Intellian

Flat Panel Compact Series

Eutelsat OneWeb LEO User Terminal

Installation & Operation User Guide

Serial number of the product

This serial number will be required for all troubleshooting or service inquiries.

Disclaimer

The information in this user guide is subject to change without prior notice. The guide may be updated whenever changes occur, but it may contain inaccuracies or omissions compared to the most recent product information. The most up-to-date information is always available on our website at intelliantech.com.

Doc. No. UG-KL6008-V3.7

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Chapter 1. Precautions

Prior to installation, read this Installation and Operations Guide carefully including the safety warnings and information. Failure to do so could result in serious injury or inoperability of the terminal.

ODU (Out Door Unit) installation must be provided by a suitably trained professional installation technician or by a qualified ODU installation service. Installation is not to be attempted by someone not trained or experienced in this type of work.

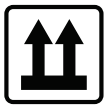
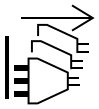
1.1 Warnings, Cautions, and Notes

WARNING, CAUTION, and NOTE statements are used throughout this manual to emphasize important and critical information. You must read these statements to help ensure safety and to prevent product damage. The statements are defined below.

	**WARNING** WARNING indicates a potentially hazardous situation that if not avoided, could result in death or serious injury.
	**CAUTION** CAUTION indicates a potentially hazardous situation that if not avoided, could result in minor or moderate injury or damage to equipment. It may also be used to alert users about unsafe practices.
	**NOTE** A NOTE statement is used to notify people of installation, operation, programming, or maintenance information that is important, but not hazard-related.

1.2 General Precautions

Before you use the ODU, make sure that you have read and understood all safety requirements.

	THIS WAY UP • Place the boxes/crates on the floor with the arrow pointing up.	
	FRAGILE • Since the Radome is fragile, handle it with care. Do not apply excessive pressure or shock. These may cause surface cracking or other damage.	
	KEEP DRY • Always make sure the ODU is stored on a dry floor. • The ODU can withstand ordinary rain. However, water resistance cannot be guaranteed if submerged. • Keep the ODU in a dry place with sufficient ventilation. Do not store the ODU wrapped in a tarp, tent, vinyl, and others.	
	• HANDLE WITH CARE • Handle the carton with care.	
	• STACKING HEIGHT • The number of boxes that can be safely stacked is three.	
	• USE NO HOOKS • Absolutely no hand hooks should be attached to pull the parcel.	
	CAUTION / Prudence To disconnect power, please remove the power cord. Pour débrancher l'alimentation, veuillez retirer le cordon d'alimentation.	

- If the product box is removed, there is a risk of malfunction or damage. Only the operator should open it.
- Review the general safety measures.
- Familiarize yourself with the ODU and mounting instructions prior to climbing any roof or ladder.
- Verify that all safety measures for outdoor or rooftop installation are arranged.
- Verify all requirements before beginning the actual installation to determine if the equipment and necessary items are available and functioning properly.
- Before you begin a site installation, check the appropriate electrical code requirements and other regulations governing this kind of installation within the country of use.
- When installing, replacing, or disconnecting any cable components, ensure that the ODU is grounded correctly before beginning the work.
- Avoid installing ODUs near high voltage overhead cables or similar.
- Install the grounding system for the ODU and support structure before installing the outdoor unit and before connecting the coaxial cable to the CNX. This protects the system against lightning strikes during installation.

- Connect the coax connector to the port, then secure any loose cables to the base mount or any stationary surface relative to the ODU to ensure minimal movement when in motion. This helps prevent damage to the coax port on the ODU.
- The ODU and ODU cables are electrical conductors so transient or electrostatic discharges may occur at the ODU during thunderstorms. If the ODU is not installed properly, the electronic equipment may be damaged and/or cause personal injury or death to persons touching the exposed metal connectors of the electronic equipment.
- Do not touch ODUs or ODU cables during a thunderstorm.
- The ODU must be properly mounted and secured to the mount. An improperly installed ODU could result in detachment of the uni, which could cause disruption in the unit's operation or could result in serious injury or death from a falling unit.
- When installing the ODU:
  - DO NOT use a metal ladder.
  - DO dress properly: wear rubber gloves, shoes with rubber soles and heels, and a long sleeve shirt or jacket.
- Equipment is intended for installation in Restricted Access Area.
  Never open the equipment. For safety reasons, the equipment should be opened only by qualified skilled person.
- The F connector connected to ODU Intellian / OW70L, OW50SL, OW130L, OW70L (P-P), OW70M, OW50M, OW10Hx, OW10HL, OW10HM, OW10HV, OW11Fx, OW11FL, OW11FM, OW11FV, which complied with fire enclosure requirement.
- The cable distribution system should be grounded (earthed) in accordance with ANSI/NFPA 70, the National Electrical Code (NEC), in particular Section 820.93, Grounding of Outer Conductive Shield of a Coaxial Cable.
- Make sure that your CATV system installer has connected the Co-axial cable shield to the grounding system of the building, as close to the point of cable entry as practical. The common or earthed side of the connected (ES1) circuits and any accessible metal parts should be connected to the screen of coaxial cable.
- Terminal block with Input Wiring: FW2 14 AWG min. Torque value 20 lb-in., wire type CU.

CAUTION

- Do not connect the power supply to the CNX or connect the power supply to a power source until you are instructed to do so.
- Do not put heavy objects on the equipment to avoid crushing the equipment or reducing the heat dissipation efficiency.

WARNING

The CNX-WIFI can expose you to BPA, which is known to the State of California to cause birth defects or other reproductive harm. For more information, go to www.P65Warning.ca.gov.

Chapter 2. Certifications

This device complies with Part 15 of the FCC Rules [and with Industry Canada licence-exempt RSS standard(s)].

Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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;

(2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Declaration of Conformity (DoC)

We, Intellian Technologies, Inc. located at 18-7, Jinwisandan-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do 17709, Korea declare under our sole responsibility that the products below, to which this declaration relates, are in conformity with the *essential requirements* and *other relevant requirements* of the standards listed below for **CE**.

Product Information:

Product Name(s):	OW10Hx (OW10HL, OW10HV, OW10HM)

Category	Standard(s) Applied in Full	Test Report Number	Result
CE-SAFETY (Art 3.1.a)	EN IEC 62368-1:2020 + A11:2020	MET 130821	Pass
CE-EMC (Art. 3.1.b)	EN 55032: 2015+A11:2020	EMC130826-EN	Pass
	CISPR 32:2015+A1:2019		
	EN 55035: 2017 + A11:2020		
	ETSI EN 301 489-1 V2.2.3	EMC130826-ETS489	
	ETSI EN 301 489-12 V3.1.2		
	EN 61000-3-2		
	EN 61000-3-3		
	EN 62311: 2008	WIR130826-EN62311_50383_50385	Pass
	EN IEC 62311:2020 per 2014/53/EU RED		
	EN 50385		
CE-RED SPECTRUM (Art. 3.2)	ETSI EN 303 980 V1.2.0 (2021-02)	WIR130826-ETSI303 Rev. 1	Pass
Maritime navigation and radiocommunication equipment and systems	IEC 60945:2002 for a category B device	EMC130826-EN 60945	Pass
		DREKETC2404-0035	
Surge Immunity	IEC 61000-4-5, Surge Immunity	EMC130826-IEC6 1000 Rev. 1	Pass

Supplementary Information:

Testing Organization	Eurofins Electrical and Electronic Testing NA, Inc. 914 West Patapsco Avenue Baltimore, MD 21230
Technical/Compliance File Held by:	Intellian Technologies, Inc. 18-7, Jinwisandan-ro, Jinwi-myeon, Pyeongtaek-di, Gyeonggi-do 17709 Korea

Authority: **Dojun Byun / SVP R&D, CTO**

Signature: __ ____

CE

Date: **June 20, 2024**

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Product Information:

Product Name(s):	OW10Hx

The following harmonized standards and other technical specifications were used in support of this declaration:

Standard(s) Applied	Test Items	Clause	Test Report No.	Result
IEC 60529:1989+A1:1999_A2:2013	Test for protection against access to hazardous parts (IP6X)	Refer to 5.6	OT-245-RRK-005	Pass
	Test for protection against solid foreign objects (IP6X)	Refer to 6.4		
	Test for protection against water (IPX6)	Refer to 7.4		

Supplementary Information:

Testing Organization	ONETECH Corp 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do 12735,Korea
Technical/Compliance File Held by:	Intellian Technologies, Inc. 18-7, Jinwisandan-ro, Jinwi-myeon, Pyeongtaek-di, Gyeonggi-do 17709 Korea

Authority: Dojun Byun / SVP R&D, CTO

Signature: 

Date: May-24-2024

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We, Intellian Technologies, Inc. located at 18-7, Jinwisandan-ro, Jinwi-myeon (Chungho-ri), Pyeongtaek-si, Gyeonggi-do 17709 Korea declare under our sole responsibility that the products described below, to which this declaration relates, are in conformity with the *essential requirements* and *other relevant requirements* for **FCC Part 15 Subpart B**.

Product Information:

Product Name(s):	OW10Hx (OW10HL, OW10HV, OW10HM)

Test Result

Standard	**Requirement**	**Rule Section**	**Test Report Number**	**Result**
• FCC Part 15, (Class B) • Canadian Standard ICES-003: Issue 7	Conducted Emission	ANSI C63.4:2014	EMC130826-FCC_IC	Pass
	Radiated Emissions	ANSI C63.4:2014		Pass

Supplementary Information:

Testing Organization	Eurofins Electrical and Electronic Testing NA, Inc. 914 West Patapsco Avenue Baltimore, MD 21230
Technical/Compliance File Held by:	Intellian Technologies, Inc. 18-7, Jinwisandan-ro, Jinwi-myeon, Pyeongtaek-di, Gyeonggi-do 17709 Korea

Authority: **Dojun Byun**
/ SVP R&D, CTO

Signature:_  ___

Date: **Jun-20-2024**

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TCB

GRANT OF EQUIPMENT AUTHORIZATION

TCB

Certification
Issued Under the Authority of the
Federal Communications Commission
By:

Eurofins Electrical and Electronic Testing NA, Inc
914 W. Patapsco Avenue
Baltimore, MD 21230-3432

Date of Grant: 06/27/2024

Application Dated: 06/27/2024

Intellian Technologies, Inc.
18-7, Jinwisandan-ro, Jinwi-myeon (Chungho-ri)
Pyeongtaek-si, Gyeonggi-do, 17709
South Korea

Attention: JunHui Lee , Senior Manager

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: XXZ-OW10HX
Name of Grantee: Intellian Technologies, Inc.
Equipment Class: Licensed Non-Broadcast Station Transmitter
Notes: Compact User Terminal Antenna

Grant Notes	FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
	25	14013.0 - 14487.0	0.033	6.654 PM	18M9G7W
	25	14022.9 - 14477.1	0.066	6.654 PM	37M7G7W
	25	14013.0 - 14487.0	0.033	6.654 PM	18M1D7W
	25	14022.9 - 14477.1	0.065	6.654 PM	37M7D7W

Output power listed is conducted. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons. Installers must be provided with antenna installation instructions for satisfying RF exposure compliance. This antenna must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures. End users must be provided with transmitter operating conditions for satisfying RF exposure compliance. Antenna must be installed such that main lobe is aimed at 37 degrees elevation from the horizon.

Chapter 3. Introduction

3.1 Introduction to OW10Hx

The OW10Hx is an electronically scanned array (ESA) user terminal (UT) which can be operated in the Eutelsat OneWeb low earth orbit (LEO) satellite constellation. The Eutelsat OneWeb communications network is comprised of terrestrial gateways positioned around the globe communicating with Eutelsat OneWeb user terminals. A radio link to the satellites is established using the UT operating in the Ku-band.

The Compact series consists of three product variants, the OW10HL (land fixed), the OW10HM (maritime), and the OW10HV (land mobile). The UTs provide network and internet access via the Eutelsat OneWeb network.

3.2 OW10Hx Features

- Active electronically scanned array.
- Field-of-view: ±55° Elevation from zenith, 360° azimuth.
- Receive nominal Gain-over-Temperature (G/T): 9 dB/K at boresight.
- Transmit Effective Isotropic Radiated Power (EIRP) supports Eutelsat OneWeb's dual carrier requirement (+42 dBW).
- Dual GNSS receivers provide differential GNSS location to support automated true north calibration and highly accurate timing reference.
- The KIM (kinetic inertial module) provides tilt measurement to aid in installation, as well as roll, pitch and yaw data to support mobility. The KIM is comprised of two modules (IMX and GPX) which jointly function as the Inertial Navigation System. The KIM provides position, velocity and acceleration information to the User Terminal.
  - This feature aids in the installation of the OW10Hx series as well as supports mobility use cases for the OW10HM and OW10HV.
- Efficient enclosure profile for aesthetics as well as functional rain shedding radome.
- The CNX feeds power and data to the ODU over a single IFL coax cable and provides data interface to the user. Intellian offers multiple CNX variants to support the varying requirements across multiple use cases and applications.
- The intuitive, user-friendly Intellian Mobile Application streamlines installation, maintenance, and troubleshooting.

Chapter 4. Planning Installation

CAUTION

Removing the radome voids the warranty.

4.1 Installing Mobile Application

A mobile app for step-by-step installation, troubleshooting, and monitoring is available on Google Play and the Apple App store via a custom link. Scan the appropriate QR to download the mobile app.

iOS:
Intellian OneWeb

Android:
Intellian OneWeb

The app will walk through the appropriate steps depending on the type of installation. Some key highlights of the Intellian mobile app include:

- Guided installation with step-by-step instructions
- Blockage recognition / tilt check to verify potential installation sites
- Dashboard displays link quality and component health
- Troubleshooting support: Error codes with recovery actions, offline FAQs and knowledge base
- User login / password security

4.2 Installation Precautions

The User Terminal installation requires thorough planning and full knowledge of the safety measures that must be followed for the specific installation environment. Failure to follow the correct installation process may lead to the injury of the installer and/or cause damage to the system. To maximize the performance of the system, review this installation guide and execute the installation process as instructed. Use of non compliant or approved accessories, such as mount adapters, cables, etc... may void the warranty.

To ensure your own safety and effectively complete the installation, carefully review the safety measures from the "1.2 General Precautions" on page 12.

4.3 Selecting Installation Site

Before installing the ODU system, consider the best place to position the ODU for both performance and safety.

4.3.1 Installation Location for ODU (Out Door Unit)

The ODU should be placed in an area with:

- Safe mounting location
- No radio frequency (RF) signal blockage
- Clear and stable environment

NOTE

When the ODU is transmitting, obstacles in the way of the beam path will decrease the satellite signal strength and interrupt the connection. The ODU unit should have direct line-of-sight within ±53° from zenith (or above 37° of elevation from local horizon at all directions) without any obstacles in the beam path.

4.3.2 Installation Location for CNX (Customer Network Exchange)

The CNX should be placed:

- In a dry, cool, and ventilated location.
- Within 1.8 m (5.9 ft) of a power source.

Distance from the ODU is dependent on the cable type used. Refer to "4.6 System Cables" on page 31 for details.

4.3.3 Minimizing Satellite Blockage

The ideal ODU site should have a clear view of the horizon with 360° of clearance. For the ODU to operate effectively, avoid blockages. Examples are listed below. To minimize the influence of obstacles, signal interference, or reflections, note the following guidelines:

- Avoid trees in the signal path. Seasonal changes, such as leaves or hanging icicles, can impact signal absorption. Obstructions for Land Fixed UT may include neighboring buildings, bridges, trees, or power lines. Obstructions for Maritime may include masts, ODUs, or other structures.
- Make sure there are no obstacles within ±53° from zenith.

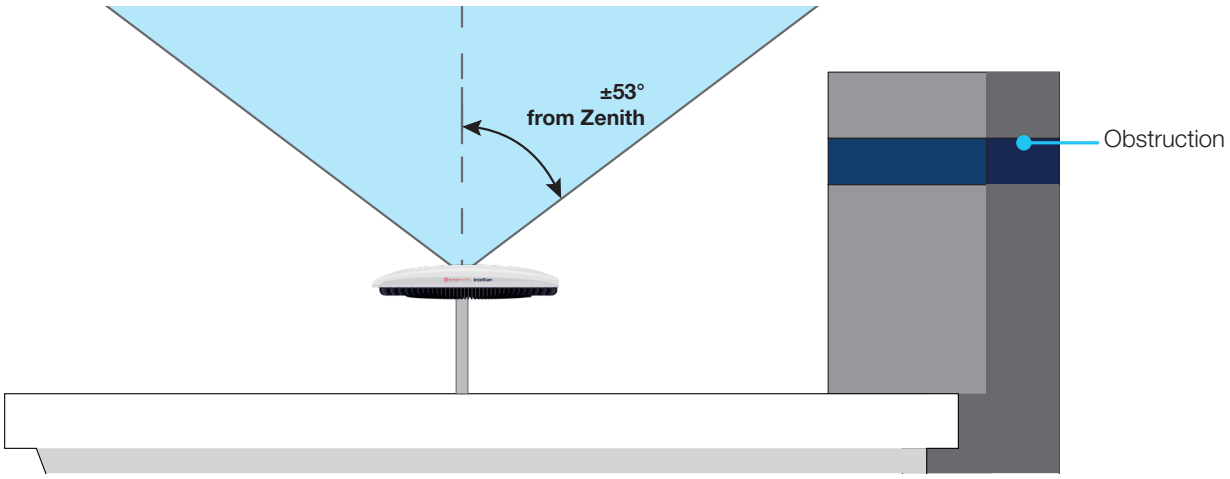


Figure 1: Minimizing Satellite Blockage (example)

4.3.4 Avoid RF Interference (For Maritime UT)

Do not install the ODU near high-power shortwave radars. Most radar transmitters emit RF energy within an elevation range of -10° to +10°. It is recommended to position the ODU at least 4.6m away from the radar.

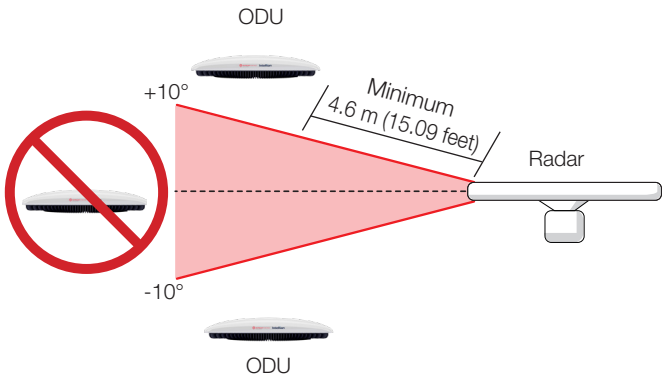


Figure 2: Potential RF Interference

CAUTION

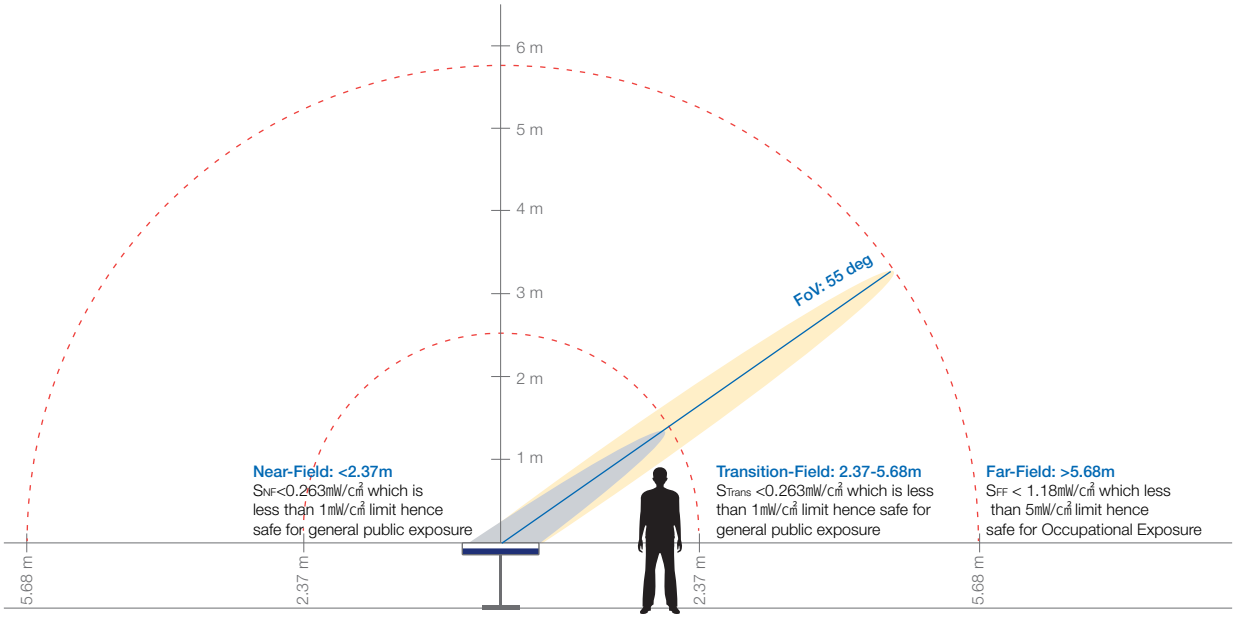
Ideally, never place the ODU in the beam path of the radar, regardless of distance. The high power radar may impair its performance or damage the ODU.

4.3.5 RF Hazard Precautions

The Federal Communications Commission (FCC) has adopted a safety standard for human exposure to RF energy which is below the Occupational Safety and Health Act (OSHA) limits. To comply with current FCC RF exposure limits, the ODU must be installed at or exceeding the minimum safe distance as guided by the ODU manufacturer or supplier.

WARNING

Keep everyone (operators, pedestrians, etc.) at a safe distance from the ODU. This includes proximity to windows and doors. Exposure to RF energy from the ODU may cause thermal injuries, including tissue damage due to increased heating and body temperature. Personnel must maintain a minimum distance of “d” (refer to the function below) and installers must place the ODU transmitter in a manner to maintain minimum spacing requirement. Failure to do so could result in exposure to RF energy transmitted from the ODU that could result in serious injury or death.



NOTE

RF Exposure for General population/Uncontrolled Exposure

$$d \cdot \tan\theta + M = P$$

$$d = \frac{P-M}{\tan\theta}$$

Examples

Mount type	Mount Height (M)	Personnel Height	Allowable Distance (d)
Non-Penetrating	62 cm. (2 ft.)	150 cm. (5 ft.)	1.2 m. (4 ft.)
TriMast	71 cm. (2.3 ft.)	150 cm. (5 ft.)	1.1 m. (3.6 ft.)
Quadpod	55 cm. (1.8 ft.)	150 cm. (5 ft.)	1.3 m. (4.3 ft.)

4.4 RF Hazard Sticker Placement

The blue RF sticker, included in ODU packaging, needs to be placed where it does not impact RF performance. The RF sticker must be placed on the UT assembly.

Figure 3: RF Hazard Sticker Placement (Example Only)

4.5 System Package

4.5.1 ODU (Outdoor Unit)

The ODU features a compact size that allows for installation in maritime, land mobile, and land fixed environments. The curved radome design ensures high performance in inclement weather such as heavy rain. With an IP66 certification, the ODU is watertight and designed for outdoor installations in any environment.

Figure 4: Compact Flat Panel ODU

4.5.2 CNX (Customer Network Exchange)

The CNX portfolio offers versatile solutions for various applications. All CNX models are interchangeable and compatible with all antennas. The sole exception is the CNX-BB, which is exclusively compatible with the OW10Hx Compact Series.

- The CNX-WIFI provides four GigE ports and Wi-Fi 6, suitable for SME/SOHO and maritime use.
- The compact CNX-BB supports land mobile, maritime, and SME/SOHO.
- The CNX-Rack AC and DC, with integrated PDMs and support for maritime environments.
- The IP56-rated CNX-Mobility is ideal for rugged land mobile and maritime deployments.

CNX-WIFI **CNX-BB** **CNX -Rack AC & DC** **CNX-Mobility**

Figure 5: CNX (Customer Network Exchange)

Select the CNX model pair that best matches your antenna model variants by referring to the table below.

Antenna	**CNX**
OW10FL	CNX-Wifi, CNX-Mobility, CNX-BB
OW10FM	CNX-Mobility, CNX-Rack AC, CNX-Rack DC
OW10FV	CNX-BB, CNX-Mobility

4.5.3 Packing List

Before beginning installation, make sure you have all the included components.

OW10HL Package list (PS-OW10HF-W)

Item	Q'ty	Size	Description
ODU Unit	1	56 x 45 x 12 cm	User terminal
Quick Installation Guide (QIG)	1	-	Quick Install Guide
Coax Cable (RG 6)	1	5 m	F-type connector for CNX Power & Data connection (Belden 1694A)
External SMA Cap	1		External SMA Cap
Grounding cable	1	1m	Flexible Grounding cable
Adjustable Mount Adapter	1	ø13x15cm	Land Fixed Mount Adapter
M6X12 Hex-S Bolt	2	M6x12	Grounding Screw
Spring Washer	4	M6	
Flat Washer	4	M6	
M6x12 Hex Bolt	4	M6x12	Bolt Kit for Mount Assembly
Spring Washer	4	M6	
Flat Washer	4	M6	
RF Hazard Sticker	1		Radiation Safety Distance Label

OW10HM/OW10HV Package list (OS-OW10HF-W / MS-OW10HF-W)

Item	Q'ty	Size	Description
ODU Unit	1	56 x 45 x 12 cm	User terminal
Quick Installation Guide (QIG)	1	-	Quick Install Guide
Coax Cable (RG 6)	1	5 m	F-type connector for CNX Power & Data connection (Belden 1694A)
External SMA Cap	1		External SMA Cap
RF Hazard Sticker	1		Radiation Safety Distance Label

CNX-WIFI Package list w/ AC power (PP-T1A1-250)

Item	Q'ty	Size	Description
CNX (Customer Network Exchange) : WIFI	1	21 x 17 x 8 cm	To access to Eutelsat OneWeb services
Quick Installation Guide (QIG)	1		Quick Install Guide
Power Adapter (AC-DC)	1	20 x 9 x 4 cm	To convert 100-240 V AC power to +56 V DC for CNX (250W)
AC Power Cord (CEE 7/4)	1	1.5m	CNX Power Cord (CEE Power Connectors)
AC Power Cord (NEMA 5-15P)	1	1.5m	CNX Power Cord (US Power Connectors)
CNX-WIFI Wall Mount	1		To mount the CNX-WIFI on the wall
Wall Mount Screw and Wall Anchors	4		Bolt kit for wall mounting the CNX-WIFI

CNX-WIFI Package list w/ DC-DC converter (PP-T1A1-DC)

Item	Q'ty	Size	Description
CNX (Customer Network Exchange) : WIFI	1	21 x 17 x 8 cm	To access to Eutelsat OneWeb services
Quick Installation Guide (QIG)	1		Quick Install Guide
DC-DC Converter	1	10 x 8 x 4 cm	12-24V DC-DC Converter & Cable (480W)
Ethernet cable (RJ45)	1	1m	For Ethernet connection
CNX-WIFI Wall Mount	1		To mount the CNX-WIFI on the wall
Wall Mount Screw and Wall Anchors	4		Bolt kit for wall mounting the CNX-WIFI

CNX-BB Package list w/ AC (PP-T1A0-250)

Item	Q'ty	Size	Description
CNX (Customer Network Exchange) : BB	1	13 x 12 x 4 cm	To access to Eutelsat OneWeb services
Quick Installation Guide (QIG)	1		Quick Install Guide
Power Adapter (AC-DC)	1	20 x 9 x 4 cm	To convert 100-240 V AC power to +56 V DC for CNX (250W)
AC Power Cord (CEE 7/4)	1	1.5m	CNX Power Cord (CEE Power Connectors)
AC Power Cord (NEMA 5-15P)	1	1.5m	CNX Power Cord (US Power Connectors)
Ethernet Cable (RJ45 / LAN)	1	1m	For Ethernet connection

CNX-BB Package list w/ DC-DC converter (PP-T1A0-DC)

Item	Q'ty	Size	Description
CNX (Customer Network Exchange) : BB	1	13 x 12 x 4 cm	To access to Eutelsat OneWeb services
Quick Installation Guide (QIG)	1		Quick Install Guide
Power Adapter (DC-DC)	1	10 x 8 x 4 cm	12-24V DC-DC Converter & Cable (480W)
AC Power Cord (CEE 7/4)	1	1.5m	CNX Power Cord (CEE Power Connectors)
AC Power Cord (NEMA 5-15P)	1	1.5m	CNX Power Cord (US Power Connectors)
Ethernet Cable (RJ45 / LAN)	1	1m	For Ethernet connection

CNX-Rack DC Package list (OP-T2B0)

Item	Q'ty	Size	Description
Customer Network Exchange: CNX-Rack DC	1	44 x 25 x 4 cm	To access to OneWeb services
Wifi dongle	1		For Wi-Fi connection (TL-WN823N)
Rack mount Plate	2		19inch Rack Mount Kit
Pan Head Screw (with Spring & Flat Washer)	8	M4 x 6 L	
Ethernet (RJ45)	1	1m	For Ethernet connection

CNX-Rack AC Package list (OP-T2C0)

Item	Q'ty	Size	Description
Customer Network Exchange: CNX-Rack AC	1	44 x 25 x 4 cm	To access to OneWeb services
Wifi dongle	1		For Wi-Fi connection (TL-WN823N)
Rack mount Plate	2		19inch Rack Mount Kit
Pan Head Screw (with Spring & Flat Washer)	8	M4 x 6 L	
AC Power Cord (CEE 7/4)	2	1.5m	CNX Power Cord (CEE Power Connectors)
AC Power Cord (NEMA 5-15P)	2	1.5m	CNX Power Cord (US Power Connectors)
Ethernet (RJ45)	1	1m	For Ethernet connection

CNX-Mobility Package list w/ AC power (PP-T2D1-450A)

Item	Q'ty	Size	Description
CNX (Customer Network Exchange) : Mobility	1	21 x 17 x 8 cm	To access to Eutelsat OneWeb services
Quick Installation Guide (QIG)	1		Quick Install Guide
Power Adapter (AC-DC)	1	20 x 9 x 4 cm	To convert 100-240 V AC power to +56 V DC for CNX (450W)
AC Power Cord (CEE 7/4)	1	1.5m	CNX Power Cord (CEE Power Connectors)
AC Power Cord (NEMA 5-15P)	1	1.5m	CNX Power Cord (US Power Connectors)
Ethernet (RJ45)	1	1m	For Ethernet connection

CNX-Mobility Package list w/ DC-DC converter (PP-T2D1-DC)

Item	Q'ty	Size	Description
CNX (Customer Network Exchange) : Mobility	1	21 x 17 x 8 cm	To access to Eutelsat OneWeb services
Quick Installation Guide (QIG)	1		Quick Install Guide
DC-DC Converter	1	10 x 8 x 4 cm	12-24V DC-DC Converter & Cable (480W)

Adjustable Mount Adapter (OW-6017)

Item	Q'ty	Size	Description
Adjustable Mount Adapter	1		Adjustable Mount Adapter
M6x12 Hex Bolt	4	M6x12	To mount ODU on Adjustable Mount Adapter (M6 Bolt Kit)
Spring Washer	4	M6	
Flat Washer	4	M6	

Maritime Mount Adapter Kit Package list (OW-6019_A)

The Maritime Mount Adapter is available for separate purchase only. When this kit is supplied, it is provided in a separate box.

Item	Q'ty	Size	Description
Maritime Mount Adapter	1		Designed to work with a variety of maritime mounting needs
Hex bolt	4	M6X12L	To mount ODU on Adjustable Mount Adapter (M6 Bolt Kit)
Spring Washer	4	M6	
Flat Washer	4	M6	
Hex Socket Bolt	4	M8x30L	To mount ODU onto Maritime Mount Adapter (M8 Bolt Kit)
Spring Washer	4	M8	
Flat Washer	4	M8	
Hex Bolt	4	M12x40L	To mount ODU onto Maritime Mast Mount (M12 Bolt Kit)
Spring Washer	4	M12	
Flat Washer	4	M12	
Hex Nut	4	M12	
Hex-S Bolt	8	5/16-18	To mount Maritime Mount Adapter onto Pedestal
Maritime Mount Adapter QIG	1		Quick Install Guide

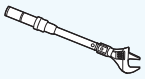
Land Mobile Mount Adapter Kit Package list (OW-6018)

The Mount Adapter (Land Mobile) is available for separate purchase only. When this kit is supplied, it is provided in a separate box.

Item	Q'ty	Size	Description
Land Mobile Mount Adapter Bar	2		ODU to vehicle cross bar mount adapter
Foot Damper	4		Land Mobile Mount Adapter rubber feet
Rubber Spacer	4		
Clamp Knob	8	M8	Fastening mechanism for vehicle cross bars
Mobility U-Clamp plate	4	-	
Mobility U-Clamp	4	M8	
Hex-S Bolt SF	4	M8x12	Fasteners to secure the ODU and land mobile mount adapter
Lock Washer	8	M8	Lock Washers for M8 fasteners
Hex-S Bolt SF, Standoff	8	M8x25	ODU standoffs, for land mobile applications and mounting
Land Mobile Mount QIG	1		Quick Install Guide

4.5.4 Installer/Customer Supplied Equipment

- Grounding system that meets the local electrical code requirements
- Fasteners and other installation tools

	6mm (0.25") Hex Key		Adjustable Wrench (Metric Sizes : 12 mm)
	1/2 " wrench		Torque Wrench
	10 mm wrench		

4.6 System Cables

4.6.1 ODU Power+Data Cable

Intellian provides the ODU RF Cable (RG6, 5 m) for connecting the ODU and CNX. When ODU and CNX are installed further apart, refer to the table below for recommended cable types and maximum cable lengths. For more information, click the **Technical Bulletin** button.

Approved Cables

CNX	Power Supply	Cable Type	Manufacturer Part Number	Max Length [m]
CNX-BB CNX-WIFI CNX-Mobility	450W / 250W AC-DC Power Supply Adapter (56 VDC output)	RG-6	BELDEN 1694A-2	75
		RG-11	BELDEN 7731A&7731RW	190
			BELDEN 9292	140
CNX-Rack-AC CNX-Rack-DC	Embedded PSA (56 VDC output)		BELDEN 1525A	45
			Amphenol T11TSFx77-LTV	45
		LMR-400	LMR-400-FR	250
CNX-Mobility	480W DC-DC Converter (48 VDC output)	RG-6	BELDEN 1694A-2	30
		RG-11	BELDEN 7731A&7731RW	75
			BELDEN 9292	55
		LMR-400	LMR-400-FR	100

* Cable Impedance should be 75 ohms

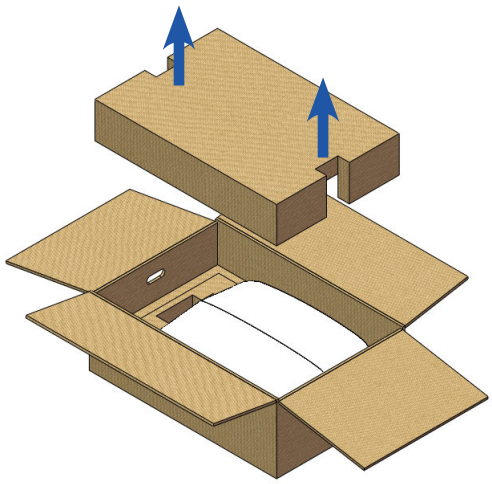
NOTE

- The use of a LMR 50 ohm cable requires an adapter.
  RF Solutions, part number ADP-NF-FM from RF Solution is an approved adapter.
  A right angle F-type adapter is also required when using this N to F-type adapter with the OW10Hx Compact Series.
- Optimal tightening torque for RF connector: 1 Nm (8lbf.in)
- Make sure of the following before installing system cables.
  - All cables with connectors need to be fully secured and protected from physical damage.
  - Don’t acutely bend any cables during installation.

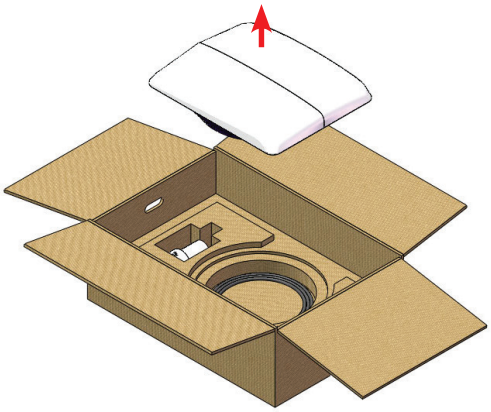
4.7 Unpacking the UT

The antenna system consists of the ODU and CNX, which are shipped in separate packages.
When unpacking the ODU, follow the steps below. The image shows the OW10HL as an example, and it may vary depending on the model.

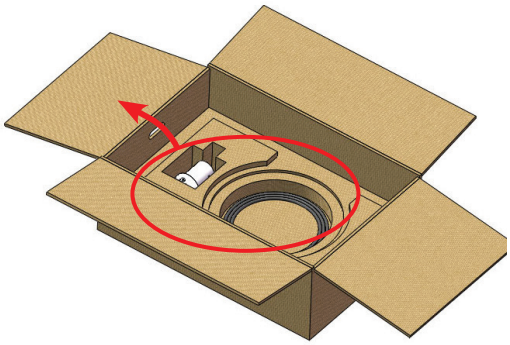
1. Place the package in a safe area.



2. Open the package and remove the protective packing.



3. Take out the ODU.



4. Take out the items.
   - Refer to the Included items "4.5.3 Packing List" on page 26

NOTE

- Make sure all the parts under the bottom cover (Step 4) are removed before the packaging is discarded.
- Consider keeping the packaging material in case the terminal needs to be moved in the future.

