# wavecom IoT Gateway User Guide

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## IoT Gateway

Modular Multi-Interface for M2M/IoT and Critical Applications with Native Gateway Management



**SMART WATER**

**SMART AGRICULTURE**

**SMART MOBILITY**

**SMART WASTE**

**SMART PARKING**

**SMART BUILDING**

**IoT Gateway… for multiple scenarios!**
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## WAVECOM – IoT GATEWAY

Wavecom IoT Gateway is an Internet of Things network access solution, designed for a wide range of applications, allowing different types of devices from different technologies, to communicate with applications with very high efficiency, reliability, and scalability.
It is modular allowing multiple wireless interfaces such as LoPaWAN@, Wi-Fi and 3G/4G/SG and provides an over-the-top WAN backbone.
On the other hand, the enclosure of the Wavecom IoT Gateway is built in aluminum providing an electromagnetic isolation between the internal radio modules and temperature's dissipation, which allows its use in various indoor/outdoor application scenarios.
It is always connected to a cloud managed platform (i.e. Wavecom IoT Manager/Multi-Tenant system) responsible for the integrated management of the gateways, providing reports and visualization of the data read from LoPaWAN assets. This platform allows connection with third parties via API.
LoRAWAN SPECIFICATIONS: 1.0, 1.0.1, 1.0.2,1.0.3, 1.0.4

## KEY FEATURES

| Integrated Management | Cloud managed platform containing a set of services to manage Wavecom IoT Gateways and connected devices – IoT Manager |
|---|---|
| Modular architecture | Combine different backhaul technologies in one equipment: LoRaWAN®, Cellular, Wi-Fi, Ethernet |
| Multiple WAN | Intelligent algorithm for load-balancing of multiple cellular 3G/4G/5G with a Single or Dual Modem |
| GNSS | Embedded GPS for management, tracking, and IoT assets |
| Storage | Up to 256 GB |
| Expansion | USB 3.0 Host interface, RS-232/485 Serial Interface, and Analog/Digital IOs |

## BASE SPECIFICATIONS

### MANAGEMENT

| Local | Serial RS232 (DB9), SSH, and WEB GUI (HTTP/HTTPS) |
|---|---|
| Remote | -SSH and WEB GUI (HTTP and HTTPS)<br>-Integrated HTTP API, SNMP (v1, v2c, v3) and, Wavecom IoT Manager/Multi-Tenant system |
| In addition | -Syslog<br>-Embedded GPS<br>-FUOTA (Firmware Update Over The Air)<br>-Linux based<br>-Bulk device configuration |

### ENVIRONMENT

| Operating temperature | [Indoor] -20°C to 70°C<br>[Outdoor] -40°C to 85°C |
|---|---|
| Storage temperature | -40°C to 85°C |
| Humidity | 10% to 95% |
| MTBF | 10% to 95% |

### REGULATORY COMPLIANCE

| Radio | EN 300 328, EN 301 893 |
|---|---|
| EMC | EN 301 489-1/17 |
| Safety | EN 60950-1 |

### NETWORK

| Wireless Modes | Routing and Bridging – Point-to-Point, Point-to-Multipoint, Mesh, and Wireless Repeater |
|---|---|
| Wireless Security | – 64-bit and 128-bit WEP encryption<br>– WPA/WPA2: TKIP, AES and IEEE 802.1x/RADIUS based authentication |
| Gateway Features | IPv4/IPv6, TCP/UDP, ARP, ICMP, DDNS, DHCP Server/Client/Relay, DNS Server/Client/Relay, NTP, MQTT |
| Routing and Switching | -Static and Dynamic: BGP, OSPF v2, RIP v1/v2<br>-STP (Spanning Tree Protocol) |
| VPN | GRE, IPSec, OpenVPN, PPTP/L2TP |
| Firewall | NAT, Port Forwarding, Traffic Rules, MAC filtering |
| VLAN | -Management VLAN<br>-Access and Trunk Modes; supporting on radio interfaces in any operation mode |
| In addition | – Layer-2 mesh protocol support on radio interfaces<br>– Cellular load balancing aggregation mechanism<br>– wRing: redundancy protocol to maximize wireless network availability |



