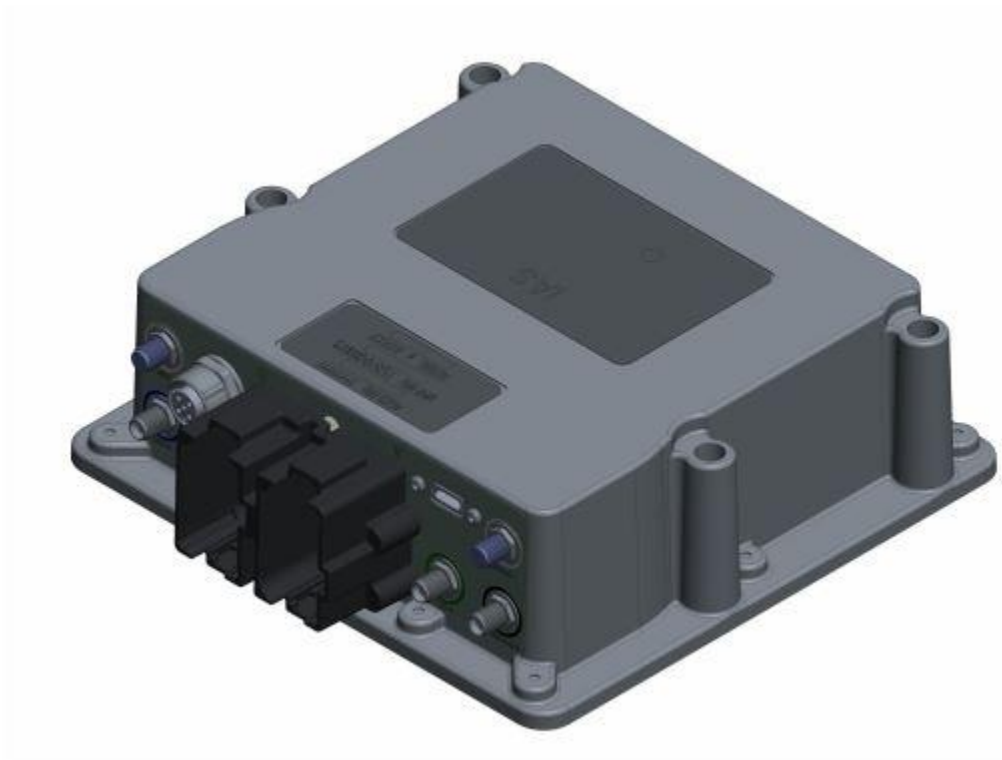




600840-000045 Gateway Installation Manual

Models: 608065-000034, 608065-000040, 608065-000043, 240433



This document and the information contained herein are the property of Appareo Systems, LLC and are confidential. They may not be disseminated or redistributed without the written permission of Appareo Systems, LLC	APPAREO SYSTEMS, LLC FARGO, NORTH DAKOTA 58102			
	Gateway Installation Manual			
DOCUMENT NUMBER 600840-000045	Document Type Manual	Last Revised June 28, 2023	Rev 2.3	Sheet 1 of 12

Record of Revisions

Revision Number	Change Description	Effective Date	Inserted By
1.0	Initial draft	12/4/18	Lee Hinsz
1.1	Addition of model 608065-000040	4/2/20	Lee Hinsz
1.2	Added ANATEL notification	7/27/21	AAL
1.3	Added model 608065-000043	8/19/21	GJG
2.0	General clean up, added Gateway 100, added additional cert approvals	9/29/22	AAL
2.1	Added NCC warning statement and RATEL approval	1/04/23	AAL
2.2	Updated System Overview table, Parts List notes	5/16/23	AAL
2.3	Added Korean Class A Notice	6/28/23	AAL