4.8 Product Overview

4.8.1 ODU Dimensions

The mounting surface and overall space occupied by the radome must be sufficient to accommodate the height and width of the ODU when installed on its mounting base.

Unit: mm (inches)

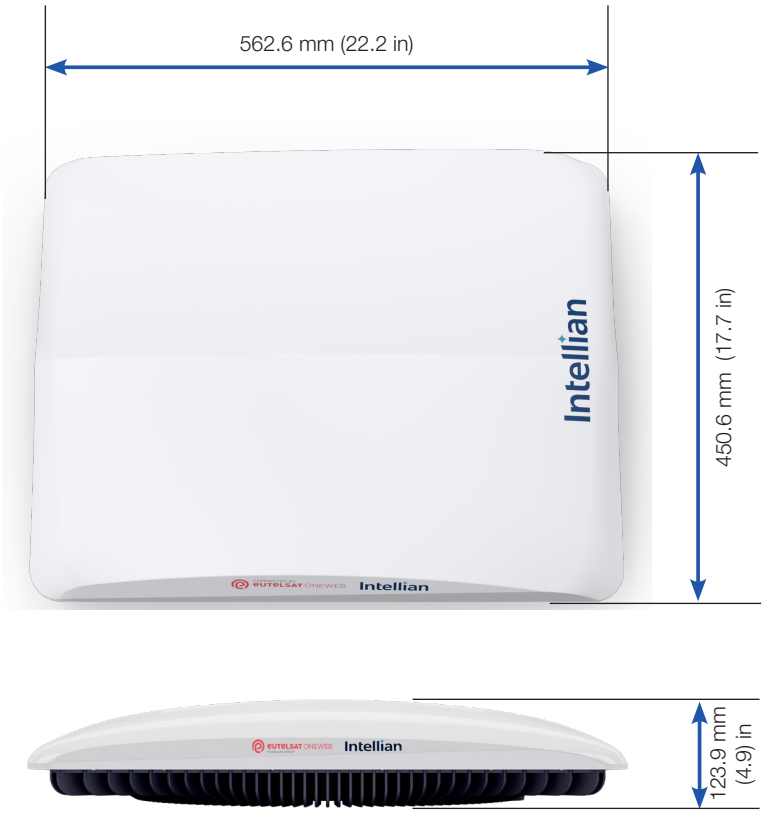
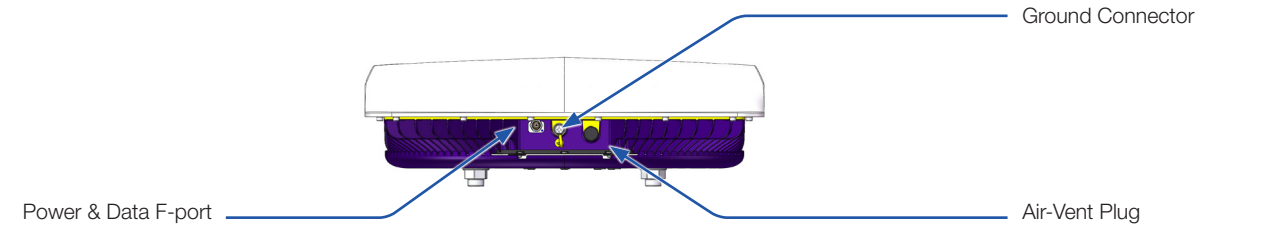


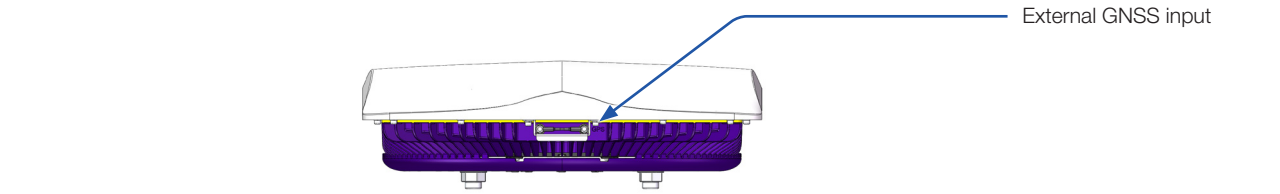
Figure 6: ODU Dimension

4.8.2 Parts Identification

Front

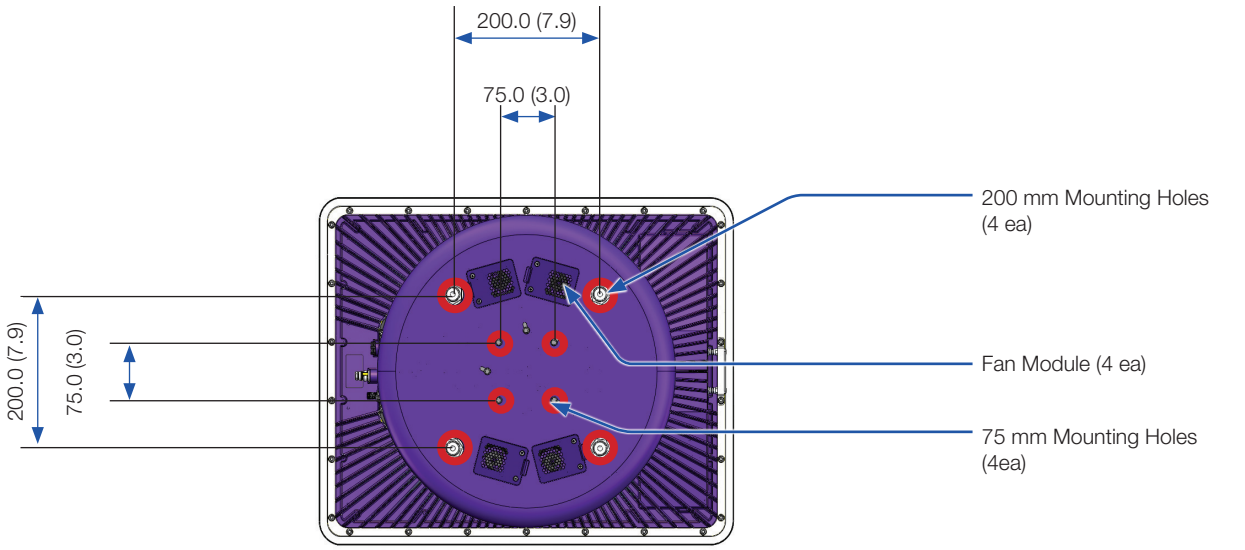


Rear



Bottom

Unit: mm (inches)



Chapter 5. Installing a Land Fixed UT (OW10HL)

5.1 Multiple Mount Types

For a Land Fixed UT installation, all mount types share the same 'Adjustable Mount Adapter'. For details of appropriate mount types refer to **"16.1 Selecting Pole Mount for Land Fixed (Optional)" on page 151** for more details.

5.2 Dimensions

Unit: mm (inches)

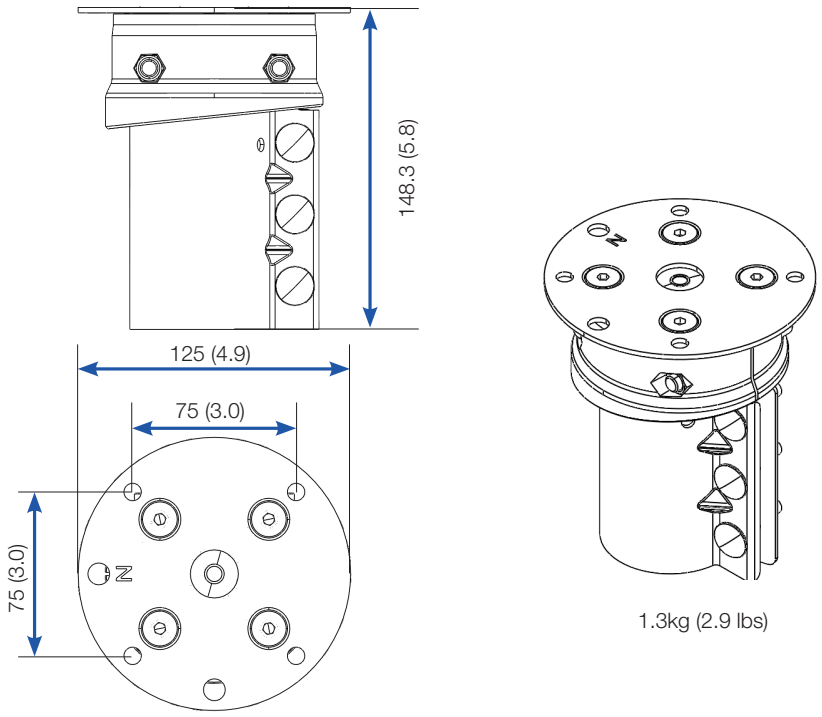


Figure 7: Adjustable Mount Adapter Dimension

5.3 Mounting ODU Using Adjustable Mount Adapter

NOTE

The Adjustable Mount Adapter must be used only for land fixed installation.

The Land Fixed UT (OW11FL) comes with an adjustable mount adapter. This adapter is capable of tilting up to 12°. The land fixed UT comes with an adjustable mount adapter that is packaged with the ODU.

5.3.1 Attaching Adjustable Mount Adapter to Pole

1. Select the appropriate pole mount. (NPM mount used in this example. Reference **"16.1 Selecting Pole Mount for Land Fixed (Optional)" on page 151.**

1. Place the adjustable mount adapter onto the pole.
2. Tighten the three bolts of the Clamp Assy using a 12 mm wrench or socket wrench.

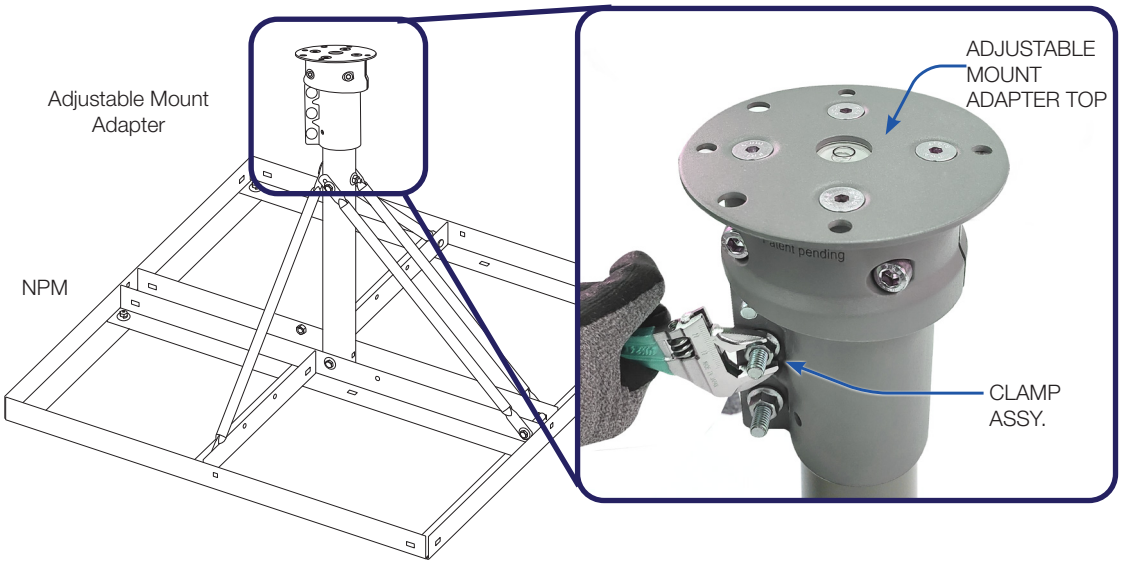


Figure 8: Tighten Adjustable Mount Adapter to Pole

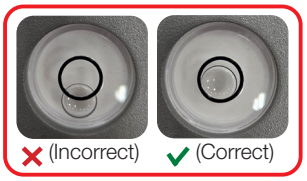
NOTE

If a mount adapter is fabricated or purchased outside of Intellian's recommended list, it shall be no greater than 3 mm. in material thickness on the mounting surface. Additional M6 screws must be used to achieve at least 6mm of thread engagement. The Hex Key for the M6 mounting hardware is 5 mm. A 1.7 cm. clearance below the fans is required for sufficient air flow and cooling.

5.3.2 Levelling the Adjustable Mount Adapter

Check if the adjustable mount adapter is level by viewing the bubble level.

If the bubble is in the center, then it is level. If it is not, proceed to adjust the top in the following steps.



1. Loosen the bolts on the adjustable mount adapter using a 6mm hex key as shown in figure.

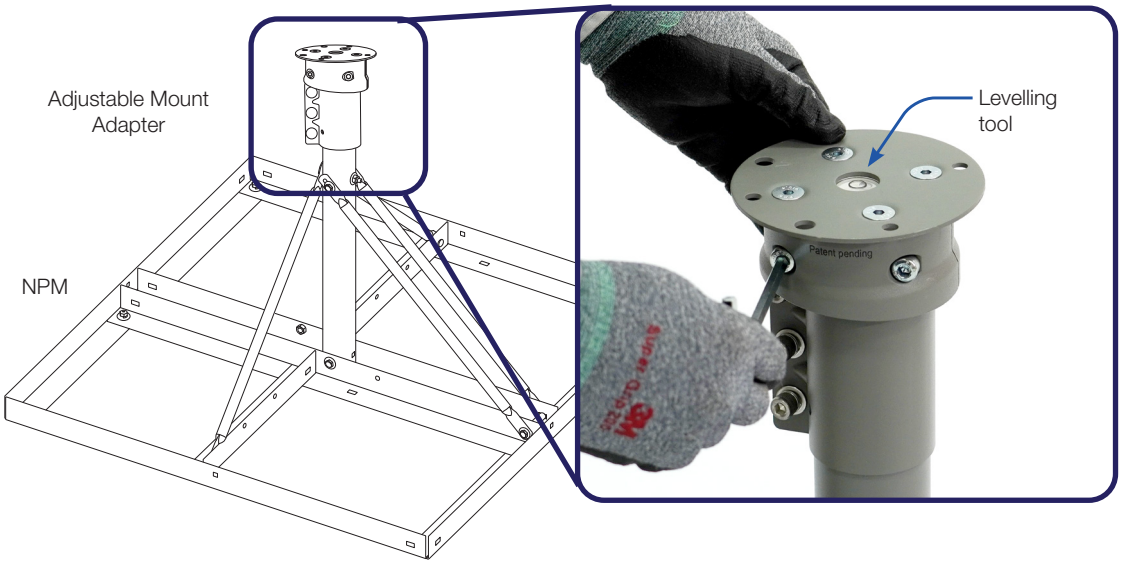


Figure 9: Loosen Bolts on Adjustable Mount Adapter

2. Rotate the top of the Adjustable Mount Adapter until parallel to the ground using the built in leveling tool. Verify that the bubble is aligned within the circle guide.

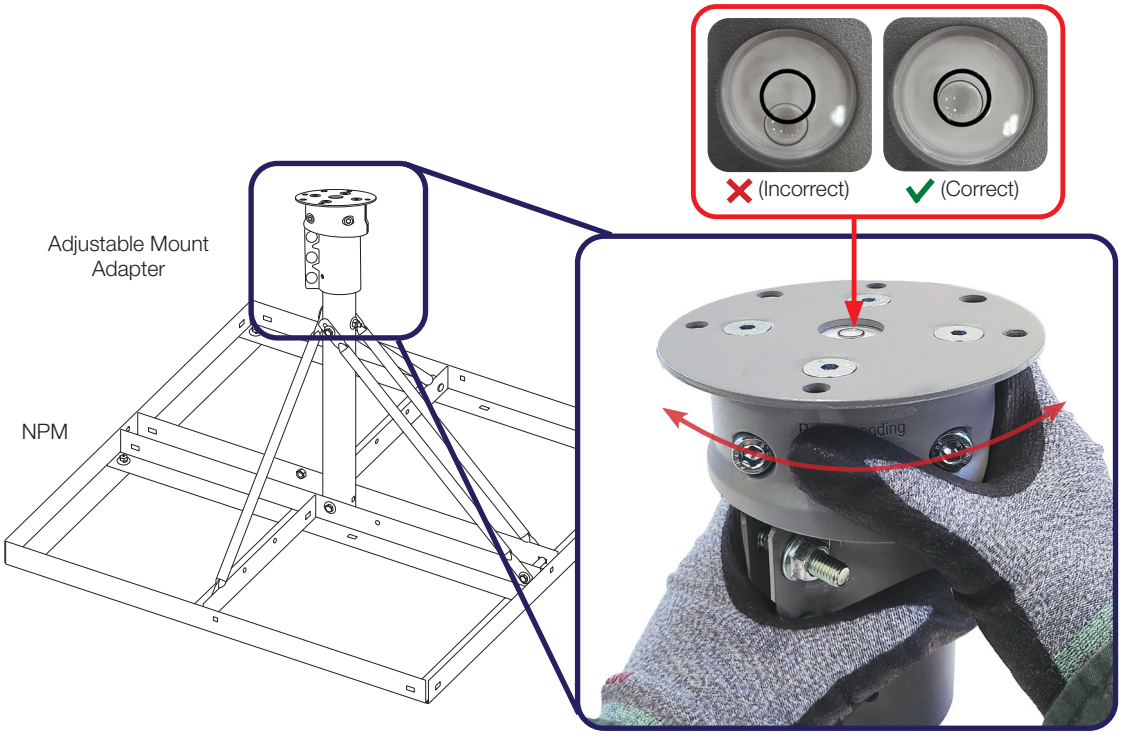


Figure 10: Using Leveling Tool

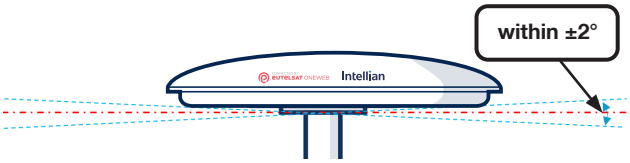
5.3.3 Mounting ODU on Adjustable Mount Adapter

NOTE

The ODU does not need to be aligned to True North because the Dual GNSS receivers provide differential GNSS location to support automated true north calibration and highly accurate timing reference.

CAUTION

Ensure the ODU is mounted within ±2° elevation angle.



1. With the ODU upside down, open the four caps for the 75 x 75mm mounting holes on the ODU.

NOTE

When placing the ODU upside down, be sure to place a polishing cloth or bubble wrap on the floor to prevent radome damage.

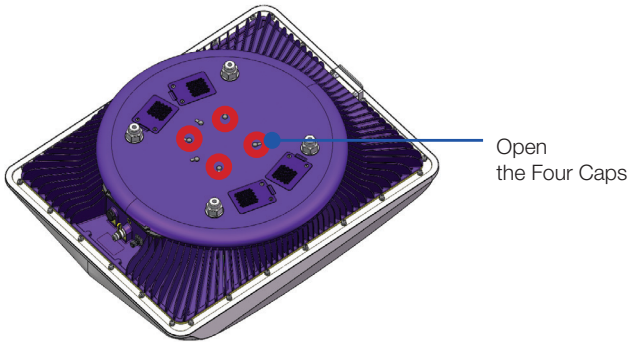


Figure 11: Opening the Four Caps

2. Move the ODU above the adjustable mount adapter and carefully lower toward the adjustable mount adapter.

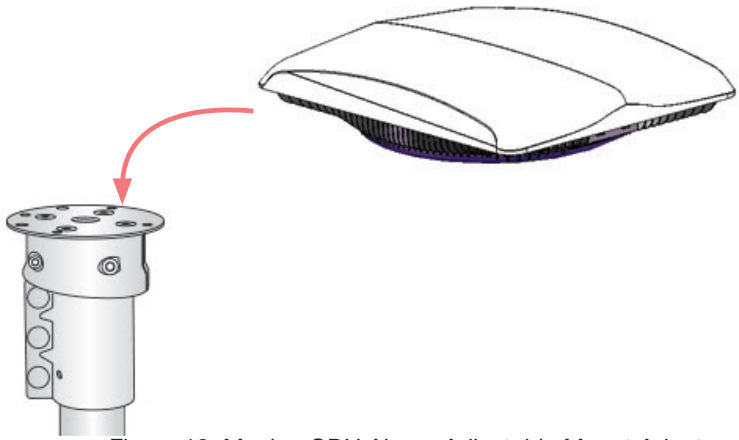


Figure 12: Moving ODU Above Adjustable Mount Adapter

3. Align the 75 mm holes on the ODU with the mounting holes on the adjustable mount adapter.

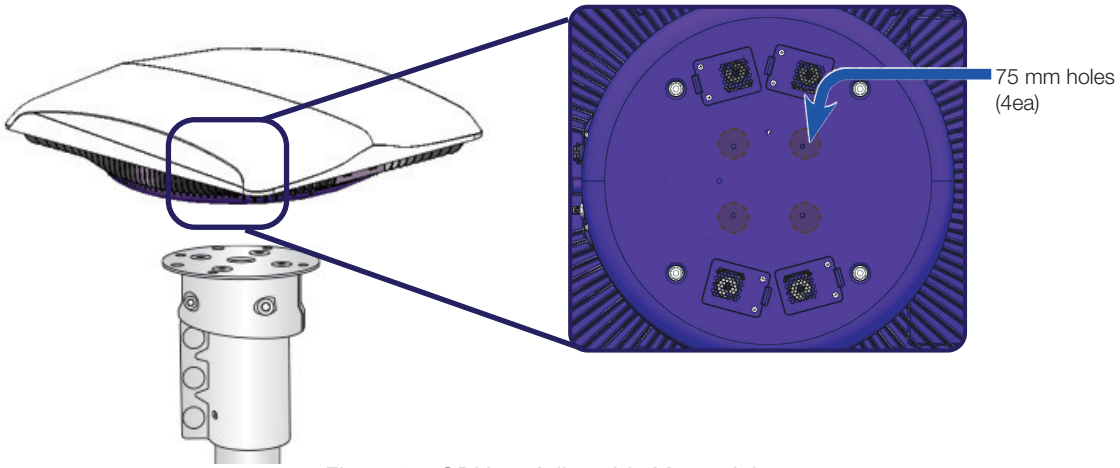


Figure 13: ODU on Adjustable Mount Adapter

4. Find the M6x12L Hex. Bolt M6 Spring and Flat washer (4 ea) from the OW10HL package.
5. Insert the bolts and washers from under the adjustable mount adapter into the threaded holes on the bottom of the ODU, and then tighten them.

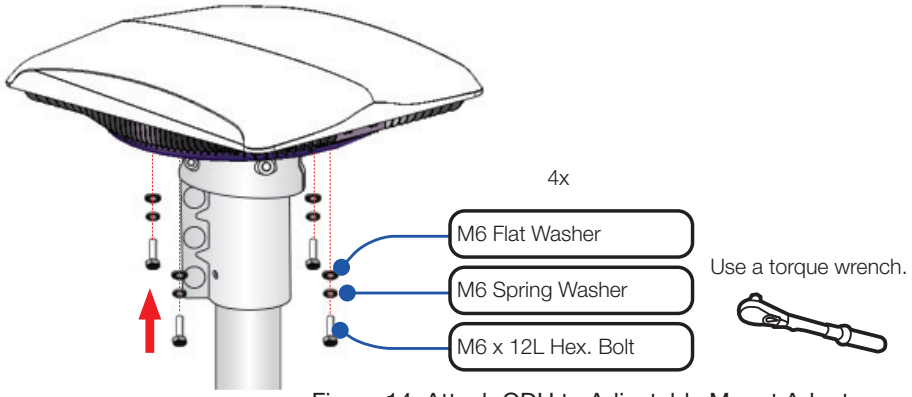


Figure 14: Attach ODU to Adjustable Mount Adapter

6. After installing all 4 bolts, fully tighten them using a torque wrench (Tightening Torque: 12Nm). Refer to **"16.2 Tightening Torque Specification" on page 164** for the bolt tightening torque.

Chapter 6. Installing Maritime UT (OW10HM)

6.1 ODU Mounting Requirements

You need to procure or fabricate a suitable mount to support the Compact UT.

The mounting platform should be rigid and secured tightly to the structure of the vessel for the maritime environment. The mount should not be subjected to excessive vibration (ETS 300 019: 2–8 Hz frequency, 7.5 mm sine level; 8–500 Hz frequency, 2 G sine level) to ensure full ODU performance and prevention of potential mechanical damage.

Consider the following factors when selecting the mounting method:

- Confirm the physical size and weight of the ODU (see table below).

Size	Weight
56 cm x 45 cm x 12 cm (22 in x 17.7 in x 4.7 in)	12.2 kg (27 lbs)

- The chosen mounting method should withstand wind loads and ensure the safety of people and property.

CAUTION

Never place the ODU in the beam path of the radar, regardless of distance. The high power radar may impair its performance or damage the ODU.

6.2 Dimensions

Unit: mm (inches)

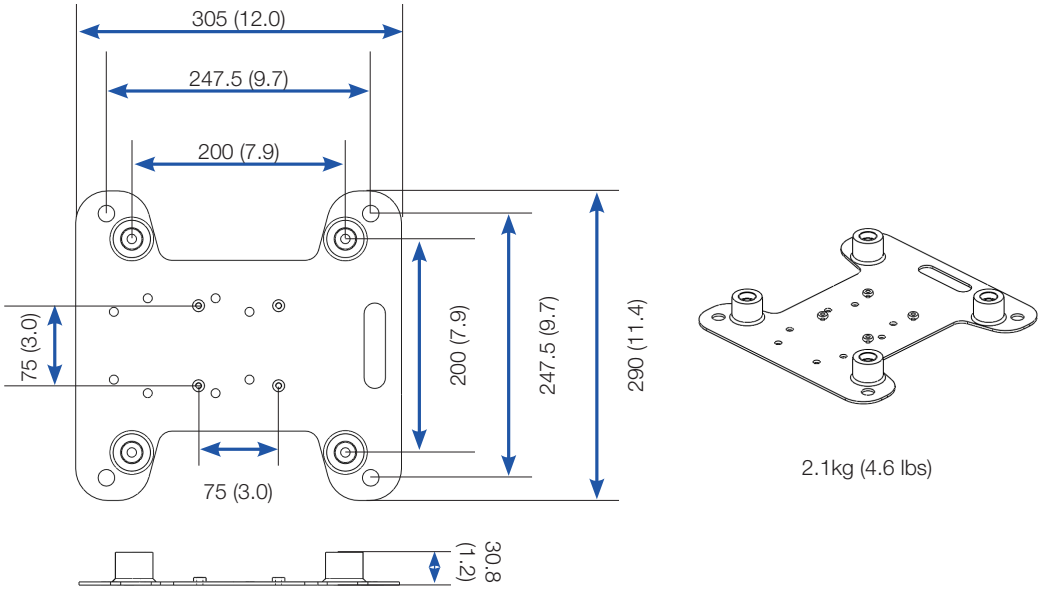
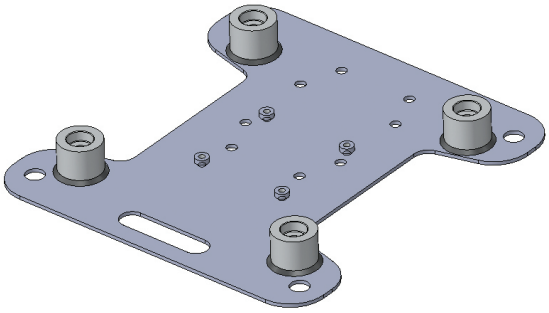


Figure 15: Maritime Mount Adapter Dimension

6.3 Mounting ODU Using Maritime Mount Adapter (Optional)

The Maritime UT kit (OW10HM) does not include a maritime mount adapter. It is strongly recommended as an additional accessory. Intellian offers the Maritime Mount Adapter (OW-6019_A) for the maritime environment to mount the ODU.



If you want to confirm the components of the maritime mount adapter, refer to "Maritime Mount Adapter Kit Package list (OW-6019_A)" on page 29 for more details.

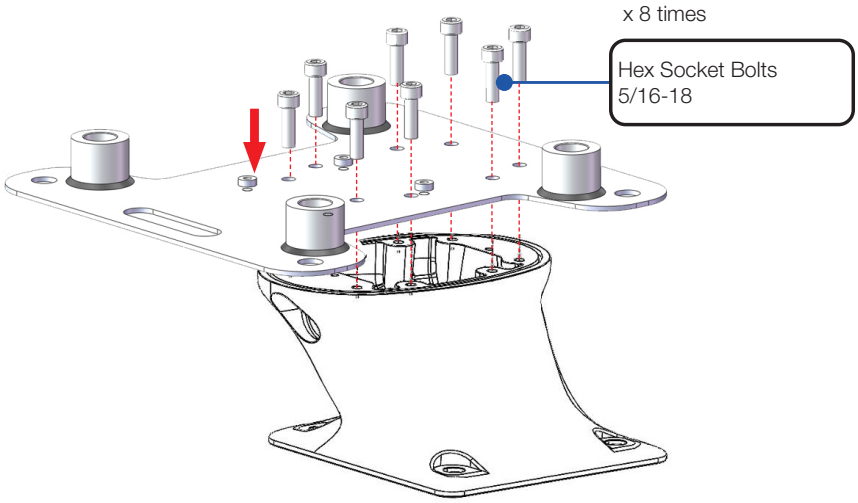
Intellian supports three approaches to mounting the outdoor unit in the maritime environment: Pole Mount, Pedestal Mount, and Mast Mount.

CAUTION

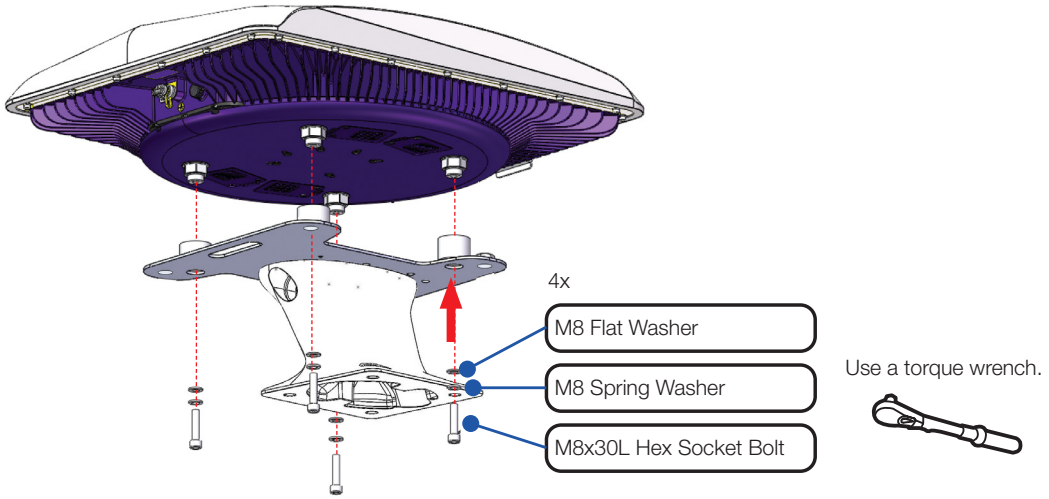
- After connecting the coax cable, be sure to secure any loose cable to the base mount or any stationary surface to the ODU to ensure minimal movement when in motion. This helps prevent damage to the coax port on the ODU.
- Ensure the ODU is mounted within ±2° elevation angle.

6.3.1 Attaching ODU to a Pedestal

1. Place the Maritime Mount Adapter Plate onto the pedestal, ensuring all holes for the pedestal are aligned with the mounting holes for the mount adapter.
2. Apply Loctite #242 to the bolt threads.
3. Insert the hex socket bolts 5/16-18 (8 ea) from above the maritime mount adapter into the mount holes on the top of the pedestal, and then lightly tighten them by hand.



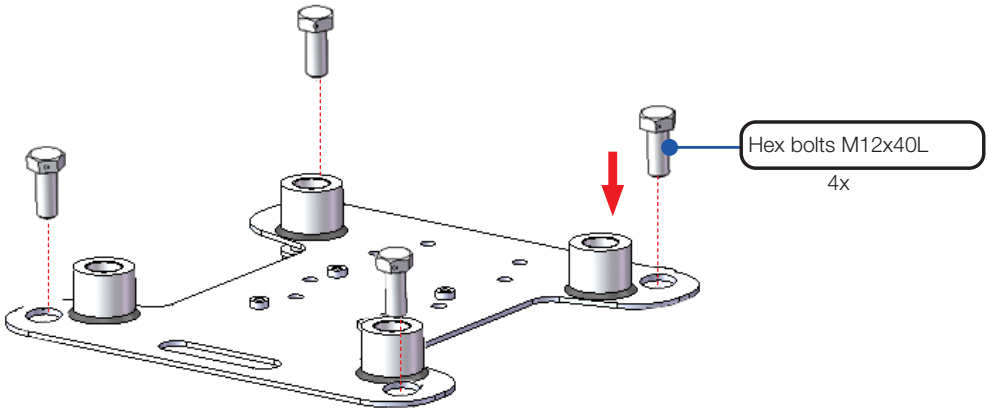
4. Fully tighten the bolts using a 6mm (0.25") hex key.
5. Insert the M8x30L hex socket bolts(4ea) and washers from under the ODU mounting holes on the Maritime Mount Adapter into the threaded holes on the bottom of the ODU, and then lightly tighten them. ***During this process, take care not to cover the fan***s.



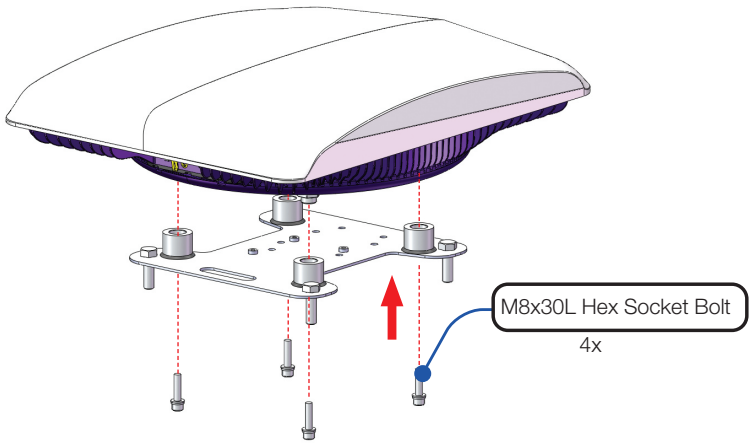
6. After installing all 4 bolts, fully tighten the bolts using a torque wrench (Tightening Torque: 27Nm). Refer to **"16.2 Tightening Torque Specification" on page 164** for the bolt tightening torque.

6.3.2 Attaching ODU to a Mast

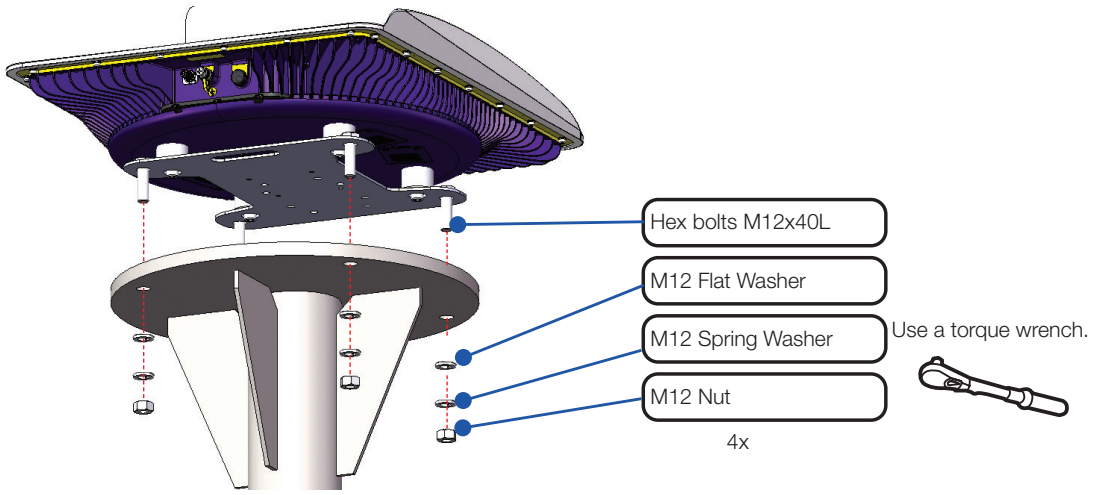
1. Bring the M12x40L hex head bolts (4 ea), spring washers and flat washers for assembling the mast, M8x30L hex socket bolts(4ea), spring washers and flat washers for mounting the ODU and the Maritime Mount Adapter from the maritime mount adapter kit.
2. Before installing the bolts, apply Loctite #242 to the bolt threads.
3. Feed the hex bolts M12x40L (4 ea) into the mast holes (large holes in the corners) of the Maritime Mount Adapter Plate. It is recommended to place tape over the bolts temporarily because you will need to turn it over for the next step.



4. Insert the M8x30L hex socket bolts (4ea) and washers from under the ODU mounting holes on the Maritime Mount Adapter into the threaded holes on the bottom of the ODU, and then lightly tighten them. ***During this process, take care not to cover the fan***s.



5. Fully tighten the bolts using a torque wrench (Tightening Torque: 27Nm). Refer to **"16.2 Tightening Torque Specification" on page 164** for the bolt tightening torque.
6. Align the pre-set M12X40L bolts (4 ea) with the mounting holes on the mast plate.
7. Feed the M12 flat washer, lock washer, and nut onto the pre-set M12X40L bolts and fully tighten the bolts using a torque wrench (Tightening Torque: 85Nm). Refer to **"16.2 Tightening Torque Specification" on page 164** for the bolt tightening torque.