**WIRELESS SPECIFICATIONS**

**RADIO**

| MIMO | 2×2 |
|---|---|
| Modulation | OFDM: BPSK, QPSK, DBPSK, DQPSK, 16-QAM, 64-QAM, 256-QAM |
| Frequency | 2412 – 2472 MHz / 5180 – 5825 MHz |
| Channel Size | 20, 40 and 80 MHz |
| Date Rates | – IEEE 802.11a: up to 54 Mbps<br>– IEEE 802.11b: up to 11 Mbps<br>– IEEE 802.11g: up to 54 Mbps<br>– IEEE 802.11n: up to 300 Mbps @ 40 MHz<br>– IEEE 802.11ac: up to 867 Mbps @ 80 MHz |
| Transmission Power | 21 dBm @ 2.4 GHz / 20 dBm @ 5 GHz (per chain) |
| Sensitivity @20MHz | 94 dBm @ 2.4 GHz / -93 dBm @ 5 GHz |
| In addition | – DFS (Dynamic Frequency Selection)<br>– ATPC (Automatic Transmit Power Control)<br>– Embedded radio scanner module |

**MODEM**

| Bands | – LTE FDD: B1/B2/B3/B4/B5/B7/B8/B20<br>– WCDMA/HSDPA/HSUPA/HSPA+: B1/B2/B5/B8<br>– GSM/GPRS/EDGE: 850/900/1800/1900 MHz |
|---|---|
| Transmit Power | – LTE: +23dBm (3GPP TS 36.101 R8 Class 3)<br>– WCDMA/HSPA+: +24 dBm (Power Class 3) EDGE 1900/1800 MHz: +26 dBm (Power Class E2)<br>– EDGE 900/850MHz: +27 dBm (Power Class E2)<br>– GSM/GPRS 1900/1800MHz: +30 dBm (Power Class 1)<br>– GSM/GPRS 900/850MHz: +33 dBm (Power Class 4) |
| Data Rates | – LTE Cat.4: 50/150 Mbps (UL/DL)<br>– DC-HSPA+: 5.76/43.2 Mbps (UL/DL)<br>– WCDMA PS: 384/384 kbps (UL/DL)<br>– EDGE: 236.8/236.8 kbps (UL/DL)<br>– GPRS: 85.6/85.6 kbps (UL/DL) |

**LoRAWAN**

| Band | EU868 (863-870 MHz) |
|---|---|
| Transmit Power | Up to 27 dBm |
| Modulation | CSS (Chirp Spread Spectrum) |
| Sensitivity | Up to -140 dBm @ SF12, BW 125 kHz |
| In addition | – LoRa Alliance architecture compliance<br>– Semtech Packet Forwarder<br>– Based on Semtech SX1303<br>– 8/16 UL channels \| 1/2 DL channel<br>– LoRaWAN < 1.0.4/1.1 compatible<br>– Device Classes: A, B, C<br>– NetID and JoinEUI LoRaWAN<br>– Fine time stamp<br>– LBT (Listen Before Talk)<br>– LoRaWAN Backend Communication's TLS/SSL encryption |