Table of Contents

1. System Overview	4
2. General Information.....	5
2.1. Special Tools Required	5
2.2. Hardware Components Background.....	5
3. Installation.....	6
3.1. Parts List For Installation	6
3.2. Installation Instructions.....	7
4. Regulatory Information	9
4.1. Federal Communications Commission Notification to User.....	9
4.2. Industry Canada Notifications to User	9
4.3. Anatel Notification to User.....	10
4.4. South Africa Type Approval.....	10
4.5. Uzbekistan Approval.....	10
4.6. Argentina Approval.....	11
4.7. NCC Warning Statement	11
4.8. RATEL Approval.....	11

1. SYSTEM OVERVIEW

Gateways are embedded computers that provide interfacing capability among a variety of wired and wireless networks. Refer to the table below for the specifications of each gateway.

Name	Model	Cellular	Wi-Fi	GPS	433 MHz Radio	Satcom Module	CAN	RS232	Broad R Reach
Gateway 100	240433		x	x			x	x	
Gateway 260	608065-000034 (Middle Specification)	x	x	x			x	x	x
Gateway 270	608065-000043 (Middle Specification)	x	x	x			x	x	x
Gateway 360	608065-000034 (High Specification)	x	x	x	x	x	x	x	x
Gateway 370	608065-000040 (High Specification)	x	x	x	x	x	x	x	x

2. GENERAL INFORMATION

2.1. SPECIAL TOOLS REQUIRED

- SAE standard and/or metric wrenches, sockets, and screw drivers
- Torque wrench (in-lbs)

2.2. HARDWARE COMPONENTS BACKGROUND

2.2.1. Electrical Characteristics

Product Rating: DC 12.0V/ 1A

2.2.2. Weight and Balance Information

The total weight of the gateway and antennas is listed below.

Table 1 Weight and Balance Information

Component	Weight (oz)	Weight (lbs)
Gateway	70.544	4.409
4G Cell – 433 MHz – WLAN Antenna (HCEL-S2-0164A-01)	26.624	1.664
Iridium – GNSS – 4G Cell Antenna (HIRD-S2-0146A-01)	26.624	1.664

2.2.3. Equipment Dimensions

Equipment dimensions are outlined in the table below for all required components in gateway installations. All figures given are representative of maximum equipment dimensions (where applicable).

Table 2 Equipment Dimensions

Component	Length (mm)	Width (mm)	Height (mm)
Gateway	165	159	54
4G Cell – 433 MHz – WLAN Antenna (HCEL-S2-0164A-01)	124.3	80.3	80.3
Iridium – GNSS – 4G Cell Antenna (HIRD-S2-0146A-01)	124.3	80.3	80.3

2.2.4. Conditions for operation

IMPORTANT NOTICE!!!!

This device can be configured to transmit on the 433 MHz frequency following the requirements of FCC Part 15.231(a-d). This requirement is that the transmission must be used as a control signal. It can include data transmission as well, or not, but in all cases it must be a control signal. Failure to adhere to this requirement voids the authority to operate the equipment.

3. INSTALLATION

With equipment installed, final configuration must meet the minimum separation distance in Table 5 and Section 3.2.

3.1. PARTS LIST FOR INSTALLATION

The following parts are required for the installation of a gateway.

Table 3 Parts List for Installation

Parts List for Installation			
Item	Nomenclature	Part Number	QTY
1	Gateway*	153510-000124 (MS)	1
		153510-000125 (MS)	
		153510-000126 (HS)	
		153510-000127 (HS)	
		153510-000159 (MS)	
		153510-000160 (HS)	
		153510-000162	
2	4G Cell – 433 MHz – WLAN Antenna	252005-0000010 (HCEL-S2-0164A-00_Rev0 4G CELL-433MHz-WLAN)	1
3	Iridium – GNSS – 4G Cell Antenna	252005-000009 (HIRD-S2-0146A-0_RevA Iridium-GNSS-4G)	1

*Only select one gateway part number to be utilized for installation.

(MS) = Middle Specification gateways only contain cellular, WIFI, and GPS modules. Please terminate unused antennas.

