E — ORing Product Categories

Access to Complete IIoT Solutions

Saas

AI	Smart City	Tracker
Big Data	Meter	
Analysis	SCADA	V2V

ORing Sensor Network
ORing Hotspot
ORing Lighting Management

Multiple platform and Resolution Support

ORing Paas

RESTful API

| Things Management | Things Control | VPN & Remote Access | Cloud Platform 3rd Party Support |
| Account Management | Network Management | Data Logger | IP Surveillance | WLC & AAA Server |

LPWAN: NB-IoT \ Cat. M1 \ Sigfox \ LoRa   OPC UA   2G \ 3G \ 4G \ 5G   Fiber \ DSL \ Cable Modem

ORing IoT Gateway

IoT Gateway   LCP Master   IoT I/O   ORing Router

Zigbee   LoRa   Sub-1GHz   UART \ RS-232, 422, 485 \ Eth. \ PLC \ ModBus \ DIO \AIO

ORing IoT Node

LCP Slave   Serial Card   I/O   Switch   Access Point   Media Converter   Device Server

DI-DO \ AI-AO \ UART \ RS-232 \ RS-422 \ RS-485 \ Wi-Fi \ ZigBee \ BLE \ Sub-1G \ PLC \ Ethernet

ORing IoT Device

AGV   Machine Tool   Street Light   Sensors   Meter   PLC Control   IP CAM   Robotic Arm
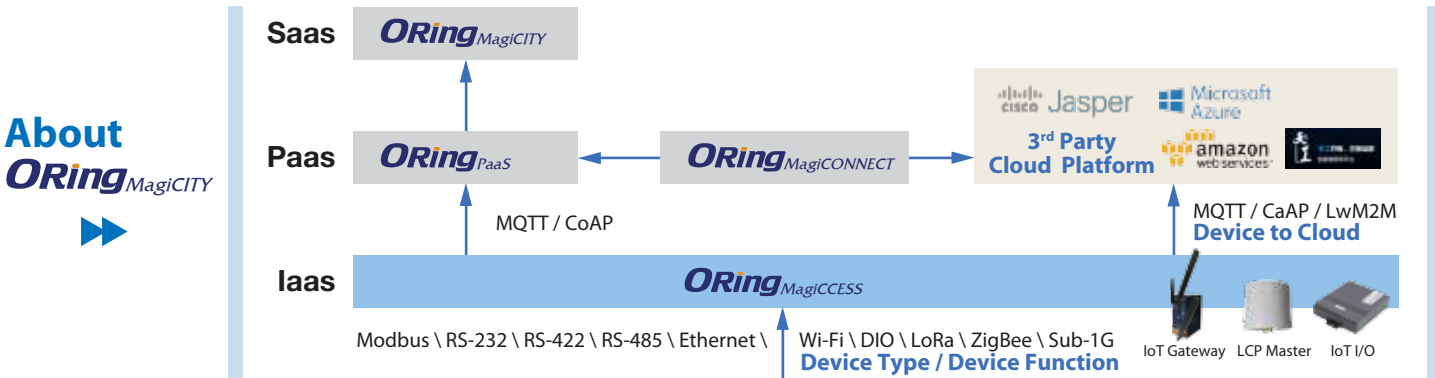
Oring diversified hardware components as above can help you upgrade existing infrastructure into smart solution.

We have wireless connection of IoT Master and Slave, which can connect via Zigbee, LoRa, Sub-1G, NB-IoT and Cat. M1 depending on different application environment. For wire connection, we support UART, RS-232/485, PoE and PLC. All of the IoT Master can upload data to cloud via MQTT.

All services are integrated in PaaS layer. Things Control is for controlling device such as street light, robotic arm and other IoT embedded devices. Things Management is to maintain connected devices, configure and obtain status of devices. VPN router can provide service of Remote Access including relative services. SCADA can record, store and analyze historical data and provide mechanism of alert for abnormal situation from connected properties. Network Management can display current topology of connected devices. When installing IP cameras, IP surveillance service can be compatible with various branding cameras with our ONVIF standard.

It is easy to customize your own IoT solution such as street lights, bus, smart metering with our modern REST API.