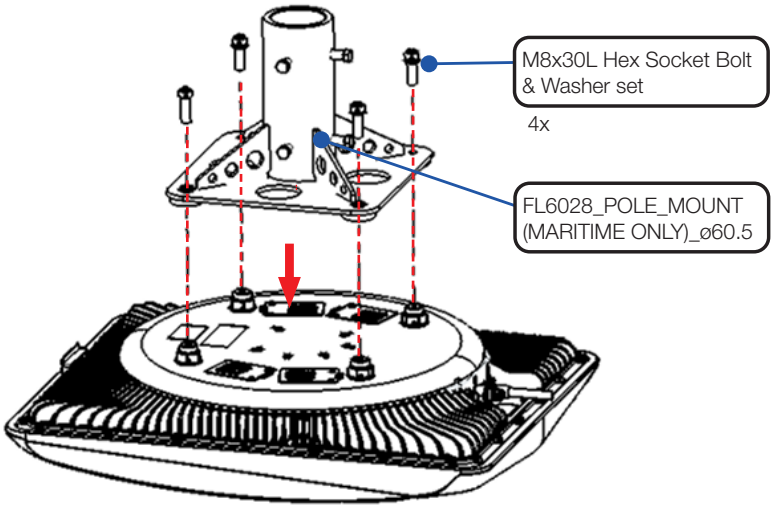


NOTE

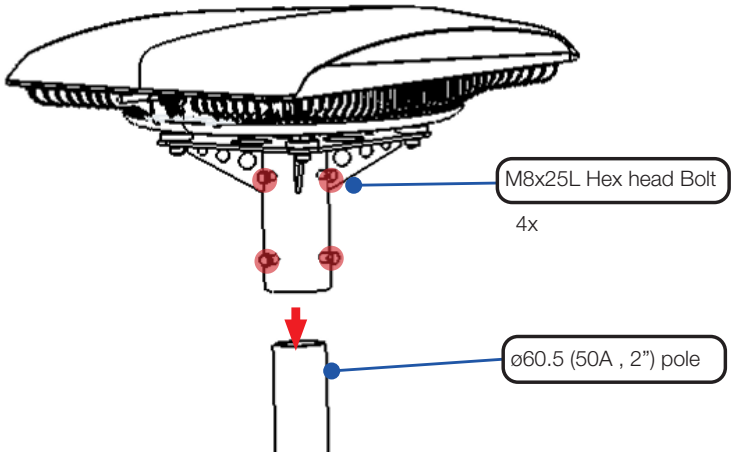
If the mast is not a level surface, washers can be added in between the mount adapter plate and mast to better level the unit.

6.3.3 Attaching to Maritime Pole Mount Adapter

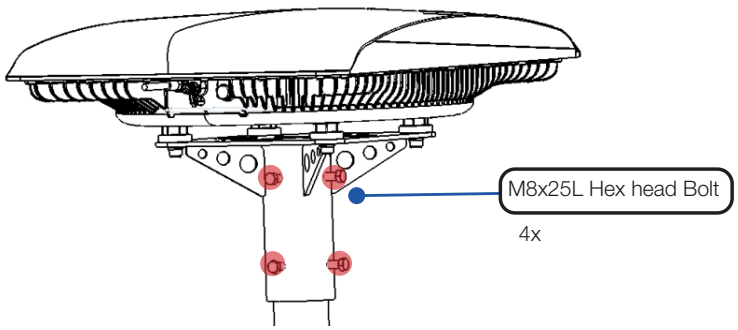
1. For the maritime pole mount install, ensure that the 60mm pole is used for the installation. Prior to the install, prepare all relevant bolts and washers included in the (OW-6034) package.
2. Prepare the ODU and turn the antenna upside down and align the Maritime Pole Mount Adapter with the 4 mounting points.
3. Fixate the maritime pole mount adapter and the ODU using the M8x30L hex socket bolts & washer set (4 ea).



4. Once ODU and the pole mount is secured, assemble it onto the 60mm pole and push in to the end of the adapter hole.



5. Secure the pole and the pole adapter using M8x25 hex socket bolts (4ea). Tighten the four bolts to securely push the pole surface back with inner pole mount surface.



6.3.4 Routing Coaxial Cable on Mast (Example Only)

The cable must be routed from the ODU and through the ship to connect to the CNX. When pulling the cable into place, avoid sharp bends, kinking, and excessive force. After placing the cable, seal the deck penetration gland and tie the cable securely in place. Cable brackets must be installed on the mast to secure the cable. The gooseneck must be installed on the side of the mast to protect the cable from water.

WARNING

- Ensure that cable has been run through watertight fittings to prevent water entry into the vessel when installation is completed.
- Unstable cable connections can cause intermittent contact, which may negatively affect communication and lead to electrical issues in the UT. Always secure connections firmly.

NOTE

This is a general example of routing cables on the post. The routing method is may differ depending on the ship's environment.

Routing Cable on Outside of Post

This method is generally recommended.

1. Route the cable from the gooseneck on the deck to the ODU as shown in the picture.
2. Maintain a sufficient cable length when routing the cable on the surface of the post. After connecting the cable to the connector on the ODU, adjust the length and fix the cable on the cable brackets using cable ties to prevent coaxial cable demage.

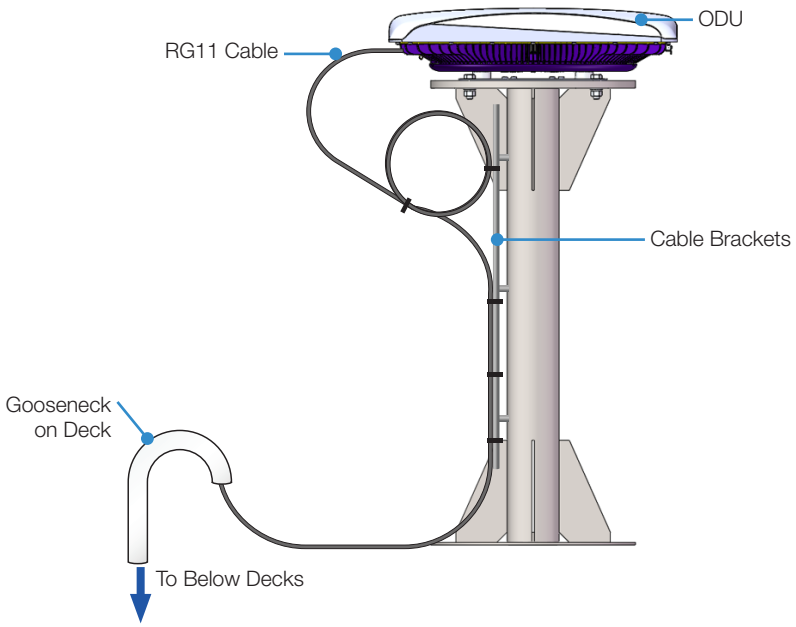


Figure 16: Routing RG11 Cable on Outside of Post

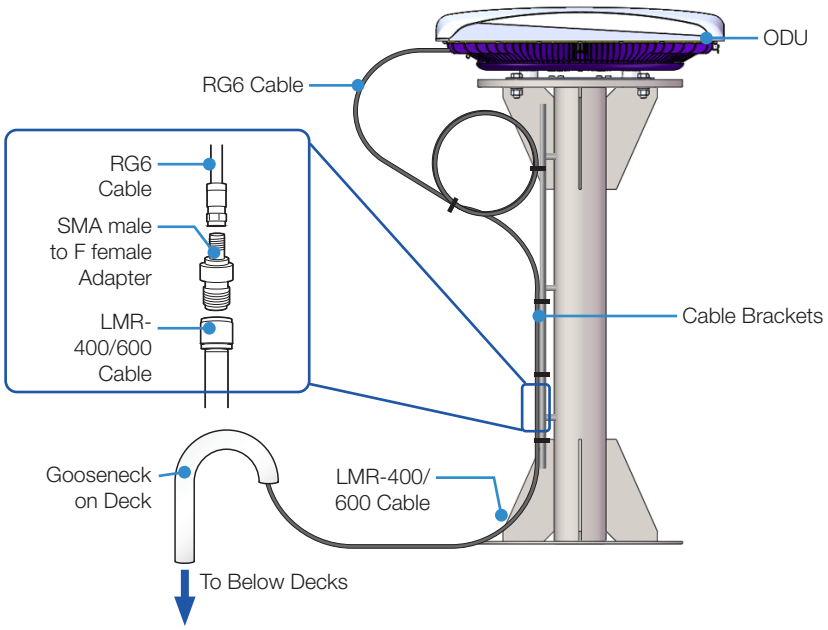


Figure 17: Routing LMR-400/600 Cable on Outside of Post

NOTE

Routing the cable through the inside of the mast is not currently supported.

CAUTION

Connect the coax connector to the port, then follow with securing any loose cable to the base mount, or any stationary surface relative to the ODU to ensure minimal movement when in motion. This helps prevent damage to the coax port on the ODU.

6.3.5 ODU Mounting Hole Pattern (Custom Mount Adapter)

Please use the hole pattern for determining mounting points on a custom mount adapter. If a mount adapter is fabricated or purchased outside of Intellian's recommended list, it shall be no greater than 3 mm in material thickness on the mounting surface.

NOTE

Use the supplied mounting template when drilling mounting holes on the mast. The hole placement for the ODU must match the mounting hole pattern on the template. When reusing an existing mast, make sure the location of the holes on the mast correspond to the hole locations and sizes printed on the mounting template.

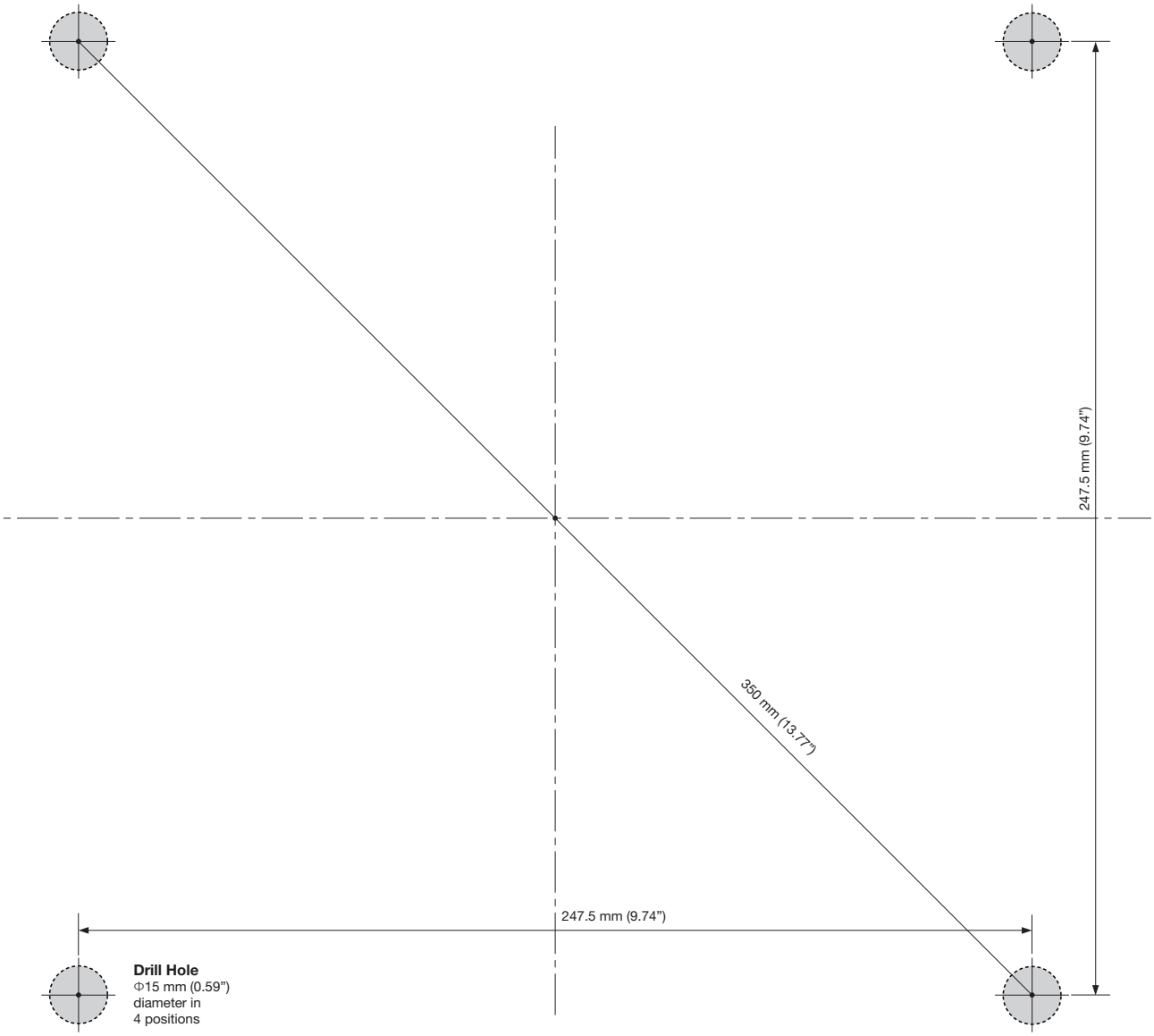


Figure 18: ODU Mounting Hole Template

Chapter 7. Installing a Land Mobile Mount Adapter (OW10HV)

7.1 Dimensions

7.1.1 OW-6018 Dimensions

Unit: mm (inches)

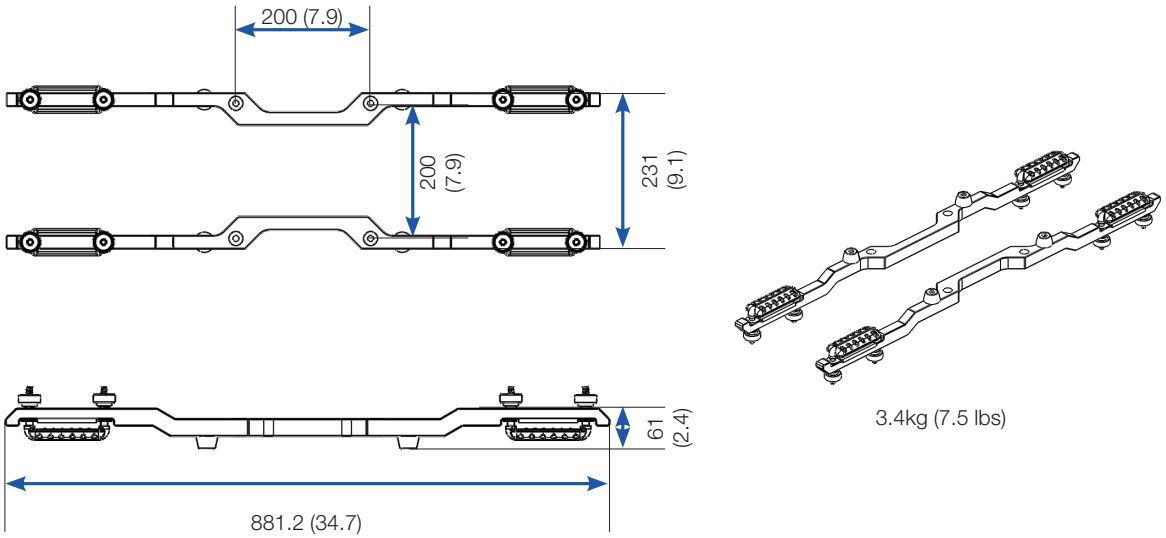


Figure 19: Land Mobile Mount Adapter Dimension (OW-6018)

7.1.2 OW-6031 Dimensions

Unit: mm (inches)

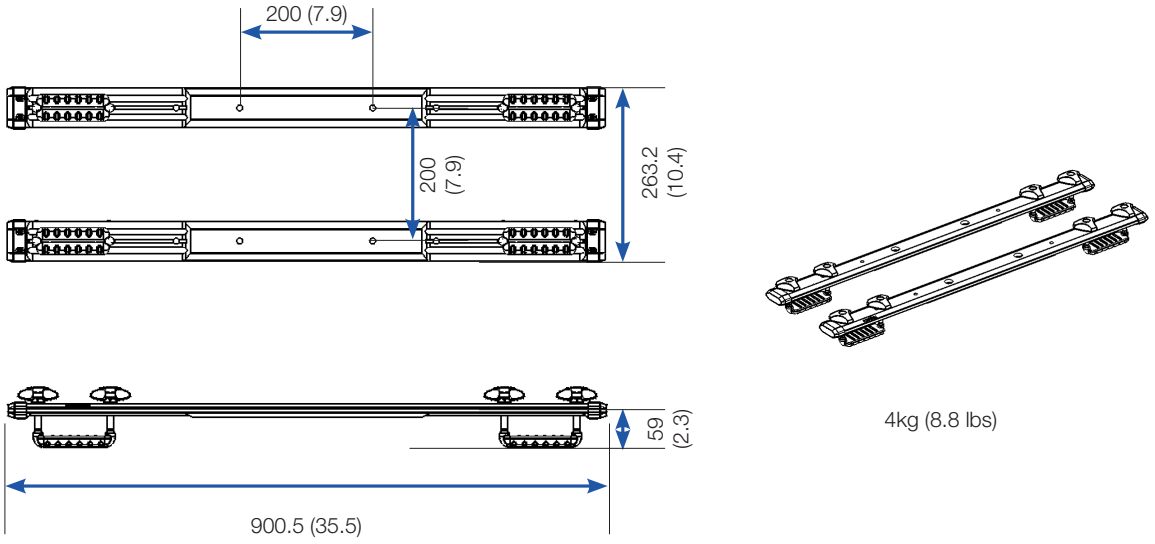


Figure 20: Land Mobile Mount Adapter Dimension

7.2 Mounting ODU Using Land Mobile Mount Adapter (OW-6018)

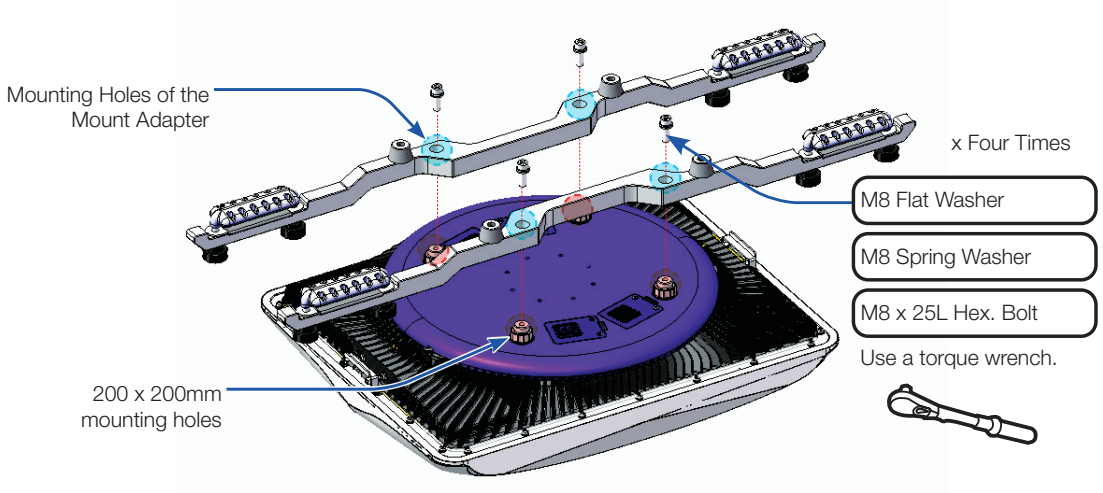
The Land Mobile UT kit (OW10HV) does not include a Land Mobile Mount Adapter. It is strongly recommended as an additional accessory. This Land Mobile Mount Adapter kit must be used in conjunction with vehicle roof crossbars.

If you would like to verify the components, refer to **"16.1 Selecting Pole Mount for Land Fixed (Optional)" on page 151** for more details.

7.2.1 Attaching the ODU to the Mount Adapter

Attach the mount adapter to the base on the ODU using the provided hardware.

1. Gather the following components: M8x25L hex socket bolts (4 ea) for mounting the ODU, Land mobile mount adapter
2. Turn the antenna upside down.
3. Ensure the 200 x 200mm mounting holes on the antenna and land mobile mount adapter are aligned as shown below. Putting the mount adapters in line with the antenna will lead to difficulty installing them on the vehicle.



4. Insert the four M8x25L hex socket bolts and washers into the mounting holes of the Land Mobile Mount Adapter, then lightly tighten them.
5. After installing all 4 bolts, fully tighten the bolts using a torque wrench (Tightening Torque: 27 Nm (20 lb-ft.)).

7.2.2 Attaching to Vehicle Crossbars

Ensure your vehicle has a cross bar system installed on the car.

Conditions for crossbars suitable for land mobile mount installation:

- Distance between crossbars: 635 mm (25")
- Maximum crossbar thickness: 22 mm (0.9")
- Maximum crossbar width: 93 mm (3.7")

NOTE

If the crossbar thickness or width exceeds these specifications, a custom clamp kit may be required.

Unit: mm (inches)

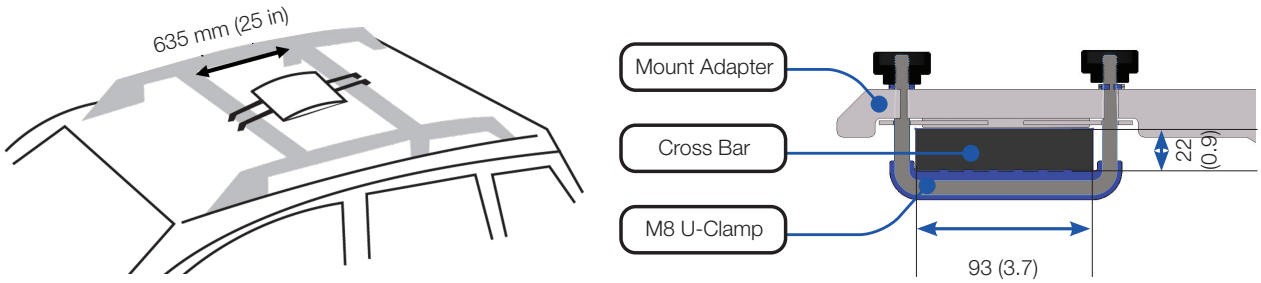


Figure 21: Conditions for crossbars suitable for land mobile mount installation

The land mobile mount adapter pieces will run in line with the vehicle. Ensure there will be no interference from other items such as vehicle radio ODUs or sunroofs. Look to your owner's manual for further details and instructions on this process.

1. Loosen all clamp knobs of the mount adapter them counterclockwise. The assembly will be detached. Components to detach: Clamp knob (8ea), Lock washer (8ea), Plate (4ea), M8 U-Clamp (4ea).

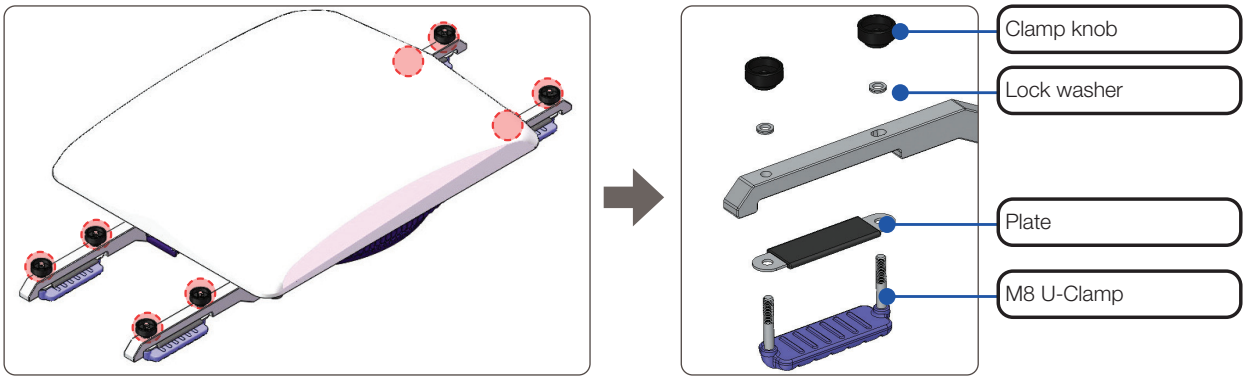


Figure 22: Loosening Clamp Knobs of the Mount Adapter

2. Place the plate and mount adapter in order on the crossbar.

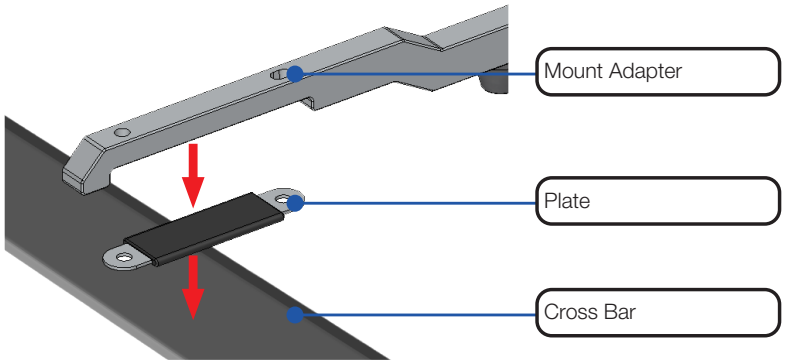


Figure 23: Placing the Plate and Mount Adapter

3. Place the M8 U-Clamp under the crossbar and insert it into the mount hole on the plate and mount adapter.
4. Feed the lock washer and clamp knob in order on the M8 U-Clamp.

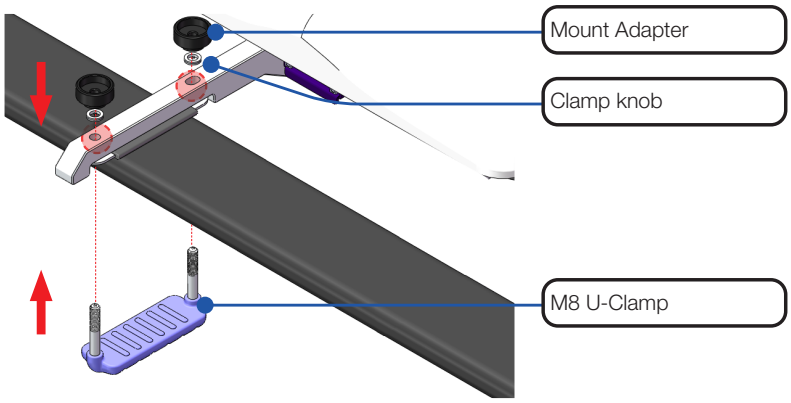


Figure 24: Assembling the M8 U-Clamp

5. Fully tighten the clamp knobs by rotating them clockwise to securely attach the mount adapter.
6. Repeat steps 2 through 5 for each remaining assembly.

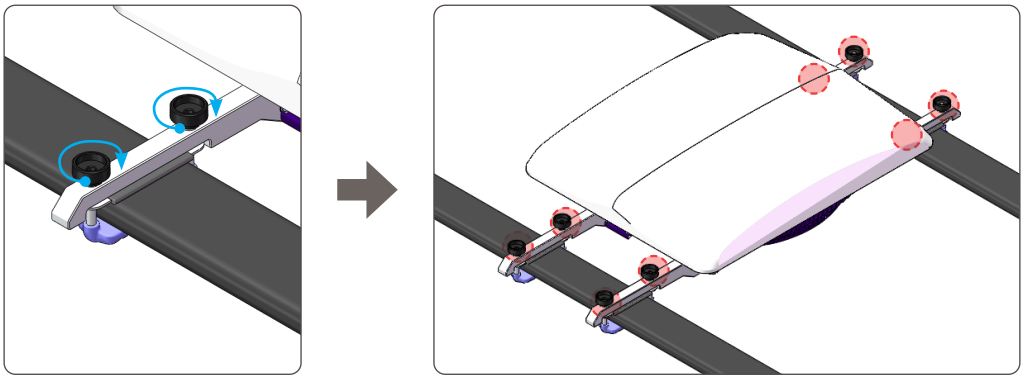


Figure 25: Fixing the Mount Adapter on the Cross Bar

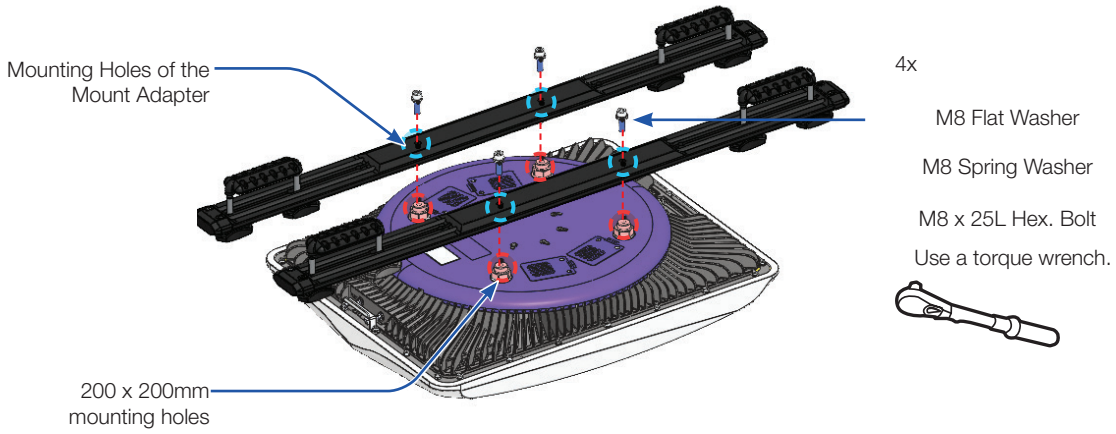
7.3 Mounting ODU Using Land Mobile Mount Adapter (OW-6031)

The ODU does not come standard with a Land Mobile Mount Adapter. This Land Mobile Mount Adapter kit must be used in conjunction with vehicle roof crossbars.

7.3.1 Attaching the ODU to the Mount Adapter

Attach the mount adapter to the base on the ODU using the provided hardware.

1. Gather the following components: M8x25L hex socket bolts (4 ea) for mounting the ODU, Land mobile mount adapter
2. Turn the antenna upside down.
3. Ensure the 200 x 200mm mounting holes on the antenna and land mobile mount adapter are aligned as shown below. Putting the mount adapters in line with the antenna will lead to difficulty installing them on the vehicle.



4. Insert the four M8x25L hex socket bolts and washers into the mounting holes of the Land Mobile Mount Adapter, then lightly tighten them.
5. After installing all 4 bolts, fully tighten the bolts using a torque wrench (Tightening Torque: 27 Nm (20 lb-ft.)).

7.3.2 Attaching to Vehicle Crossbars

Ensure your vehicle has a cross bar system installed on the car.

Conditions for crossbars suitable for land mobile mount installation:

- Distance between crossbars: 635 mm (25")
- Maximum crossbar thickness: 30 mm (1.2")
- Maximum crossbar width: 92 mm (3.6")

NOTE

If the crossbar thickness or width exceeds these specifications, a custom clamp kit may be required.

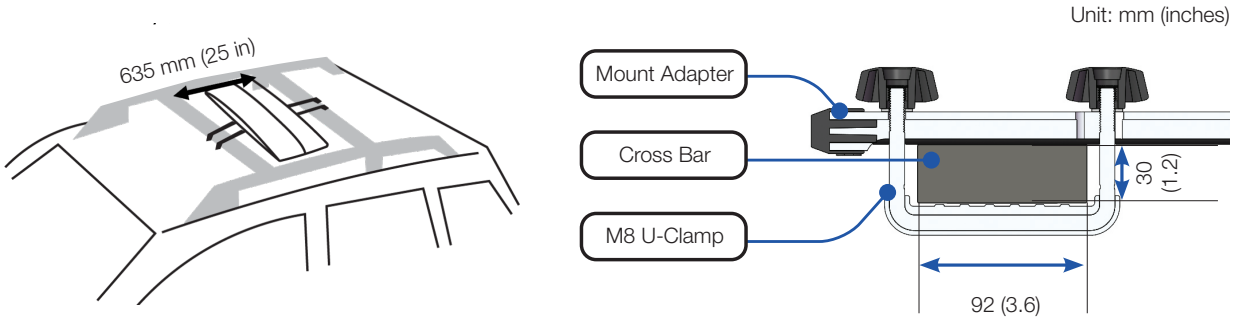


Figure 26: Conditions for crossbars suitable for land mobile mount installation

The land mobile mount adapter pieces will run in line with the vehicle. Ensure there will be no interference from other items such as vehicle radio ODUs or sunroofs. Look to your owner's manual for further details and instructions on this process.

1. Loosen all clamp knobs (8 ea) of the Land Mobile Mount Adapter by turning them counter clockwise in order to detach the following components: Flat washer (8set), M8 U-Clamp (4ea) with clamp knob.

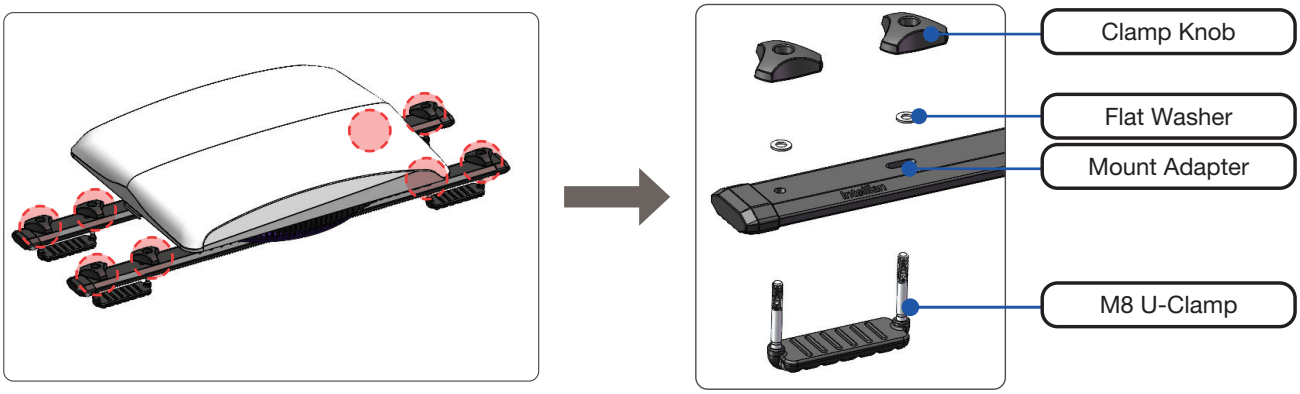


Figure 27: Loosening Clamp Knobs of the Mount Adapter

2. Place the antenna and mount adapter onto the vehicles cross bars, ensuring the coaxial port faces the rear of the vehicle.
3. Place the M8 U-Clamp under the crossbar and insert it into the mount hole on the mount adapter. Align the Land Mobile Mount Adapter pieces with the vehicle.
4. Feed the lock washer and clamp knob in order on the M8 U-Clamp.

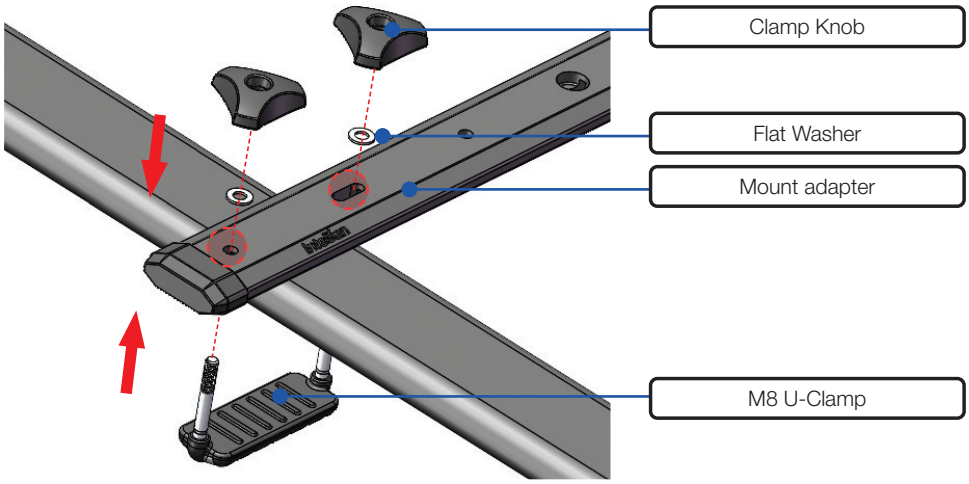


Figure 28: Assembling the M8 U-Clamp

5. Fully tighten the clamp knobs by rotating them clockwise to securely attach the Land Mobile Mount Adapter.
6. Repeat steps 2 through 5 for each remaining assembly. Ensure they're tightened.

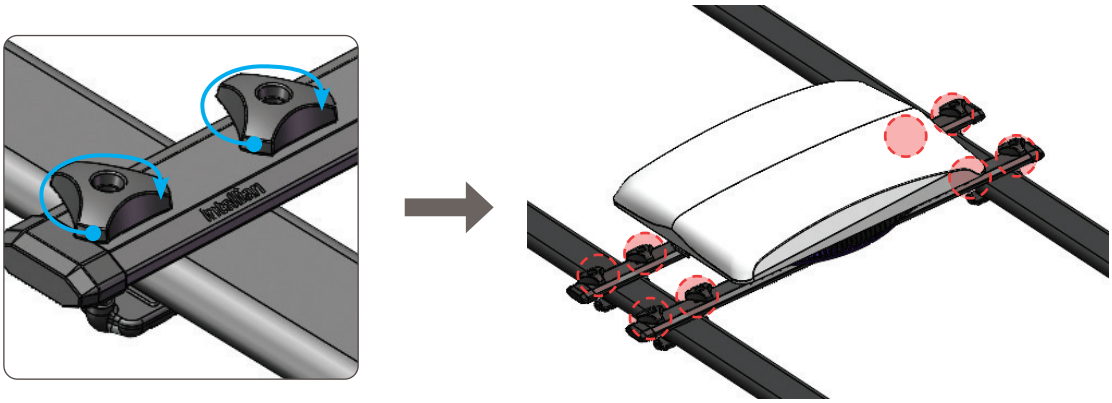


Figure 29: Fixing the Mount Adapter on the Cross Bar

7. Secure the coax cable to prevent movement while the vehicle is in motion.

Chapter 8. Connecting Cable to the ODU

NOTE

Make sure of the following before installing system cables.

