

# GridPuls-RF

Smart RF WiSUN Gateway



The **GridPuls-RF** is a **Wi-SUN gateway** which is a high-performance device that integrates advanced mobile communication technology, a 64-bit RISC embedded platform, and a professional-grade real-time Linux OS. It supports multiple communication methods, including **Ethernet**, remote **cellular** connectivity, **RS485**, **Wi-Fi**, **Wi-SUN**, and optional backhaul, ensuring seamless data transmission.

Designed for reliability, ease of use, and stable operation, it delivers high data collection accuracy, **robust performance**, and **large storage** capacity. Its advanced capabilities make it an ideal solution for low-voltage centralized AMI meter reading systems, enhancing efficiency and operational effectiveness.



DLMS PROTOCOL



WiSUN COMPLIANT



MESH NETWORK



HIGH GAIN ANTENNA



## Main Functionalities

The WiSun gateway excels in its ability to seamlessly integrate multiple communication protocols and technologies, making it a versatile solution for a wide range of applications. With its robust Ethernet and cellular communication options, it ensures reliable data transmission across various network environments. Additionally, its Wi-SUN and Wi-Fi capabilities offer flexible connectivity options, enabling easy integration into existing network infrastructures and ensuring consistent communication even in challenging environments.

Wi-SUN is key option in ensuring reliable, long-range, and secure wireless communication for IoT and smart grid applications. Wi-SUN (Wireless Smart Utility Network) technology is designed for large-scale, outdoor, and industrial networks, offering mesh networking capabilities that ensure consistent data transmission even in challenging environments. This results in improved network resilience, lower latency, and better energy efficiency, making Wi-SUN gateways ideal for applications like remote meter reading, smart cities, and utility management.



## Highlights:

- Supports both concentrator and gateway functionality
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- Support Internet Protocol version 4/6
- Support IPv6-ND/ICMPv4/ICMPv6
- Support IPv6 over IPv4 via OpenVPN Client
- Support IPv6 package forward
- Standard DHCPv6 Client and DHCPv6-PD Server/Client
- Large Wi-SUN FAN Network support
- Build-in WIFI adapter that support AP and STA mode
- Customize Docker App available
- GPRS/3G/4G/Ethernet/Backhaul are supported in uplink channel
- Interoperability is preserved by supporting DLMS/COSEM protocol both in uplink and downlink channels
- Both polling and pushing mechanisms are supported for data reading / event reporting
- Multi- layer security is considered both in Wi-SUN layer as well as in DLMS application layer
- Integrated Web-server for local and remote access.
- Build-in battery to support last gasp function
- Build-in device monitor to support alarm function
- Support GPS to get the location.

## Specification

| Description             | Value                                                                                                                          |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Connection Wiring       | Single Phase                                                                                                                   |
| Nominal Voltage         | 120 ~ 220 VAC                                                                                                                  |
| Operating Voltage range | 70%-130%Un                                                                                                                     |
| Frequency               | 50Hz ± 5%                                                                                                                      |
| Environment             | Normal operation range: -25°C to +55°C<br>Limit operation range: -40°C to +70°C<br>Storage and transport range: -45°C to +85°C |
| Relative Humidity       | ≤95%, non-condensing                                                                                                           |
| Ingress Protection      | IP67                                                                                                                           |
| Clock Accuracy          | ≤ 0.5 sec/day                                                                                                                  |
| MTBF                    | ≥ 50,000 hours                                                                                                                 |
| Meter Lifetime          | ≥ 15 years                                                                                                                     |
| Battery Lifetime        | 10 years                                                                                                                       |
| Dimensions (WxHxD)      | 248.5*206.5*103mm                                                                                                              |
| Weight                  | 3.85kg                                                                                                                         |
| SDRAM                   | 1GB                                                                                                                            |
| Flash                   | 8GB                                                                                                                            |
| Operating System        | Linux                                                                                                                          |
| Internet Protocol       | IPV4/IPV6                                                                                                                      |