About ORing MagiCITY

Saas — ORing MagiCITY

Paas — ORing PaaS — ORing MagiCONNECT — 3rd Party Cloud Platform

MQTT / CoAP

MQTT / CaAP / LwM2M **Device to Cloud**

Iaas — ORing MagiCCESS

Modbus \ RS-232 \ RS-422 \ RS-485 \ Ethernet \   Wi-Fi \ DIO \ LoRa \ ZigBee \ Sub-1G   IoT Gateway   LCP Master   IoT I/O
Device Type / Device Function

F — ORing IOT Products

RF Modules
- Support WiFi, ZigBee, NB-IoT, LoRa, BLE, Sub-1G,...
- Compact size
- Can integrate with different devices
- Support -30~70 degree
- Module Size : 28mm x 20mm x 2.2mm (non-shielding)
- Programmable output gain, up to +21dBm
- DIP type, 20pin

Edge Server : OSC-815
- Private and Public cloud
- Support MQTT and REST api available
- Cluster computing and data backup
- AWS-IoT Enabled
- Support fog computing.

IoT Gateway : IMG-6322GT
- 2/3.5/4G LTE model included
- High Speed Air Connectivity: WLAN interface support up to 150Mbps link speed
- Support Open VPN, PPTP VPN
- Redundant multiple host devices: 5 host devices: Virtual COM, TCP Server, TCP Client mode, UDP mode(4 IP Ranges)
- 1KV isolation for PoE P.D. (IOTM-4312+-4G)

Antenna Model : IOTA-O5-IM-WG-01
(PCB Antenna for Smart Street Light unit)
- Small Size
- Customized design based on customers' needs
- High Reliability
- Provide different antenna design according to each field site

IOT Antenna
- High performance rail rooftop antenna with omnidirectional antenna.
- Support 2G/3G/4G and wifi 2.4GHz applications
- Wide temperature range -30 to 85°C
- Rugged design suitable for railway applications
- GPS + Glonass Active Antenna

Remote I/O
- Support two Serial Ports for RS232/RS422/4W-RS485/2W-RS485
- Support NB-IOT/CAT M1/CAT 1/ZigBee/BT (BLE3.0)/LoRa (by model)
- Support 4 Digital inputs (Dry/Wet) / 4 Digital outputs (Sink)
- Support Data Log (SD card)
- Support GPS (optional)
- Support Modbus protocol

IOT Meter
- Standard product for variety meter application
- Support UART /TTL/RS-485
- Support NB-IOT
- Support MQTT protocol
- Long battery life support

IOT lighting
- ANSI C136.10 / 136.24 and new ANSI C136.41
- Std. NEMA three prong twist lock per ANSI C136.10
- FCC Compliance Statement (Part 15.19 RSS-GEN)
- FCC Title 47, Subpart B, Section 15, class A

Cloud PaaS
- Simple, Manage Authorization
- ORing Account Management is way of utilizing ACL and OAuth 2.0 which keeps account management, permission setup and authorization more easily
- Connect, Just in a Finger
- By using the device management of ORing PaaS, to obtain the device status and much more information, just at a glance

Cloud MagiCITY
- designed for Smart City Management
- Smart Streetlight Management
- Sensor Monitoring
- Path Tracking
- Smart Metering

ORing Paas   ORing MagiCITY

G — ORing CMS

Visualized Management
(On Google or Baidu Map)

User can check the status of each light from Google or Baidu Map. Any abnormal situation can be easily identified from the map i.e. red street light sign stands for defective working status. The visualized management can facilitate users to detect irregular failure from a big range of lighting territory.

Group Management & Flexible Schedule

Last updated: 12 minutes ago

Groups	Options	
West Seattle Bridge	x86
LA Bureau of Street	x133
Milpitas, CA, United	x196
Novato, CA, United	x281

The quantity of each street light project is usually numerous. Group management provides users a more convenient way to overall inspect the status of street lights. The scheduling provides more flexibility in assemble on/off and dimming based on level of lightness due to seasonable changes. Users can also design based on the ambient numbers of people. For example, if the location where street light installed has fewer people during mid-night, the dimming level can be reduced to level adapt to the ambience and save unnecessary energy consumption.
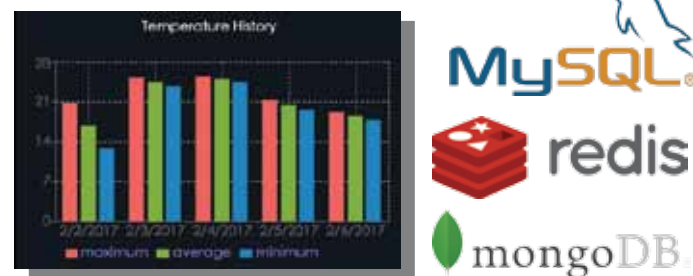
Power Consumption Calculating

