UBIQUITOUS SOLUTION

RFID/USN
LS Industrial Systems that has grown to be a leader in electrical power solution & automation solution provides technology that makes people more convenient.

LS Industrial Systems that pursues customers’ happiness by building Ubiquitous Infrastructure is making their dream come true.
LEADING YOU TOWARD
A GREATER FUTURE THAN
YOU IMAGINE

More convenient and advanced world than you can imagine,
More satisfactory solution than customers want,
LS Industrial Systems will make a better future with the leading solutions.
WONDERFUL UBIQUITOUS WORLD
The technology that makes people more convenient
LS Industrial Systems makes Ubiquitous world.

RFID/USN
“LS Industrial Systems aims at the world’s best RFID/USN solution provider.”

Nation’s first & world’s highest level of RFID Tag & Reader manufacturing capability

In 2004, LS Industrial Systems started RFID division first among Korea’s conglomerates and built the nation’s first & world’s highest level of RFID manufacturing line in 2005. LS Industrial Systems spares no strenuous efforts on investment on developing leading RFID/USN technology.

VISION
Green Innovators of Innovation means environment friendly innovation of products and services beyond the level of customers’ expectation.

As a top tier RFID/USN solution provider in Korea, LS Industrial Systems offers top notch RFID/USN technology and standard.

Global market leading People, Product, Process

PEOPLE
World top R&D human resources
World top professional engineer

PRODUCT
Differentiation of the product design
Reliable and high quality product

PROCESS
Nation’s biggest tag manufacturing facility
World class QC center

The nation’s best RFID/USN R&D human resources & facilities

Research & Development
- RF H/W R&D Group
- Antenna Technology R&D Group
- DSP R&D Group
- S/W R&D Group

- RF Front-End / Host Interface R&D
- Tag/Reader Antenna / Beam Forming Technology-related R&D
- DSP Baseband Design / Data Processing Algorithm R&D
- F/W, M/W, Application R&D

Design & Production
- Quality Control Part
- Production engineering Part
- Production Management Part
- Production Part
- Design Part
- Customer Service Part

- Product Evaluation & Development, Standard & PPM Management for Products
- Material Management, Process Design, and Equipment investment
- Sales and Production Plan Management
- Production & Equipment Maintenance, Inventory Management
- Custom-made Product Design & Development
- Maintenance & After-sales Service
RFID (Radio Frequency Identification) is a technology that uses RF (Radio Frequency) to automatically identify people or objects. Certain information is stored in an RFID tag, and the stored information can be read by a reader.

USN (Ubiquitous Sensor Network) technology enables identifying information of the object and environment surrounding object by attaching tags or sensors on all objects, and utilizing the information real time through network connected each other at any time and anywhere.

XCODE is the brand of LS Industrial Systems’ RFID / USN Solution to lead Ubiquitous age.

Keywords:
- Ubiquitous World
- RFID

Infrastructure for High-tech Intelligent Society

USN (Ubiquitous Sensor Network) technology enables identifying information of the object and environment surrounding object by attaching tags or sensors on all objects, and utilizing the information real time through network connected each other at any time and anywhere.

**Process**

LS Industrial Systems aims at highest level of automated production facilities with world class production process, and has QC center with high standard. Particularly, various performance tests and simulation tests for unique environment of customer’s sites are performed at QC center.

**Production Facilities**

Readers, Tags, and Antennas
- Production Line
- Inspection Line

**QC Center**

1 Step: Basic Performance Test (e.g. Reading Range, Output Test)
- Measurement of the Range & Orientation
- Rotating Angle
- Rotating Reader

2 Step: Expanded Performance Test (e.g. Multiple Reading Test, Environmental Sensitivity Analysis, etc.)
- Multiple Layer Reading
- Metal/Liquid Test
- Simulated Test & Multiple Tags Reading Test
- Simulated Test for Handheld Product

3 Step: Performance Test at Customer’s Site (In house test)

**PRODUCT**

*Refer to the Product Description*
THINGS THAT THINK

RFID/USN BUSINESS AREA AND SALES

Based on technology development, design, production, installation know-how, and past records for various applications in RFID/USN, LS Industrial Systems offers optimized RFID/USN solutions and products for customers’ environment.