(HS) = High Specification gateways contain cellular, WIFI, GPS, Satellite Communications, 433 Radio Modules.

3.2. INSTALLATION INSTRUCTIONS

Install the gateway and antennas using the following steps:

1. Find an installation location for the gateway that meets these specifications:

REQUIRED:

- Meets the spacing requirements in Table 4.
- Connectors point downward or sideways/horizontal (not up).
- Avoid areas of moving parts or debris. For example, don't mount it on the bottom of a frame that may be covered in mud or brush against crop/brush underneath.
- Avoid high temperature areas such as engine bays, near exhaust systems, or on hydraulic manifolds.
- Supports the preferred antenna locations in Step 2 (due to antenna cable length).

RECOMMENDED:

- Connectors pointing downward.
- Do not mount directly next to other RF antennas (such as cell, radio, or Wi-Fi).
- Mount within line of sight of the operator to observe LED.

2. Find an installation location for the antennas that meet these specifications:

REQUIRED:

- Meets the spacing requirements in Table 4.
- Fins of the antennas are facing upward. The steel plate the antennas are mounted to should be flat and be towards the bottom of the installation. Do not mount sideways or upside down.
- Antennas have line of sight to connected devices and sky.
- Avoid mounting directly next to steel plates, tanks, or other structures. For example, avoid mounting the antenna on the side wall of an air cart, spreader, or sprayer tank.
- Avoid mounting directly next to other RF antennas.
- Do not mount inside the cab.
- Do not run antenna cables alongside other electrical harnessing, especially high power circuits.

RECOMMENDED:

- Mount GPS antenna as central on the machine as possible.

3. Mount the gateway enclosure to the cab with ¼" or 6-mm fasteners and a torque of 30 in-lbs.
4. Torque the antenna terminations to gateway RF SMA connectors with a torque spec of 8.5 +/- 2 in-lbs.

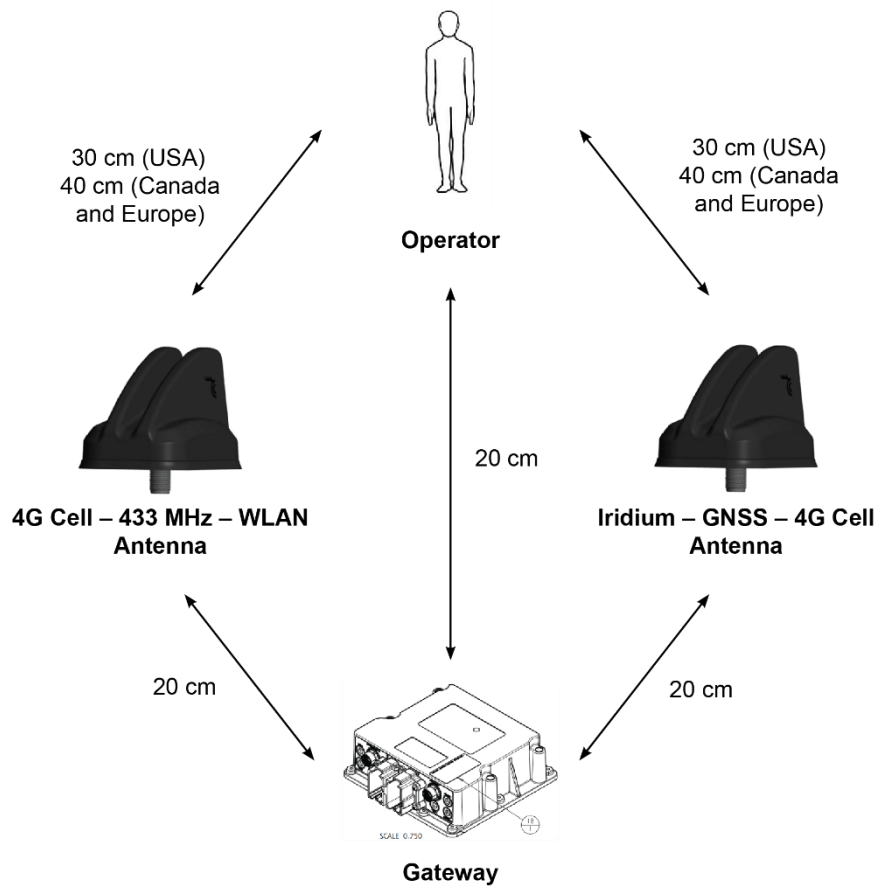
The gateway and antennas must follow the distances in the following table and illustration to comply with FCC part 1.310 and ISED RSS-102.

