



### Advantages:



#### LONG RANGE

- 1-5 km for urban city
- 15+ km for open space area



#### LOW POWERED

- Up to 5+ years lifetime



#### LOW COST

- More than 5000 sensors in 1 gateway



#### INTEROPERABILITY

- Many use cases

## LORA GATEWAY

LoRa gateways play a crucial role in LoRaWAN networks, serving to receive, aggregate, and convert data from widely dispersed LoRaWAN IoT devices into a format that can be understood by network servers. In addition, the gateway also transmits data to the server, enabling network management, signal quality monitoring, data security, and capacity management.

### LoRaWAN Compliance:

Indonesian RF Frequency of **920 -923 MHz (AS923-2)** Has been regulated by KOMINFO in 2019.



Licensing from SISKOMDAT and becoming a LoRaWAN Operator to support digitalization with IoT implementation in Indonesia.



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## INDOOR LORA GATEWAY



There are 2 types of Indoor LoRa Gateway:

1. **Wirnet iFemtoCell**
2. **Wirnet iFemtoCell-Evolution**

Based on the same Hardware and Software, they only differ by the type of backhaul connection they propose.

The Wirnet iFemtoCell and Wirnet iFemtoCell-evolution range is the ideal LoRaWAN indoor gateway range to support your smart building, smart city or any smart project that requires dedicated deep indoor coverage and/or network densification, providing both unique superior coverage and operational excellence.

This LoRaWAN gateway offers high performance in demanding environments (basement, underground, parking, etc.) to connect energy meters, parking sensors or equipment actuators.

The powerful and robust Gateway:

- LoRaWAN gateways leverage the successful LoRa RF technical design and the common software of Wirnet i-Series gateways,
- They embed built-in high rejection filters and secured Software architecture to be reliable gateways in the core of your smart application,
- Easy to configure, and come with exclusive features for its remote monitoring and management with Kerlink network operations solutions.

They both embed:

- Ingress Protection (IP30)
- 8ch RX (125 kHz, multi Spreading Factor) + 1ch RX (250kHz or 500kHz, mono Spreading Factor) + 1ch RX (FSK) to get 10ch RX + 1ch TX
- Built-in high-rejection filters
- Power supply (230VAC/12VDC) with provided jack connector 2.5mm/5.5mm
- Highly secured device relying on a hardware secure core
- Backhaul connectivity:
  - **Wirnet iFemtoCell:** Ethernet (RJ45)
  - **Wirnet iFemtoCell - Evolution:** 4G Worldwide module with 3G/2G fallback and Ethernet (RJ45)



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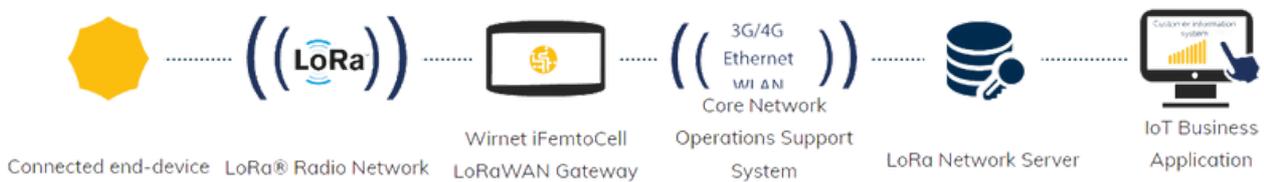
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## Technical Feature

| PARAMETERS                           | Wirnet iFemtoCell                                       | Wirnet iFemtoCell-evolution                                 |
|--------------------------------------|---|---|
| Sniffer for LBT (Listen Before Talk) | Yes   |   |
| RX Sensitivity                       | -141 dBm (SF12)   |   |
| TX Power                             | configurable from 5dBm to 27dBm                         |   |
| Temperature range                    | -20°C +55°C<br>(for gateway only, without power supply) |   |
| Humidity                             | 5% to 95%   |   |
| Size                                 | 160 x 90 x 35 mm  |   |
| Weight                               | 163g (Gateway only); 372g (with packing)                |   |
| CPU                                  | ARM Cortex A9   |   |
| DDRAM                                | 256 MB  |   |
| eMMC                                 | 8 GB eMMC (6 GB available for user)                     |   |
| Backhaul connectivity                | Ethernet (RJ45)   | 4G Worldwide module with 3G/2G fallback and Ethernet (RJ45) |

## Wirnet iFemtoCell in a IoT Implementations



## OUTDOOR LORA GATEWAY



The Wirnet iStation is the ideal LoRaWAN gateway for your **Outdoor deployments**.

With a strong and robust design, Wirnet iStation has been thought to support your smart city, smart industry, or any other smart project, combining the simplicity of outdoor installation, unique superior coverage and operational excellence.