- Kangwon Land: Ticketing system
- Ministry of Environment: Contagious wastes management system
- Ministry of National Defense: Ammunition management system
- Skoolooks: Genuine product verification system
- Je-Ju Do: Tourist information service system
- GS E&C: Construction site worker management system

Total 11 projects

- Konjiam resort & Kangwon Land: Ticketing system
- ROK Navy: Asset management system
- LS Tower: Access control system
- Donga University: U-Campus

Total 23 projects

- Malaysia government: Illegal CD/DVD circulation control system
- Konjiam resort & Kangwon Land: Ticketing system
- KORIL: Warehouse management system
- Asiana Airline: Tag for RFID baggage handling system
- ENVICO: Central control system
- Wonkang & Inha University: Library management system
- Ministry of Environment: Tags for contagious wastes management
- LG Display: LCD production management RFID system
- Nonghyup: Warehouse management system

Total 80 projects
2009

- National Assembly : Archives management system
- National Archives of Korea : Archives management system
- Malaysia government : Illegal CD/DVD circulation control system
- Yonsei University : Library management system
- Hanmi Pharmaceutical : Production and sales management system

Total 93 projects

2010

- Kalmar : Production management system
  (Pharmaceutical products)
- Hanmi Pharmaceutical : Tags for production and sales management system
- Malaysia government : Illegal CD/DVD circulation control system
- Kunsan University : Library management system
- Public Procurement Service : Tags for public procurement
- Konjiam and Kangwon Land : Ticketing system
- LG display : LCD production management RFID system

Expecting more than 120 projects
Supply Chain Management

Apparel, Pharmaceuticals

**Apparel**

RFID technology adds considerable value at overall value chain of apparel industry from production to sales.

**Effect**: Real time inventory monitoring, Customer management, Anti-counterfeiting

**Pharmaceuticals**

RFID technology at pharmaceutical industry allows safe distribution and sales of pharmaceutical products over whole value chain from production to customer.

**Effect**: Real time inventory checking, Customer management, Secure visibility of pharmaceutical product sales and distribution
Library
Due to its inherent characteristics of UHF RFID technology’s high speed and multi-reading capability, UHF Library solution maximizes work efficiency of librarian and convenience of visitors compared to Barcode and HF library solution.

Effect: Multi-function
(Lending & returning / assortment of books / theft prevention) with one technology

Home/Building
Ubiquitous sensor network technology such as RFID, sensors, network and automation makes human life more convenient and safe than ever.

Application: Building automation, Access control, Asset management, Facility management, Remote monitoring
Real time manufacturing process control based on RFID and MES solution maximize productivity and efficiency.

Effect: Real time manufacturing process monitoring and control, Real time warehouse management

Sensor network solution allows human to live more safe and convenient through real time surrounding environment monitoring.

Effect: Intelligent transportation system, Environment monitoring, Facility management
Location Tracking

Resort, Healthcare / Hospital

Resort
RFID system at resort maximizes convenience and satisfaction level of visitors resulting in increase of revenue.

Effect: Real time location, Information service, One card resort system

Hospital / Health Care
USN technology enables real time medical diagnosis on health of human at remote place.

Effect: Remote medical examination and monitoring, Real time location system of patient
RFID/USN ARCHITECTURE & COMPONENTS

LS industrial systems provides key to the optimum RFID/USN environment.

You can meet XCODE, the optimized solution for customer’s environment. LS Industrial systems offers optimized RFID/USN solution based on its own various components and experience as a provider of industrial devices.

LS industrial systems changes the world to Ubiquitous environment based on its knowhow in integration experience, and high quality devices (Tag, Reader, Antenna, network devices).