Table 4 Separation Distance

Device	Distance from Operator	Distance from Gateway
4G Cell – 433 MHz – WLAN Antenna (Recommended minimum spacing between antennas is 7.5 cm)	30 cm (in USA) 40 cm (in Canada and Europe)	20 cm
Iridium – GNSS – 4G Cell Antenna	30 cm (USA) 40 cm (in Canada and Europe)	20 cm
Gateway	20 cm	N/A

NOTE: Ensure the 4G Cell – 433 MHz – WLAN antenna has a metallic ground plane of 300 x 300 mm for the mounting.

- Torque the antenna mounting nut (M14x1) to 30 +/- 0.5 in-lbs.



4. REGULATORY INFORMATION

4.1. FEDERAL COMMUNICATIONS COMMISSION NOTIFICATION TO USER

Models: 608065-000034, 608065-000040, 608065-000043, 240433

These devices comply with Part 15 of the Federal Communications Commission (FCC) Rules. Operation is subject to the following two conditions: (1) These devices may not cause harmful interference, and (2) these devices must accept any interference received, including interference that may cause undesired operation.

These devices must be operated as supplied by Appareo Systems LLC. Any changes or modifications made to these devices without the express written approval of Appareo Systems LLC may void the user's authority to operate these devices.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

4.2. INDUSTRY CANADA NOTIFICATIONS TO USER

Models: 608065-000034, 608065-000040, 608065-000043, 240433

English

These devices comply 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.

French

Ces appareils sont conformes aux normes RSS sans licence d'Industrie Canada. Son fonctionnement est soumis aux deux conditions suivantes: (1) cet appareil ne doit pas causer d'interférences et (2) cet appareil doit accepter toute interférence, y compris les interférences pouvant entraîner un fonctionnement non souhaité de l'appareil.

Selon les réglementations d'Industrie Canada, cet émetteur radio ne peut fonctionner qu'avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Pour réduire le risque de brouillage radioélectrique causé aux autres utilisateurs, le type d'antenne et son gain doivent être choisis de manière à ce que la puissance rayonnée isotrope équivalente (e.i.r.p.) ne soit pas supérieure à celle nécessaire au succès de la communication.

4.3. ANATEL NOTIFICATION TO USER

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.

Para maiores informações, consulte o site da ANATEL www.anatel.gov.br.

4.4. SOUTH AFRICA TYPE APPROVAL

608065-000040

608065-000043



TA 2021-2553
Approved



TA 2022-0860
Approved

4.5. UZBEKISTAN APPROVAL

This device has IEC Class 3 protection.



4.6. ARGENTINA APPROVAL

608065-000043

608065-000040

CNC ID: C-24950



4.7. NCC WARNING STATEMENT

減少電磁波影響，請妥適使用

電波功率密度 MPE 標準值：0.35 mW/cm²，送測產品實測值：0.158 mW/cm²，建議使用時設備天線至少距離人體20公分。

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾

本器材須經專業工程人員安裝及設定，始得設置使用，且不得直接販售給一般消費者

警告使用者：

此為甲類資訊技術設備，於居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。

4.8. RATEL APPROVAL



4.9. KOREAN CLASS A NOTICE

이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.