Via our Data collecting and analysis system, you can easily to obtain the indivisual or totoal power comsumtion of your devices
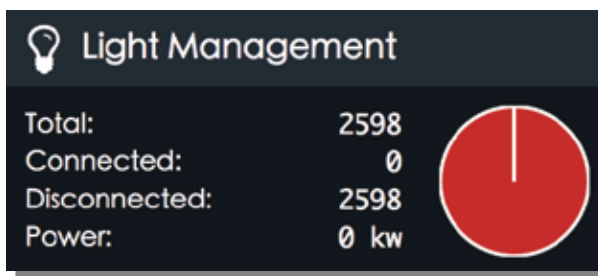
Smart Data Logger

Easy to log and save your data to database, currently we support MySQL, MongoDB and Redis

Light Management

Total:	2598
Connected:	0
Disconnected:	2598
Power:	0 kw

MySQL   redis   mongoDB

IP Surveillance

We support various functions in our IP surveillance software, incl. smart search of video, tamper resistance of camera, specific object tracking, and adding watermark on video.
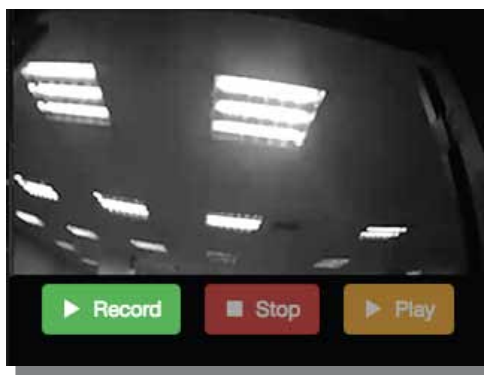
Powerful APP

Construction APP is capable of collecting essential information from street lights such as GPS, Zigbee ID and upload data to our public or private cloud.

Light control APP can manipulate, monitor and manage the street lights remotely. Statistical chart in light control APP can display power consumption and cloud server can make further analysis.
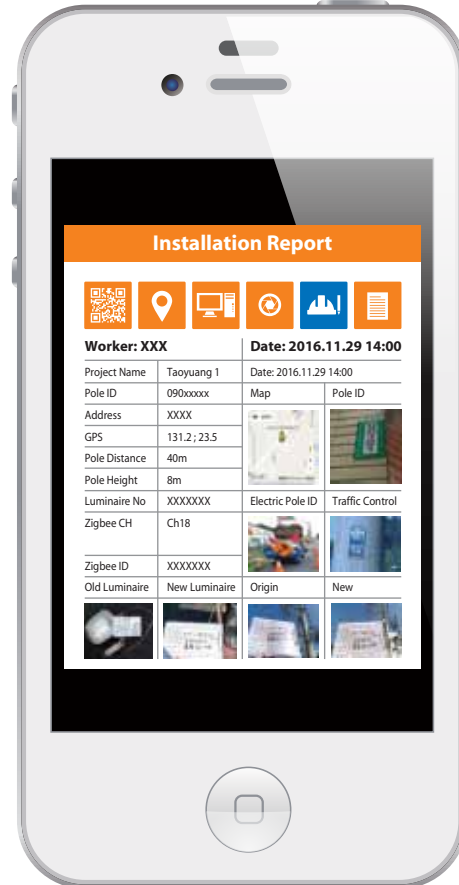
Record   Stop   Play

iOS   android

H — IoT Device Installation Flow

Device Installation Flow

- Simulation
- Site Survey App — Signal Checking
- Installation App — Record and Test
- Management
- Maintenance App