Now, experience RFID/USN solutions optimized to your environment.
**XCODE - System Architecture**

XCODE is a total solution that provides not only RFID tags, readers, sensors, networks, control devices, but also various integrated systems.

**XCODE - System Components**

<table>
<thead>
<tr>
<th></th>
<th>RFID</th>
<th>USN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SENSING DEVICE</strong></td>
<td>Passive Tag (HF 13.56MHz)</td>
<td>Passive Tag (UHF 860~960MHz)</td>
</tr>
<tr>
<td></td>
<td>Antenna (Outside or Inside)</td>
<td>Transmitter</td>
</tr>
<tr>
<td></td>
<td>Passive Reader (HF 13.56MHz)</td>
<td>Signal Converter/ADC Modem</td>
</tr>
<tr>
<td></td>
<td>Passive Reader (UHF 860~960MHz)</td>
<td>(RF, Ir, Zigbee, PLT)</td>
</tr>
<tr>
<td><strong>NETWORK DEVICE</strong></td>
<td>Repeater/Router/Concentrator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RTU(Remote Terminal Unit)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Protocol Converter, Concentrator</td>
<td></td>
</tr>
<tr>
<td><strong>CONTROL DEVICE</strong></td>
<td>PLC(Programmable Logic Controller)</td>
<td></td>
</tr>
<tr>
<td><strong>Software Middleware</strong></td>
<td>Application S/W</td>
<td></td>
</tr>
<tr>
<td><strong>System Integration</strong></td>
<td>M/W(RFID, RTLS, USN)</td>
<td>MES, WMS, SCM, ERP, CRM</td>
</tr>
</tbody>
</table>
RFID/USN - Product

Reader & Antenna

**UHF Handheld Reader**
- **Model**: XCODE-IU9060/9061
- **Features**:
  - Support for EPC global Gen 2 standard & KCC(Korea) / TELEC (Japan) certified
  - Long operating hours with large battery capacity (7,500mAh, including optional battery)
  - Superior and stable operation with high performance Xscale PXA 300 Processor
  - Easy to use with ergonomically designed Gun-handle
  - Various wireless & wire communication options support for various customer’s environment
  - IP64 rated durable design under harsh environment

**UHF High Performance Reader**
- **Model**: XCODE-IU9003
- **Features**:
  - Support for EPC global Gen 2 standard & TTA & MIC (Korea) certified
  - User friendly Interface
  - Powerful DRM(Dense Reader Mode) & Noise cancelation
  - Powerful operation under harsh environment
  - Recognize tag direction without additional device

**UHF Stationary Reader**
- **Model**: XCODE-IU9004
- **Features**:
  - KCC(Korea) certified
  - Easy firmware upgrade with Console & Program
  - Internal antenna support for small area reading
  - Support stable DRM(Dense Reader Mode)
  - Excellent noise rejection performance under harsh RF environment

**UHF USB Reader**
- **Model**: XCODE-IU9011
- **Features**:
  - Support for EPC Global Gen2 Standard and KCC(Korea) certified
  - Convenient use with USB communication Interface and power supply
  - Compact Design provides flexible use in various situation

**UHF Desktop Reader**
- **Model**: XCODE-SL9001
- **Features**:
  - Support for EPC Global Gen2 Standard
  - Embedded NFC antenna read limited area only
  - Support Barcode reading function (Option)

**HF Reader**
- **Model**: XCODE-IH1306/1307
- **Features**:
  - Support for ISO 15693 standard
  - Multi-Drop up to 16 readers reduces installation cost and provide convenient installation
  - 3 kinds of Mode (Scan Mode, Master Mode, and Buffer Model) provide application scalability
**UHF External Antenna**

- **Model**: XCODE-AU9003/9004
- **Features**:
  - IP54 rated sealing enables installation and use at outdoor

**Specification**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Frequency</td>
<td>917.3~920.3 MHz</td>
</tr>
<tr>
<td>Gain</td>
<td>6dBi</td>
</tr>
<tr>
<td>Size W x D x H</td>
<td>330x330x65 (mm)</td>
</tr>
</tbody>
</table>

