



Cloudleaf Gateway 1.5

Model: GW-1.5-E, SKU: GW-2C4E7

User Guide

Oct 24, 2019

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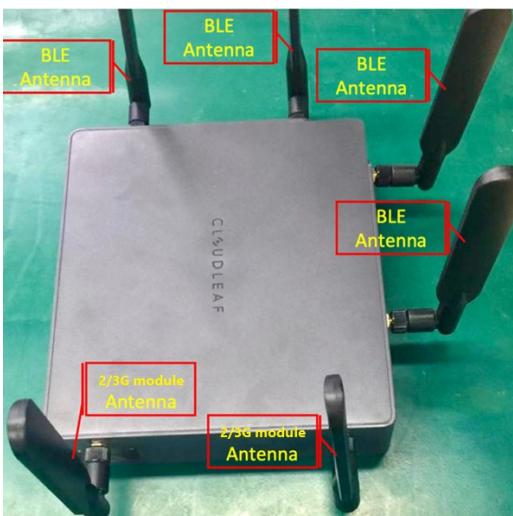
Introduction

The Cloudleaf GW-1.5 Gateways are the access point for all Cloudleaf Bluetooth based sensors tags, to communicate with the Cloudleaf cloud. The Gateway co-locates with existing indoor wireless networks via Cellular, WiFi, or Ethernet, ensuring quick & easy deployment. This also allows existing wireless network security to be leveraged, extending end-to-end security with SSL/TLS tunneling from the access point to the Cloudleaf's Cloud.

Features

The GW-1.5 Gateway utilizes a proven wireless technology standard (Bluetooth 5.1) to communicate with the downstream sensors, tags. It has four independent BLE radio subsystems, which create scalability, link redundancy, and spectral diversity. It can perform scans on all three BLE specifications-defined advertisement channels (37, 38, 39), ensuring all BLE devices present in its 150 feet coverage range are visible. The gateway supports native 128-bit AES encryptions for all communications to the end-nodes as needed. The gateway is designed to provide visibility for thousands of end-node devices, via a proprietary device management algorithm.

The Gateway is designed to operate in harsh industrial environments, with the ability to withstand an extended operating temperature range from 0 C to 60 C. The Gateway can be wall- or ceiling-mounted.

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|  A photograph of the Cloudleaf GW-1.5 Gateway device. It is a rectangular, silver-colored metal box with a flat top. The word "CLOUDLEAF" is printed vertically on the top edge. Four black, omnidirectional antennas are attached to the top corners of the device. The device is mounted on a black base with four leveling feet. |  A photograph of the same Cloudleaf GW-1.5 Gateway device, but with red boxes and labels indicating specific components. The top four antennas are labeled "BLE Antenna" in red boxes. The bottom two antennas are labeled "2/3G module Antenna" in red boxes. |
| Figure 3: Cloudleaf Gateway | Figure 4: Cloudleaf Gateway antenna |

Ports & LEDs

The Gateway has the following ports & LEDs exposed:

- Power Status LED indicator
- Status1 LED indicator
- Status 2 LED indicator
- Status 3 LED indicator
- Status 4 LED indicator
- Status 5 LED indicator
- Ethernet (Power over Ethernet [POE] capable)
- SIM Slot
- Micro USB 2.0
- 5v DC
- Reset pin hole
- Cellular antennas

Ports and LEDs are same for both the models.

Installation

Installing a Gateway is easy and quick, and it can usually be completed within 30 minutes. This section provides the “best practice” guidelines to get the Gateway up and running. If you have any questions or require advanced setup, please contact Cloudleaf technical support at support@Cloudleaf.io.

Power

A Gateway needs to be powered by external source of power. There are few ways of powering Gateway.

1. A 5V DC port requiring wall powered 5V 2A source. Gateway ships with a 5V DC cable and a USB wall charger.
2. The micro USB port requiring a 5V 2A.
3. Power over Ethernet on the Ethernet port requiring 10W at a nominal 48V.

BLE

There are 4 BLE radios. Each radio can be configured to have transmit power ranging from 0dBm.

Network

The Gateway needs access to the Internet to connect to the Cloudleaf’s cloud. It establishes a secure connection to the cloud using SSL (port 443), so please make sure this is supported in the LAN at the installation site. The Gateway can obtain network connection via Cellular, Ethernet, Wi-Fi, or USB. When connected to Ethernet, the downstream port from the switch needs to provide direct Internet connectivity. When using Wi-Fi, the Gateway can support WPA2 or WEP security. Use Cloudleaf’s mobile app to provision the WIFI network’s SSID and password.

Mounting Best Practices

The Cloudleaf Gateway should be installed with the following guidelines:

- Each Gateway is designed to cover up to 70,000 square feet of indoor area. For best coverage and Bluetooth Low-Energy signal strength, space Gateways 200 to 250 ft. from one another.
- Install the Gateways at about 10 ft. above the ground to ensure good reception
- Avoid immediate metal structures next to the Gateway (e.g. metal beam on the ceiling), which can attenuate signal strength.
- The Gateway needs to be secured on a stable structure, with screws, bolts, zip ties, or strong adhesives (e.g. 3M VHB).
- Make sure the installation point does not have excess exposure to moisture or dust.
- Make sure the 3 mounting holes are protected against entry of contaminants.
- If Wi-Fi is used for backhaul, make sure the Gateway is within reasonable distance from the Wi-Fi access point (to get a stable connection to the network).

Operating Conditions

The Gateway is designed to operate in the following conditions:

- Temperature: 0 to 60 C
- Humidity: 0 to 95% RH

FCC Statement

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded cables must be used with this unit to ensure compliance with the class B FCC limits.

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- This device may not cause harmful interference
- This device must accept any interference received, including interference that may cause undesired operation.

This device complies with the FCC and IC radiation exposure limits established for an uncontrolled environment. The device should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

IC Statement

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and
(2) this device must accept any interference, including interference that may cause undesired operation of the device. Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante. Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

The device must not be co-located or operating in conjunction with any other antenna or transmitter

To comply with FCC's and Industry Canada's RF radiation exposure limits for general population/uncontrolled exposure, this device must be installed to provide a separation distance of at least 20cm from all persons.

L'appareil doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et votre corps.



RECYCLING

This product bears the selective sorting symbol for Waste electrical and electronic equipment (WEEE). This means that this product must be handled pursuant to European directive 2012/19/EU in order to be recycled or dismantled to minimize its impact on the environment.

User has the choice to give his product to a competent recycling organization or to the retailer when he buys a new electrical or electronic equipment.

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