## User Interfaces

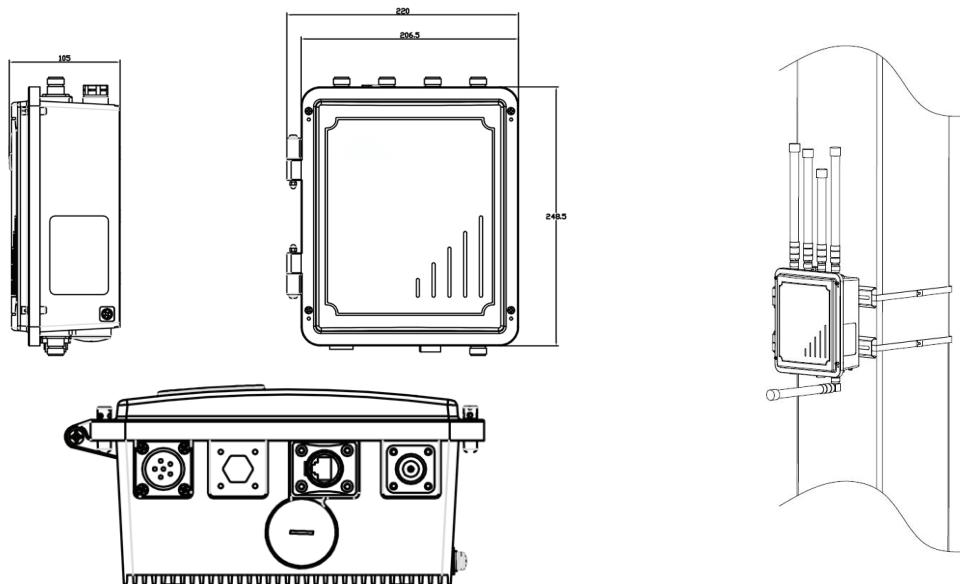
| Interface                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Interface                     | Single phase AC220V/120V input                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Wi-Fi Interface                     | One Wi-Fi adapter is build-in for debugging and manage, the communication distance is not less than 10 meters, the frequency is 2.4G, with an omnidirectional antenna                                                                                                                                                                                                                                                                                                                                                    |
| 2G/3G/4G Module Interface           | One 2G/3G/4G module is build-in too for uplink communication, with an omnidirectional antenna                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Wi-Sun Module Interface             | Build-in Wi-SUN BR module with an omnidirectional antenna                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| USB 2.0 Type-A and Type-C Interface | One USB2.0 interface for local upgrade and Maintenance                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Ethernet Interface                  | One 10/100M Ethernet interfaces, function for uplink communication or local parameter configuration                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Door Contact Interface              | One door contact, support the switch alarm of the WIR-3000 Wi-SUN Gateway installation box door                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Web Portal                          | <ul style="list-style-type: none"> <li>The Wi-SUN Gateway has an internal web user portal that can be accessed through the Ethernet or WIFI connection. The web interface can be used to checing system information, Configures network service (e.g., VPN), Docker App control and System upgrade function.</li> <li>It is recommended to use the Ethernet and WIFI interface for access, because the communication speed using the 2G/3G/4G interface is affected by the local telecommunications operator.</li> </ul> |



## User Interfaces

| Interface                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Package, Transportation and Storage | <ul style="list-style-type: none"> <li>• Avoid direct rain and snow during transportation and unpacking to prevent severe impact and vibration.</li> <li>• Inventory and storage should be stored on the rack under the original packaging conditions, and the stacking height should not exceed 5 layers.</li> <li>• Do not store after unpacking.</li> <li>• Storage conditions: The ambient temperature does not exceed -20°C to + 75°C, and the relative humidity does not exceed 95%. The place to be stored should be clean and free of harmful substances sufficient to cause corrosion in the air.</li> </ul>                                                                                                                                                         |
| RF Mesh Techniques                  | <ul style="list-style-type: none"> <li>• Frequency band : 902-907&amp;915-928M MHz<br/>(Could change the working frequency via configuration)</li> <li>• Support IPsec\I2TP\GRE for VPN;</li> <li>• Support IEEE 802.15.4e TSCH;</li> <li>• Support SSH\TLS 1.2\HTTPS protocol;</li> <li>• Support NTP Protocol to synchronized system clock;</li> <li>• Support SNMP v1/v2/v3 Protocol;</li> <li>• Support 6LoWPAN protocol in Wi-SUN FAN Network;</li> <li>• Support dynamic router protocol to adjust network path automatic;</li> <li>• Support FHSS tech;</li> <li>• Support coap protocol to configure Wi-SUN BR module;</li> <li>• Build-in radius server\client and support traca+ protocol for AAA function;</li> <li>• Build-in standard Linux firewall.</li> </ul> |

### Gateway Installation



The following gateway is designed to be mounted on a vertical pole and fixed to a mounting bracket with 4x M6 stainless steel screws. The Wi-SUN antenna is fixed to the mounting bracket with 4 M6 stainless steel screws. The gateway and the gateway bracket are directional, and the debugging interface must be installed facing down

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