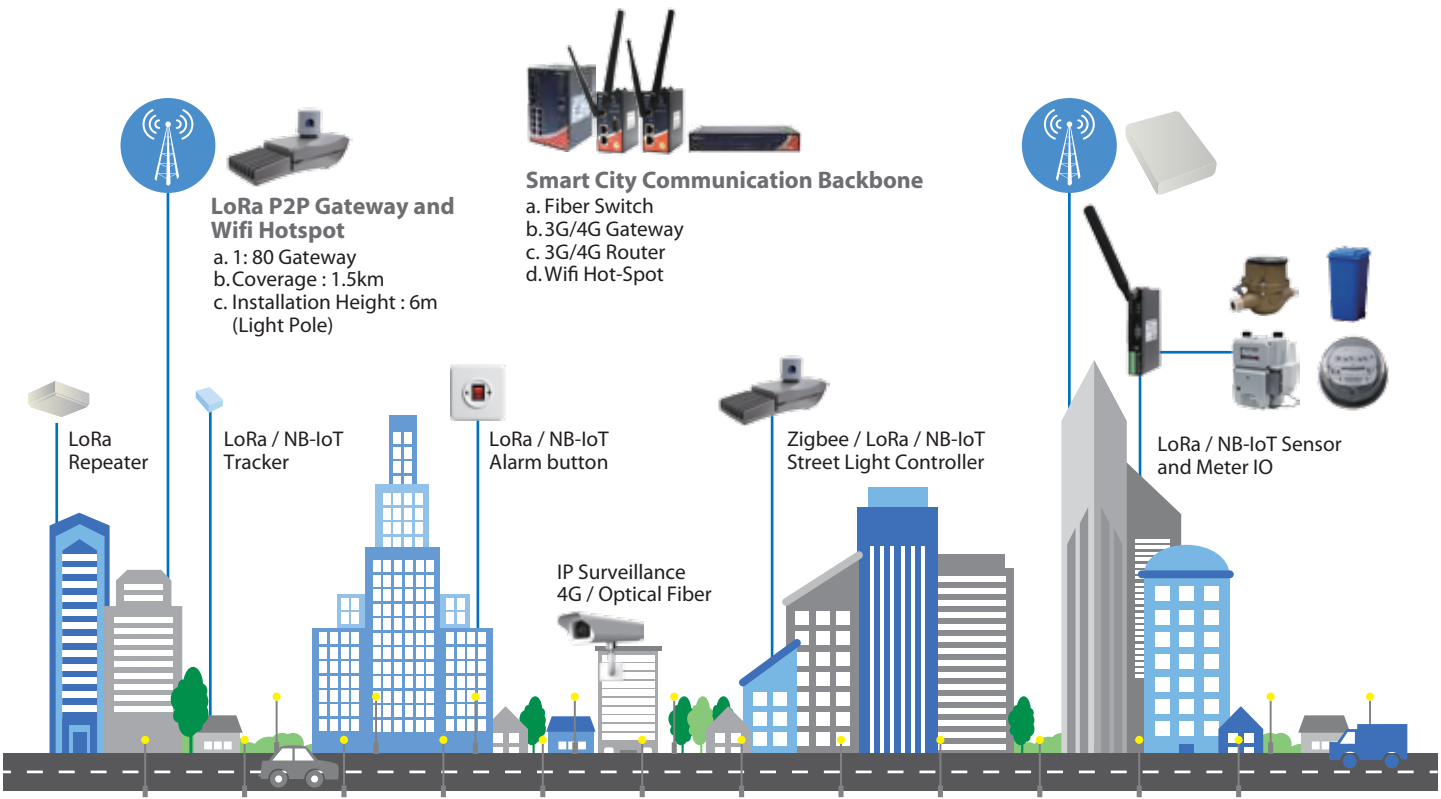## I — IOT device Installation APP Tool

How to build the IoT devices clear and accuracy is the most important know-how in Smart City Total Solution.