**HF External Antenna**

- **Model**: XCODE-AH1301/1302/1303
- **Features**:
  - Support for ISO 15693 standard
  - Slim and 3 kinds of antenna size

**Specification**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Impedance</td>
<td>500Ohm</td>
</tr>
<tr>
<td>Weight</td>
<td>AH1301: 36.5g / AH1302: 109.5g / AH1303: 305g</td>
</tr>
<tr>
<td>Size W x D x H</td>
<td>AH1301: 61.7x61.7x12.8 (mm)</td>
</tr>
<tr>
<td>Reading Distance</td>
<td>AH1301:0<del>10cm / AH1302:0</del>15cm / AH1303:0~15cm</td>
</tr>
</tbody>
</table>

**Business Product**

**Lending & Returning Equipment**

- **Model**: XCODE-SL9003
- **Features**:
  - Certified with KCC (Korea)
  - Compatible with barcode and smartcard
  - Ergonomic design maximizes customers’ convenience

**Specification**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Frequency</td>
<td>917MHz ~ 923.5MHz</td>
</tr>
<tr>
<td>Protocol</td>
<td>ISO18000-6C, EPC Class 1 Gen2</td>
</tr>
<tr>
<td>Reading Distance</td>
<td>10cm</td>
</tr>
<tr>
<td>Barcode</td>
<td>Support</td>
</tr>
<tr>
<td>Monitor</td>
<td>4.3inch Touch Screen</td>
</tr>
<tr>
<td>Supported Language</td>
<td>Korean, English, Malaysian</td>
</tr>
<tr>
<td>Receipt printing</td>
<td>Thermal Printing</td>
</tr>
<tr>
<td>Communication</td>
<td>TCP/IP</td>
</tr>
<tr>
<td>Camera</td>
<td>Option + Certification</td>
</tr>
</tbody>
</table>

**UHF BDS Gate**

- **Model**: XCODE-SL9002/9004
- **Features**:
  - Support for EPC Global Gen2 Standard and certified with KCC (Korea)
  - Optimized beam width provides high performance

**Specification**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Frequency</td>
<td>917MHz ~ 923.5MHz</td>
</tr>
<tr>
<td>Protocol</td>
<td>ISO18000-6C, EPC Class 1 Gen2</td>
</tr>
<tr>
<td>Distance between gates</td>
<td>90 cm</td>
</tr>
<tr>
<td>Operation software</td>
<td>Embedded Linux</td>
</tr>
<tr>
<td>PC</td>
<td>Embedded PC or User selection</td>
</tr>
<tr>
<td>Communication</td>
<td>TCP/IP</td>
</tr>
<tr>
<td>Certification</td>
<td>KCC (Korea)</td>
</tr>
<tr>
<td>Size W x D x H</td>
<td>650 X 1780 X 100 (mm)</td>
</tr>
</tbody>
</table>

**UHF POS**

- **Features**:
  - High performance mobile CPU
  - Powerful cooling system guarantees stable operation

**Specification**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Intel Core 2 DUO</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel 945GME</td>
</tr>
<tr>
<td>Memory</td>
<td>DDR2 5000M x 2 slot</td>
</tr>
<tr>
<td>Graphic</td>
<td>Intel 82845GM GMCH</td>
</tr>
<tr>
<td>Display</td>
<td>38.1cm TFT LCD</td>
</tr>
<tr>
<td>Communication</td>
<td>UBS, P5/2, 160-332, D-5/SUB, Mini PCI, LVDS, LAN</td>
</tr>
<tr>
<td>Option</td>
<td>MSR, SOR, Camera, Dallas, VFD, DWR, WIFI, VGA</td>
</tr>
<tr>
<td>Power supply</td>
<td>AC 110 or 220 (Max 240watt)</td>
</tr>
<tr>
<td>Operating System</td>
<td>Windows 2000/XP/XP/POS, POS Ready, Windows7</td>
</tr>
</tbody>
</table>