1. Only use approved cables and connectors. Refer to "4.6.1 ODU Power+Data Cable" on page 31.
2. All cables with connectors need to be fully secured and protected from physical damage.
3. Don't acutely bend any cables during installation.
4. Always make sure to secure any loose cables to the base mount or a stationary surface after connecting the coax connector. This will minimize movement when in motion and prevent damage to the coax port on the ODU.

CAUTION

Do not over-tighten the F-type connector or handle it improperly during installation. It may cause damage to the F-type ports on the CNX and ODU. All installers must ensure that no more than 1 Nm (limit for current design: 2.26 Nm or 20 in.lbf) of torque is applied during the installation process.

Whether the F-type connector is being tightened with appropriate tools or by hand, it needs to be properly secured without over-torquing and risking damage. If applying a force of 1 Nm is challenging with the available tools on site, it is recommended to tighten the F-type connector by hand.

8.1 Connecting Cable to the ODU F-port

8.1.1 Connecting Coaxial Cable to the ODU F-port

1. Terminate M(Male) Connector on each end of coaxial cable.
2. Connect the coaxial cable to the Power & Data connector (F-port) on the ODU.

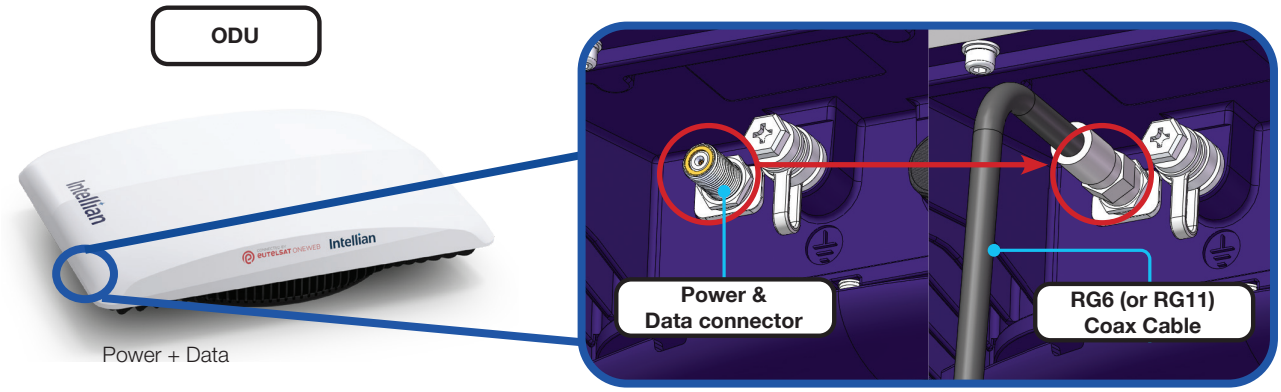


Figure 30: Cable Connection of CNX to ODU

NOTE

- The 5m RG6 cable for connecting the CNX to the ODU is supplied in the install kit box.
- To prevent cable damage, use the supplied cold shrink tube when wrapping the cable and connector. Refer to the "**8.1.2 Installing the Cold Shrink Tube on the Cable" on page 57** for more details.

8.1.2 Installing the Cold Shrink Tube on the Cable

WARNING

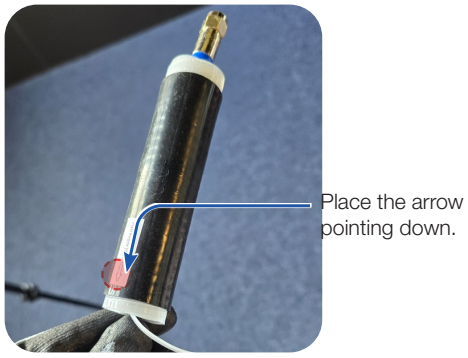
Unstable cable connections can cause intermittent contact, which may negatively affect communication and lead to electrical issues in the UT. Always secure connections firmly.

To prevent cable damage, use the supplied cold shrink tube when wrapping the cable and connector by following the steps below.

Note for Installation

- Ensure there are no sharp or acute edges on the cable part where the cold shrink tube is to be installed.
- Be careful not to damage the cold shrink tube with sharp objects when taking it out of the PE bag.

1. Place the arrow on the cold shrink tube pointing down and pass the cable through the tube.



2. Plug the cable connector into the port on the ODU. Then, tighten the connector using a torque wrench (recommended: 1 N·m).

3. Pull the plastic strap downward slowly until the cable and connector are wrapped.

4. After the tube shrinkage is complete, check whether the installed tube has any external damage or lifting. If there is damage or lifting, wrap the cable with rubber or tape.

8.2 Connecting Ground cable for Land Fixed (OW10HL)

Direct grounding for the ODU is very important for safety. Your ODU hardware must be protected from lightning strikes or static electricity by grounding. When establishing your grounding system, it must comply with the safety standards in your country.

1. Bring the ground cable and M6 x 12L hexagon socket head cap bolt (1 ea) for grounding from the installation kit box.
2. Unscrew the ground screw on the ground connector using a Phillips screwdriver.
3. Attach the ring connector of the ground cable to the ground connector and hold it in place.
4. Re-tighten the ground screw to secure the ground cable.

Figure 31: Connecting the Ground cable

5. Connect the other side of the ground cable to the place marked with the grounding symbol. Secure the ground cable using the supplied M6 x 12L hexagon socket head cap bolt (Tightening Torque: 12Nm). Refer to **"16.2 Tightening Torque Specification" on page 164.**

NOTE

When connecting the ODU to the CNX using the coax cable, it is best practice to include a properly grounded coax ground block between the two devices. This is in addition to the grounding strap applied directly to the ODU.

8.3 Connecting external GNSS (Optional)

Intellian's flat panel series offers the ability for an external GNSS input via an SMA connection. It is ideal for use in GNSS denied environments.

When an external GNSS is connected, the UT automatically switches to the R-GNSS and becomes operational.

If the R-GNSS is disconnected and the jumper cable is reconnected, a power cycle is required to revert the unit to using the internal GNSS ODUs.

1. Purchase of an external GNSS is required.
2. Remove the pre-installed caps from the SMA connector on the ODU.
3. Connect the SMA connector of the external GNSS cable to the GNSS connector.

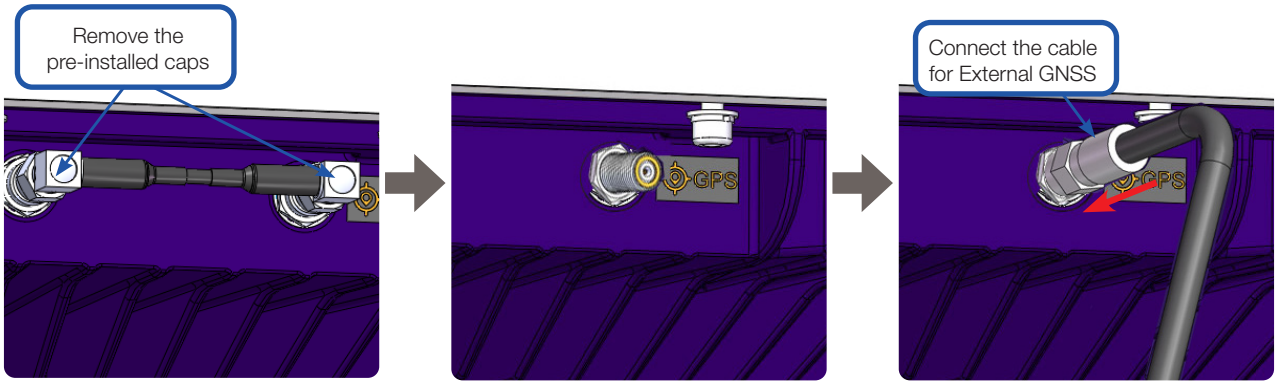


Figure 32: Connecting the SMA connector of the external GNSS cable to the GNSS connector

4. Select the supplied external SMA cap from the install kit.
5. Use the cap by turning the bolt clockwise to close the other connector, which does not have a GPS sticker (Not supported for GNSS).

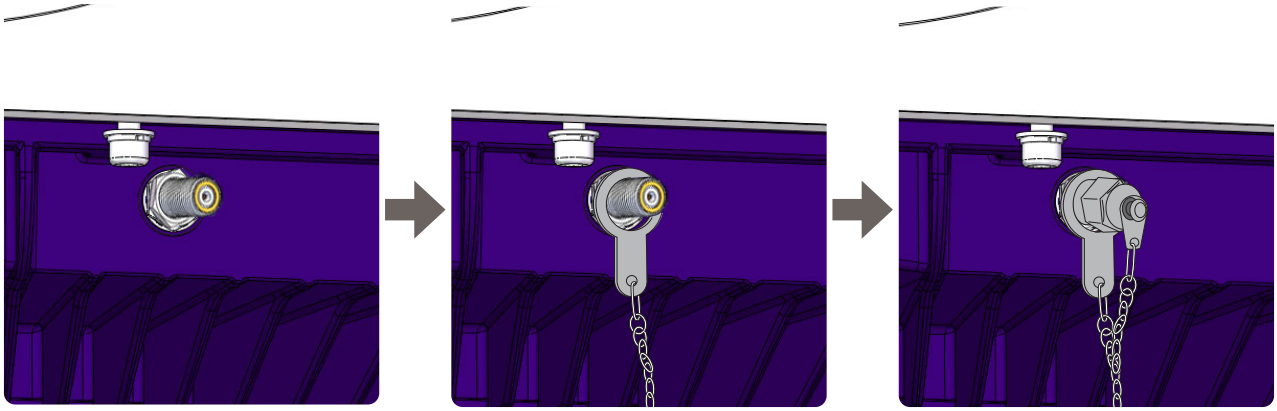


Figure 33: Close the left-hand connector (without GPS sticker) using the SMA cap provided

CAUTION

- When no longer connected to an external GNSS source, the jumper must be reinstalled for proper operation.
- The SMA connector must be DC-blocked externally. Customers must not apply any DC voltage to the RGNSS SMA port.

Chapter 9. Installing CNX-WIFI

9.1 Selection of CNX-WIFI Installation Site

- The CNX-WIFI should be installed in a clean, dry area.
- Ensure there is adequate space around the CNX-WIFI for cooling.

Position the CNX-WIFI

- Place the CNX-WIFI in its desired location.
- The CNX-WIFI must be placed vertically for optimal performance.

9.2 Dimensions

Confirm the dimensions of the CNX before installing it.

Unit: mm (inches)

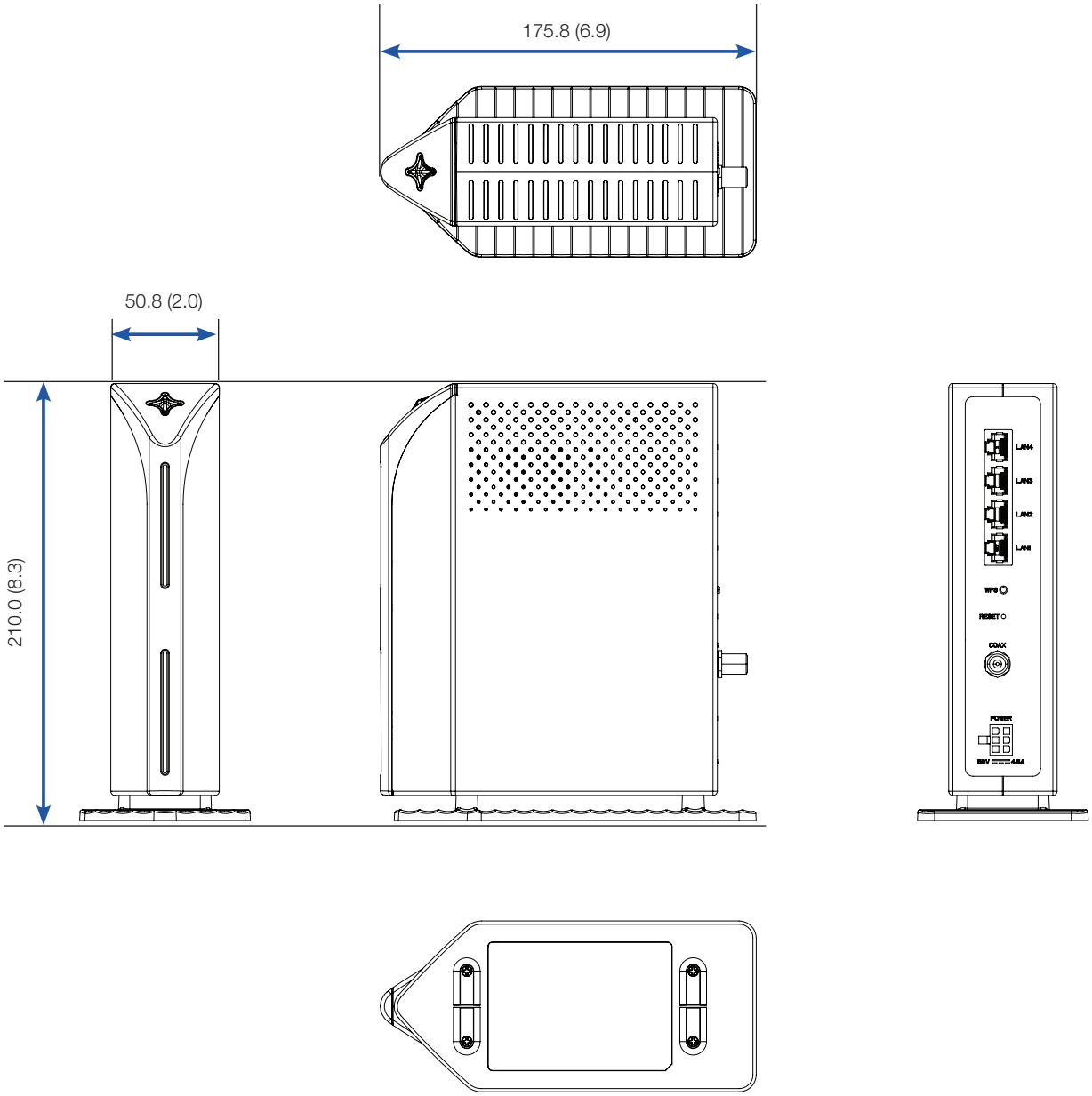


Figure 34: CNX-WIFI Dimensions

CAUTION

- The use of the provided 250W AC-DC adapter or 480W DC-DC converter is recommended. Using other power sources may cause malfunction or damage.
- This product is intended to be installed with the included Intellian Power Adapter, rated either 250W AC-DC adapter (56 VDC, 4.4A) or 480W DC-DC adapter (48 VDC, 10A). If you need further assistance, please contact Intellian for more information.
- For the AC-DC adapter, the power adapter must be plugged into a socket outlet with a grounded connection.
- Never open the equipment. This will void the warranty.
- Connect the cable to the **COAX** port on the CNX, then follow with securing any loose cable to the base mount, or any stationary surface relative to the ODU to ensure minimal movement when in motion. This helps prevent damage to the F-port on the ODU.

9.3 ODU System Configuration

For the proper operation of your satellite communication system, the ODU must be connected with all the provided components as shown in the figures below.

The basic ODU system consists of the ODU and CNX.

The ODU includes the SSM Module, which is capable of controlling and managing the ODU system.

9.3.1 ODU System Configuration with CNX-WIFI

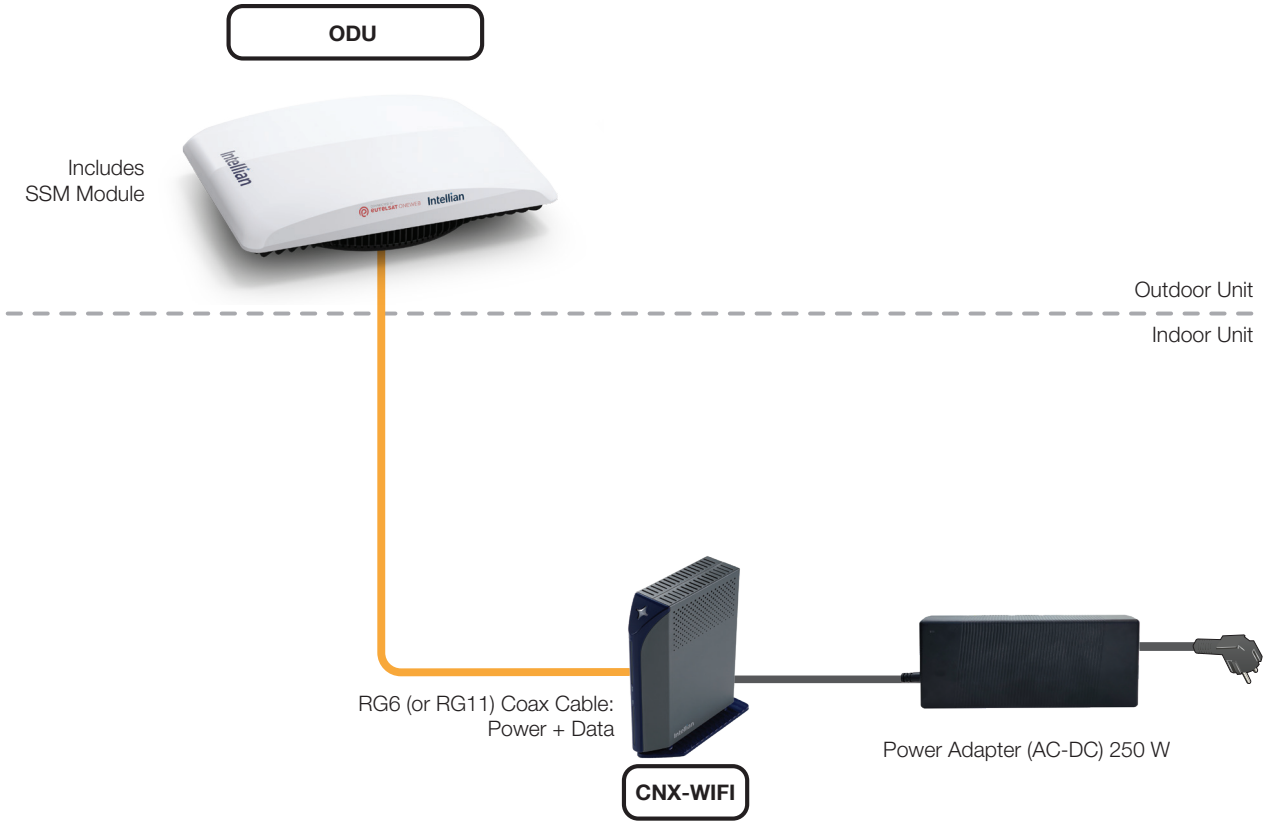


Figure 35: ODU System Configuration with CNX-WIFI

9.3.2 ODU System Configuration with 480W DC-DC Converter for Mobility

To set up the mobility UT, you need to purchase the CNX-WIFI that includes the DC-DC converter(PP-T1A1-DC). Refer to the following **"Mobility DC Power Connection Procedure" on page 65** for more details.

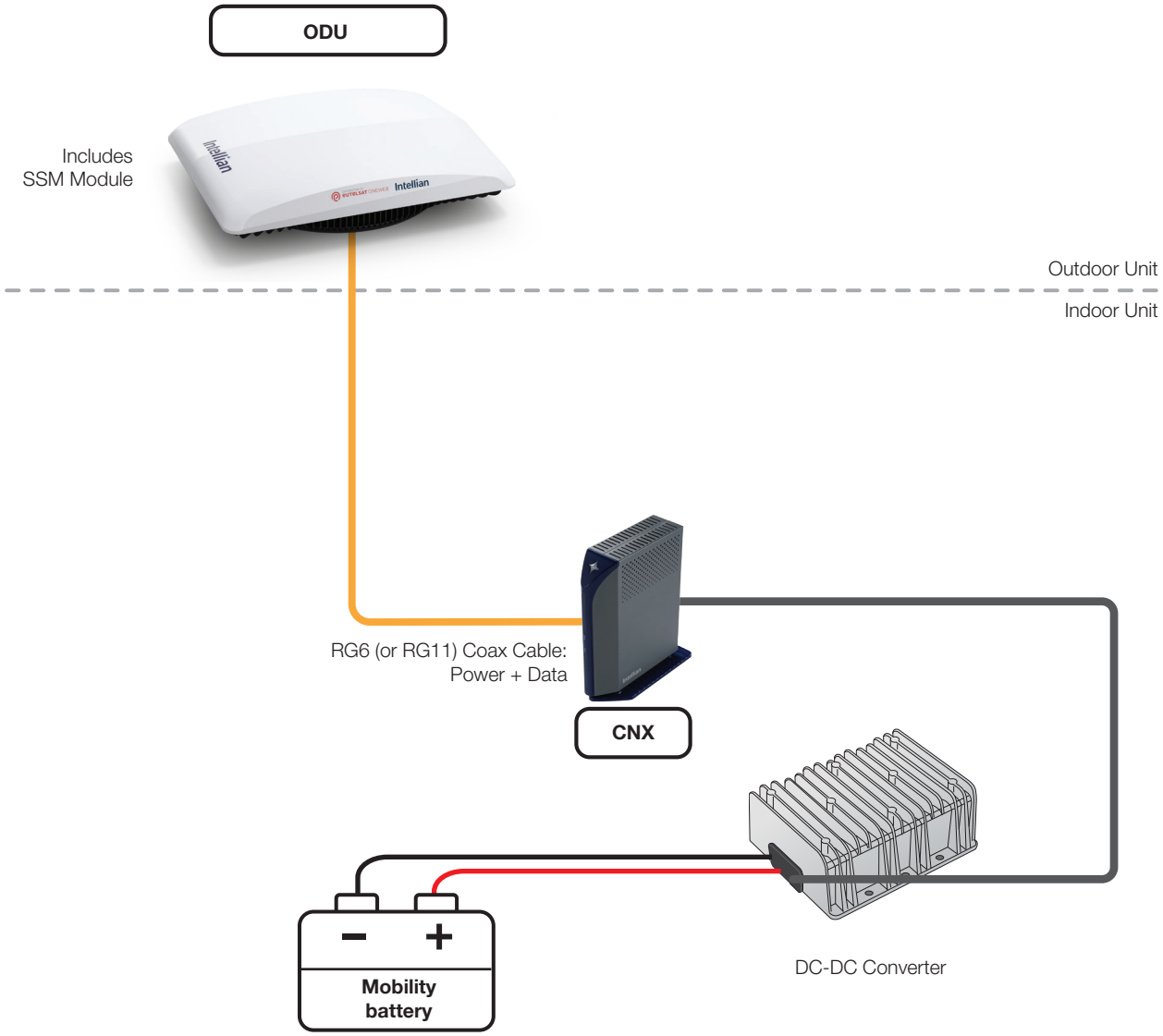


Figure 36: ODU System Configuration at DC Power site

CAUTION

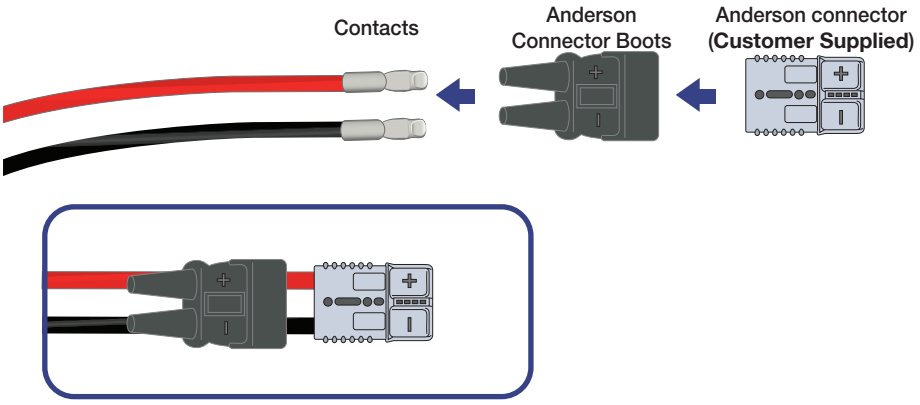
Connect the cable to the **COAX** port on the CNX, then secure any loose cable to the base mount or a stationary surface near the ODU to minimize movement while in motion. This helps prevent damage to the F-port on the ODU.

Mobility DC Power Connection Procedure

WARNING

- Ensure the vehicle is turned off with a disconnected battery, and remains off during the entirety of the installation until instructed to reconnect the battery and turn the vehicle on. Failure to do so can result in personal injury.
- The DC-DC Converter (480W) is only certified for land fixed and land mobile use. Use in a maritime environment may impact nearby third party electronic devices within 1.5m of the DC-DC converter due to EMI. There is a decreased risk to devices beyond this distance.

1. Ensure the vehicle is turned off with any work area being cool to the touch.
2. Confirm access to your vehicle's battery
3. Determine the desired location for the DC-DC converter, outside of the engine bay.
4. Measure the desired length from your car battery, or power access point, to your desired placement location of the DC-DC Converter. Record this value.
5. Cut wires to length based on the above measurements. This will be one (1) red jacketed 10 awg copper wire and one (1) black jacketed 10 awg copper wire.
   a. Note: it is recommended to cut each wire long by 1-2 meters if you are not certain of length. This can help ensure sufficient length, and slack in the line in later steps.
6. Feed the red and black wires from the battery to the DC-DC converter location.
   a. Ensure wires are managed in a clean and proper way as to not negatively impact any other components.
   b. On any externally facing panels such as the firewall, ensure the through hole is adequately sealed.
7. Connect one end of the wire that will be connected to the DC DC converter to the Anderson connector (Customer Supplied).
   a. Pass the cables through the boots. The polarity of the terminal is indicated on the boots with + and - marks. Check the polarity to ensure the cables are inserted correctly.
   b. Insert the contacts into the negative (-) and positive (+) terminals of the Anderson connector.



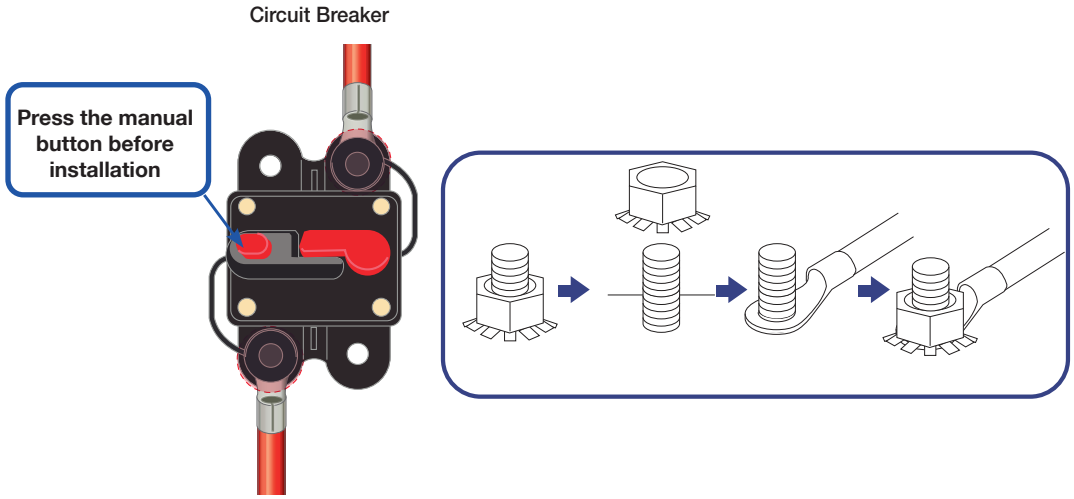
8. Terminate the wires on the battery side.
   a. Select the proper ring terminal size for your battery. This will go in line with the terminal clamp screw. Most common sizes are 6mm and 8mm.
   b. Strip 1cm of jacket off each wire end. Insert the wire into the ring terminal. Then crimp in place using the appropriate crimp tool.

9. Connect the red (positive) cable to the circuit breaker.
    a. Before connecting wires, press the manual button on the circuit breaker to disconnect power. This is to prevent personal injury.

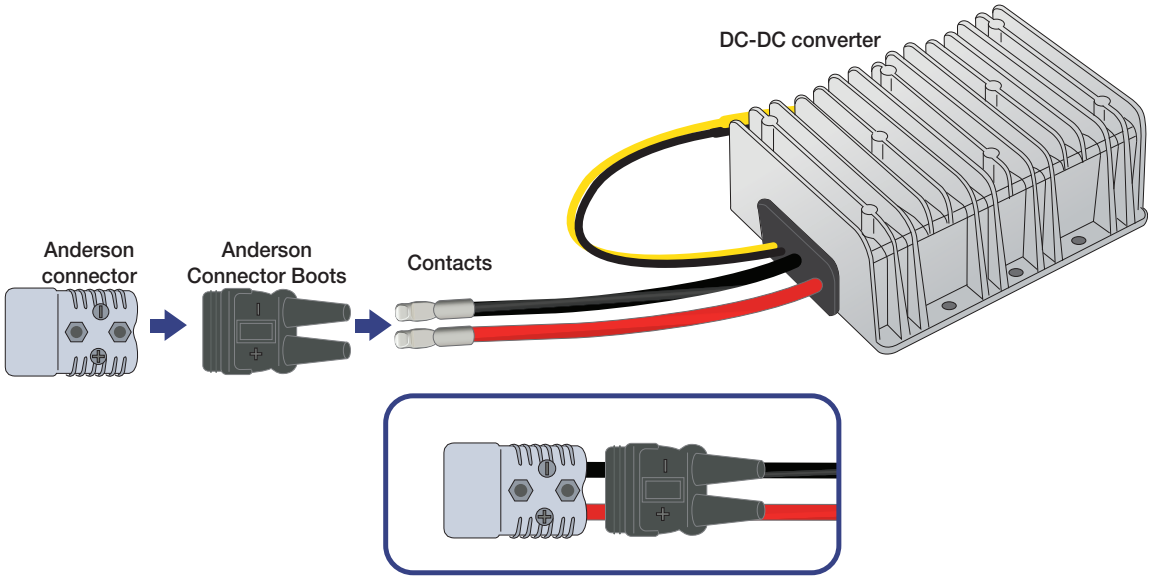
WARNING

Do not press the manual button again until the installation is complete. Doing so may result in personal injury.

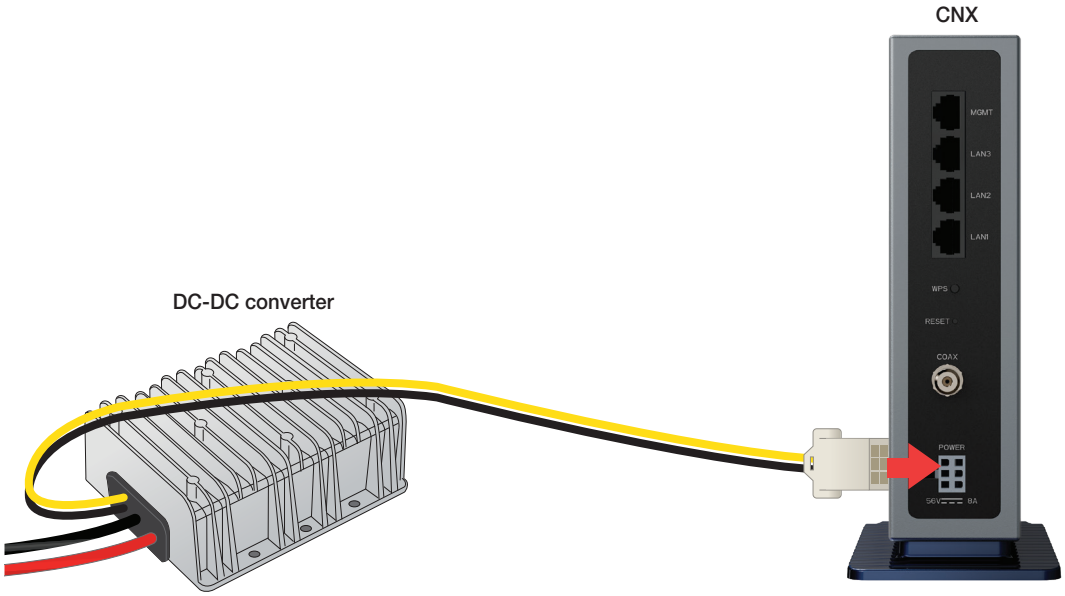
    b. Open the caps on the circuit breaker.
    c. Unscrew the terminal of the circuit breaker using a wrench. Insert the o-lug of the red (positive) wire into the terminal and tighten the bolt back into the terminal.
    d. The circuit breaker is installed and secured inside the engine bay. Ensure circuit breaker is managed in a clean and proper way as to not negatively impact any other components.



10. Create another wire to run from the circuit breaker to the DC-DC Converter.
    a. Determine the required length, and terminate it with a ring terminal on one end, and a Anderson connector contact on the other.
11. Connect one end of the red wire(positive) to a circuit breaker and one end of the red wire(positive) to the battery positive terminal.
    a. Open the caps on the circuit breaker. Unscrew the terminal of the circuit breaker using a wrench. Insert the o-lug of the red wire(positive) into the terminal and tighten the bolt back into the terminal.
    b. The circuit breaker is installed and secured inside the engine bay. Ensure circuit breaker is managed in a clean and proper way as to not negatively impact any other components.
    c. Unscrew the terminal of the circuit breaker using a wrench. Insert the o-lug of the red wire (positive) into the terminal and tighten the bolt back into the terminal.
12. Connect red wire(positive) to the battery positive terminal.
13. Connect the black wire(negative) from step 8 to the negative battery terminal.
14. Bring the other red cable. Unscrew the terminal on the other side of the circuit breaker using a wrench. Insert the o-lug of the red (positive) wire into the terminal and tighten the bolt back into the terminal.
15. Connect the cables from the DC-DC converter to the Anderson connector.
    a. Insert the contacts into the cable conductor for the DC-DC converter and clamp using a crimping tool.
    b. Pass the cables through the boots. The polarity of the terminal is indicated on the boots with + and - marks. Check the polarity to ensure the cables are inserted correctly.
    c. Insert the contacts into the negative (-) and positive (+) terminals of the Anderson connector.



16. Connect the DC-DC output wires the power input port on the CNX.



17. Plug in the Anderson connectors until a click sound is heard, and then assemble the boots

18. Press the manual button on the circuit breaker to release it and reconnect the power.

CAUTION

If you leave the CNX connected, the car battery might discharge. Please take one of the following actions:

- Unplug the Anderson connectors. This completely disconnects the power.
- Disconnect the CNX and DC-DC converter. This puts the system in standby status.
- DC-DC converters generate significant heat, which can cause damage to vehicle seats, etc.

9.4 CNX-WIFI Cable Connections and LEDs

9.4.1 CNX-WIFI Front/Back Panel

CNX-WIFI Front Panel

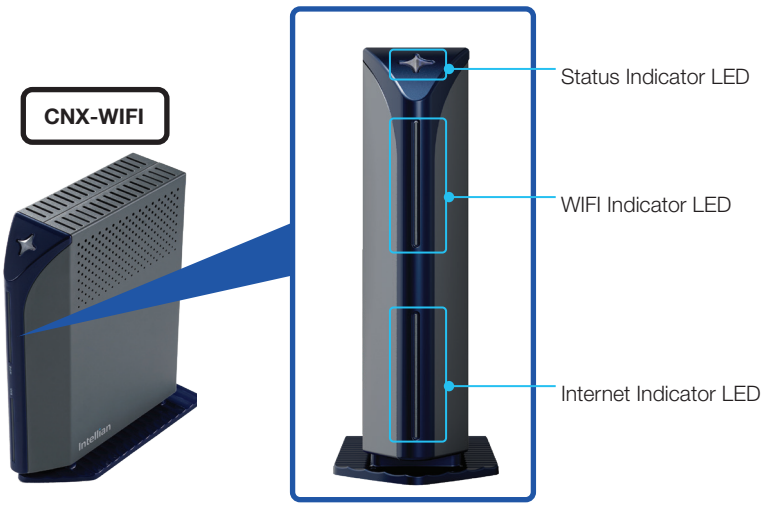


Figure 37: Front Panel View of CNX-WIFI

CNX-WIFI BACK Panel

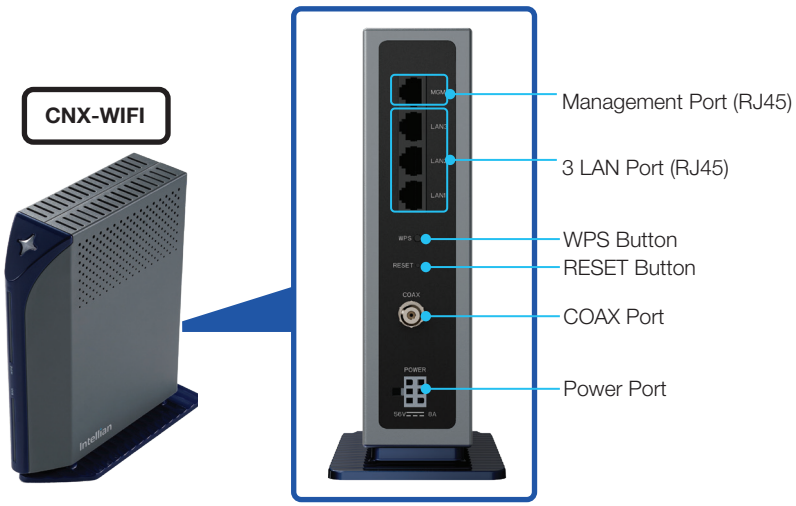


Figure 38: CNX-WIFI Back Panel Ports

9.4.2 CNX-WIFI LEDs

During the installation process and use, it is important to know the elements of the CNX-WIFI. The front panel displays the Wi-Fi and WAN indicators lights. They will light up blue when engaged and can be used to check the connection status with the LED indicators on the front and back panel of the CNX-WIFI.