Installation Report

- QR Code Device Management
- GPS
- Network Setting
- Camera
- Engineering Report
- Engineering Installation Instruction

Smart City Communication Backbone
a. Fiber Switch
b. 3G/4G Gateway
c. 3G/4G Router
d. Wifi Hot-Spot

LoRa P2P Gateway and Wifi Hotspot
a. 1: 80 Gateway
b. Coverage : 1.5km
c. Installation Height : 6m (Light Pole)

LoRa Repeater

LoRa / NB-IoT Tracker

LoRa / NB-IoT Alarm button

Zigbee / LoRa / NB-IoT Street Light Controller

IP Surveillance 4G / Optical Fiber

LoRa / NB-IoT Sensor and Meter IO

SaaS Application & APP

North -Bound API

SaaS Application & APP

South-Bound API	South-Bound API	South-Bound API	South-Bound API
Oring IOT gateway Management	Oring IOT gateway Management	LoRaWan / Sigfox Network Server	Carrier Network
ORing IOT Gateway	ORing IOT Gateway	LoRaWAN / Sigfox Gateway	Cell Tower — eSim Provide Chip Sim assembly
Zigbee / BLE Node	Sub-1G Node	LoRaWAN / Sigfox Node	NB-IoT / CATM1 Node

ZigBee   Bluetooth   Private LoRa (Sub-1G)   LoRaWAN   sigfox   CATM1 (eMTC) 2G/3G/4G

Panama City
In Panama, the electricity source is from DC(direct current) 24V solar panel which is on the top of lamp; the structure is different than other countries. It will lead to more modifications of its CMS different than others. ORing demonstrates its unusual flexible R&D strength to suit diversified demands in each country.

Jiangsu Province, China
China has vast realm and so as well potential in developing IoT Smart Lighting Control System as its massive energy demand and eager for power saving scheme. ORing has installed 13,000 nodes in Jiansu Province, southern part of China. The achievement of power saving in this project is up to 80% depending on different dimming levels. For such a large area implementation, it easily saves the cost of maintenance and monitoring the status of street light via ORing intellectual street light management system. As China has its own visualized Baidu Map, IOTWAV implement the CMS into Baidu Map rather than Google map. The remote control on/off and dimming transform the city into a best practice of smart city in China.

Taoyuan, Taiwan
ORing got the project of 6000 nodes in Taoyuan, Taiwan. Installing smart lighting control unit makes it easier to manage and monitor the status of street lights remotely and save maintenance time and man effort. The precise power consumption monitoring makes operator more aware of the power saving benefits, energy efficiency and reduction of carbon footprint.

We Bring You

Power Efficiency	Business Efficiency
Energy Saving Save energy up to 80% via LED and dimming	**Maintenance** Massively save the cost and time via remote monitor
Environmental Friendly Diminish carbon dioxide emission	**Security** Keep the fundamental function of street light and power saving simultaneously
Integration Well integrated with other renewable energy supply such as solar power	**Stability** Minimize the down time via auto-alert to staff in charge

ORing
Get Connected Anytime, Anywhere

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The Next Generation of Your City.

Upgrade Your City with Our IIoT Solution

- **Smart Street Lighting Control System**
- **IP Surveillance**
- **Traffic Status & Congestion Alert**
- **Urban Communication Networks**
- **Sensors of Air Quality (PM2.5)**
- **Smart Parking Service**
- **City Information Bulletin Board**

From the forecast of Strategy Analytics 2015, urban living will contain 86% of the developed countries and 64% of developing countries by 2020.

The circumstance of global population shifting to urban centers is stimulating the development of "Smart Cities" which is to maximize the efficiency of crucial resources such as utilities, water supply and transportation services and so on. These cities in the future will combine and leverage Internet of Things (IoT) and Information and Communications (ICT).

From the forecast of Strategy Analytics 2015, urban living will contain 86% of the developed countries and 64% of developing countries. It makes resource allocation me more critical for global development, especially in ICT and relative integrated IoT system. According to the report of "The Future of Smart Cities- Opportunities, solution and Players," ICT revenues from urban living will reach $977 Billion by 2022. End to end systems such as cloud computing and data collection mechanism becomes essential to sustainably urban living in terms of how to make proper use of energy and further increase service quality of public infrastructure.

86% Developed Countries   **64%** Developing Countries

Creat your IoT Application Agilely

ORing has a strong R&D team for developing wireless communications technology. In light with the emergence of IoT, ORing has incorporated its technology strength with its gateways, modules, smart antennas and cloud service platform and apps to provide a complete IIoT solution. Our solution perfectly reflects the concept of Smart City and helps crate a sustainable future.

Potential IoT applications are growing such as Wi-Fi hotspots, PM2.5 air quality detection, urban marketing, and real-time surveillance systems. More business opportunities can be found in tremendous IoT solutions and we really look forward to inviting our ambitious customers to join our global IoT group.

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