CoGo User Manual

AGW Asset Gateway

Revision History

Revision	Date	Notes	Contributor(s)	Approver
001	2024-05-02	Initial Release	Lachlan Pedersen	Morgan Hughes

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Contents

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1. Introduction

This user guide is designed to provide end-users, installers, and administrators with comprehensive instructions and information about the CoGo AGW Asset Gateway. The guide aims to:

- **Educate:** Provide a clear understanding of the device's features, specifications, certifications, and functions.
- **Guide Installation:** Deliver step-by-step procedures for safely and efficiently installing the device in various industrial environments.
- **Facilitate Setup:** Instruct users on how to configure the device, pair it with Bluetooth sensors, and ensure seamless communication with the CoGo Portal.
- **Support Troubleshooting:** Offer solutions to common problems and direct users on how to leverage diagnostic tools and logs for issue resolution.

By referring to this guide, users will be equipped with the knowledge and tools necessary to maximize the benefits of the CoGo AGW Asset Gateway, ensuring optimal performance and data accuracy for their asset management, risk assessment, and insurance needs.

Refer to *COGO-ENG-MAN-002* for the MA1 Movement Alert Sensor.

Refer to *COGO-ENG-MAN-003* for the CoGo Cloud Portal.

This document applies to version 1.x.x of the AGW firmware.

2. Product Overview

2.1. Configurations

The CoGo AGW Asset Gateway is available in three configurations to suit different environments and use cases. The most common configuration is the IP67 Rated Industrial Enclosure. Following sections will assume to be referring to this configuration.

2.1.1. Standalone with mounting bracket

Part No: 450-00193

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Mounting Bracket Part No: 540-00026

Use Case: Designed primarily for indoor settings.

Protection: Not waterproof.

Installation: Comes with a mounting bracket for mounting to a flat surface. Recommended to use 4 number 6 size stainless steel flat head drilling screws for metal, or number 6 size Phillips flat head screws for wood.

Dimensions: 85 x 22 x 100 mm (without antennas or mounting brackets)

Operating Temperature Range: -40° to +55°C (-40° to +131°F)

2.1.2. Industrial Enclosure[1]

Part No: 450-00191-K1

Use Case: Suitable for outdoor or industrial environments where moisture and dust protection are crucial.

Protection: IP67 certified, preventing dust entry and safeguarding against short durations of water immersion.

Installation: The enclosure includes 4 integrated holes for mounting to a flat surface. Mount on walls or brackets by simply opening the blind lids.

Dimensions: 200 x 65 x 200 mm

Operating Temperature Range: -40° to +55°C (-40° to +131°F)

2.1.3. Hazardous Area Enclosure[2]

Part No: Contact CoGo IoT Inc.

Use Case: Intended for environments with the potential for explosive atmospheres.

Protection: Highly rugged, IP66 and NEMA 4 rated. ATEX and IECEx Zone 2 and 22 certified. cMETus Class I, II Division 2 and Zone 2 certified.

Installation: Mount the enclosure to a flat surface through the outer flange. Pole mounting kit available by request.

Dimensions: 293 x 388 x 220 mm

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[1] Industrial Enclosure not assessed by FM Approvals.
[2] Hazardous Area Enclosure not assessed by FM Approvals.

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Operating Temperature Range: -40° to +55°C (-40° to +131°F)

2.2. Power Requirements

Input Voltage	100-240V ~ 50/60Hz 1.4A
Power Connector	Standard 2-prong industrial power connector.

2.3. Connectivity

2.3.1. Bluetooth

The AGW employs Bluetooth 5.0 technology to establish communication with CoGo Bluetooth Sensors, such as the CoGo BTAT Bluetooth Asset Tag. This mode of connection offers substantial benefits in industrial settings. Firstly, it ensures minimal interference with other automated equipment or signals present on-site. Furthermore, Bluetooth's inherently long-range capabilities ensure reliable communication even in expansive industrial areas.