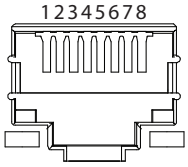
The following table shows the status indicators and buttons for the CNX-WIFI.

LED Indicators	Color	Description
Status LED	Off	No Power
	Solid Blue	Connected to power supply
	Solid Red	Fault Condition
Wi-Fi 6 LED	Off	5G and 2.4G Disabled
	Blinking Blue	Data Activity
	Solid Blue	5G or 2.4G Enabled
INTERNET	Off	Coaxial Port Disconnected
	Blinking Blue	Data Activity
	Solid Blue	Coaxial Port Connected, but no data activity

9.4.3 CNX-WIFI Connector Pinout Guide

Reference the following connector pinout information for the connection Ports of the CNX.

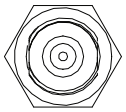
LAN Connector



RJ-45 Female

Pin	Signal
1	BI_DA+
2	BI_DA-
3	BI_DB+
4	BI_DC-
5	BI_DC+
6	BI_DB-
7	BI_DD+
8	BI_DD-

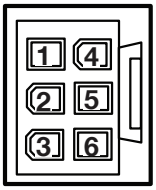
Coax Connectors



RF F Type Female

Conductor	Function
Inner	Power + Data
Outer	GND

Power Connector



6 Contact Power Plug Male
View is from back of connector

Pin	Signal
1	Return
2	GND
3	Return
4	+56V DC
5	NC
6	+56V DC

9.4.4 Connecting CNX-WIFI to ODU

Connect a coaxial cable from the Coax port of the CNX-WIFI to the F-port of the ODU.

NOTE

- The coaxial cable has already been connected to the ODU. Refer to the **"4.6.1 ODU Power+Data Cable" on page 31** for details.
- Make sure of the following before installing system cables.
  - All cables with connectors need to be fully secured and protected from physical damage.
  - Don't acutely bend any cables during installation.

- Ensure that each connection is fully tightened with a torque of 1 Nm (8lbf.in).
- Ensure the cables are not subjected to excessive tension or in a tight bend radius.

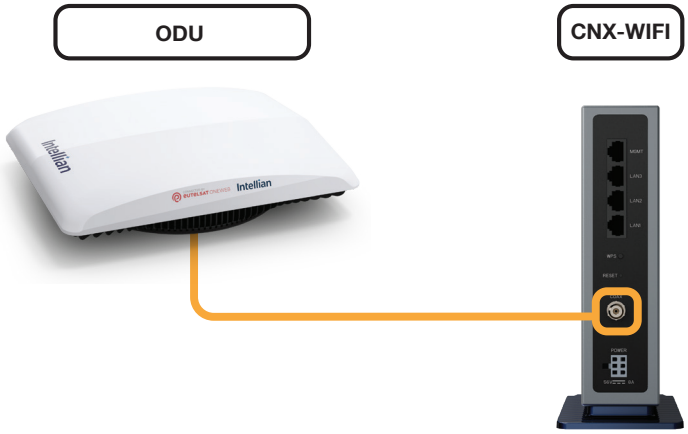


Figure 39: Connecting Power to CNX-WIFI

CAUTION

After connecting the coax cable to the **COAX** Port, ensure the cable is properly secured. The cable shall be secured to any stationary surface near the CNX to mitigate additional movement and reduce stress on the port. A service loop is also recommended if allowable by the installation.

9.4.5 Connecting Power to CNX-WIFI

1. Plug the appropriate power cable (AC power cord (NA) or AC power cord (NEMA 5-15P)) into the power adapter.
2. Connect one end of the power supply unit to the electrical outlet and the other end to the CNX-WIFI.
   - It is recommended that the power cable is plugged into the CNX-WIFI before plugging in the power adapter to an outlet.
   - The power connector can only be plugged into the CNX-WIFI one way. The locking pin is on the left side.
   - Ensure the cable is not subjected to excessive tension or a tight bend radius.

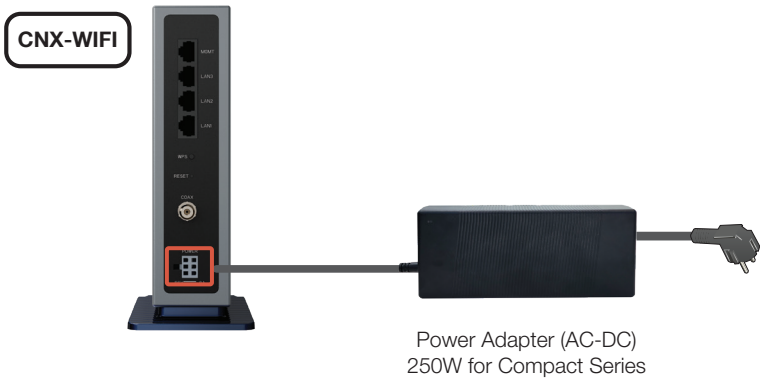


Figure 40: Connecting Power to CNX-WIFI

CAUTION

- Do NOT power ON or OFF the CNX unless the RF cable is properly connected to ODU
- Operating the CNX without this connection may cause permanent damage to the internal components of the device.

9.5 CNX-WIFI Modes of Operations

CNX-WiFi supports six modes: Bridge Mode, WiFi Router Mode, Switch/AP Mode, Single Port Mode, Multi-APN Router Mode, and Multi-APN Switch Mode. It can changed the mode according to specific usage needs through the LUI. (It is recommended to use Chrome when accessing the LUI.)

- What is the default out of the box. = WiFi Router mode
- What is the default upon upgrade. = Switch/AP Mode
- What happens when you push the reset button = Reverts back to factory WiFi Router mode, wipes all content like SSID name and PW, and CNX LUI password

9.5.1 Supported Modes of Operation with version 22 or older

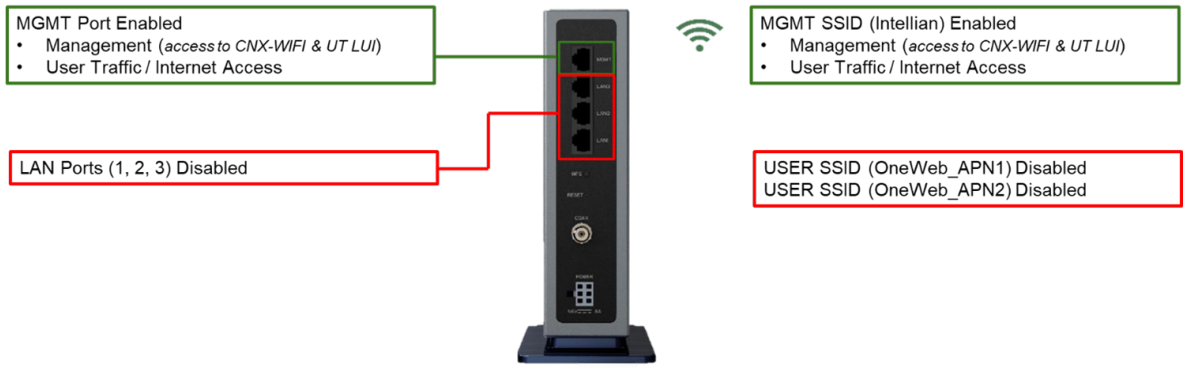
Bridge Mode

In Bridge Mode, the router acts as a bridge or a link between devices within the same network, allowing them to communicate directly.

The CNX-WIFI is in **Bridge** work mode by default.

When in Bridge Mode, all traffic (management and user) is accessible via the MGMT port. The SSID “Intellian” is also enabled for all traffic. LAN ports 1-3 and the User SSIDs are disabled.

Do not attempt to change work modes or enable other SSIDs in version 22 or older. at this time as user traffic and internet access will be denied.



To ensure the CNX-WIFI is in Bridge mode:

1. Use an ethernet cable to connect your computer to the MGMT port on the CNX-WIFI.
2. Open a web browser and enter the default IP address: **192.168.100.3.** (Chrome is recommended.)
3. Set your password upon first log in. A basic recommendation is "admin", but can be changed based on the user preference.
   - If the password is ever lost or forgotten, the CNX can be reset to default by pushing and holding the reset button for 10 seconds.
4. From the **Network** menu, select **Work Mode**.

5. From the **Work Mode** Setting page, select **Bridge** if necessary. By default, it will be in **Bridge** work mode. If you change the setting, select the **Save and Apply** button.

9.5.2 Supported Modes of Operation with CNX software 26 or later

WiFi Router Mode

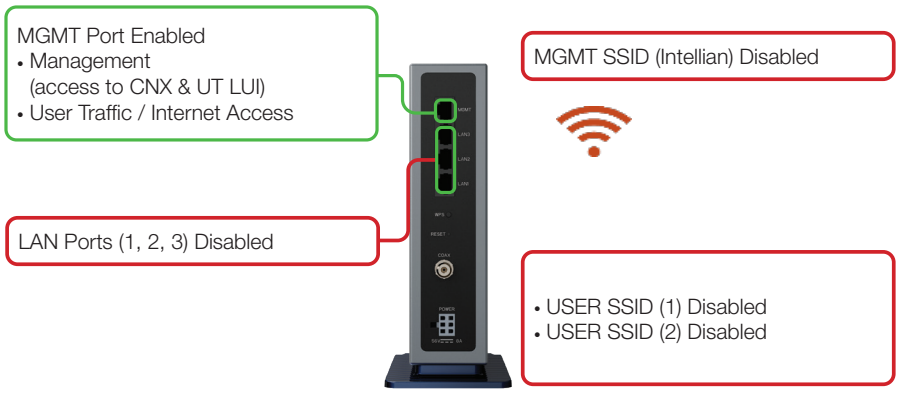
- CNX operates as Layer-3 NATP/Router
- Device connected to any LAN port obtain address via DHCP from CNX
- Device connected to MGMT SSID Intellian obtains address via DHCP from CNX
- CNX Obtains WAN-IP via DHCP from SSM
- User is able to create additional SSIDs if desired
- All local networks are isolated in their own firewalled subnet and have configurable DHCP settings

Switch /AP Mode

- CNX operates as Layer-2 device including SSID Intellian
- Device connected to any LAN ports obtain address via DHCP from SSM
- Device connected to MGMT SSID Intellain obtains address via DHCP from SSM
- All physical ports and MGMT SSID Intellain are bridged and trunked to SSM

Single Port Mode

- CNX functions as a single port bridge
- Device connected to Management LAN port obtains address via DHCP from SSM
- All other ports and Wi-Fi SSIDs (including Intellian) are disabled and cannot be enabled



Multi-APN Router Mode

- All physical user ports & MGMT SSID are enabled
- SSID OneWeb_APN1 and OneWeb_APN2 are disabled, but can be enabled by the user
- Switch LAN Port 1 & SSID OneWeb_APN1 are NAT'ed to X.X.X.b
- Switch LAN Port 2 & SSID OneWeb_APN2 are NAT'ed to Y.Y.Y.b
- Switch LAN Port 3 trunks VLAN 111 and VLAN 222, and does not trunk untagged traffic
- CNX WAN IP is obtained from SSM via DHCP per VLAN , each VLAN on CNX runs a DHCP server (NAPT)
- Switch LAN Port 4 labeled Management always operates in bridge mode with Intellian SSID

Multi-APN Switch Mode

- CNX operates as a L2 device, including SSID Intellian
- SSID OneWeb_APN1 and OneWeb_APN2 are disabled, but can be enabled by the user
- Device connected to any LAN port obtains address via DHCP from the SSM
- LAN Port 1 and SSID OneWeb_APN1 are bridged to SSM eth0.111
- LAN Port 2 and SSID OneWeb_APN2 are bridged to SSM eth0.222
- LAN Port 3 trunks VLAN 111 and VLAN 222, and does not trunk untagged traffic
- Device connected to SSID Intellian obtains address via DHCP from SSM

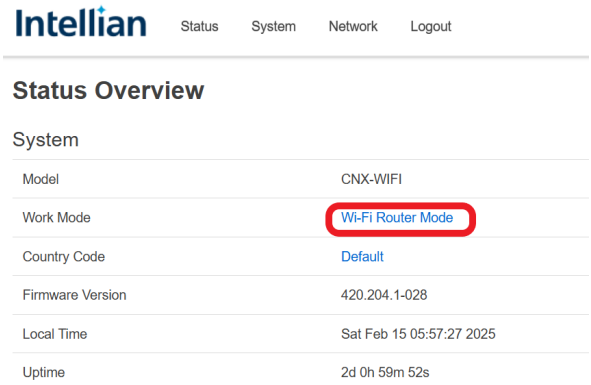
9.6 CNX-WIFI Settings

9.6.1 Setting Up CNX-WIFI for First-Time Login

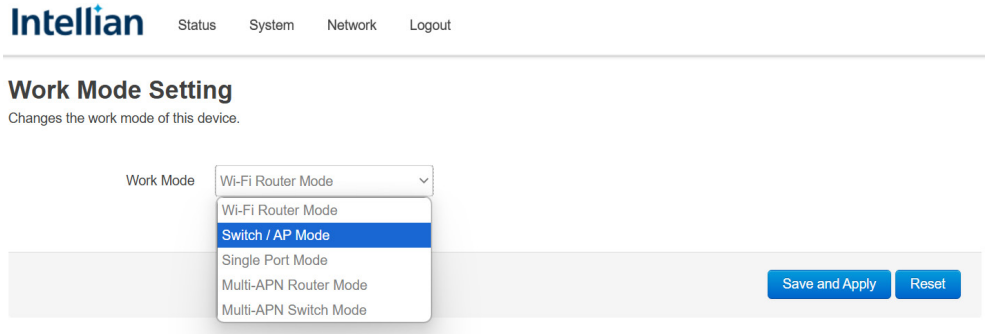
1. Use an ethernet cable to connect your computer to the MGMT port on the CNX-WIFI.
2. Open a web browser and enter the default IP address: **192.168.100.3.** (Chrome is recommended.)
3. Set your password upon first log in. A basic recommendation is "admin", but can be changed based on the user preference.
   - If the password is ever lost or forgotten, the CNX can be reset to default by pushing and holding the reset button for 10 seconds.

9.6.2 Setting the Work Mode

1. From the LUI home page, click the current work.



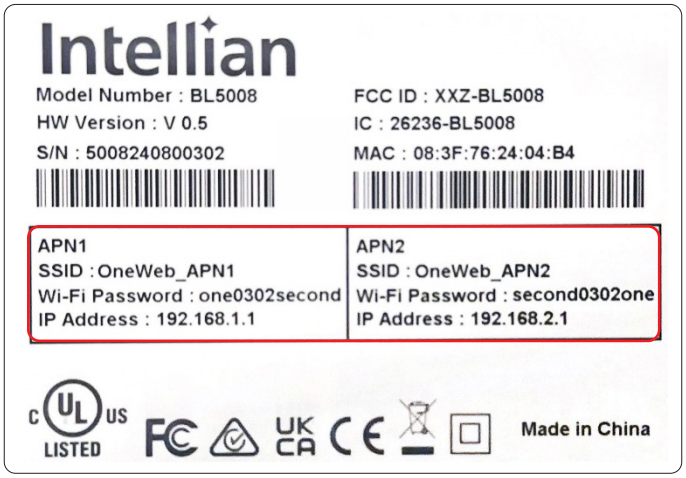
2. Select desired work mode from the drop down.



3. Click **Save and Apply** to apply the settings to the system.

9.6.3 Updating Wi-Fi Passwords for CNX-WIFI

The username, password, and SSID information are on a label on the bottom of the CNX-WIFI. The Intellian MGMT network does not have a password.



NOTE: This is an example. Passwords are unique to each CNX.

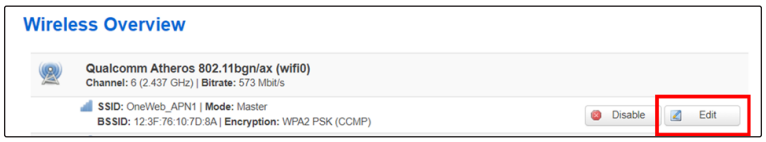
Figure 41: CNX-WIFI Label

In Bridge Mode, only the MGMT SSID intellian is enabled / accessible.
To change the SSID name or Password:

1. Go to the **Network** menu and select **WIFI**.

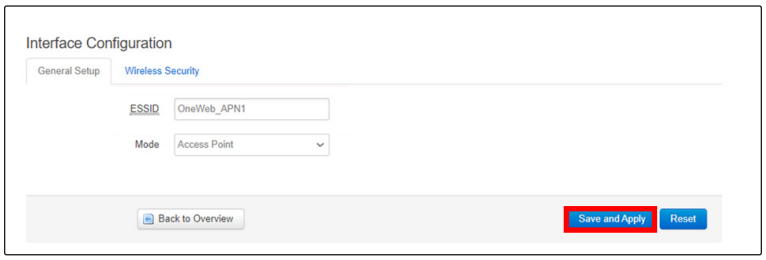
The Wireless Overview page will display the following:

2. Select the **Edit** button to make changes.

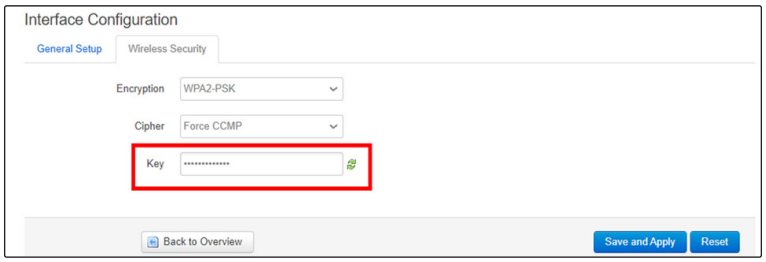


3. To change the SSID name, go to the Interface Configuration section, select the General Setup tab and type in the new name in the ESSID field.

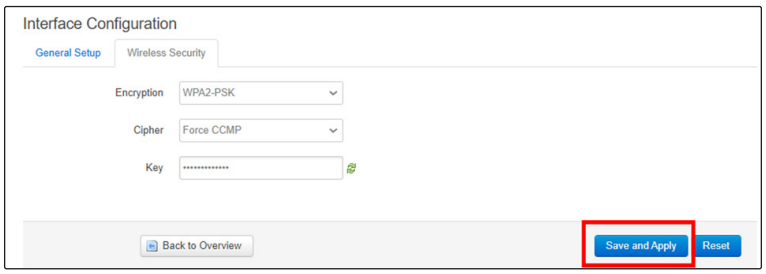
Once the SSID name has been updated, select the **Save and Apply** button.



4. Type in the new password in the **Key** field. By default, it will be the password on the label on the bottom of the CNX-WIFI.



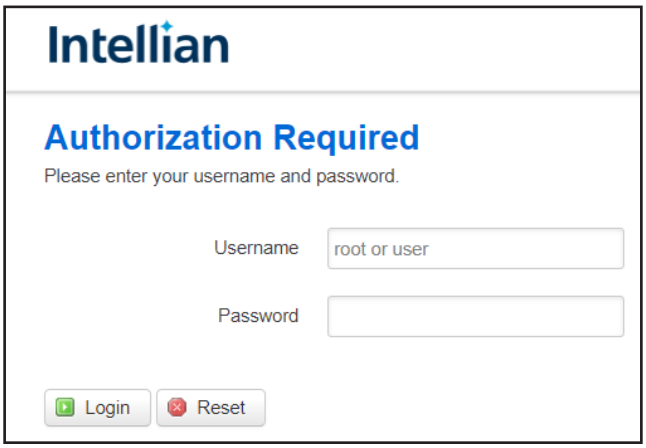
5. Once the password has been updated, select the **Save and Apply** button.



9.6.4 Updating the Country Code for CNX-WIFI

To update the Country Code, follow these steps:.

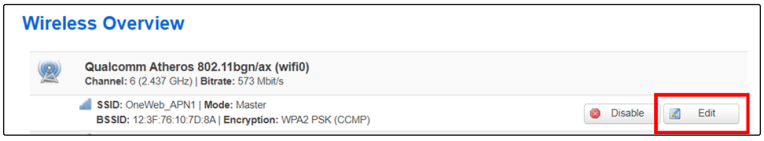
1. Log into the CNX Login page: **192.168.100.3**. The default username is “root.” Use the password you set when first connecting to the CNX. If you forget your password, press and hold the RESET button on the CNX for 10 seconds to reset the system, then set a new password.



2. Go to **Network** > **WiFi**.

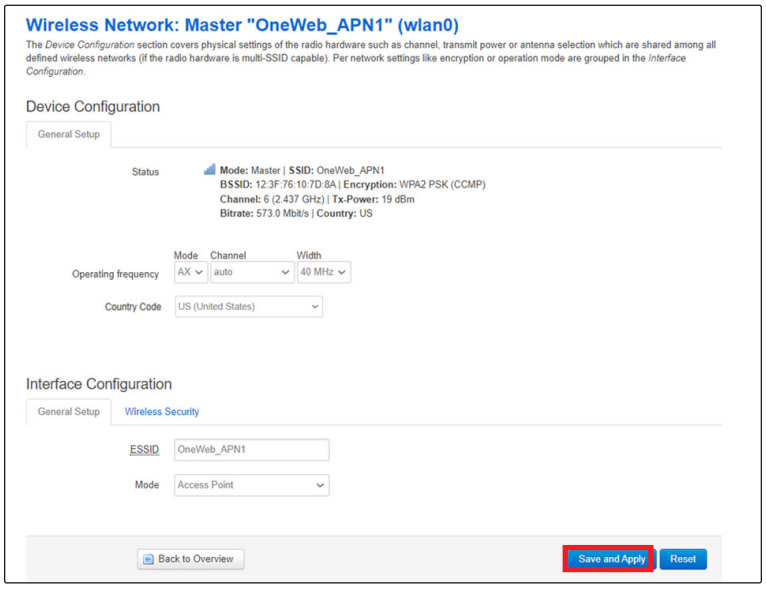
The Wireless Overview page will display the following:

3. Select **Edit** button.

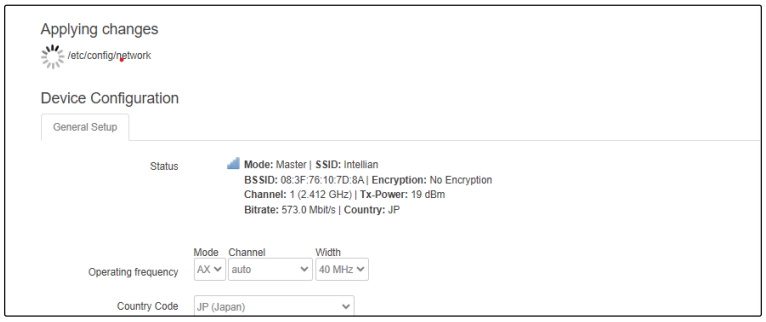


4. From the General Setup section, select the appropriate Country Code from the drop down list.

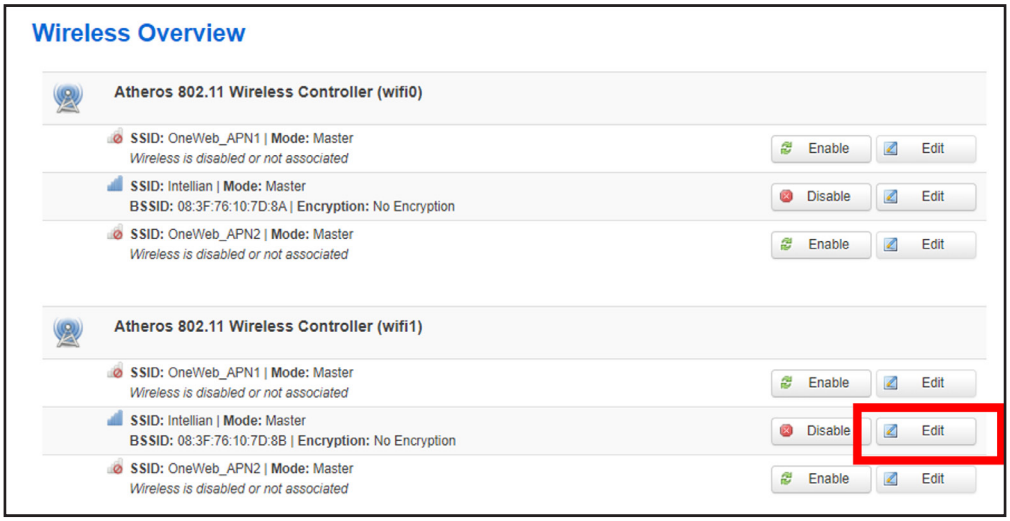
5. Scroll to the bottom of the page and select the Save and Apply button.



6. The screen will display that changes are being applied.



7. Once the changes have been applied, the **Wireless Overview** page will display. The 5 GHz row will also need to be updated. Select the **Edit** button on the **SSID**: Intellian | **Mode**: Master row for 5 GHz (wifi1).



8. Follow steps 1-4 to complete the same procedure.

   Based on the country list provided, here are the operating / allowed Wi-Fi frequency across different countries:

   The following countries have the same data:

   Argentina, Australia, Brazil, Chile, EU (European Union), Indonesia, Mexico, Saudi Arabia, South Africa, South Korea, UK (United Kingdom), and USA.

   - 2.4 GHz Band: 2400–2483.5 MHz
   - 5 GHz Band:
     - UNII-1: 5150–5250 MHz
     - UNII-2: 5250–5350 MHz
     - UNII-2 Extended: 5470–5725 MHz
     - UNII-3: 5725–5850 MHz

   Canada

   - 2.4 GHz Band: 2400–2483.5 MHz
   - 5 GHz Band:
     - UNII-1: 5150–5250 MHz
     - UNII-2: 5250–5350 MHz
     - UNII-2 Extended: 5470–5725 MHz
     - UNII-3: 5725–5825 MHz

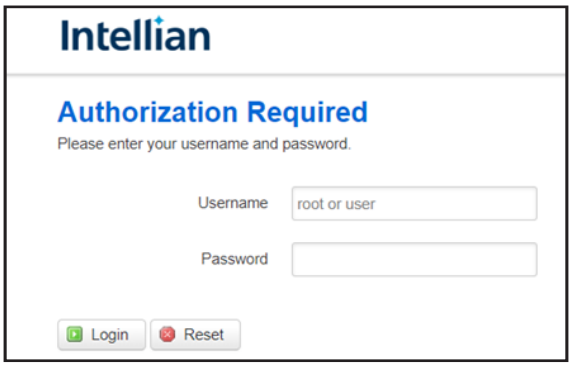
   Japan

   - 2.4 GHz Band: 2400–2483.5 MHz
   - 5 GHz Band:
     - UNII-1: 5150–5250 MHz
     - UNII-2: 5250–5350 MHz
     - UNII-2 Extended: 5470–5600 MHz
     - UNII-3: 5650–5850 MHz
   - 2.4 GHz Band is universally the same across all these countries (2400–2483.5 MHz).
   - 5 GHz Band has variations, especially in the upper ranges and some specific bands.

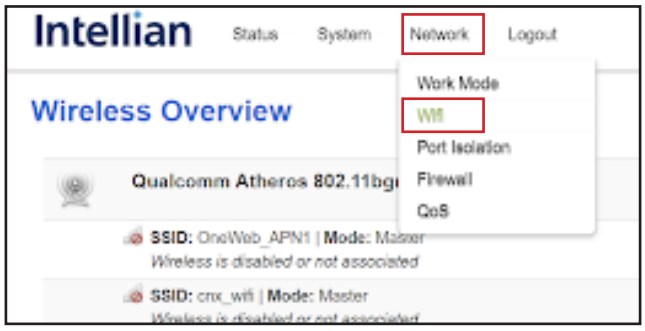
9.6.5 Disabling the Wi-Fi

To disable the Wi-Fi, follow these steps:

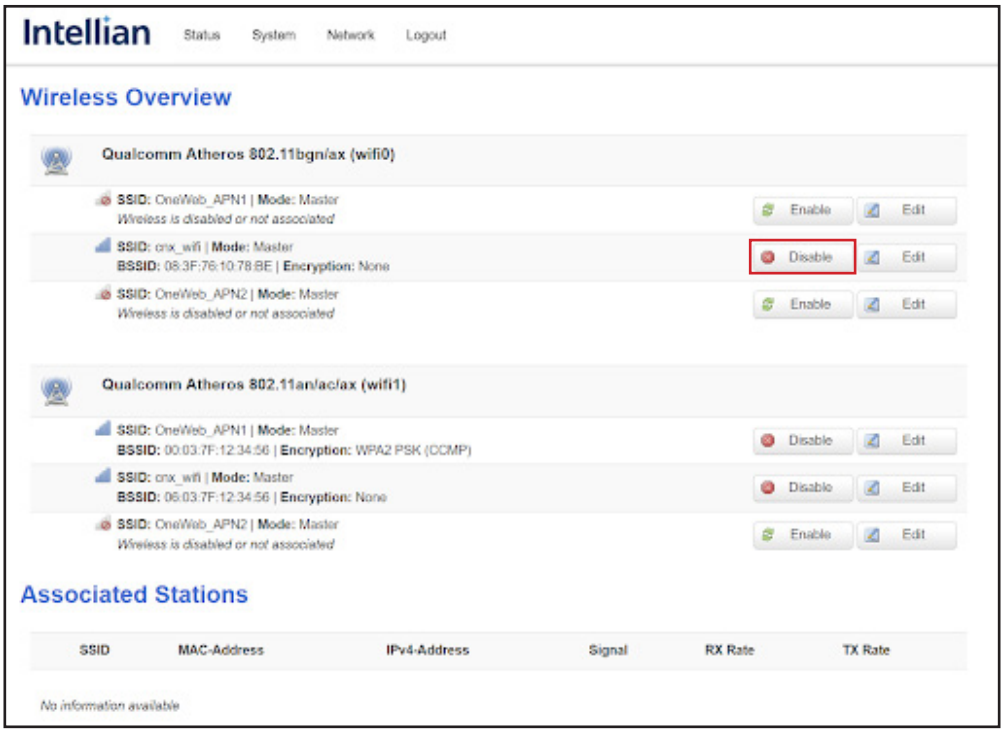
1. Log into the CNX Login page: **192.168.100.3**. The default username is “root.” Use the password you set when first connecting to the CNX. If you forget your password, press and hold the RESET button on the CNX for 10 seconds to reset the system, then set a new password.



2. From the **Network** menu, select Wifi.



3. Select the **Disable** button of the Wifi network you want to disable. Then, Wifi will be disabled, and the **Disable** button will change to **Enable**.



9.6.6 Updating the CNX-WIFI Software

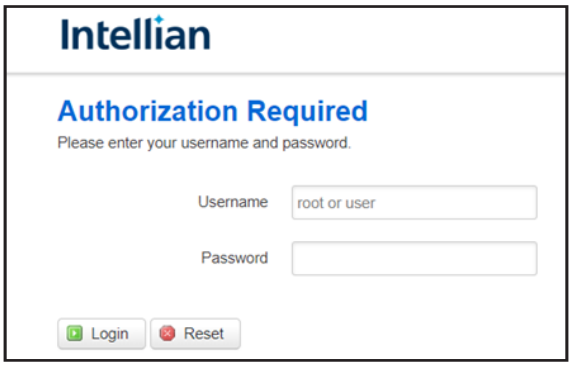
NOTE

Downgrading the CNX-WIFI firmware will result in a loss of functionality. Ensure the firmware version is compatible with your configured mode of operation before proceeding.

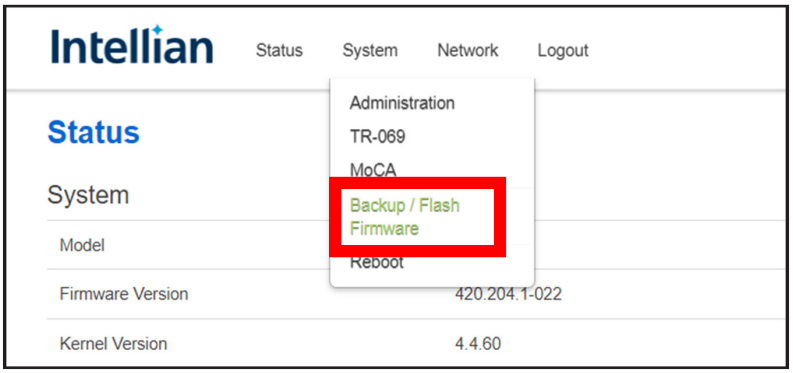
If an incompatible firmware version is uploaded to the CNX-WIFI, the top front LED will display a solid red color. To resolve this issue, upload the correct and updated CNX-WIFI firmware version via the LUI.

To update the CNX-WIFI software, follow these steps:

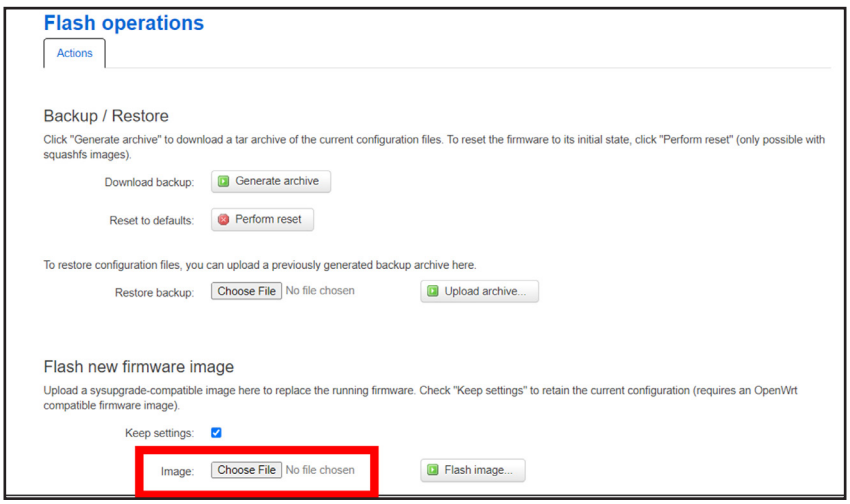
1. Log into the CNX Login page: **192.168.100.3**. The default username is “root.” Use the password you set when first connecting to the CNX. If you forget your password, press and hold the RESET button on the CNX for 10 seconds to reset the system, then set a new password.



2. From the **System** menu, select **Backup / Flash Firmware**.



3. Go to the Flash new firmware image section and select the Choose File button to get the appropriate file.



9.6.7 Updating the CNX-WIFI Software

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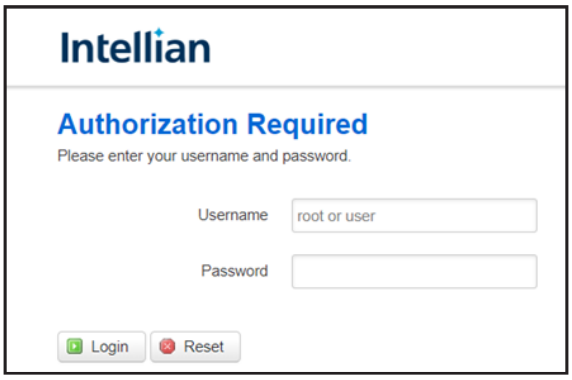
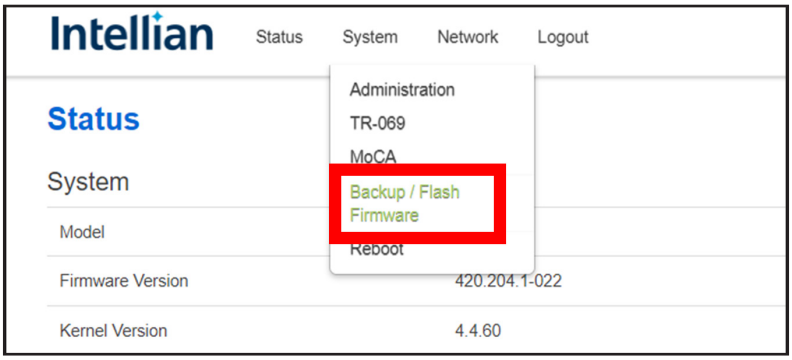
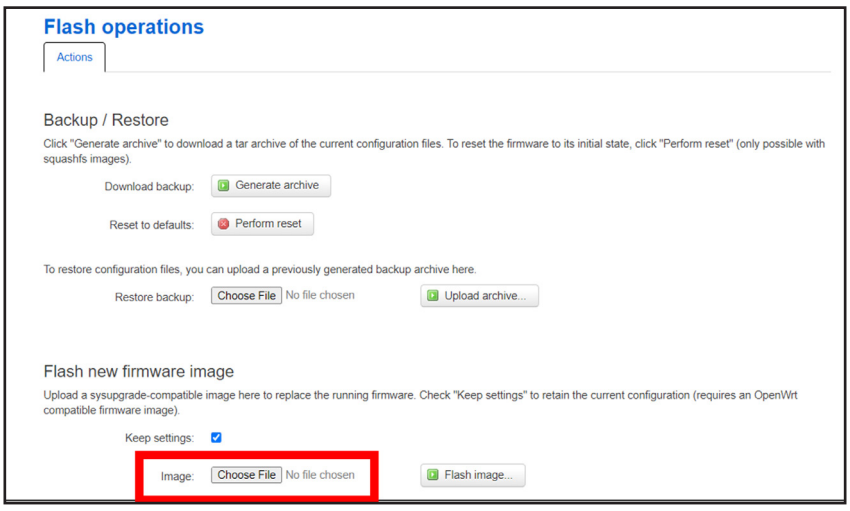
1. Log into the CNX Login page: **192.168.100.3**. The default username is “root.” Use the password you set when first connecting to the CNX. If you forget your password, press and hold the RESET button on the CNX for 10 seconds to reset the system, then set a new password.