**PHYSICAL SPECIFICATIONS**

**PHYSICAL**

| | |
|---|---|
| Dimensions | [Indoor] 178 mm x 82 mm x 174 mm<br>[Outdoor] 272 mm x 276 mm x 96 mm |
| Weight | [Indoor] 1600 g<br>[Outdoor] 2500 g |
| Enclosure | [Indoor] Aluminum<br>[Outdoor] UV Resistant and IP67 |
| Connectors | [Indoor] – Lockable DC Plug<br>– Up to 9 RP/SMA-Female connectors<br>– Up to 3 10/100/1000Base-T interfaces<br>– 1 DB9 for RS 232 management console, 1 DB9 for RS 232 and a<br>12-Pin terminal block for RS485, and 6 Analog/Digital IOs (2 Analog + 4 Digital) [Outdoor] – 10/100/1000 Base-T interface with PoE support |
| Installation | [Indoor] DIN-rail mounting and Wall mounting [Outdoor] Mounting kit |
| In addition | – Hardware Monitor Status (e.g., Temperature, CPU, RAM, Statistics [Network, LoRaWAN and Cellular], Geolocation and Operational Status)<br>– Surge protection<br>– Internal RF Filtering<br>– Modular architecture (x86 architecture, 2 GB RAM and up to 256 GB SSD storage) |
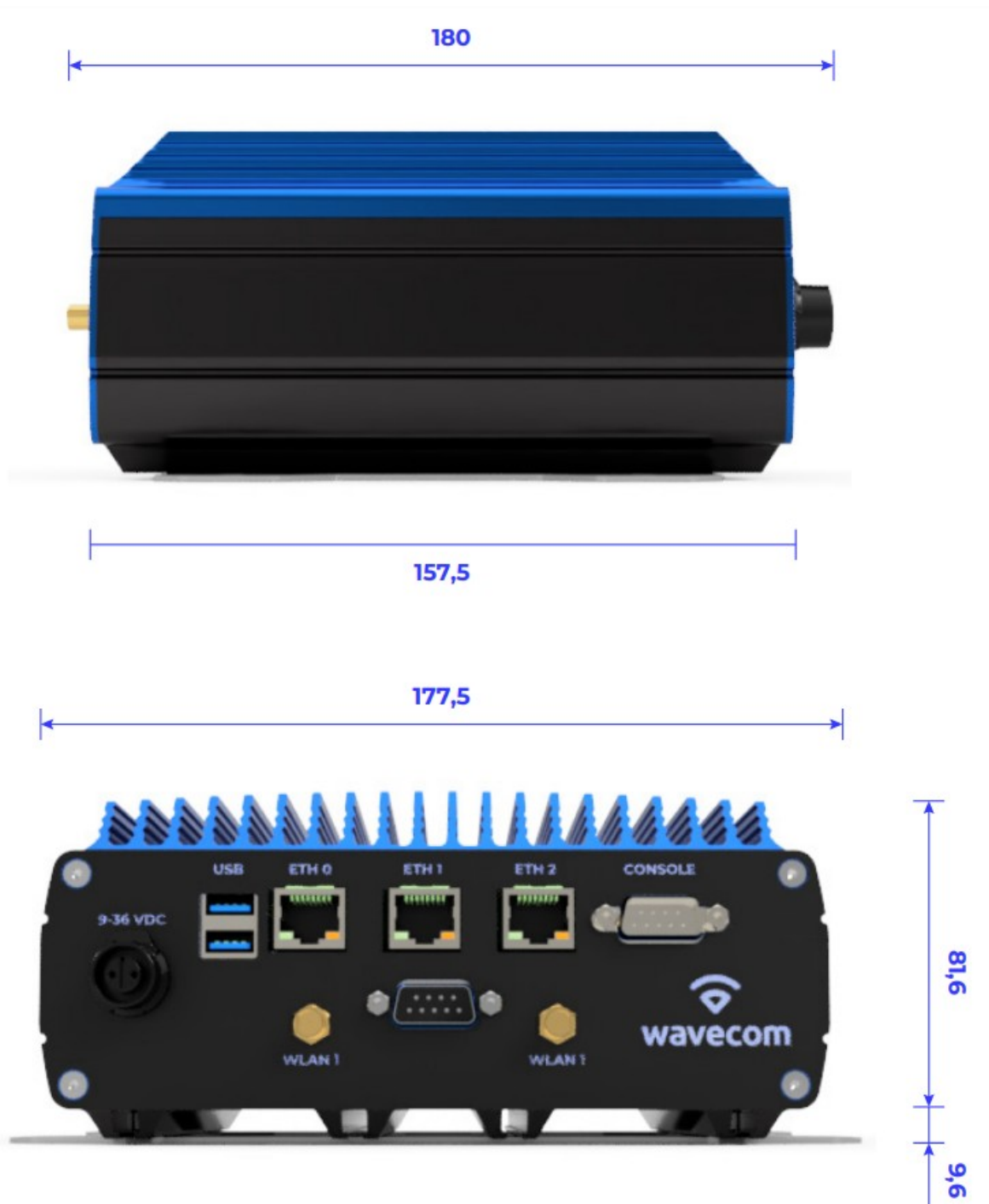
**POWER CONSUMPTION**

Input Voltage……………… [Indoor] 9 – 36 VDC [Outdoor] 48 – 56 VDC IEEE802.3at PoE

## ORDERING INFORMATION

As the IoT Gateway offers a modular architecture, custom configurations can be provided to suit your application's communication needs.
For the provision of a configuration suitable for your application, do not hesitate to contact us.



**About Us**

Wavecom has been in the field for 20 years with a solid know-how and expertise in wireless and IP-based systems and applications.

We understand about the integrators' challenges and our goal is to equip them with the indispensable technology, insights, advice and tools to help them to achieve their most pressing objectives.

With our capacity for innovation and knowledge of integrator's activity, we can improve people's quality of life through the products we manufacture.

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NP 4457:2007, ISO 9001, ISO 14001 e ISO 45001:2018

Cofinanciado por:



**Documents / Resources**

**wavecom IoT Gateway** [pdf] User Guide
IoT Gateway, IoT, Gateway