- Specifically meets the standard requirements of public operators, MVNOs, cable operators, private businesses or public authorities that want to boost their businesses with IoT and to deploy evolutive and reliable networks, connect high volumes of end-devices, and manage millions of bidirectional messages every day,
- The Wirnet iStation is easy to operate, even for non-telecom users
- This long-range and low-power gateway comes with exclusive features for its remote monitoring, advanced radio network configuration and backhauling management with Kerlink's, it becomes very easy to operate LoRaWAN network even for non-telecom users,
- The Wirnet iStation is also compatible with the Wanesy Small Private Network solution to deploy standalone and self-operating LoRaWAN private network,
- The Wirnet iStation is industry-grade and futureproof,
- The Wirnet iStation is highly secured.

### Key Feature

- Outdoor LoRaWAN Gateway
- Carrier grade casing (IP67) for industrial use
- Supported unlicensed bands:
  - 863 - 874.4 MHz (EMEA, India)
  - 902 - 928 MHz (North America)
  - 915 - 928 MHz (APAC, America Latin)
- Supported LoRaWAN regional parameters:
  - EU863 - 870
  - IN865 - 867
  - RU864 - 870
  - US902 - 928
  - AU915 - 928
- AS923
- KR 920-293
- 8ch RX (125 kHz, multi Spreading Factor) + 1ch RX (250KHz or 500kHz, mono Spreading Factor) + 1ch RX (FSK) to get 10ch RX + 1ch TX
- Powered by:
  - PoE (injector, switch, ...), both Mode A and Mode B (802.3af specifications),
  - ± 48 VDC through RJ45 (UPS, solar panels, etc)
- Highly secured device relying on a hardware secure core



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## Key Differentiators

### High performance, reliability & robustness

- Carrier grade design with excellent heat dissipation
- Semtech reference design v1.5 components

### Security HM and SW architectures

- SecurityBoot (Signed firmware),
- SecureStorage (keys and certificates in secured area) using ProvenCore solution,
- Secured links and backhaul protection (OpenVPN/IPsec),
- Reboot (watchdog) and recovery on previous Management config (or factory config if the boot issue is not fixed).

## Easy Deployment

- No need to open the casing during the installation phase (waterproof connectors for RJ45, SIM Card...),
- Easy installation mounting kit,
- Fully integrated and internal antennas (GPS, 4G, LoRa), no external antenna installation required (external LoRa antenna as an option),
- Easy access to connectivity:
  - Ethernet 10/100 Mbps (RJ45),
  - SIM Card (mini - SIM format),
  - Two LED's controlled by SW (programmable):
    - 1x green LED for power,
    - 1x red LED for system status (update, boot behavior, LoRa status, backhaul...),
- USB (Type C) connector for debug probe,
- Multifunction button for:
  - On/Off
  - Reset
  - Factory Reset
- Simple and convenient configuration, management, control and update using the Kerink Management Center (Alarm notifications, firmware upgrade, platform statistics, RF statistics, RF spectrum analyzer...),
- Remotely configurable, manageable, via intuitive Web GUI,
- Remote access via SSH



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## Technical Features

| PARAMETERS                               | LORA OUTDOOR GATEWAY   |
|--|--|
| Built-in with high rejection SAW filters | Yes  |
| Brand                                    | Kerlink, France  |
| TX Power                                 | Configurabel from 5 dBm to 27 dBm  |
| RX Sensitivity                           | -141 dBm (SF12)  |
| Temperature Range                        | -40°C ... +60°C  |
| Humidity                                 | 95%  |
| Size                                     | 265 x 165 x 100 mm   |
| Weight                                   | 1,4 kg (mounting kit included)   |
| Ingress Protection                       | Casing: IP67 Alu (Back), Polycarbonate (Front), Inox (mounting kit)      |
| CPU<br>DDRAM<br>eMMC                     | : ARM Cortex A9<br>: DDRAM 256 MB<br>: 8GB eMMC (6GB available for user) |

## Software Feature

- Same Software than Wirnet iBTS and iFemtorCell: same User experience, quicker integration,
- Dynamic web interface (On-the fly modifications),
- Programmable Gateway: Toolchain, libraries and header files for compilation of homemade applications, or extra packages additions,
- Including:
  - Operating system: KerOS with embedded GNU/Linux based on Yocto 2.4 and LTS kernel 4.14,
  - Native Language Support: Python2, C/C++ and Shell,
  - Included Package: SQLite (Database), Connman/Ofono, NTPd, lighttpd.



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## Value Added Services

- Free access to Kerlink Wiki for customer,
- Plug & Play installation (option),
- Wirnet iStation is part of the end-to-end LoRa Connectivity solution with Kerlink Management Center, remote monitoring and Operations Management suite (option),
- Wanesy SPN2 for Small Private Network, embedding a LoRa Network Server on the Gatewa
- Maintenance Services (option),
- Kerlink Project Management:: Kerlink supports you throughout your project by responding to your specific needs through its service offering and network of specialist integrators available worldwide (option)

## Implementations



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