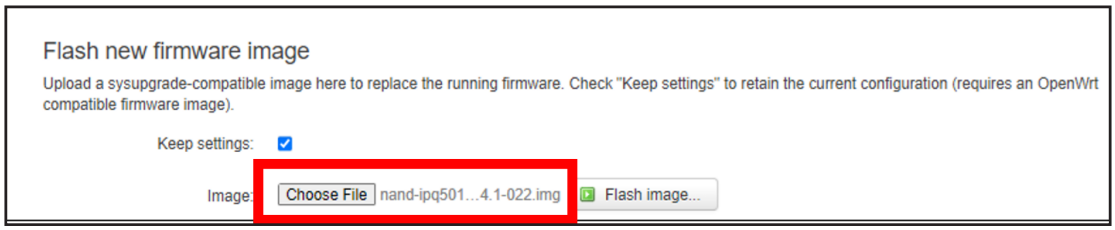
2. From the **System** menu, select **Backup / Flash Firmware**.



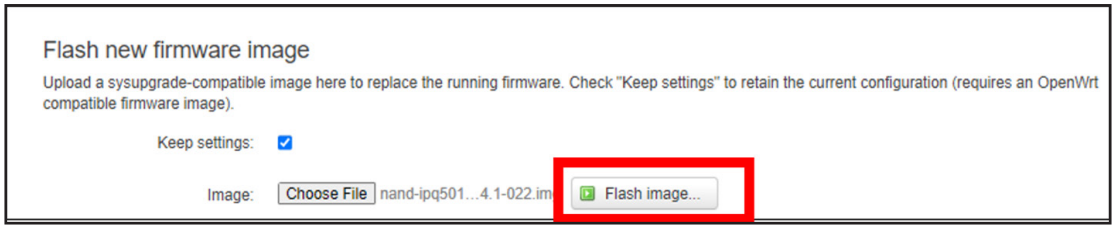
3. Go to the Flash new firmware image section and select the Choose File button to get the appropriate file.



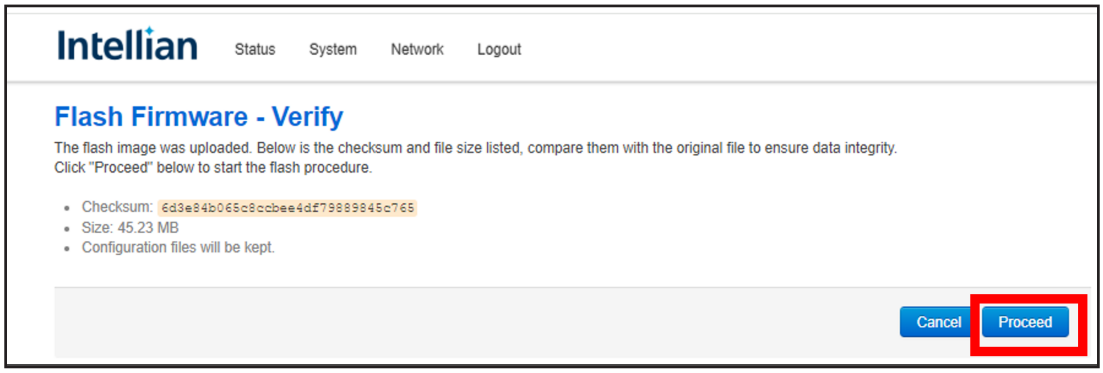
4. The file name will display next to the Choose File button.



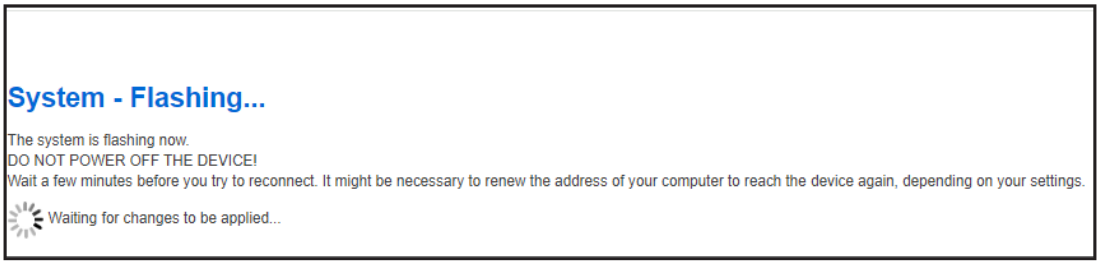
5. Select the **Flash image** button to begin upgrade.



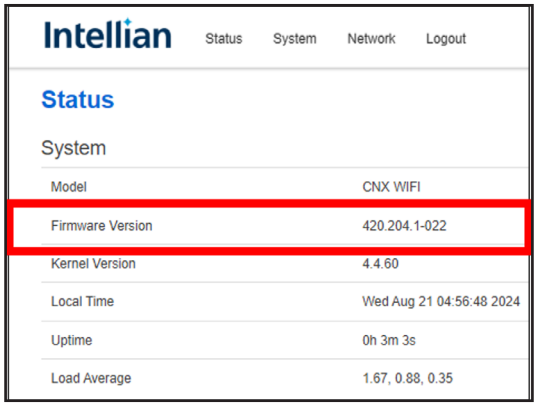
6. The **Flash Firmware - Verify** page displays with the file information. Select the **Proceed** button.



7. The System Flashing screen will display while the updates are being done.



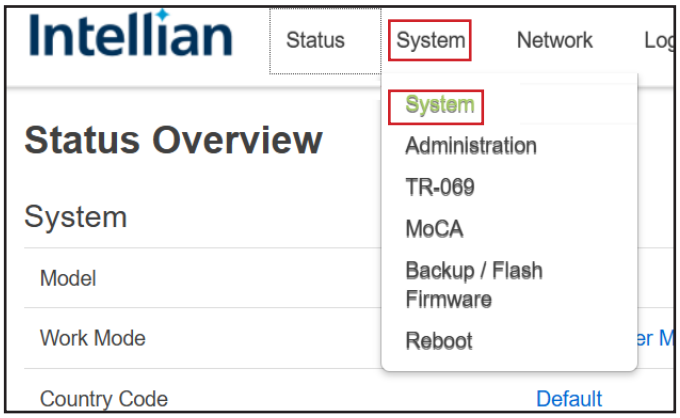
8. Once the update is complete, log back into the system and verify that the software has been updated on the **Status** page.



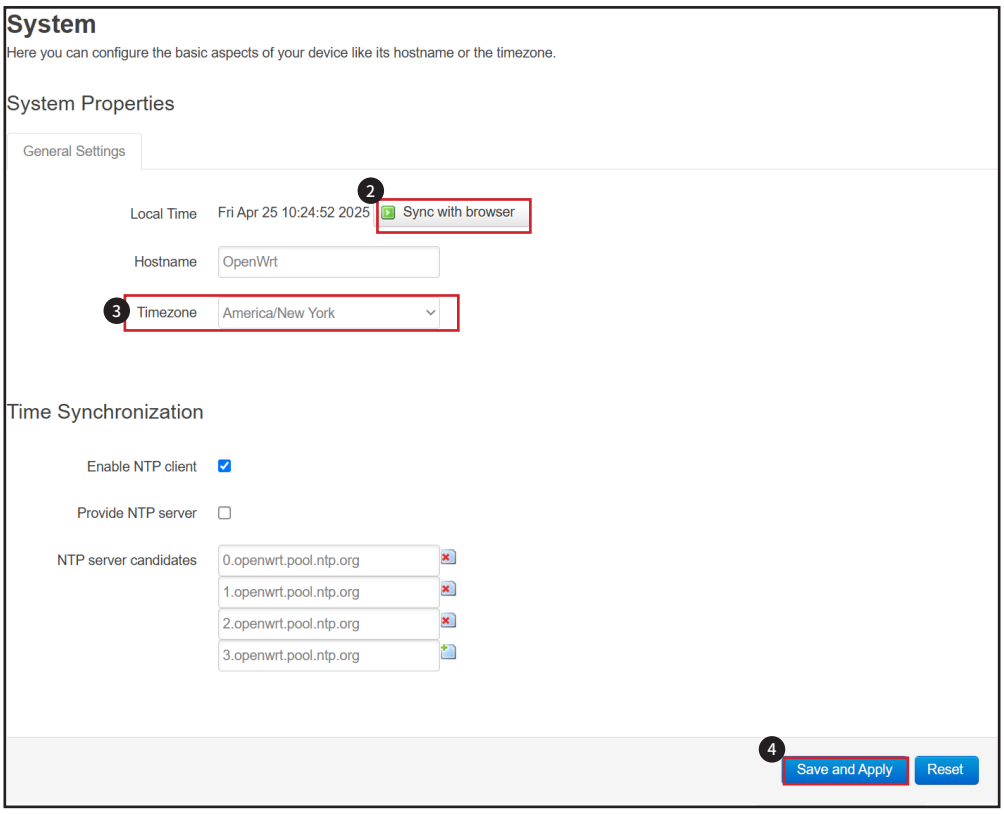
9.6.8 Updating CNX-WIFI Local Time

The local time on the CNX-WIFI can be updated via the System tab. To do that:

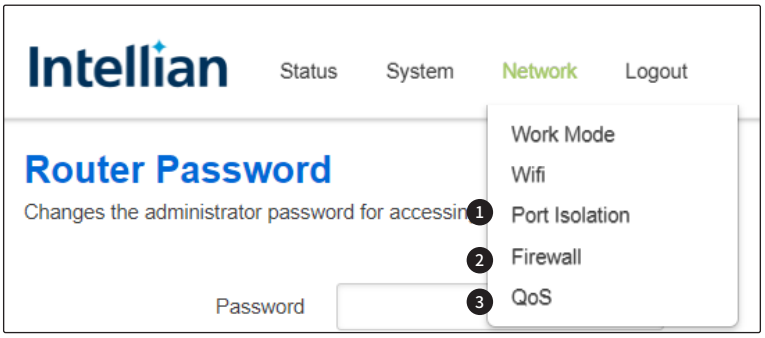
1. Select the System tab in the System drop down.



2. Click the "Sync with Browser" button
3. Select your relative Time Zone.
4. Save and Apply.

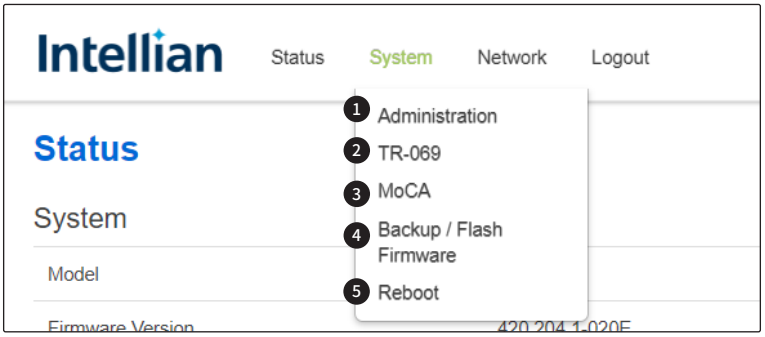


9.6.9 Network Configuration Options



No.	Item	Description
①	Port Isolation	Shows the WAN interfaces that cannot communicate with one another when the router mode is turned on.
②	Firewall	Firewall- Port Forwards is an advanced network configuration that allows external devices to access internal ports.
③	QoS	Quality of Service is an advanced network configuration that allows users to set traffic priority for different services/ protocols.

9.6.10 System Options



No.	Item	Description
①	Administration	Change CNX password.
②	TR-069	TR-069 Settings is an advanced WAN management protocol enabling service provider to access peripherals remotely.
③	MoCA	MoCA Settings is used to change coaxial cable options such as the operating frequency and transmit power limit.
④	Backup / Flash Firmware	Flash Operations enables backup and restoration of CNX operating system as well as an option to update the CNX firmware image.
⑤	Reboot	Reboots the operating system of the CNX.

Chapter 10. Installing CNX-BB

10.1 Selection of CNX-BB Installation Site

- The CNX-BB should be in a clean, dry area.
- Ensure there is adequate space around the CNX-BB for cooling.

Position the CNX-BB

- Place the CNX-BB in its desired location.

10.2 Dimensions

Confirm the dimensions of the CNX before installing it.

10.2.1 CNX-BB Dimensions

Confirm the dimensions of the CNX before installing it.

Unit: mm (inches)

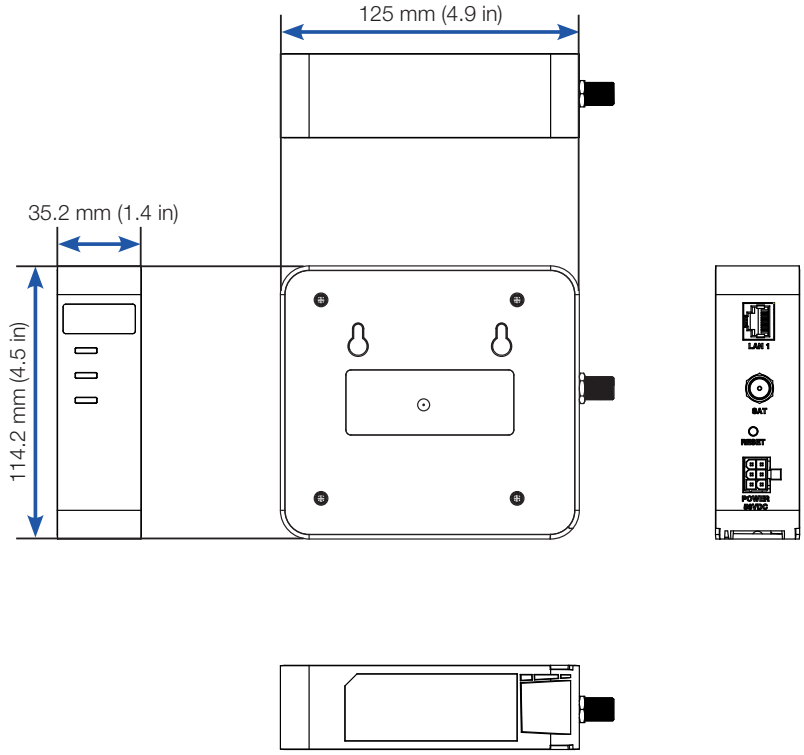


Figure 42: CNX-BB Dimensions

CAUTION

- The use of the provided 250W AC-DC adapter or 480W DC-DC converter is recommended. Using other power sources may cause malfunction or damage.
- This product is intended to be installed with the included Intellian Power Adapter, rated either 250W AC-DC adapter (56 VDC, 4.4A) or 480W DC-DC adapter (48 VDC, 10A). If you need further assistance, please contact Intellian for more information.
- For the AC-DC adapter, the power adapter must be plugged into a socket outlet with a grounded connection.
- Never open the equipment. This will void the warranty.
- Connect the cable to the **SAT**(coax) port on the CNX, then follow with securing any loose cable to the base mount, or any stationary surface relative to the ODU to ensure minimal movement when in motion. This helps prevent damage to the F-port on the ODU.

10.3 ODU System Configuration

For the proper operation of your satellite communication system, it must be connected with all the provided components as shown in the figures below.

The basic ODU system consists of the ODU and CNX-BB.

The ODU Includes the SSM Module, which is capable of controlling and managing the ODU systems simultaneously.

10.3.1 ODU System Configuration with CNX-BB

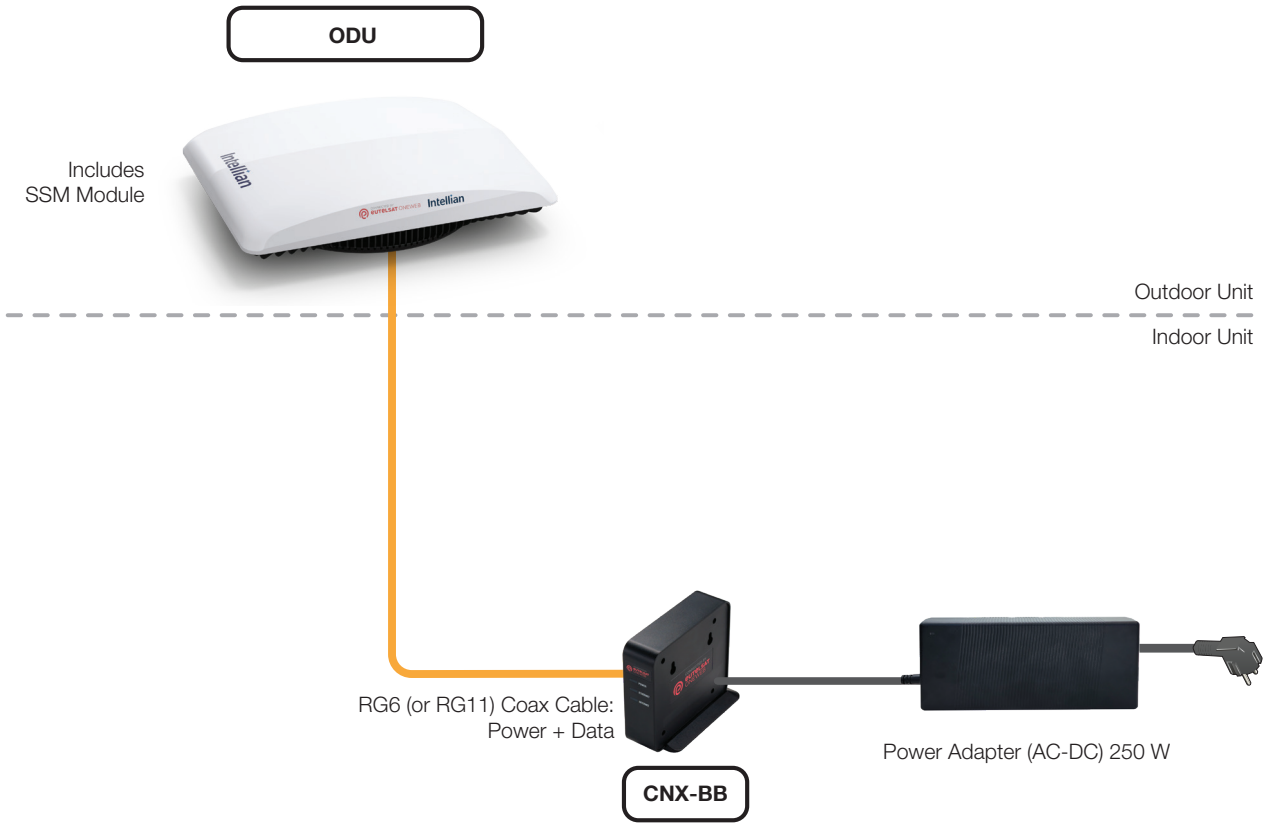


Figure 43: ODU System Configuration with CNX-BB

10.4 CNX-BB Cable Connections and LEDs

10.4.1 CNX-BB Front/Back Connectors

CNX-BB Front Panel

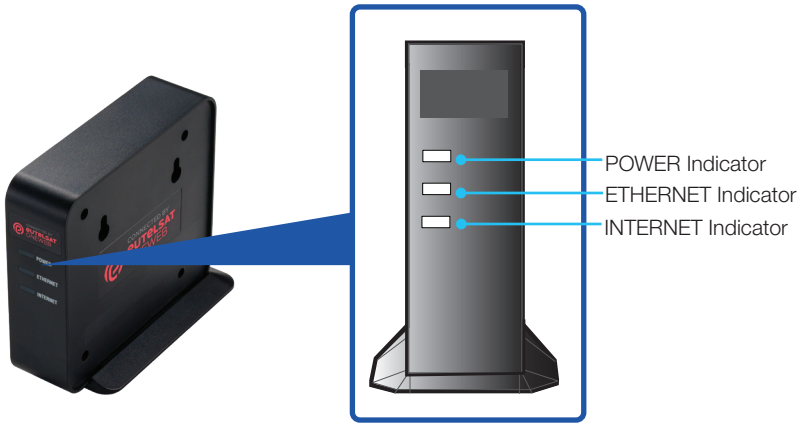


Figure 44: Front Panel View of CNX-BB

CNX-BB BACK Panel

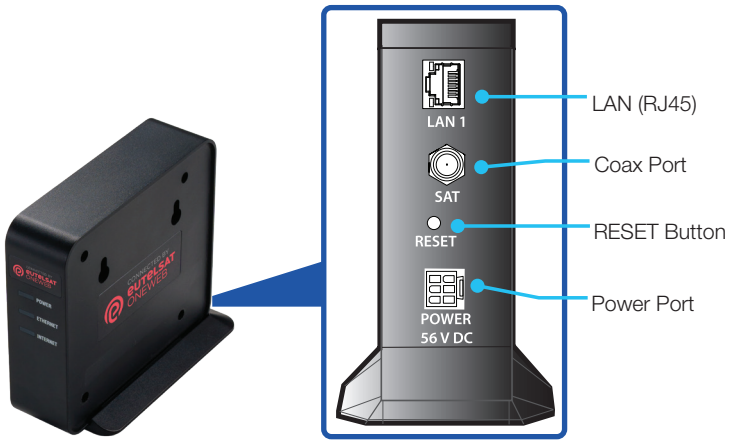


Figure 45: CNX-BB Back Panel Ports

10.4.2 CNX-BB Front Panels

During the installation process and use, it is important to know the parts of the CNX-BB. The front panel displays the Ethernet and Internet indicators lights. They will light up green when engaged and are used to check the connection status.

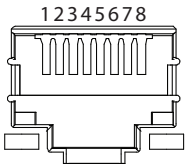
The following table shows the status indicators and buttons for the CNX-BB.

LED Indicators	Color	Description
POWER	Off	The CNX is powered off.
	Steady Green	The CNX is powered on.
ETHERNET	Off	The user network is not connected.
	Blinking Green	The user network is ready. There is a good physical connection and also, running through traffic stably connected.
	Steady Green	The user network is connected. There is a physical connection.
INTERNET	Off	The CNX Coaxial cable is not connected properly. MoCA communication is not properly established.
	Blinking Green	The CNX Coaxial cable is connected. Its blinking frequency changes by the signal traffic. MoCA communication is established.

10.4.3 CNX-BB Connector Pinout Guide

Reference the following connector pinout information for the connection Ports of the CNX.

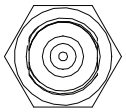
LAN Connector



RJ-45 Female

Pin	Signal
1	BI_DA+
2	BI_DA-
3	BI_DB+
4	BI_DC-
5	BI_DC+
6	BI_DB-
7	BI_DD+
8	BI_DD-

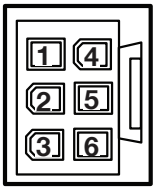
Coax Connectors



RF F Type Female

Conductor	Function
Inner	Power + Data
Outer	GND

Power Connector



6 Contact Power Plug Male
View is from back of connector

Pin	Signal
1	Return
2	GND
3	Return
4	+56V DC
5	NC
6	+56V DC

Chapter 11. Installing CNX-Rack

11.1 Selection of CNX-Rack Installation Site

- The CNX-Rack should be installed horizontally in a rack in a clean, dry area.
- Ensure there is adequate space around the CNX-Rack for cooling.

Position the CNX-Rack

- Place the CNX-Rack in its desired location.
- The CNX-Rack can be mounted in any orientation but for best performance, Intellian recommends that it is mounted horizontally.

11.2 Dimensions

Unit: mm (inches)

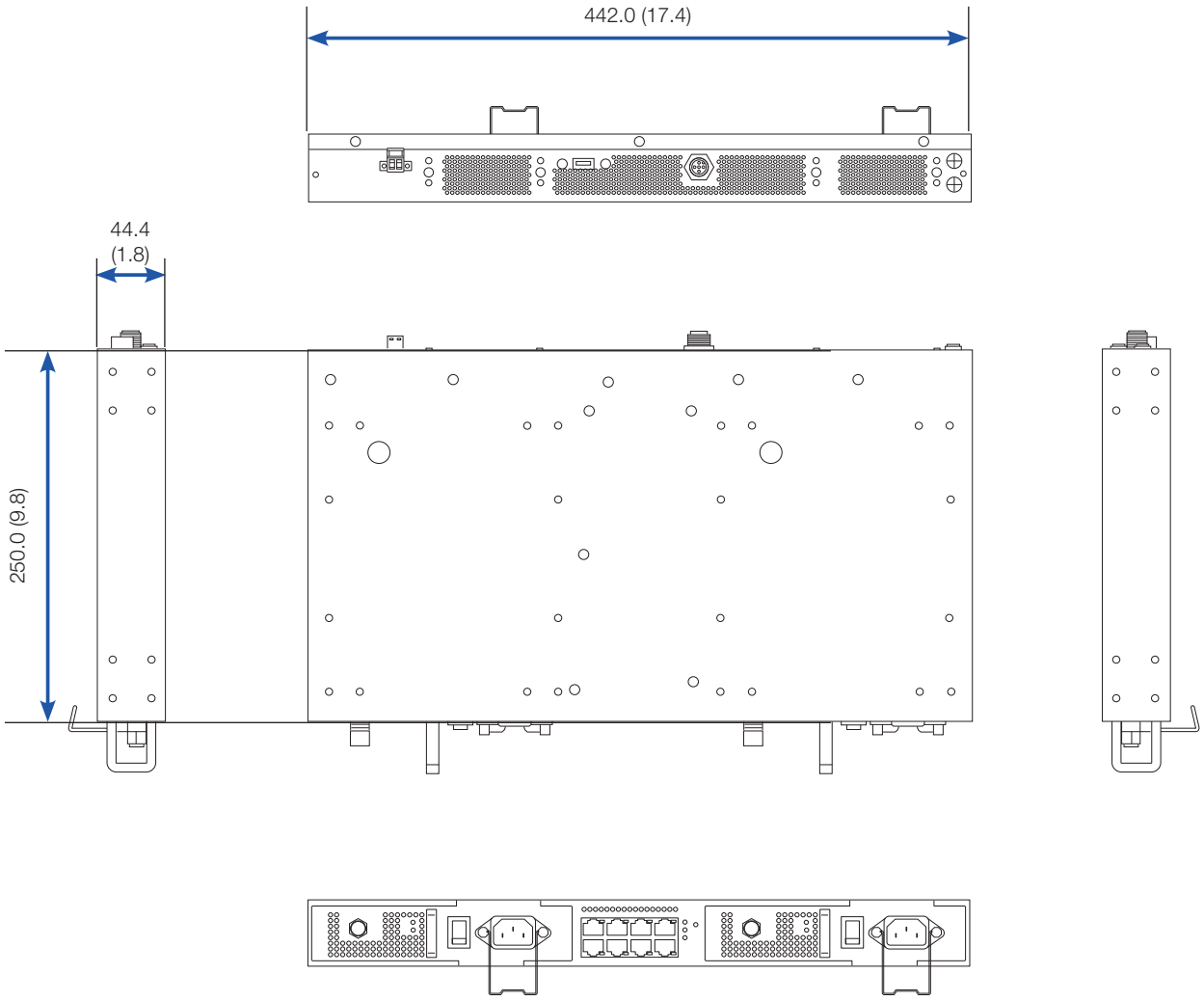


Figure 46: CNX-RACK Dimensions

CAUTION

- The power adapter must be plugged into a socket-outlet with a grounded connection.
- Never open the equipment. This will void the warranty.
- Connect the cable to the **XCVR** (coax) port on the CNX, then follow with securing any loose cable to the base mount, or any stationary surface relative to the ODU to ensure minimal movement when in motion. This helps prevent damage to the F-port on the ODU.

11.3 Mounting for CNX-Rack AC & CNX-Rack DC

Mounting CNX-Rack in a 19" Rack

The CNX-Rack can be installed in a 19" rack using the two rack mount brackets that are included in the CNX-Rack box. Attach the rack mount brackets to the sides of the CNX-Rack using the included M4 x 12L flat head screws (8 ea).

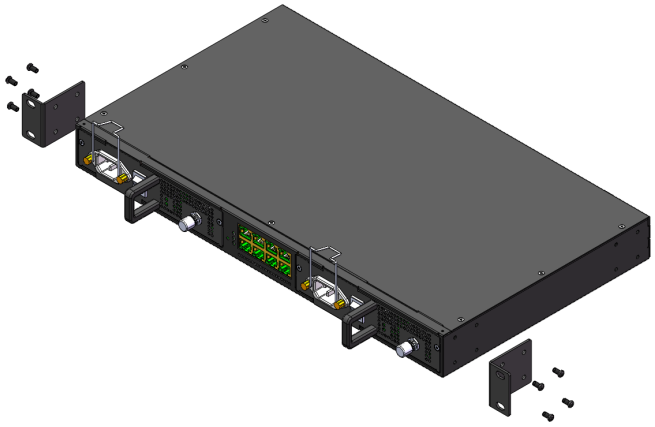


Figure 47: 19" Rack Mounting CNX-Rack

CAUTION

Ensure that the cables connected to the CNX-Rack are long enough to prevent damage when the CNX-Rack is pulled out from the rack.

11.4 ODU System Configuration

11.4.1 ODU System Configuration with CNX-Rack AC & CNX-Rack DC

For the proper operation of your satellite communication system, the ODU must be connected with all the provided components as shown in the figures below.

The basic ODU system consists of the ODU and CNX.

The ODU includes the SSM Module, which is capable of controlling and managing the ODU system.

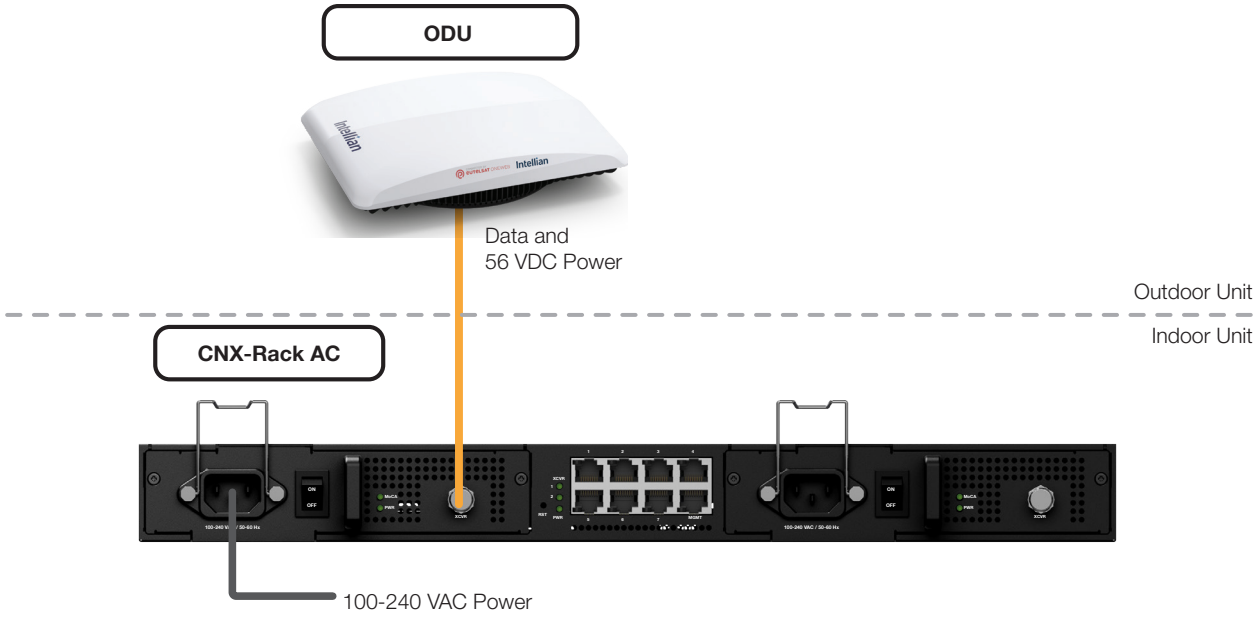


Figure 48: ODU System Configuration with CNX-RACK AC

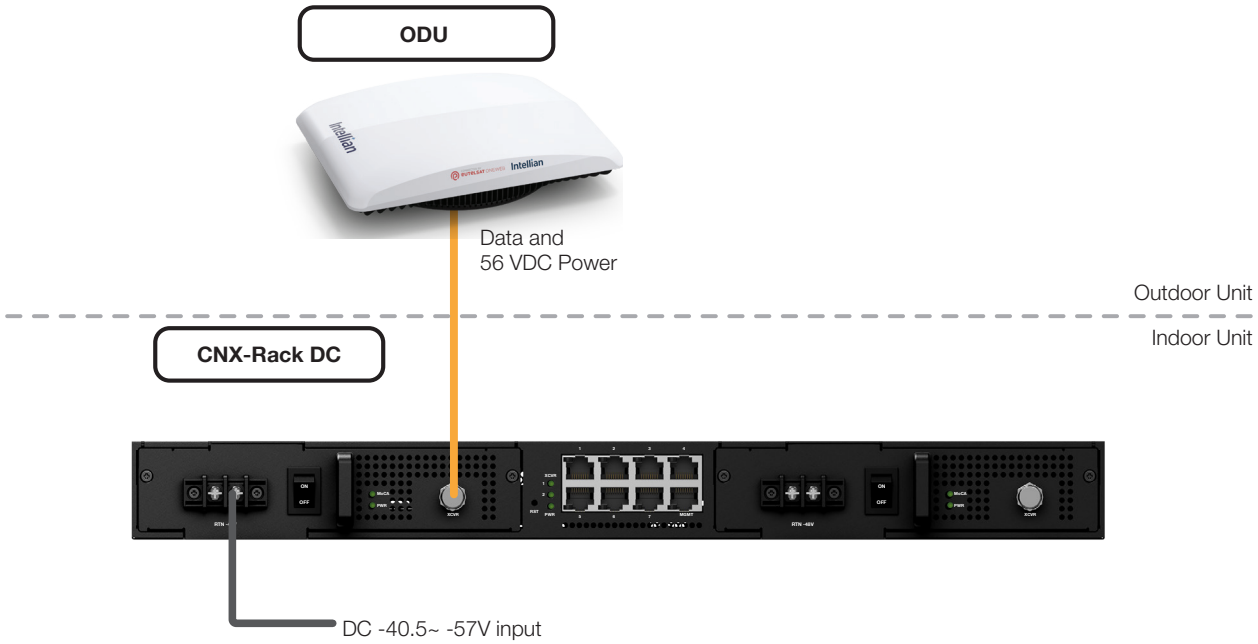


Figure 49: ODU System Configuration with CNX-RACK DC

WARNING

The power cable must be plugged into a socket-outlet with a grounded connection.

11.5 CNX-RACK Cable Connections and LEDs

11.5.1 CNX-Rack Front/Back Panels

During the installation process and use, it is important to know the parts of the CNX-Rack AC & CNX-Rack DC. The front panel includes the power connections, power switches, XCVR ports and the LAN ports.