**UHF High Speed Encoding System**

- **Model**: XCODE-MU9001
- **Features**:
  - World first high speed encoding system for pharmaceutical products
  - Encoding speed of 150ea/minute (Encode EPC Code / Verify / Lock)

**Specification**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Frequency</td>
<td>860 ~ 960MHz</td>
</tr>
<tr>
<td>Protocol</td>
<td>ISO18000-6C, EPC Class 1 Gen2</td>
</tr>
<tr>
<td>RF Power</td>
<td>+30dBm</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td><del>10°C</del>55°C (14°F~122°F)</td>
</tr>
<tr>
<td>Size W x D x H</td>
<td>1400x950x380 (mm)</td>
</tr>
<tr>
<td>Operating Voltage</td>
<td>24V DC Input</td>
</tr>
<tr>
<td>Operating System</td>
<td>Windows XP</td>
</tr>
<tr>
<td>Monitor</td>
<td>38.1cm touch panel PC</td>
</tr>
<tr>
<td>Communication</td>
<td>Ethernet, Serial</td>
</tr>
<tr>
<td>Error detection</td>
<td>3 color Flash light</td>
</tr>
<tr>
<td></td>
<td>Auto-sort</td>
</tr>
</tbody>
</table>
RFID/USN - Product

**Business Product**

**UHF High Speed Multi Reading System (Enterprise Class)**

- **Model:** XCODE-MU9002
- **Features:**
  - Maximize warehouse efficiency with powerful reading performance (5 boxes / Box / Minute)

**Specification**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Frequency</td>
<td>860 ~ 960MHz</td>
</tr>
<tr>
<td>Protocol</td>
<td>ISO 18000~6C, EPC Class 1 Gen2</td>
</tr>
<tr>
<td>RF Power</td>
<td>+30dBm</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-10°C ~ 50°C</td>
</tr>
<tr>
<td>Size</td>
<td>4700 x 1010 x 1800 (mm)</td>
</tr>
<tr>
<td>Operating Voltage</td>
<td>24V DC Input</td>
</tr>
<tr>
<td>Operating System</td>
<td>Windows XP</td>
</tr>
<tr>
<td>Monitor</td>
<td>38.1cm panel PC</td>
</tr>
<tr>
<td>Wire Communication</td>
<td>Ethernet, Serial</td>
</tr>
<tr>
<td>Error detection</td>
<td>3 color Flashing light</td>
</tr>
<tr>
<td>Max. Box Size (W x D x H)</td>
<td>560 x 450 x 405 (mm)</td>
</tr>
</tbody>
</table>

**UHF High Speed Multi Reading System (Standard Class)**

- **Model:** XCODE-MU9003
- **Features:**
  - Maximize warehouse efficiency with powerful reading performance (5 boxes / Minute)

**Specification**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Frequency</td>
<td>860 ~ 960MHz</td>
</tr>
<tr>
<td>Protocol</td>
<td>ISO 18000~6C, EPC Class 1 Gen2</td>
</tr>
<tr>
<td>RF Power</td>
<td>+30dBm with extended length cables</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-10°C ~ 50°C</td>
</tr>
<tr>
<td>Size</td>
<td>4700 x 1010 x 1800 (mm)</td>
</tr>
<tr>
<td>Operating Voltage</td>
<td>24V DC Input</td>
</tr>
<tr>
<td>Operating System</td>
<td>Windows XP</td>
</tr>
<tr>
<td>Wire Communication</td>
<td>Ethernet, Serial</td>
</tr>
<tr>
<td>Error Detect signal</td>
<td>3 color Flashing light</td>
</tr>
<tr>
<td>Max. Box Size (W x D x H)</td>
<td>560 x 450 x 405 (mm)</td>
</tr>
</tbody>
</table>