2.3.2. LTE

To establish a secure connection with the CoGo Portal, the AGW leverages CAT-1 LTE technology. Users have the flexibility to reprovision the LTE network provider over-the-air by reaching out to CoGo support. A primary advantage of using LTE is that it enables routing all data traffic through the LTE network, eliminating the need for, and potential security vulnerabilities of, connecting to local Wi-Fi networks.

2.3.3. Wi-Fi

While Wi-Fi connectivity is available on the AGW, it is disabled by default to prioritize security. Utilizing LTE allows CoGo to bypass the security challenges often associated with accessing and integrating into customers' local Wi-Fi networks. If there's a specific need or use-case to activate the Wi-Fi feature, clients are encouraged to get in touch with CoGo support for a comprehensive discussion and potential activation.

2.4. Security

The CoGo AGW Asset Gateway has been designed with a robust suite of security features to ensure data integrity, protection against unauthorized access, and secure communication:

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- **Ports**: Ports like USB, LAN1 & LAN2 (Ethernet), MicroSD, and SIM are either disabled by default or require special authentication for activation, ensuring they're used securely and as intended. USB port is restricted to connecting to authorized field service equipment. SIM card is supplied with the unit and should not be removed.
- **Bluetooth Communication:** The AGW securely receives encoded data from CoGo BTAT sensors, verifying each sensor's identity for data authenticity.
- **LTE:** AGW's LTE communication to the CoGo cloud platform is encrypted and safeguarded. Specific diagnostic actions may require a secure SSH connection, which is restricted and controlled internally by CoGo.
- **Ethernet and Wi-Fi:** Both connectivity methods are disabled by default for enhanced security. Activation requires specialized authentication, and when active, both offer secured diagnostic and transfer capabilities.

3. Certifications and Ratings

The Base configuration includes the following Certifications and Ratings:

- FM Approved per FM 6510 standard as Class II Condition Monitoring System. Certification No FM24US0035X (see 3.1. FM Approvals Conditions of Use).[3]
- FCC
- ISED
- EU
- UKCA
- UL/IEC62368-1
- Cellular certifications: PTCRB, GCF, AT&T, Vodafone

When installed within the Industrial Enclosure, the certifications of the base configuration apply, as well as:

- IP67

When installed within the Hazardous Area enclosure, the certifications of the base configuration apply, as well as:

- IP66

[3] The base configuration only (part no 450-00193) is FM Approved per FM 6510 standard as Class II Condition Monitoring System. IP and additional ratings of the Industrial and Hazardous Area enclosures are not assessed by FM Approvals.

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- NEMA 4
- Extronics II
    - 3 (3) G Ex ec [ic Gc] nR IIC T6 Gc
    - 3 D Ex ec ic tc IIIC T85°C Dc
- cMETus
    - Class I, Div 2, Groups A – D
    - Class II, Div 2, Groups F – G
    - Class I, Zone 2 AEx ec ic nR IIC T6 Gc
    - Class II, Zone 22 AEx ec ic tc IIIC T85°C Dc

3.1. FM Approvals Conditions of Use

Condition Monitoring using the MA1 and AGW Gateway

For the purpose of accurately time-tagging events in case of a power outage, the AGW Gateways must be connected to a power source capable of providing uninterrupted service for up to one year.

For outdoor applications, AGW Gateways must be housed in an enclosure rated NEMA 4/IP65.

4. Installation

4.1. Tools and Equipment Required

- Screws or other mounting hardware (customer-provided).
- Drill or screwdriver, depending on chosen mounting hardware.
- Optional: Pole mounting kit (available separately).

4.2. Choosing an Installation Location

- **Centrality:** Position the gateway central to the assets being monitored.
- **Cellular Reception:** The location should have good cellular reception. This can be verified using a cell phone or another device that displays signal strength.
- **Optimization:**
    - **LTE Antennas:** Ensure there is no major interference hindering the reception of the LTE antennas.