CNX-RACK AC Front Panel

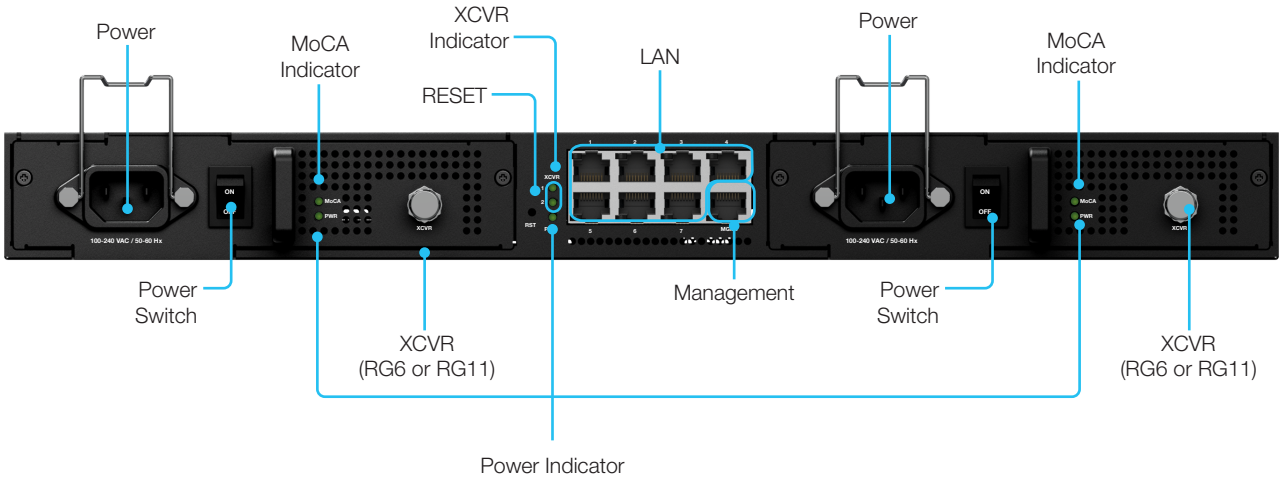


Figure 50: Front Panel View of CNX-RACK AC

CNX-RACK DC Front Panel

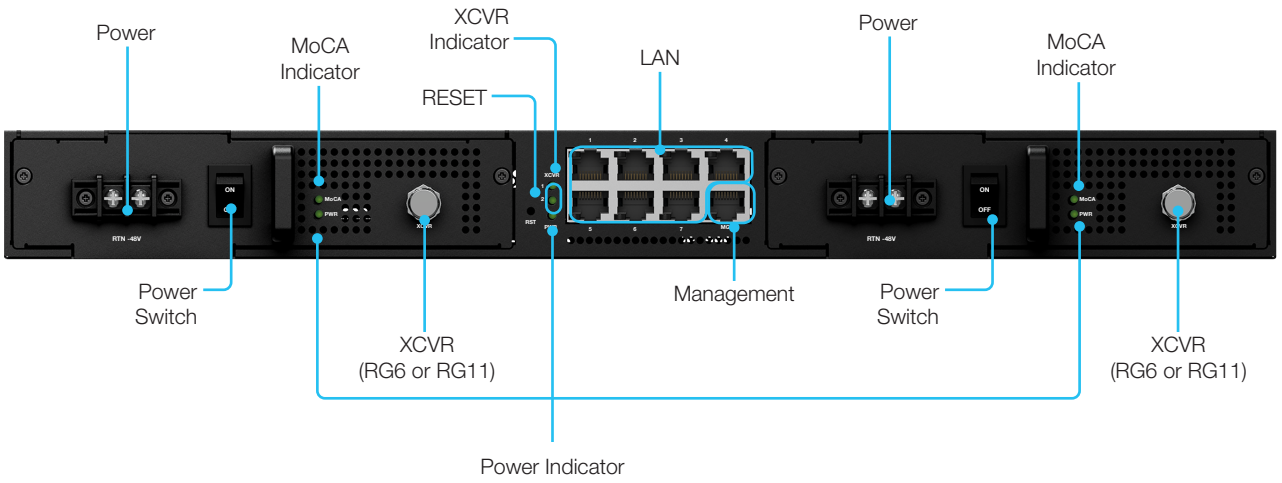
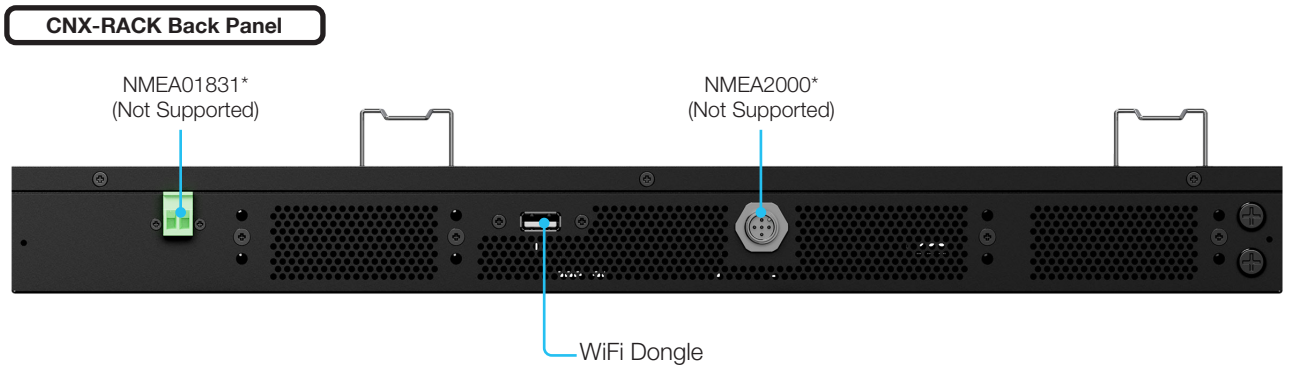


Figure 51: Front Panel View of CNX-RACK DC



**** NMEA 0183/2000 is not supported for the compact ODU.***

11.5.2 CNX -Rack AC & DC LEDs

The following table shows the status indicators and buttons for the CNX-Rack.

LED Indicators	Color	Description
POWER	Off	The CNX is powered off.
	Steady Green	The CNX is powered on.
MoCA	Off	The user network is not connected.
	Blinking Green	The user network is ready. There is a good physical connection and also, running through traffic stably connected.
	Steady Green	The user network is connected. There is a physical connection.
XCVR	TBD	TBD

NOTE

- The supplied Ethernet cable is a 1G-compatible cable (CAT6).
- The LED indicator for the LAN ports work properly when 1G is used with the CAT6 Ethernet cable. We recommend using an Ethernet cable that meets the specifications listed in the table below.

Cable Type	Cable Length
Ethernet cat6 STP Cable (Shielded)	100 m

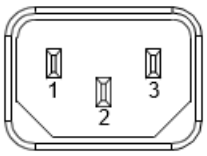
11.5.3 CNX-Rack Reset button

Button	Description
Reset	Pushing and holding the RESET button with a pointed object such as a pencil for 6 or more seconds will trigger a reset of the unit and revert it back to the factory settings.

11.5.4 CNX -Rack AC & DC Connector Pinout Guide

Reference the following connector pinout information for the connection Ports of the CNX-Rack AC & CNX-Rack DC.

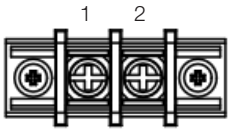
CNX-RACK AC Power Connector



IEC 320 C14 Plug Male

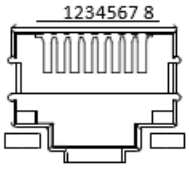
Pin	Signal
1	NEUTRAL
2	FG
3	LIVE

CNX-RACK DC Power Connector



Pin	Signal
1	RTN
2	-48V

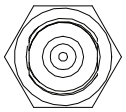
LAN Connector



RJ-45 Female

Pin	Signal
1	BI_DA+
2	BI_DA-
3	BI_DB+
4	BI_DC+
5	BI_DC-
6	BI_DB-
7	BI_DD+
8	BI_DD-

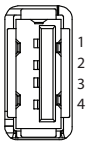
Coax Connectors



RF F Type Female

Conductor	Function
Inner	Power + Data
Outer	GND

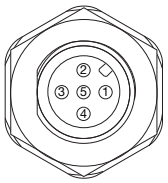
WiFi Dongle USB Connector



USB A Female

Pin	Signal
1	+5 V
2	DATA-
3	DATA+
4	GND

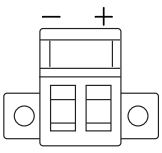
NMEA 2000 Input (Not supported with the Flat Panel Series)



Micro-C 5-Pin Male

Pin	Signal
1	Power + Data
2	Vcc
3	GND
4	CAN-H
5	CAN-L

NMEA 0183 Input (Not supported with the Flat Panel Series)



2-Pins Terminal Block

Pin	Signal
-	HEADING GND
+	HEADING IN

11.5.5 Connecting CNX -Rack AC & DC to ODU

Connect a coaxial cable from the Coax port of the CNX -Rack AC & DC to the F-port of the ODU.

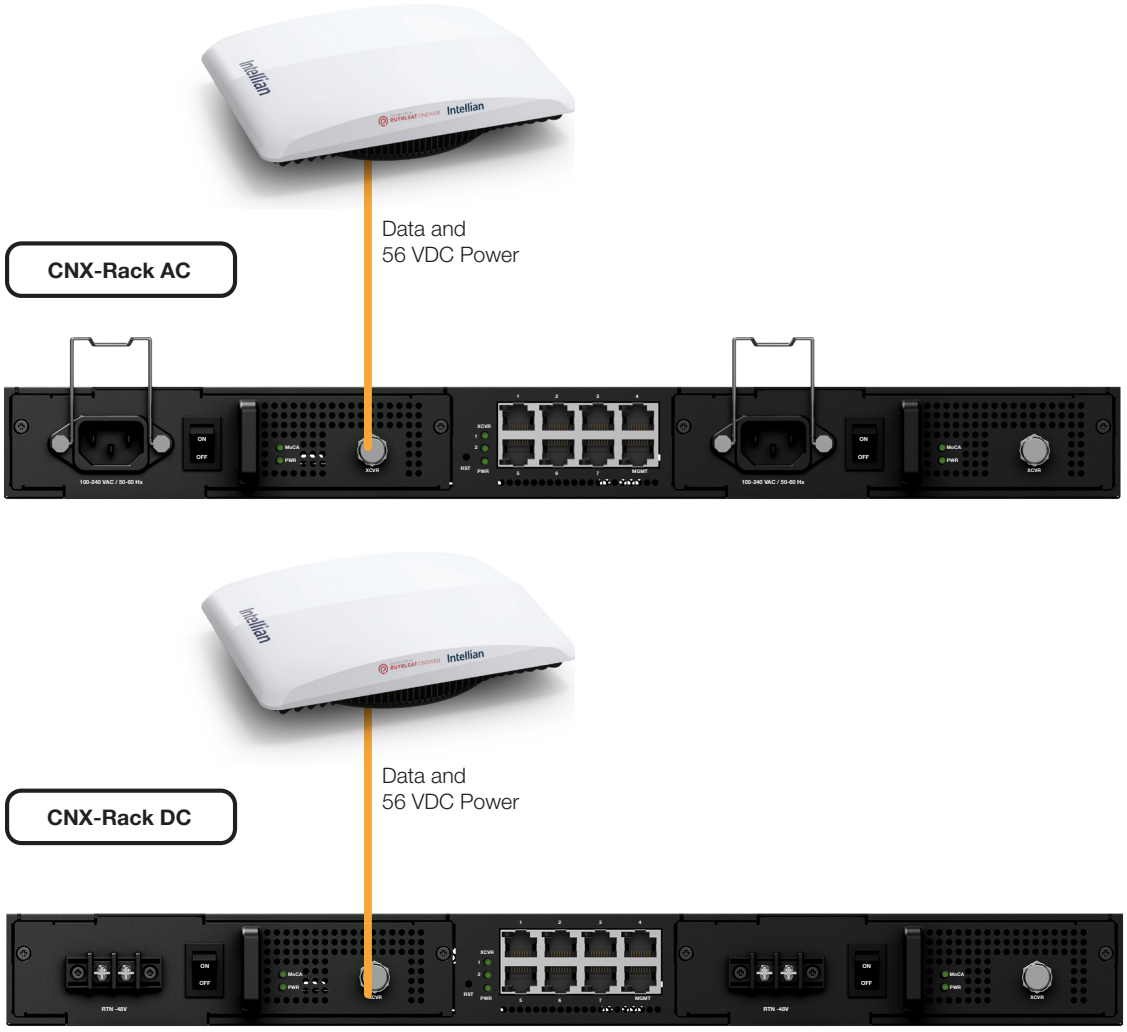
NOTE

- The coaxial cable has already been connected to the ODU. Refer to the **"4.6.1 ODU Power+Data Cable" on page 31** for details.
- Make sure of the following before installing system cables.
  - All cables with connectors need to be fully secured and protected from physical damage.
  - Don't acutely bend any cables during installation.

- Ensure that each connection is fully tightened with a torque of 1 Nm (8lbf.in).
- Ensure the cables are not subjected to excessive tension or in a tight bend radius.

CAUTION

After connecting the coax cable to the **XCVR** Port, ensure the cable is properly secured. The cable shall be secured to any stationary surface relative to the ODU in order to mitigate additional movement and reduce stress on the port. A service loop is also recommended if allowable by the installation.



11.5.6 Connecting Power to CNX-Rack

CNX-Rack AC

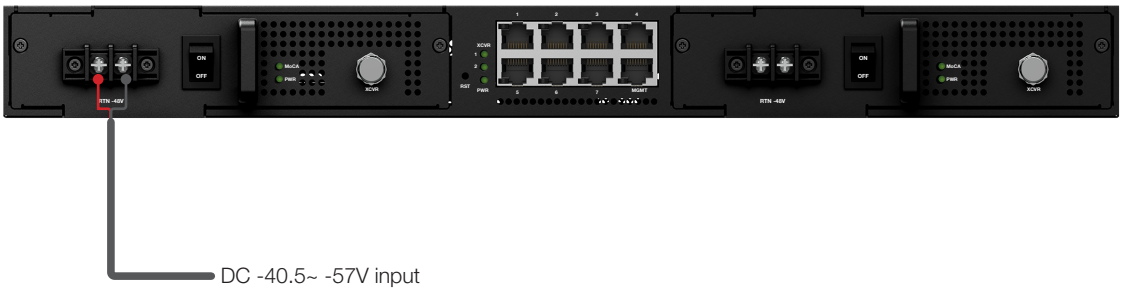
1. Plug the power cable into the power port of the CNX-Rack Connect the supplied AC power cable (AC Power Cord (NA) or AC Power Cord (NEMA 5-15P)) to the power port of the CNX-RACK AC.
   - **CNX-RACK DC**: Connect the DC power cable (customer-supplied) to the power port of the CNX-RACK DC.
2. Connect the power supply unit to the CNX -Rack AC first, and then plug the adapter into an electrical outlet.
   - The power connector can only be plugged into the CNX -Rack AC & DC one way.
   - Ensure the cable is not subjected to excessive tension or a tight bend radius.

CNX-Rack AC

CNX-Rack DC

1. For the DC power cable (customer-supplied), attach the ring connectors to the Red (positive) and Black (negative) wires.
2. Unscrew the "**RTN**" terminal on CNX-RACK DC using a Phillips screwdriver. Insert the ring connector of the Red (positive) wire into the terminal and tighten the screw back into the terminal.
3. Unscrew the "**-48V**" terminal on CNX-RACK DC using a Phillips screwdriver. Insert the ring connector of the Black (negative) wire into the terminal and tighten the screw back into the terminal.
4. Connect the power supply unit to the CNX -Rack DC first, and then plug the adapter into an electrical outlet.
   - The power connector can only be plugged into the CNX -Rack DC one way.
   - Ensure the cable is not subjected to excessive tension or a tight bend radius.

CNX-Rack DC



11.5.7 LAN Port Default Configuration

- CNX operates as Layer-2 device: Devices connected to any LAN port obtain address via DHCP from SSM.
- Port configuration as defined above.
- MTU size: 1500

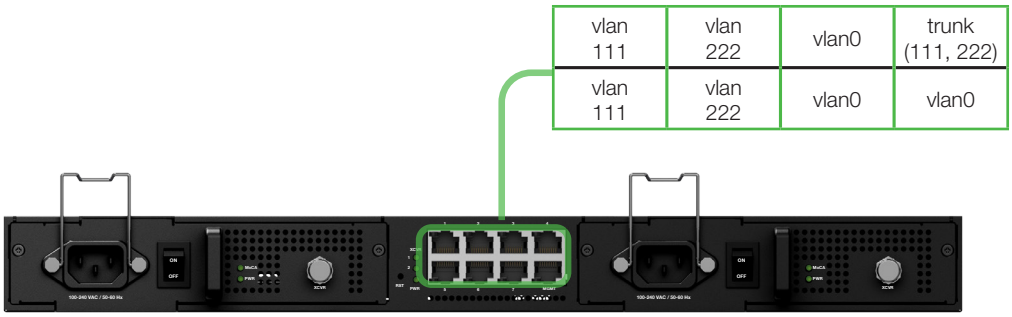


Figure 52: CNX-Rack Default Configuration

11.5.8 Connecting to a Wi-Fi network through the Wi-Fi Dongle

Intellian provides the Wi-Fi Dongle for Wi-Fi connection to LUI. You can connect a PC or mobile app to the CNX via Wi-Fi for easy management and control whenever you are on the vessel.

Setting up the CNX to access Wi-Fi

1. Find the Wi-Fi Dongle in the accessory box, and then insert the Wi-Fi Dongle into the USB port on the back panel of CNX.

Figure 53: Back Panel Wi-Fi Dongle Connection

Setting up the PC in order to access Wi-Fi

The image and "aabb" is for reference; it represents the last four digits of the CNX MAC address. You can find the CNX MAC address on the CNX label.

1. Select the Network icon (/ /) on the taskbar.
2. Choose the ***cnxaabb*** (Default), then select **Connect**.
3. Type the network security key and then select **Next**.
   - **Default Network security key: : cnx_aabb**

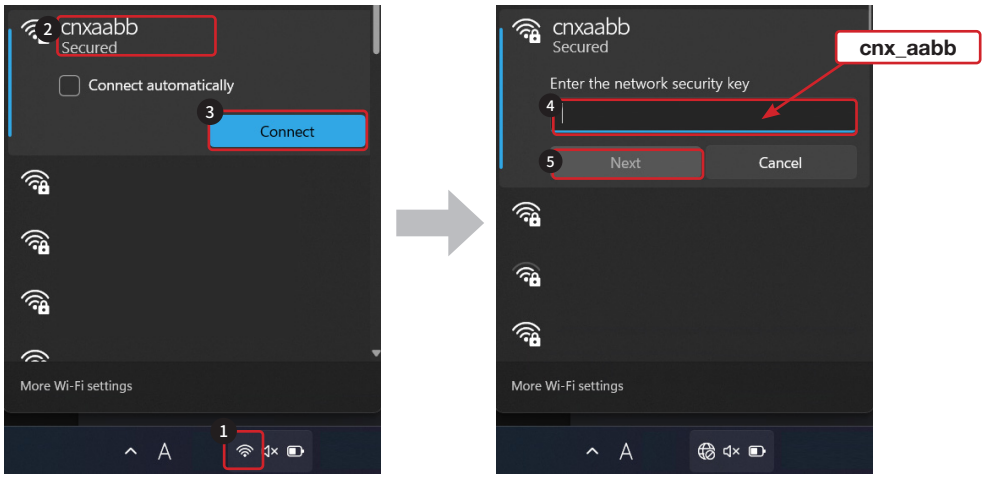


Figure 54: Setting up a Wi-Fi network on a PC

4. Navigate to the IP address **192.168.100.1** (default) to access the terminal's Local User Interface (LUI).

NOTE

Unlike the CNX-WIFI and CNX-Mobility, the CNX-Rack does not have a CNX-LUI (**192.168.100.3**). Users cannot access the CNX Login page on the CNX-Rack.

Chapter 12. Installing CNX-Mobility

12.1 Selection of Installation Site

- The CNX-Mobility should be installed in a clean and dry area if possible.
- A rack mount kit is available for installations in a 19" rack.

12.2 Dimensions

Confirm the dimensions of the CNX before installing it.

Unit: mm (inches)

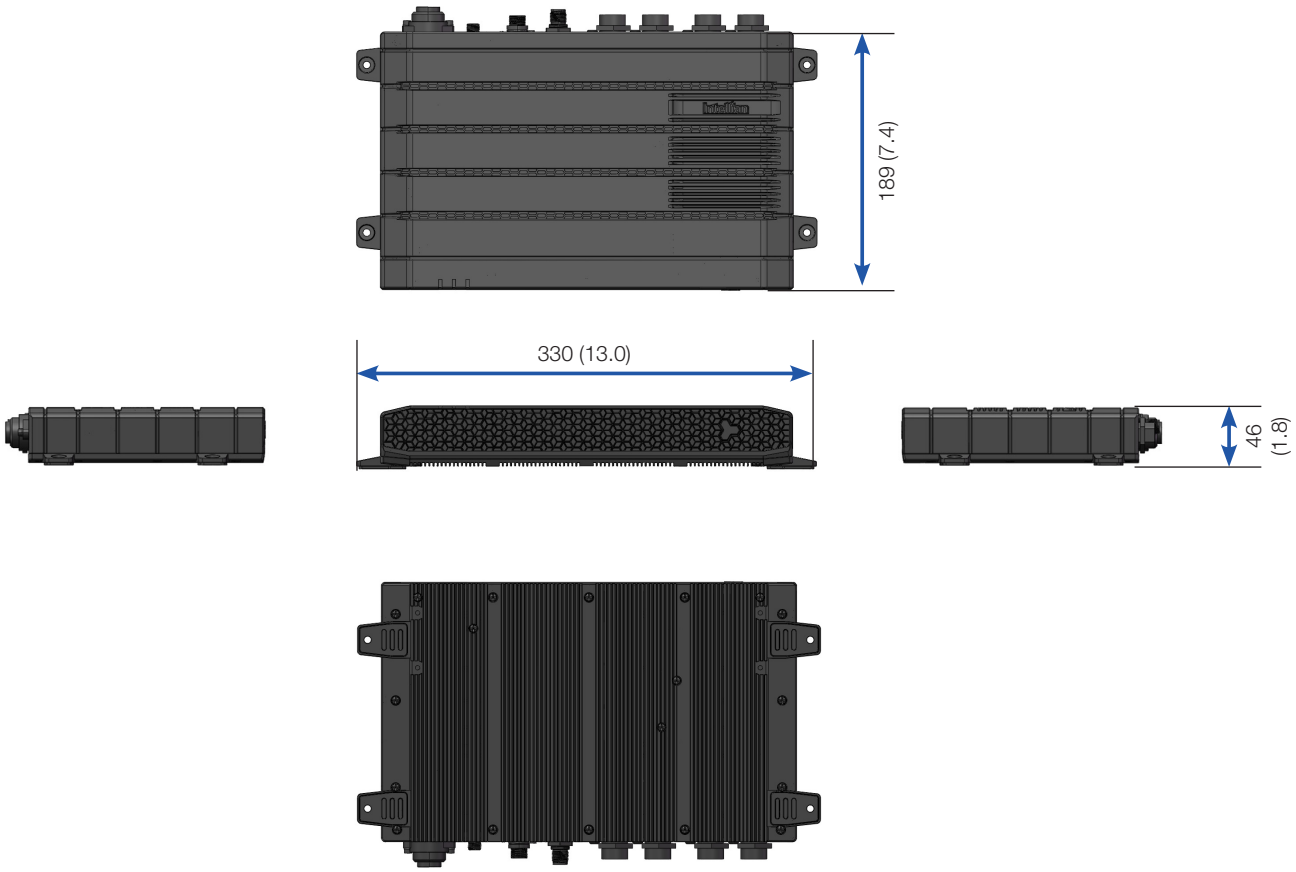


Figure 55: CNX-Mobility Dimensions

CAUTION

- This product is intended to be installed with the included Intellian Power Adapter, rated either 450W AC-DC adapter (56 VDC, 8A) or 480W DC-DC adapter (48 VDC, 10A). If you need further assistance, please contact Intellian for more information.
- For the AC-DC adapter, the power adapter must be plugged into a socket outlet with a grounded connection.
- Never open the equipment. This will void the warranty.
- Connect the cable to the **COAX** port on the CNX, then follow with securing any loose cable to the base mount, or any stationary surface relative to the ODU to ensure minimal movement when in motion. This helps prevent damage to the F-port on the ODU.

12.3 Mounting CNX-Mobility

The CNX-Mobility can be mounted in any orientation, Intellian recommends that it is mounted horizontally.

12.3.1 Mounting CNX-Mobility using the Mounting Feet

The CNX-Mobility has four mounting feet built into the unit that can utilize M4 mounting hardware. These mounting feet include rubber dampers on the base, to further insulate the CNX from the shock and vibration experienced in the land mobile and maritime environments.

12.3.2 Mounting CNX-Mobility using the Rack Mount Kit

The CNX-Mobility can be installed in a 19" rack using the rack mount kit. This rack mount kit also supports the storage of the 450W AC PSA. Intellian recommends using a 19-inch rack shelf (not supplied) to support the CNX-Mobility in the rack.

1. Bring the following items from the rack mount kit box: Rackmount Plate (1 ea), Adapter Bracket (1 ea), Adapter Cover (1 ea), M4X8L Flat Head Screws (4 ea), and M4X8L Pan Head Screws (8 ea).
2. With the CNX-Mobility upside down, attach the Rackmount Plate beneath the CNX-Mobility using the M4X8L Flat Head Screws (4 ea).

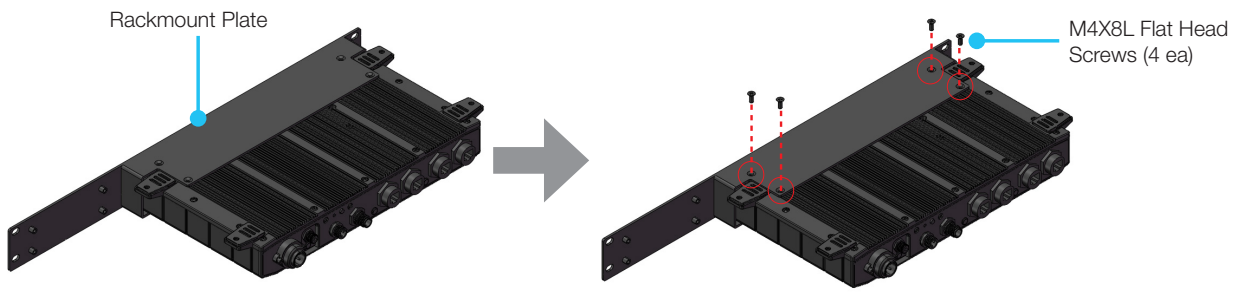


Figure 56: Attaching Rackmount Plate to CNX-Mobility

3. Ensure the holes on the Adapter Bracket align with the holes on the Rackmount Plate. Insert the M4X8L Pan Head Screws (4 ea) into the built-in nuts inside the Adapter Bracket, and fully tighten them using a Phillips screwdriver.

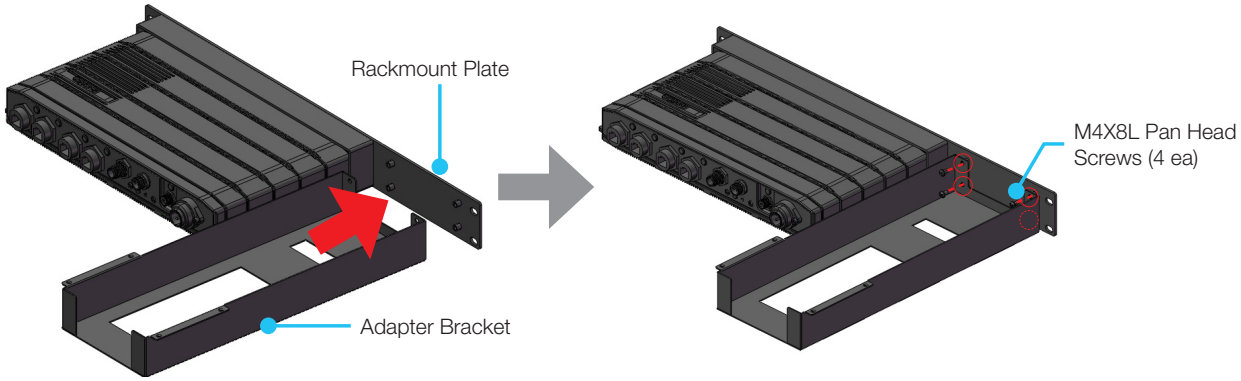


Figure 57: Attaching Adapter Bracket to Rackmount Plate

4. Place the AC-DC Adapter onto the Adapter Bracket.
5. Position the Adapter Cover as shown in the image below, and install it using the M4X8L Pan Head Screws with a Phillips screwdriver.

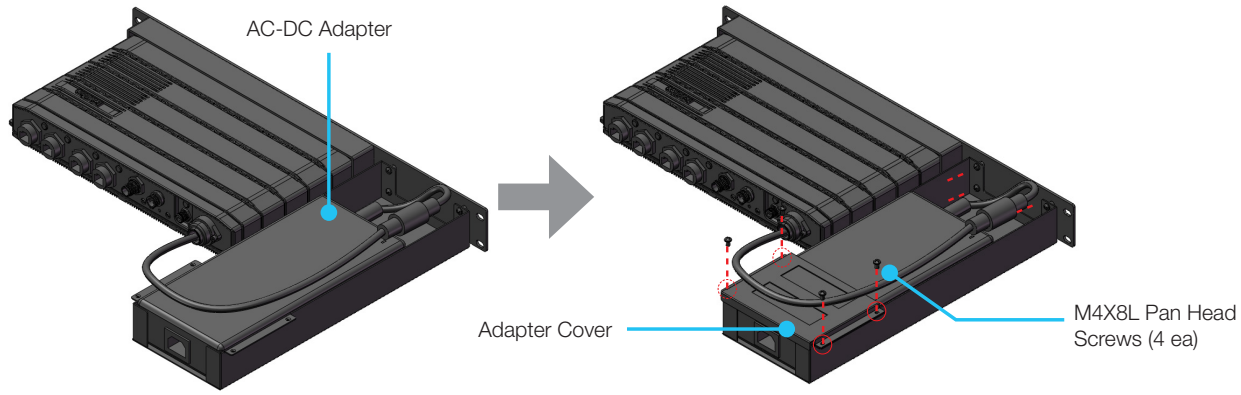


Figure 58: Attaching Adapter Cover

12.4 ODU System Configuration

For the proper operation of your satellite communication system, the ODU must be connected with all the provided components as shown in the figures below.

The basic ODU system consists of the ODU and CNX.

The ODU includes the SSM Module, which is capable of controlling and managing the ODU system.

12.4.1 ODU System Configuration with CNX-Mobility

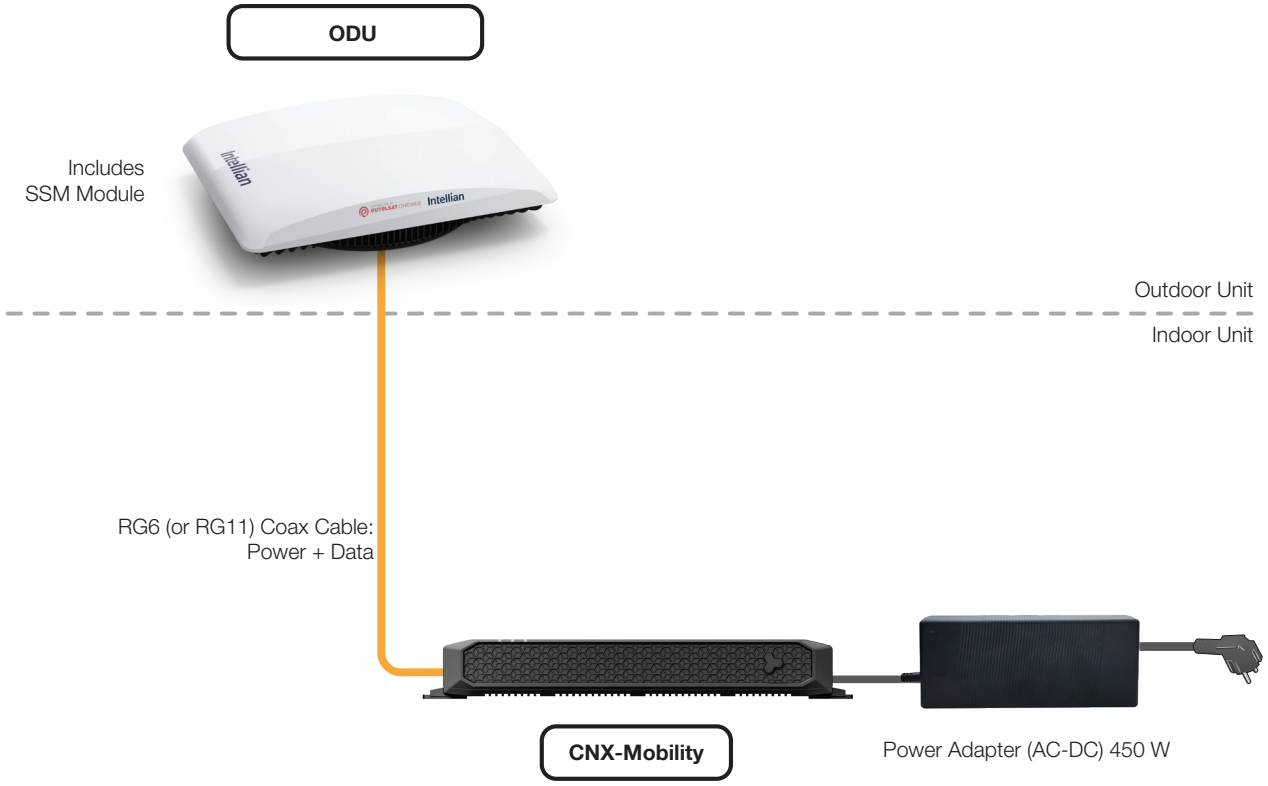


Figure 59: ODU System Configuration with CNX-Mobility

12.4.2 ODU System Configuration with 480W DC-DC Converter for Mobility

To set up the mobility UT, you need to purchase the CNX-Mobility that includes the DC-DC converter (PP-T2D1-DC). Refer to the following **"Mobility DC Power(480W) Connection Procedure" on page 113** for more details.

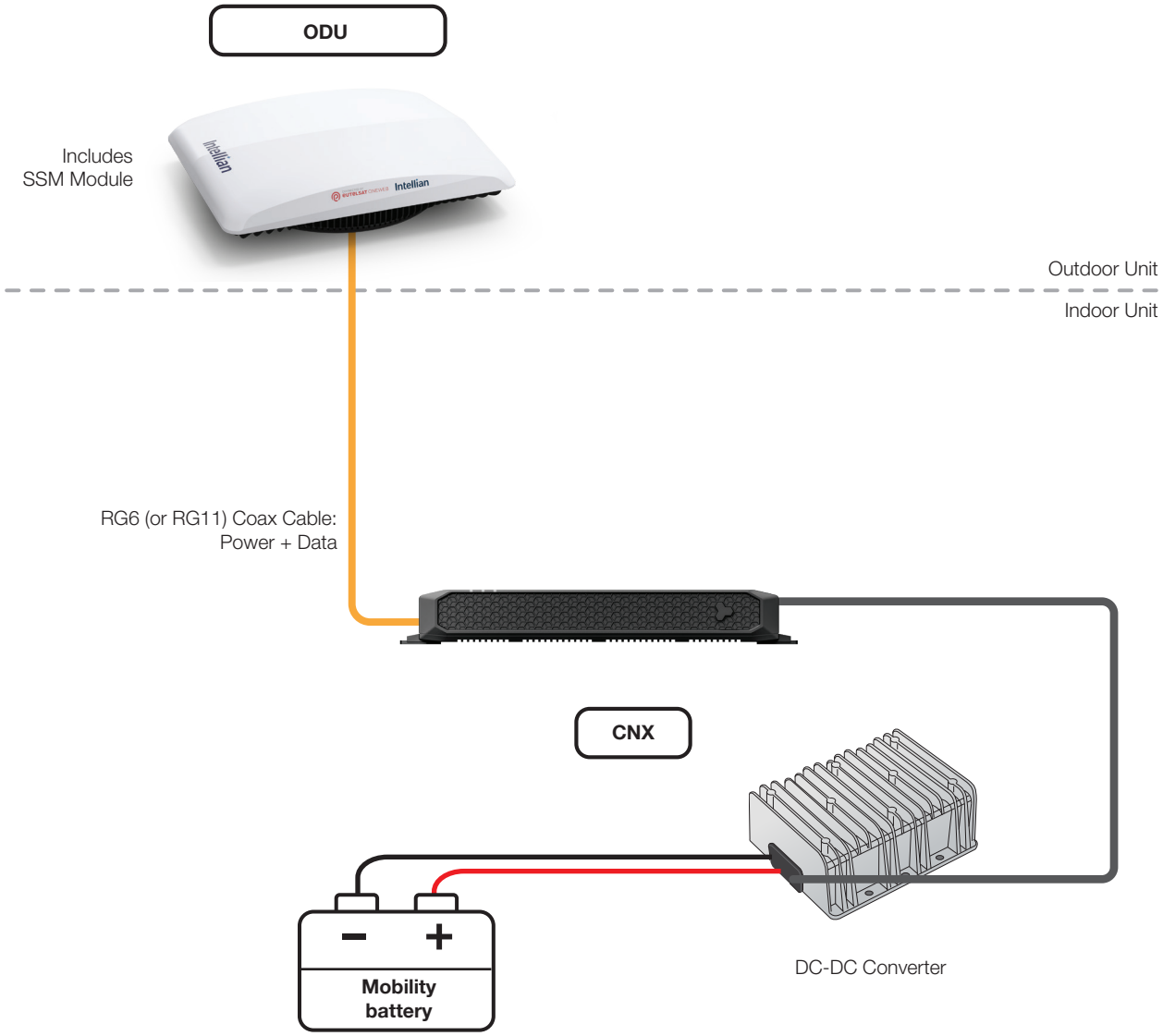


Figure 60: ODU System Configuration at DC Power site (480W)

CAUTION

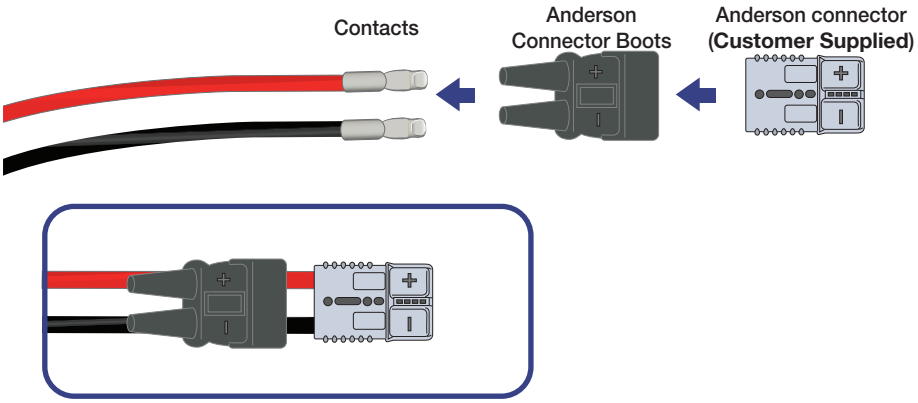
Connect the cable to the **COAX** port on the CNX, then secure any loose cable to the base mount or a stationary surface near the ODU to minimize movement while in motion. This helps prevent damage to the F-port on the ODU.