**TAG**

**UHF Tag**

<table>
<thead>
<tr>
<th>Model Name</th>
<th>XCODE-95000018</th>
<th>XCODE-95000030/81</th>
<th>XCODE-95000042/43/65/66</th>
<th>XCODE-95000056/82</th>
<th>XCODE-95000058</th>
<th>XCODE-95000067</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Image</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Application</strong></td>
<td>Contagious Waste</td>
<td>General/Apparel/Pharmaceutical</td>
<td>General Books / Pharmaceutical</td>
<td>Books</td>
<td>CD/DVD</td>
<td></td>
</tr>
<tr>
<td>Protocol</td>
<td>GEN 2, ISO 18000~6C</td>
<td>GEN 2, ISO 18000~6C</td>
<td>GEN 2, ISO 18000~6C</td>
<td>GEN 2, ISO 18000~6C</td>
<td>GEN 2, ISO 18000~6C</td>
<td>GEN 2, ISO 18000~6C</td>
</tr>
<tr>
<td>Radio Frequency</td>
<td>860MHz~960MHz</td>
<td>860MHz~960MHz</td>
<td>860MHz~960MHz</td>
<td>860MHz~960MHz</td>
<td>860MHz~960MHz</td>
<td>860MHz~960MHz</td>
</tr>
<tr>
<td>EPC</td>
<td>128bit</td>
<td>96bit</td>
<td>96/96/240/240 bit</td>
<td>96bit</td>
<td>96bit</td>
<td>240bit</td>
</tr>
<tr>
<td>User</td>
<td>128bit</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>512bits</td>
</tr>
<tr>
<td>TID</td>
<td>64bit</td>
<td>32bit</td>
<td>32/32/64/64 bit</td>
<td>32bit</td>
<td>32bit</td>
<td>64bit</td>
</tr>
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<td>Reasem Stack</td>
<td>64bit</td>
<td>64bit</td>
<td>64/32/64/64 bit</td>
<td>64bit</td>
<td>64bit</td>
<td>64bit</td>
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<tr>
<td>Antenna Size</td>
<td>29x17.4(mm)</td>
<td>18 x 32 (mm)</td>
<td>14.4 x 90 (mm)</td>
<td>3 x 95 (mm)</td>
<td>3 x 164 (mm)</td>
<td>37 x 3 (mm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Name</th>
<th>XCODE-95000078</th>
<th>XCODE-95000088</th>
<th>XCODE-95000089</th>
<th>XCODE-95000090</th>
<th>XCODE-95000114</th>
<th>XCODE-95000115</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Image</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Application</strong></td>
<td>General</td>
<td>General</td>
<td>General</td>
<td>General</td>
<td>Apparel</td>
<td>Apparel</td>
</tr>
<tr>
<td>Protocol</td>
<td>GEN 2, ISO 18000~6C</td>
<td>GEN 2, ISO 18000~6C</td>
<td>GEN 2, ISO 18000~6C</td>
<td>GEN 2, ISO 18000~6C</td>
<td>GEN 2, ISO 18000~6C</td>
<td>GEN 2, ISO 18000~6C</td>
</tr>
<tr>
<td>Radio Frequency</td>
<td>860MHz~960MHz</td>
<td>860MHz~960MHz</td>
<td>860MHz~960MHz</td>
<td>860MHz~960MHz</td>
<td>860MHz~960MHz</td>
<td>860MHz~960MHz</td>
</tr>
<tr>
<td>EPC</td>
<td>96bit up to 480bit</td>
<td>96bit</td>
<td>96bit</td>
<td>96bit</td>
<td>96bit</td>
<td>96bit</td>
</tr>
<tr>
<td>User</td>
<td>512bit</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>TID</td>
<td>64bit</td>
<td>32bit</td>
<td>32bit</td>
<td>32bit</td>
<td>32bit</td>
<td>32bit</td>
</tr>
<tr>
<td>Reasem Stack</td>
<td>64bit</td>
<td>64bit</td>
<td>64bit</td>
<td>64bit</td>
<td>64bit</td>
<td>64bit</td>
</tr>
<tr>
<td>Antenna Size</td>
<td>22 x 92 (mm)</td>
<td>30 x 80 (mm)</td>
<td>16 x 94 (mm)</td>
<td>16 x 92 (mm)</td>
<td>68 x 16 (mm)</td>
<td>50 x 30 (mm)</td>
</tr>
</tbody>
</table>
USN