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- **Bluetooth Connectivity:** opt for a position with a clear line of sight to the Bluetooth peripheral sensor devices. While Bluetooth can penetrate some barriers, its range may vary based on the material. Here's a general guide:
  - **Line of Sight:** Up to 1 km.
  - **Concrete:** Reduced by approximately 40-60%.
  - **Wood:** Reduced by approximately 20-50%.
  - **Metal:** Significant reduction; avoid metal obstructions if possible.

Note: The exact distances vary significantly by the install location and can be determined experimentally, or by contacting CoGo for a consultation.

4.3. Mounting the Gateway

1. Attach the provided antennas to the associated antenna connectors on the device. Do not touch the center pin of the antenna or connector. RF connections are often sensitive to ESD, which can cause failure.
2. Use the customer-provided screws or other mounting hardware to affix the gateway to a flat surface.
3. Ensure the gateway is level and securely attached.
4. Optional: If you're utilizing the pole mounting kit, follow the included instructions.

4.4. Powering the Gateway

Once the gateway is securely mounted, simply plug it into the designated power source. Upon connecting, the gateway will initiate its automated setup process.

4.5. Connecting to the Network (LTE)

Ensure the installation location has adequate cellular reception. The gateway will automatically establish an LTE connection when powered. Check the CoGo portal to confirm successful network connection.

5. Setup and Use

5.1. CoGo Portal

All device configurations, settings adjustments, and management functions are accessible through the CoGo Portal. To ensure a smooth and effective setup:

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1. Log in to the CoGo Portal using your organization credentials.
2. Navigate to the device section and select the CoGo AGW Asset Gateway from the list.
3. Here, you can view the status and modify configuration values as needed.

- **Display Name**. This should be a name which clearly identifies the gateway. The display name should be descriptive such that it can aid in locating the gateway when pairing sensors or for maintenance events.
- **Photo(s)**. At least one photo should be uploaded per device. It is recommended to upload multiple photos, especially if the device is mounted in a difficult to find location.
- **Location.** The Location (latitude, longitude) of the device should be set in the Portal. This allows the device to be displayed on the map and will assist in locating the device.

5.2. Pairing with CoGo Sensors

To pair a sensor to a gateway, simply select and assign a gateway in the sensor configuration in the Portal. No physical contact is required on the devices if the sensor is within range of the gateway.

6. Maintenance

While the CoGo AGW Asset Gateway is designed to operate efficiently without regular maintenance, certain environments might expose the device to factors that could impact its performance over time. In harsh or industrial settings, it's recommended to periodically inspect and maintain the gateway to ensure optimal functionality.

6.1. Dust and Debris Buildup

Frequency: Inspect the gateway every 3-6 months.

Procedure: Check for any accumulation of dust or debris on and around the device. A buildup can hinder the gateway's ventilation and performance.

Action: Use a soft, dry cloth or a low-pressure air blower to gently remove any accumulated dust. Avoid using water or liquid cleansers.

6.2. Cable Inspection

Frequency: Inspect cables every 6 months.

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Procedure: Examine all cables connected to the gateway for signs of wear, fraying, or damage.

Action: If any cables appear worn or damaged, consider replacing them to ensure a stable connection and prevent potential malfunctions.

6.3. Mounting Point Inspection

Frequency: Check mounting points annually.

Procedure: Look for any signs of corrosion, damage, or instability where the gateway is mounted.

Action: If you identify any issues, reinforce, or replace the mounting hardware as necessary.

6.4. Antenna Connections

Frequency: Inspect antenna connections every 6 months.

Procedure: Ensure that all antennas are securely connected and that their contact points are free from corrosion or damage.

Action: Tighten any loose connections and clean contact points using a soft cloth. If an antenna appears damaged, consider replacing it.

Do not touch the center pin of the antenna or connector. RF connections are often sensitive to ESD, which can cause failure.

Note: If at any time you notice a decline in the gateway's performance or observe any irregularities, contact CoGo support for assistance.

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