take a walk in the storage yard interior, all RFID tag has read then, these reading to the information transmits through the private network after the thing flows the management the server to carry on the recognition and the checkup, feeds back the correlation the useful information. If uses the high efficiency the active RFID tag and may cover the entire storage yard the high efficiency stationary type read-write to carry on the work, artificial takes a walk all does not need to carry on may complete the above task.

Here also has a United States military the example, in a duty, an American national defense rear service bureau's military officer read-write used handheld RFID to take a walk 20 minutes in the wharf, has accepted after checking 179 cabinets and has collected the related information. But this work formerly needed to use a platoon the military strength to spend two days time to be able to complete. Had the RFID technology help, the United States military overthrew the Saddam regime Iraqi war period has been being short 30% army as well as the use compared to the operation desert storm motion is short in 90% quantity cabinet.

### **Asset tracking and working in progress system**

#### **System Introduction:**

To successfully combat this ever-growing problem, Refine developed the i-Collected™ asset management system. This system leverages the unique capabilities of Refine' enhanced RFID technology to provide real-time, hands-free event monitoring while permitting employees and their assets to move freely throughout the enterprise. The system provides total solutions for asset containment, mobile asset management, and asset location and tracking.

#### **Unique Feature of i-Collected RFID system:**

- ◆ Flexible Control Point Monitoring – detect assets and personnel at strategic locations or within specific zones
- ◆ Network Architecture – leverage existing corporate networks to collect data directly over the LAN/WAN/Internet
- ◆ Multiple Tag Reads – multiple assets and personnel tags can be read simultaneously, even in high traffic areas
- ◆ Freedom of Movement – automatic, hands-free identification enables dynamic facility-wide monitoring

- ◆ Functional Linkage - associate tagged assets with authorized personnel to facilitate authorized movement

Benefits of the i-Collected RFID system:

- ◆ Convenience – eliminates the need for invasive guard searches or cumbersome check in/out procedures
- ◆ Reduced Asset Loss – detect and deter internal theft of high-value assets and equipment
- ◆ Enhanced Business Operations – collect and manage information anywhere using the enterprise network, saving both time and money
- ◆ Proactive Response – zone control within the facility gives security personnel the time to react before it's too late
- ◆ Flexibility – coverage zones can be configured for control points or zones, providing both perimeter protection and wide area monitoring

The Refine i-Collected asset management system provides an effective way to reduce theft from both internal and external threats via perimeter-based asset containment. By creating "control point" detection zones at strategic entrance and exit points throughout a facility, tagged items are unable to leave the premises without triggering an immediate alert/alarm notification. Not only does the system provide perimeter protection for the entire facility, but it can also be used within the facility to detect when assets leave certain rooms or specific areas, or enter or leave zones that are designated as off limits, highly classified or secure.

Locating or tracking assets that can be either static or in motion, such as wheelchairs or IV pumps in a healthcare facility, servers in a data center or laptops in a corporation, is no easy task until now. To know where these assets are at all times, the i-Collected system provides a comprehensive resource for locating and tracking assets, whether on the move or sitting still. The system allows users to instantly determine the general location of a tagged asset anywhere within the facility. Installation of "control point" detection zones at strategic locations throughout the facility allows the user to define logical zones and monitor high traffic areas. Tagged assets moving through these control points provide instant location data. In addition, the system can verify that any asset "functionally linked" is accompanied by its assigned owner or user as it moves through the detection zone, and provide instant notification if the movement is unauthorized. When assets are between control points or inside of zones, beacon signals received from tags on a periodic basis help locate an asset or person within a designated zone or area.

### **Animal tracking and tracing system**

System Introduction:

The animal track domain most is typical is the city pet dog tracing management. Progresses, the economical development along with the society and the people living standard enhancement, the dog the function which looks after the house protects the courtyard in the city is vanishing

gradually, but more becomes. Whiles away the time the entertainment for the people, the pursue quality of life one kind of sign, down to had from "animal" to "pet" evolving, specially these small and exquisite, darling puppy, lets many city slickers favor like sub-. But, hotly raises the dog along with the city to continue the elevation of temperature, also floated some new social questions, the "dog has barked the full corridor, an excrement plot, did not have the card randomly to breed, but guarded against the pass "becomes the city dog pollution" four big subjects '.

It is reported, the closure our country had 24 cities makings to appear the standard at present to raise the dog behavior the place laws and regulations, the overwhelming majority all by limits raises, the strict tube primarily. Except that the strict limit raises the dog region, the type, the quantity and outside the strict tube animal immunity, but also requests to raise the dog person to have to pay the certain amount the registration fee and the annual inspection expense. Each place raises the dog expense stipulation not for consistently, but registration fee few then several thousand Yuan, are many then the up to ten thousand Yuan, in addition, also must pay the amount many annual inspections expense every year. Pays fee is not the goal, nothing but is must raise raises the dog the threshold, strictly controls the city to raise the dog quantity, the convenient government manages, reduces "the dog trouble". May mostly the city actual situation prove in fact that, this management way to reduces "the dog trouble" to be of no help, "on the sign dog" the quantity few astonishment, "the illegal resident dog" is the case everywhere actually. Some cities therefore concentrate capture and kill do not have the card dog's method to initiate the common people intense disaffection, is contradictory layer on layer.

How manages the good city to raise dog's question, had the related administrative rules and regulations, how but carried out and practically manages well the city pet dog still to lack the effective technical method. At present exists the question is: Very many cities used the roof frame to manage, but the traditional roof frame only was a serial number, the city administrative personnel inspects troubles extremely and is not convenient, efficiency low, work load big, moreover the roof frame was easy to wear creates the serial number fuzzily to be unable to inspect.

Now, will solving the dog question based on the newest RFID technology for the city to provide the true effective technical method. Constructed the pet dog by the RFID tag technology "the electronic roof frame", "the electronic roof frame" center has used the newest wireless radio frequency technology, pet dog's each kind of information like master name, address, dog's name, dog's type, dog's picture, dog's immunity situation, dog's information storage and so on annual inspection in "electronic roof frame" center, but the city administrative personnel through the computer grasped read-write based on the PDA palm on may wear "the electronic roof frame" in the long-distance range relaxed inspection dog, carried on the highly effective management to the dog. At the same time solved the roof frame to pretend, question spuriously and so on replace.

Uses the RFID tag technology to realize "the electronic roof frame" to have to consider the following question:

- ◆ The RFID tag technology is the radio frequency technology, must consider to the low emissivity and to the dog body security influence, therefore "the electronic roof frame" and the read-write equipment must be an environmental protection;
- ◆ Must be able to complete in 20 meters scopes the long-distance range automatic diagnosis, otherwise can create the management inconveniently, the work load is big, the effect inferior many questions;

- ◆ "The electronic roof frame" must have the function which the long-distance range may read, may write, and has the certain capacity the memory property and the low power loss characteristic;
- ◆ Must have portable which the administrative personnel uses "the electronic roof frame" the read-write equipment.

Therefore, the Shanghai refine information science and technology limited company provided field original creation high price compared to compare the solution.