2.45GHz Reader

Model: RU2401S

Specifications:
- Operating Frequency: 2.4GHz
- Protocol: 802.11b, 802.11g
- Security: WPA, WAP, AES, LEAP
- Communication: 10/100 M Ethernet
- Power: 19-18 V DC; POE

2.45GHz Tag

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard</th>
<th>High performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol</td>
<td>IEEE802.11b</td>
<td></td>
</tr>
<tr>
<td>Modulation</td>
<td>Direct Sequence</td>
<td></td>
</tr>
<tr>
<td>Receiving Sensitivity</td>
<td>-89 dBm &amp; 2 Mbps</td>
<td></td>
</tr>
<tr>
<td>Output Power</td>
<td>-19 dBm</td>
<td></td>
</tr>
<tr>
<td>Operating Frequency</td>
<td>2412 ~ 2454 MHz</td>
<td></td>
</tr>
<tr>
<td>Antenna</td>
<td>Embedded Printed Antenna</td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Indoor: 50m @ 2 Mbps</td>
<td></td>
</tr>
<tr>
<td>Display</td>
<td>X 128×96 pixel</td>
<td></td>
</tr>
</tbody>
</table>

Main Peripheral

RFID Printer

Model: XCODE-PU9001

Features:
- Certified with MIC & TTA(Korea)
- Sequence encoding & printing function of Label tag and Metal Tag
- Automatic verification of error tags and damaged tags before & after printing
- Control pitch between Tags from 3.5cm or more

Specifications:
- Operating Frequency: 91MHz ~ 923.5MHz
- Protocol: ISO 18000-6C, EPC Class 1 Gen2
- Printer: Thermal/Thermo Printing
- Printing speed: 2PPS ~ 8PPS
- Resolution: 300dpi
- Printing Width: 105mm
- Memory: 16MB(DRAM), 4MB(Flash) or more
- Communication: RS-232C, USB, EEE284
- Language: MS Window(CE)/UNIX
- Size(W x D x H): 274x548x291(mm)
- Weight: 15kg
- Certification: MIC, TTA

POI (Point of Information)

Features:
- Equipped with Large capacity of Hard Disk Drive allows to be used in many areas and RFID or Barcode function is user selectable

Specifications:
- Processor: Intel Atom 1GHz
- Memory: DDR2 2GB(1up to 2GB)
- Graphic: Intel GMA 950, Video Memory 16MB, up to 64MB
- Display: 38.1cm TFT LCD(1024×768)
- I/O Interface: COM, Parallel, USB, VGA10-Subit, LAN, AUDIO, PS2
- Option: Magnetic Card Reader and Scanner
- Operating System: Windows XP, POS Ready, Linux
- Power supply: AC 110 or 220(Max 400watt)

DID (Digital Information Display)

Features:
- Various multi-Media contents can be displayed efficiently with high resolution LCD panel
- Convenient and easy to control with remote control function

Specifications:
- Processor: Intel Atom
- Memory: DDR2 2GB, HDD 100GB (Expandable)
- Resolution: 1920×1080
- Brightness: 700cd/m2
- Contrast: 1,000:1
- Operating System: Windows XP
- Power Supply: AC 110 or 220 (50/60Hz)
- Size(W x D x H): 614x1670×70(mm) / 692×1800×90(mm)

Business Product

Library

- UHF Landing & Returning Machine
- UHF Automatic Returning Machine
- UHF EDS Gate
- UHF Shelf Antenna
- UHF Librarian Reader
- UHF Handheld Reader
- 3D Graphics Monitor Display
- Kiosk

Pharmaceuticals

- UHF High Speed Encoding System
- UHF High Speed Multi-Reading (Enterprise Class)
- UHF High Speed Multi-Reading (Standard Class)
- UHF Handheld Reader
- UHF USB Reader
- Kiosk

