AlphaGateway IoT
Internet of Things Network Access Device

**Features:**

- Enables IoT and M2M applications
- Single-box rapid deployment solution
- Ethernet backhaul via Alpha hardened DOCSIS 3.0 modem
- Passively cooled carrier-grade design (IP67)
- Supports multicarrier LoRaWAN transmission
- 2x LoRaWAN RF antenna connections
- Full-duplex operation

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**The AlphaGateway Internet-of-Things (IoT) is the bridge between the HFC network, Low Power Wide Area Network (LoRaWAN) technology, and the growing field of IoT business opportunities.**

The AlphaGateway IoT joins the growing family of Outside Plant (OSP) AlphaGateways. A backhaul-capable hardened gateway designed for IoT data communications and Machine-to-Machine (M2M) connections, the AlphaGateway IoT has been developed for network operators to increase their service offerings.

This strand-mounted, HFC-powered, single-box solution utilizes the power, backhaul, and real-estate of the HFC network to provide communication between devices in city and utility applications. The LoRaWAN technology powered by the AlphaGateway IoT aggregates and bi-directionally transmits small amounts of data over long distances for any application in the IoT industry using connected sensors, including utility metering, street light monitoring/control, as well as traffic, activity, and movement monitoring amongst many other use cases.
### Specifications

#### Electrical
- **Input Voltage Range:** 42 to 93VAC @ 60Hz
- **Input Voltage Waveforms:** Sine, trapezoidal, quasi-square wave
- **Input Voltage Turn On:** 418VAC
- **Input Voltage Turn Off** *(Hysteresis):* 420VAC
- **Nominal Input Voltage:** 75VAC @ 60Hz
- **Hold Up Time:** 16.67ms
- **Over Voltage Protection:** 93VAC
- **Power Supply Max Output:** 50W load
- **Power Supply Efficiency:** > 80%

#### Mechanical
- **Dimensions H x W x L (in):** 9 x 6.3 x 16
- **Weight (lb):** 20

#### Environmental and Agency
- **Operating Temperature:** -40 to +60 °C
- **Storage Temperature:** -40 to +70 °C
- **Humidity:** 5 to 95% non-condensing
- **Water Proof Level:** UL 565 Type 6; IEC 60529 IP67
- **Nominal Input Voltage:** 375VAC @ 60Hz

#### Safety
- **Safety:** CSA/UL/ 60950-1: ED 2 / 60950-22: ED 2
- **Radiated Immunity:** IEC 61000-4-3
  - 80 to 6000MHz: 10V/m
- **Radiated Emissions:** FCC Part 15 Class B
- **Surge:** EN 61000-4-5 (5 x 4kV common mode)
- **IEC 60825 Category B3**
- **FCC for LoRaWAN Transmissions:**
  - FCC Part 15.247: Operation within the 902-915 MHz band

#### LoRaWAN Gateway
- **Compliance:** CISCO 3.0
- **Transmit Frequency Range:** 5 to 42MHz
- **Receive Frequency Range:** 88 to 1002MHz
- **Channel Bandwidth:** 6MHz
- **Downstream Data Rate:** Up to 300Mbps (8 bonded channels)
- **Modulation:** TDMA: GPSK, QAM (8, 16, 32, 64)
  - 5-CMA: GPSK, QAM (8, 16, 32, 64, 128)
- **Upstream Data Rate:** Up to 100Mbps (4 bonded channels)
- **Radiated Emissions:** FCC Part 15 Class B
- **Outdoor Harmed:** Yes
- **Network Management Protocols:** SNMPv1, V2c, V3, HTTP
- **Input Connector:** RJ45 female
- **Input Impedance:** 75Qm
- **Privacy:** BPI
- **Downstream Modulation:** 64 or 256QAM

#### LoRaWAN Radio
- **Uplink:**
  - Full duplex operation
  - Full 64 + 8 LoRaWAN uplink channel support
  - Flexible uplink channel configuration
  - (eg. 32 channel full Rx diversity or 56 channel + 8 channel Rx diversity)
  - (4) 125kHz channels numbered 0 to 63, supporting DR0 to DR3, starting at 902.3MHz and incrementing linearly by 200kHz to 914.9MHz
  - (4) 500kHz channels numbered 64-71, supporting DR4, starting at 903MHz and incrementing linearly by 1.6MHz to 914.9MHz
- **Link Budget Up:** (8) 500kHz channels numbered 0 to 7, supporting DR8 to DR13, starting at 902.3MHz and incrementing linearly by 600kHz to 912.5MHz
- **FCC Radio Certification:** FCC ID: 2ALEPT0004564

#### LoRaWAN Regional Summary
- **Region:** Europe | North America
- **Frequency Bandwidth:** 868 to 869MHz | 902 to 923MHz
- **Channels:** 10 | 64 + 8
- **Channel Bandwidth Up:** 125/250kHz | 125/500kHz
- **Channel Bandwidth Down:** 125kHz | 500kHz
- **TX Power Up:** +16dBm | +20dBm typ (+30dBm allowed)
- **TX Power Down:** +16dBm | +30dBm
- **SF Up:** 7 to 12 | to 10
- **Data Rate:** 250kbps to 50kbps | 90kbps to 21.9kbps
- **Link Budget Up:** 155db | 154db
- **Link Budget Down:** 155db | 157db