Apparel

- UHF High Speed Multi-Reading System (Standard Class)
- RFID Printer
- UHF Handheld Reader
- UHF Filling Room
- UHF POS
XCODE - Product

Network/Control Devices

PLC (Programmable Logic Controller)
XGT Series
(National Top 10 New Technology Award)
- Model: XGR, XGI, XGK, XGB (XBM, XBC)
- Features:
  - CPU Processing Speed: 28~160ns/step
  - Max. Control: 256~131,072 Points
  - Program Memory Support
  - Extension Base: 7~31 Layers
  - IEC 61131-1 Standard Language Support

PLC (Programmable Logic Controller)
GLOFA-GM Series
- Model: GLOFA-GMR, GM1~GM7
- Features:
  - CPU Processing Speed: 0.1~0.5 μs/step
  - Max. Control: 100~16,000 Points
  - Program Memory Support
  - Extension Base: 2~31 Layers
  - IEC 61131-1 Standard Language Support

PLC (Programmable Logic Controller)
MASTER-K Series
- Model: MASTER-K100S, K300S, K200S, K120S, K80S
- Features:
  - CPU Processing Speed: 0.1~0.5 μs/step
  - Max. Control: 100~1,024 Points
  - Program Memory Support
  - Extension Base: 2~3 Layers
  - IEC 61131-1 Standard Language Support

SMART I/O Series
- Model: SMART I/O (Block / Extension)
- Features:
  - EtherNet/IP, Modbus/TCP
  - Profinet-OP, DeviceNet, Rnet

HMI Software
- Model: XGT InfoU
- Features:
  - Integrated Development Environment for UI
  - Direct import: PLC Software
  - Open Industrial Standard Architecture (OPC, OLE DB, etc)
  - Powerful Script Function

HMI
- Model: XP10, XP30, XP50, XP70, XP80
- Features:
  - LCD Panel
  - Resolution: 192X64, 320X240, 800X600
  - Ethernet, USB, Serial Communication
  - Dimension: 4.1", 5.7", 8.4", 10.4", 12.1"

AMRS (Automatic Meter Reading System)
- Model: AMRS
- Features:
  - Regular Reading
  - Reading on demand
  - Failure Compensation
  - Diversified Reports

Protocol Converter
- Model: GMPC-V, GMPC-III
- Features:
  - I-Net (LS Protocol) Input
  - RS-232, RS-422, RS-485, Modbus, DNP3.0, Ethernet
  - Link to 20~80 Terminal devices

RTU (Remote Terminal Unit)
- Model: Micro RTU-II
- Features:
  - Analog (In) / I-Net (Out)
  - Status Monitoring on contact points
  - Remote control

PLT Gateway
(PLT: Power Line Carrier Technology)
- Model: Z-bus Gateway
- Features:
  - Ethernet / RS232C
  - Power Line Carrier

PLT Coupler
(PLT: Power Line Carrier Technology)
- Model: Z-bus Phase Coupler
- Features:
  - RS232C / 9.6kbps PLT
  - Power Line Carrier

Main Control System

Distributed Control System

Supervisory Control and Data Acquisition

**XCODE - Product**

**Network/Control Devices**

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- Model: Z-bus Phase Coupler
- Features:
  - RS232C / 9.6kbps PLT
  - Power Line Carrier

**Main Control System**

**Distributed Control System**

**Supervisory Control and Data Acquisition**

**AMRS**

The Remote Terminal Unit (RTU) collects data from field instruments & sensors and transmits the information to the Supervisory Control and Data Acquisition System (SCADA) installed in a central control room through wire/wireless communication systems and lines, and receives control commands from the telemeter telecontrol system to conduct online controls in real time.
Customer can determine the feasibility to introduce RFID/USN Solution based on the definite technology. From grasping the customer’s requirement to the installation condition, profitability analysis, and thorough and prompt A/S, you can now rely on LS Industrial Systems.