Mobility DC Power(480W) Connection Procedure

WARNING

- Ensure the vehicle is turned off with a disconnected battery, and remains off during the entirety of the installation until instructed to reconnect the battery and turn the vehicle on. Failure to do so can result in personal injury.
- The DC-DC Converter (480W) is only certified for land fixed and land mobile use. Use in a maritime environment may impact nearby third party electronic devices within 1.5m of the DC-DC converter due to EMI. There is a decreased risk to devices beyond this distance.

1. Ensure the vehicle is turned off with any work area being cool to the touch.
2. Confirm access to your vehicle's battery
3. Determine the desired location for the DC-DC converter, outside of the engine bay.
4. Measure the desired length from your car battery, or power access point, to your desired placement location of the DC-DC Converter. Record this value.
5. Cut wires to length based on the above measurements. This will be one (1) red jacketed 10 awg copper wire and one (1) black jacketed 10 awg copper wire.
   a. Note: it is recommended to cut each wire long by 1-2 meters if you are not certain of length. This can help ensure sufficient length, and slack in the line in later steps.
6. Feed the red and black wires from the battery to the DC-DC converter location.
   a. Ensure wires are managed in a clean and proper way as to not negatively impact any other components.
   b. On any externally facing panels such as the firewall, ensure the through hole is adequately sealed.
   c. Protect any externally exposed cables using a cable sleeve.
7. Connect one end of the wire that will be connected to the DC DC converter to the Anderson connector (Customer Supplied).
   a. Pass the cables through the boots. The polarity of the terminal is indicated on the boots with + and - marks. Check the polarity to ensure the cables are inserted correctly.
   b. Insert the contacts into the negative (-) and positive (+) terminals of the Anderson connector.



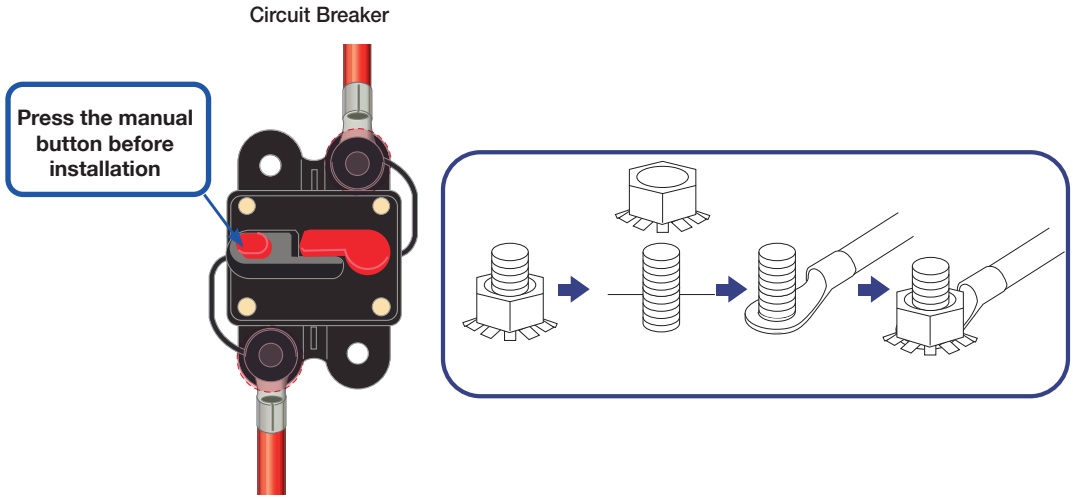
8. Terminate the wires on the battery side.
   a. Select the proper ring terminal size for your battery. This will go in line with the terminal clamp screw. Most common sizes are 6mm and 8mm.
   b. Strip 1cm of jacket off each wire end. Insert the wire into the ring terminal. Then crimp in place using the appropriate crimp tool.

9. Connect the red (positive) cables to the circuit breaker.
    a. Before connecting wires, press the manual button on the circuit breaker to disconnect power. This is to prevent personal injury.

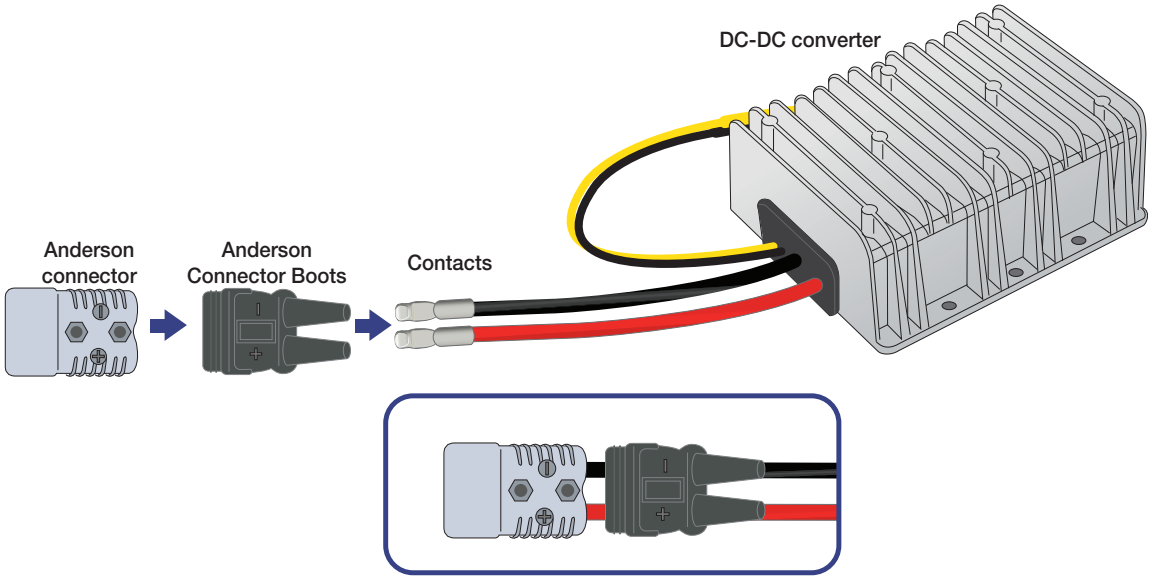
WARNING

Do not press the manual button again until the installation is complete. Doing so may result in personal injury.

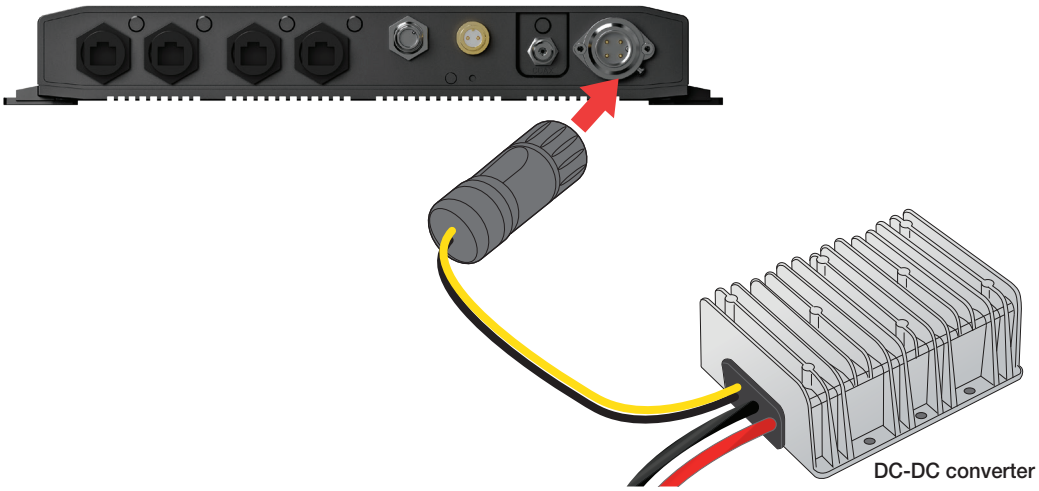
    b. Open the caps on the circuit breaker.
    c. Unscrew the terminal of the circuit breaker using a wrench. Insert the o-lug of the red (positive) wire into the terminal and tighten the bolt back into the terminal.
    d. The circuit breaker is installed and secured inside the engine bay. Ensure circuit breaker is managed in a clean and proper way as to not negatively impact any other components.
    e. Follow steps b–e to connect the cable to the terminal on the opposite side of each already connected cable.



10. Create another wire to run from the circuit breaker to the DC-DC Converter.
    a. Determine the required length, and terminate it with a ring terminal on one end, and a Anderson connector contact on the other.
11. Connect one end of the red wire(positive) to a circuit breaker and one end of the red wire(positive) to the battery positive terminal.
    a. Open the caps on the circuit breaker. Unscrew the terminal of the circuit breaker using a wrench. Insert the o-lug of the red wire(positive) into the terminal and tighten the bolt back into the terminal.
    b. The circuit breaker is installed and secured inside the engine bay. Ensure circuit breaker is managed in a clean and proper way as to not negatively impact any other components.
    c. Unscrew the terminal of the circuit breaker using a wrench. Insert the o-lug of the red wire (positive) into the terminal and tighten the bolt back into the terminal.
12. Connect red wire(positive) to the battery positive terminal.
13. Connect the black wire(negative) from step 8 to the negative battery terminal.
14. Bring the other red cable. Unscrew the terminal on the other side of the circuit breaker using a wrench. Insert the o-lug of the red (positive) wire into the terminal and tighten the bolt back into the terminal.
15. Connect the cables from the DC-DC converter to the Anderson connector.
    a. Insert the contacts into the cable conductor for the DC-DC converter and clamp using a crimping tool.
    b. Pass the cables through the boots. The polarity of the terminal is indicated on the boots with + and - marks. Check the polarity to ensure the cables are inserted correctly.
    c. Insert the contacts into the negative (-) and positive (+) terminals of the Anderson connector.



16. Connect the DC-DC output wires the power input port on the CNX.



17. Plug in the Anderson connectors until a click sound is heard, and then assemble the boots

18. Press the manual button on the circuit breaker to release it and reconnect the power.

CAUTION

If you leave the CNX connected, the car battery might discharge. Please take one of the following actions:

- Unplug the Anderson connectors. This completely disconnects the power.
- Disconnect the CNX and DC-DC converter. This puts the system in standby status.
- DC-DC converters generate significant heat, which can cause damage to vehicle seats, etc.

12.5 CNX-Mobility Overview

12.5.1 CNX-Mobility Front/Back Panel

CNX-Mobility Front Panel

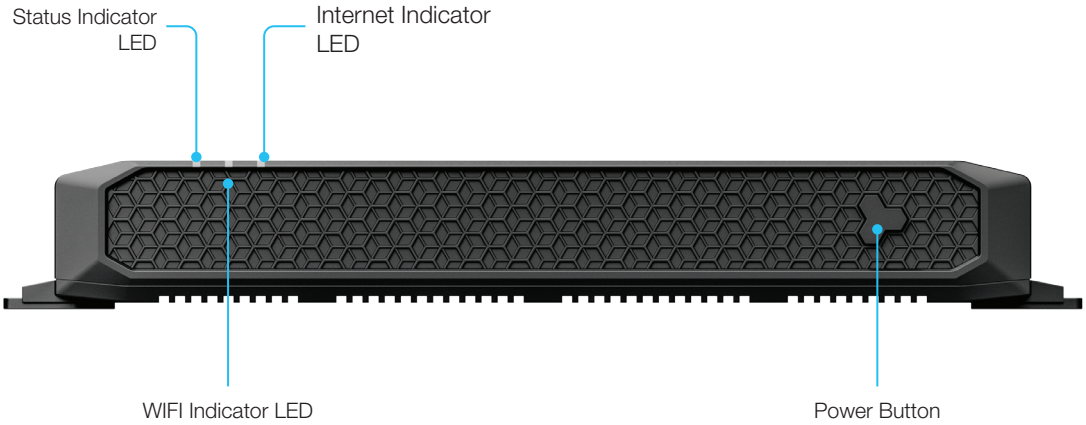


Figure 61: Front Panel View of CNX-Mobility

CNX-Mobility BACK Panel

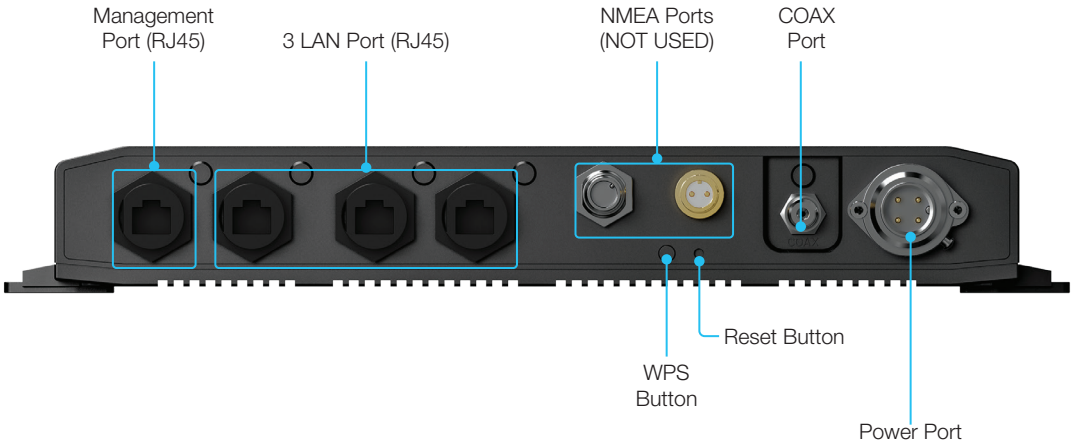


Figure 62: CNX-Mobility Back Panel Ports

12.5.2 CNX-Mobility LEDs

During the installation process and use, it is important to know the elements of the CNX-Mobility. The front panel displays the Wi-Fi and WAN indicators lights. They will light up blue when engaged and can be used to check the connection status with the LED indicators on the front and back panel of the CNX-Mobility.

The following table shows the status indicators and buttons for the CNX-Mobility.

LED Indicators	Color	Description
Status LED	Off	No Power
	Solid Blue	Connected to power supply
	Solid Red	Fault Condition
Wi-Fi 6 LED	Off	5G and 2.4G Disabled
	Blinking Blue	Data Activity
	Solid Blue	5G or 2.4G Enabled
INTERNET	Off	Coaxial Port Disconnected
	Blinking Blue	Data Activity
	Solid Blue	Coaxial Port Connected, but no data activity

NOTE

We recommend using an Ethernet cable that meets the specifications listed in the table below.

Cable Type	Cable Length
Ethernet Cat5e STP Cable (Shielded)	100 m

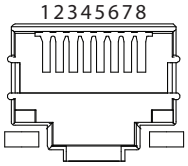
12.5.3 CNX-Mobility buttons

Button	Description
Power	Press and hold the Power button for more than 3 seconds to turn the CNX power on or off.
Reset	Press and hold the Reset button for more than 5 seconds to reset the settings.
WPS (Wi-Fi Protected Setup)	Press the WPS button to access Wi-Fi setup without entering a password.

12.5.4 CNX-Mobility Connector Pinout Guide

Reference the following connector pinout information for the connection Ports of the CNX.

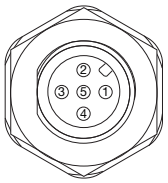
LAN Connector



RJ-45 Female

Pin	Signal
1	BI_DA+
2	BI_DA-
3	BI_DB+
4	BI_DC-
5	BI_DC+
6	BI_DB-
7	BI_DD+
8	BI_DD-

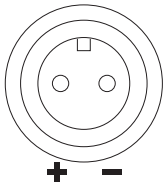
NMEA 0183 Input (Not supported with the Flat Panel Series)



Micro-C 5-Pin Male

Pin	Signal
1	Power + Data
2	Vcc
3	GND
4	CAN-H
5	CAN-L

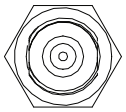
NMEA 2000 Input (Not supported with the Flat Panel Series)



Micro-C 2-Pin Male

Pin	Signal
+	HEADING IN
-	HEADING GND

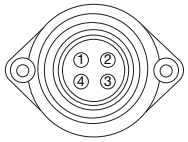
Coax Connectors



RF F Type Female

Conductor	Function
Inner	Power + Data
Outer	GND

Power Connector



4 Contact Power Plug Male

Pin	Signal
1	Input Power
2	Input Power
3	GND
4	GND

12.5.5 Connecting CNX-Mobility to ODU

Connect a coaxial cable from the Coax port of the CNX-Mobility to the F-port of the ODU.

NOTE

- The coaxial cable has already been connected to the ODU. Refer to the **"4.6.1 ODU Power+Data Cable" on page 31** for details.
- Make sure of the following before installing system cables.
  - All cables with connectors need to be fully secured and protected from physical damage.
  - Don’t acutely bend any cables during installation.

- Ensure that each connection is fully tightened with a torque of 1Nm (8lbf.in).
- Ensure the cables are not subjected to excessive tension or in a tight bend radius.

Figure 63: Connecting Power to CNX-Mobility

CAUTION

After connecting the coax cable to the **COAX** Port, ensure the cable is properly secured. The cable shall be secured to any stationary surface near the CNX to mitigate additional movement and reduce stress on the port. A service loop is also recommended if allowable by the installation.

12.5.6 Connecting Power to CNX-Mobility

1. Turn the cap for power port anticlockwise to open it.
2. Plug the appropriate power cable (AC power cord (NA) or AC power cord (NEMA 5-15P)) into the power adapter.
3. Connect one end of the power supply unit to the electrical outlet and the other end to the CNX-Mobility. When the power supply is connected for the first time, the power will turn on automatically. After that, press and hold the power button for more than 3 seconds to turn the power on or off.
   - It is recommended that the power cable is plugged into the CNX-Mobility before plugging in the power adapter to an outlet.
   - The power connector can only be plugged into the CNX-Mobility one way. Turn the connector all the way to lock it.
   - Ensure the cable is not subjected to excessive tension or a tight bend radius.

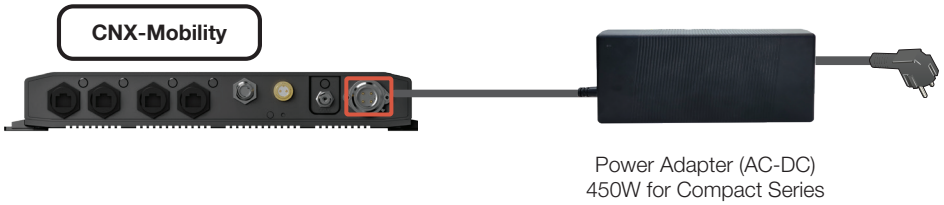


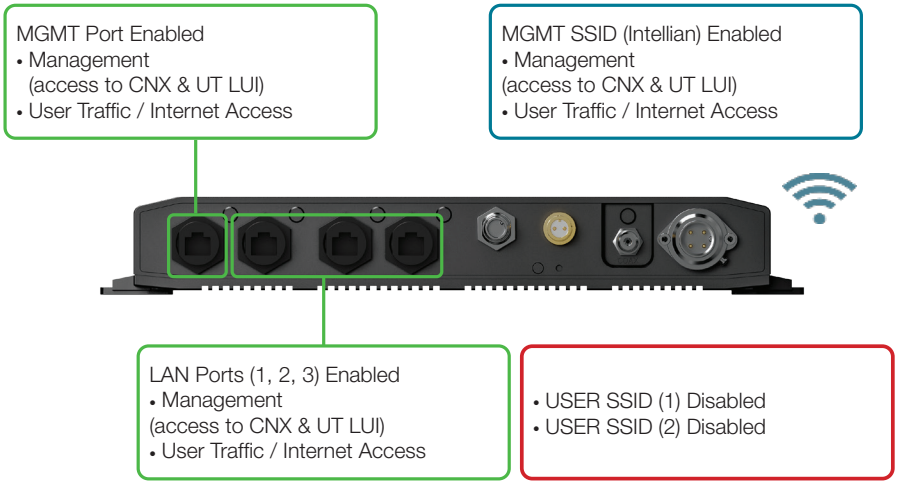
Figure 64: Connecting Power to CNX-Mobility

12.6 Modes of Operation

CNX-Mobility is initially set to Wi-Fi Router mode by default and supports five modes: Wi-Fi Router Mode, Switch/AP Mode, Single Port Mode, Multi-APN Router Mode, and Multi-APN Switch Mode. The mode can be changed according to specific usage needs through the LUI. (It is recommended to use Chrome when accessing the LUI.)

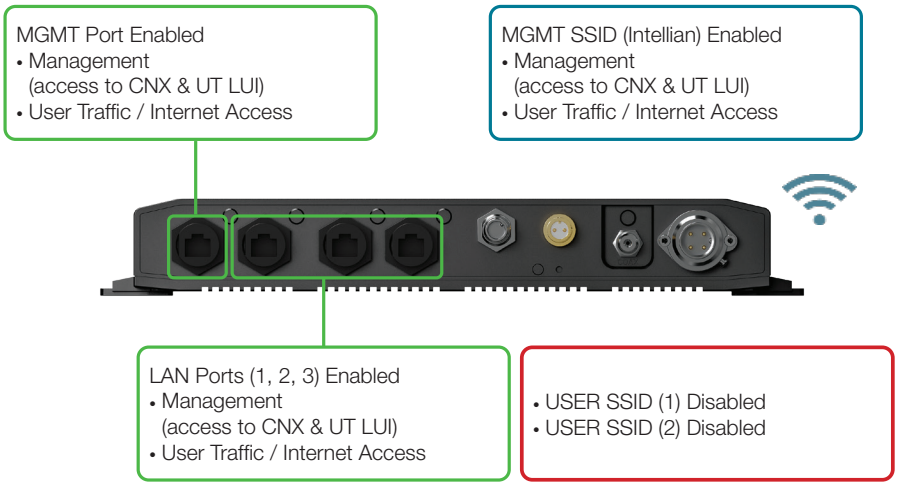
WiFi Router Mode

- CNX operates as Layer-3 NATP/Router
- Device connected to any LAN port obtain address via DHCP from CNX
- Device connected to MGMT SSID Intellian obtains address via DHCP from CNX
- CNX Obtains WAN-IP via DHCP from SSM
- User is able to create additional SSIDs if desired
- All local networks are isolated in their own firewalled subnet and have configurable DHCP settings



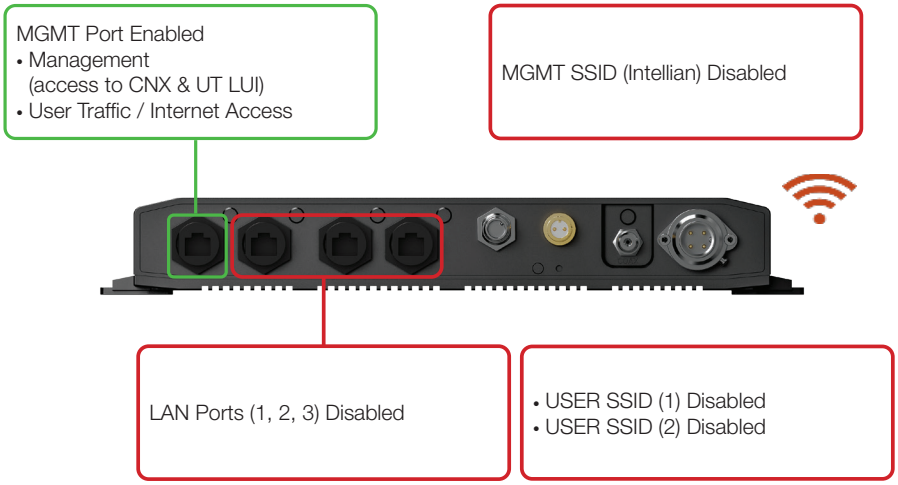
Switch /AP Mode

- CNX operates as Layer-2 device including SSID Intellian
- Device connected to any LAN ports obtain address via DHCP from SSM
- Device connected to SSID Intellian obtains address via DHCP from SSM
- All physical ports and SSID Intellian are bridged and trunked to SSM



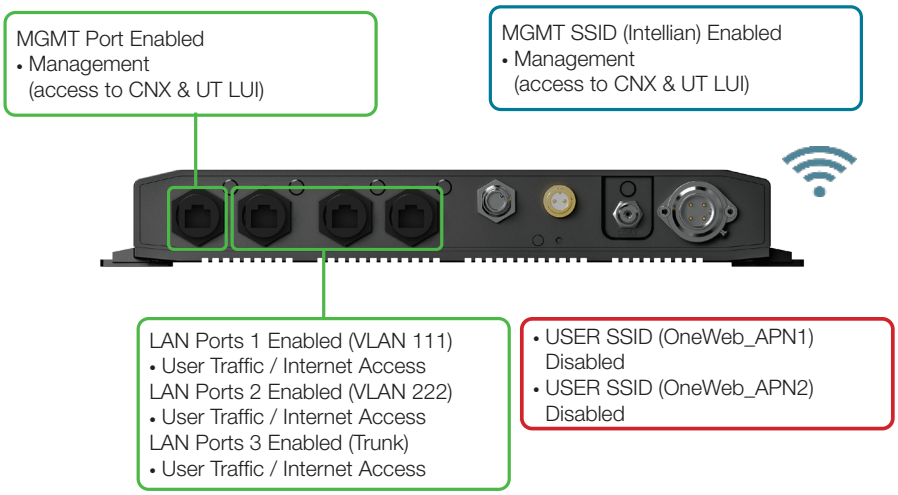
Single Port Mode

- CNX functions as a single port bridge
- Device connected to Management LAN port obtains address via DHCP from SSM
- All other ports and Wi-Fi SSIDs (including Intellian) are disabled and cannot be enabled



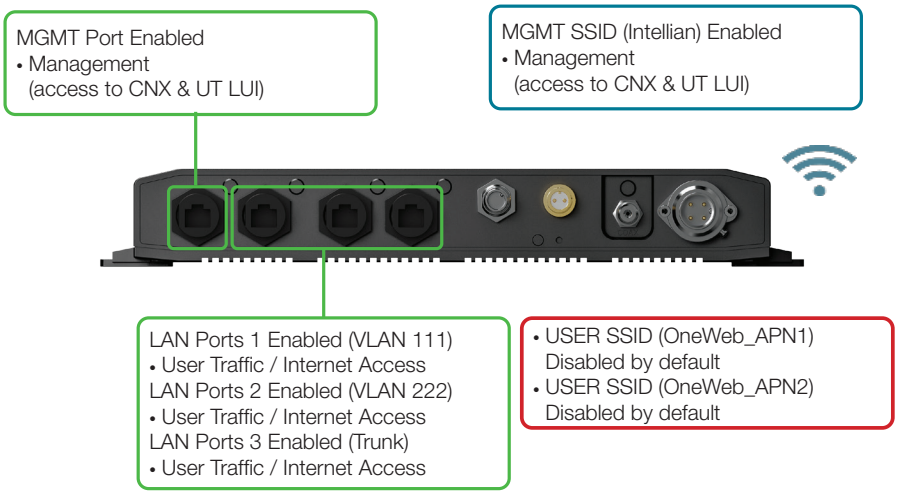
Multi-APN Router Mode

- All physical user ports & MGMT SSID are enabled
- SSID OneWeb_APN1 and OneWeb_APN2 are disabled, but can be enabled by the user
- Switch LAN Port 1 & SSID OneWeb_APN1 are NAT'ed to X.X.X.b
- Switch LAN Port 2 & SSID OneWeb_APN2 are NAT'ed to Y.Y.Y.b
- Switch LAN Port 3 trunks VLAN 111 and VLAN 222, and does not trunk untagged traffic
- CNX WAN IP is obtained from SSM via DHCP per VLAN , each VLAN on CNX runs a DHCP server (NAPT)
- Switch LAN Port 4 labeled Management always operates in bridge mode with Intellian SSID



Multi-APN Switch Mode

- CNX operates as a L2 device, including SSID Intellian
- SSID OneWeb_APN1 and OneWeb_APN2 are disabled, but can be enabled by the user
- Device connected to any LAN port obtains address via DHCP from the SSM
- LAN Port 1 and SSID OneWeb_APN1 are bridged to SSM eth0.111
- LAN Port 2 and SSID OneWeb_APN2 are bridged to SSM eth0.222
- LAN Port 3 trunks VLAN 111 and VLAN 222, and does not trunk untagged traffic
- Device connected to SSID Intellian obtains address via DHCP from SSM



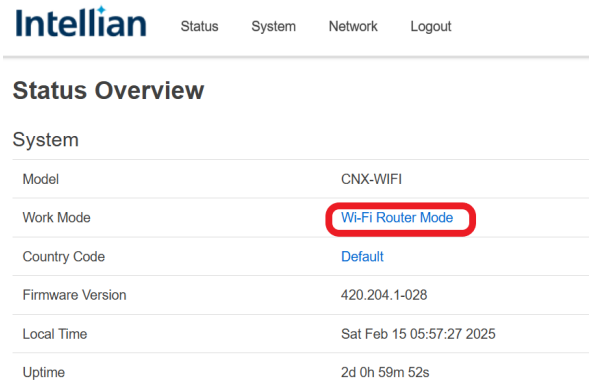
12.7 CNX-Mobility Settings

12.7.1 Setting Up CNX-WIFI for First-Time Login

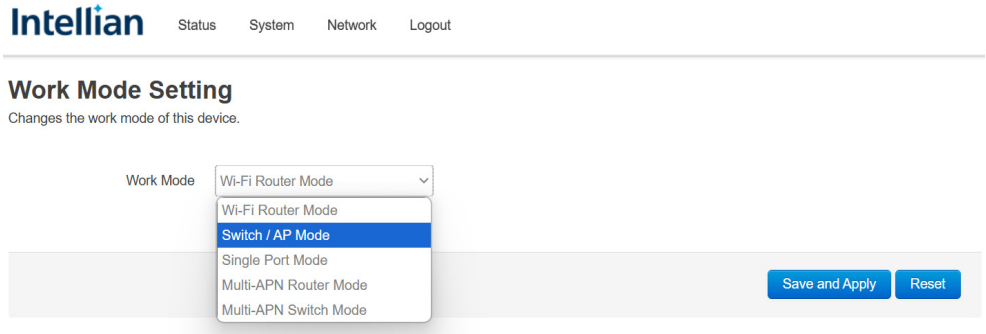
1. Use an ethernet cable to connect your computer to the MGMT port on the CNX-WIFI.
2. Open a web browser and enter the default IP address: **192.168.100.3.** (Chrome is recommended.)
3. Set your password upon first log in. A basic recommendation is "admin", but can be changed based on the user preference.
   - If the password is ever lost or forgotten, the CNX can be reset to default by pushing and holding the reset button for 10 seconds.

12.7.2 Setting the Work Mode

1. From the LUI home page, click the current work.



2. Select desired work mode from the drop down.



3. Click **Save and Apply** to apply the settings to the system.

12.7.3 Updating Wi-Fi Passwords for CNX-Mobility

The username, password, and SSID information are on a label on the top of the CNX-Mobility. The Intellian MGMT network does have a password, as indicated on the label.

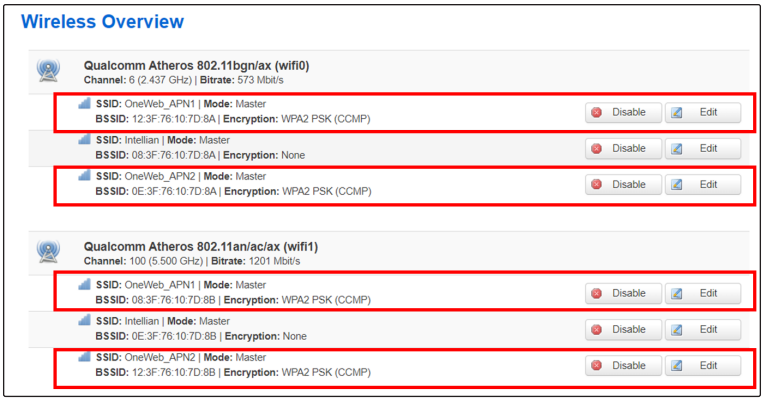
NOTE: This is an example. Passwords are unique to each CNX.

Figure 65: CNX-Mobility Label

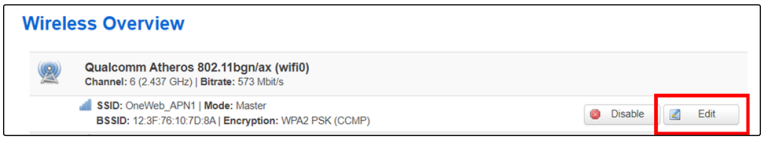
To change the SSID name or Password:

1. Go to the **Network** menu and select **WIFI**.

The Wireless Overview page will display the following:



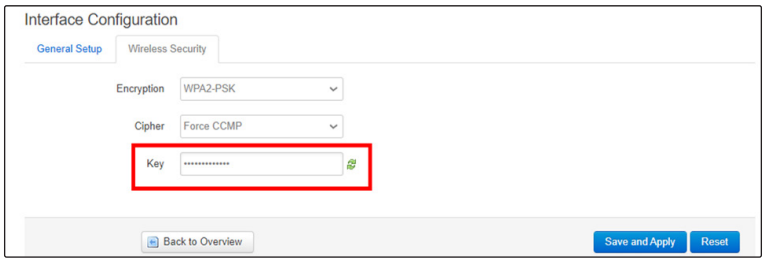
2. Select the **Edit** button to make changes.



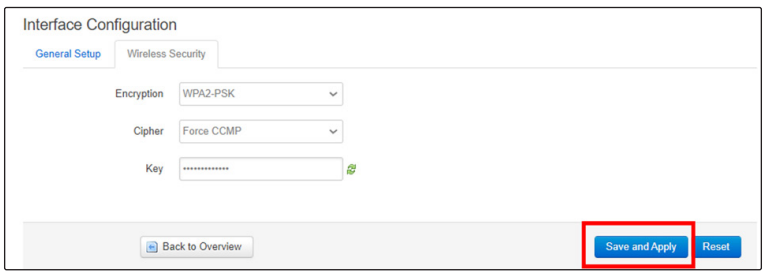
3. To change the SSID name, go to the Interface Configuration section, select the General Setup tab and type in the new name in the ESSID field.

Once the SSID name has been updated, select the **Save and Apply** button.

4. Type in the new password in the **Key** field. By default, it will be the password on the label on the bottom of the CNX-WIFI.



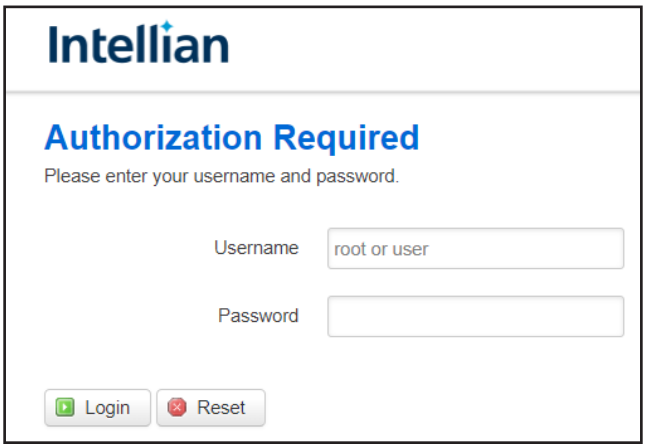
5. Once the password has been updated, select the **Save and Apply** button.



12.7.4 Updating the Country Code for CNX-Mobility

To update the Country Code, follow these steps:.

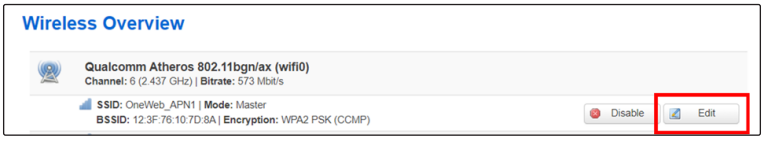
1. Log into the CNX Login page: **192.168.100.3**. The default username is “root.” Use the password you set when first connecting to the CNX. If you forget your password, press and hold the RESET button on the CNX for 10 seconds to reset the system, then set a new password.



2. Go to **Network** > **WiFi**.

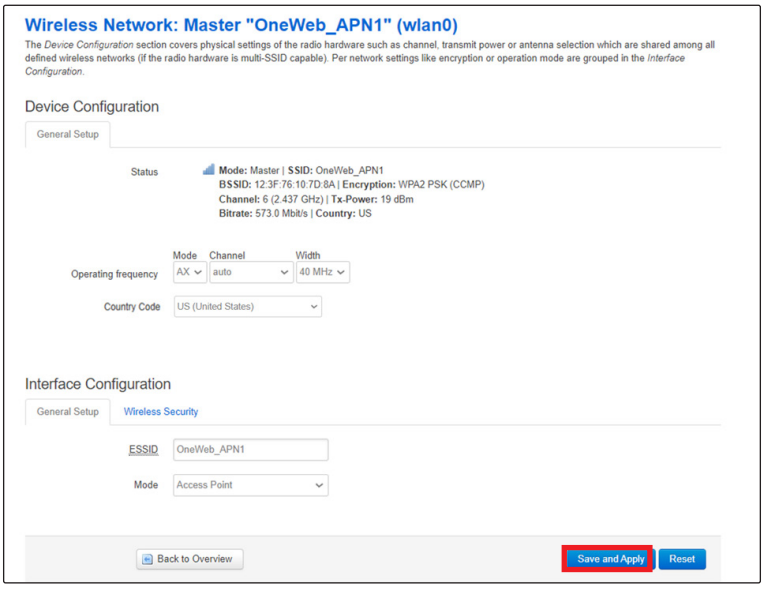
The Wireless Overview page will display the following:

3. Select **Edit** button.

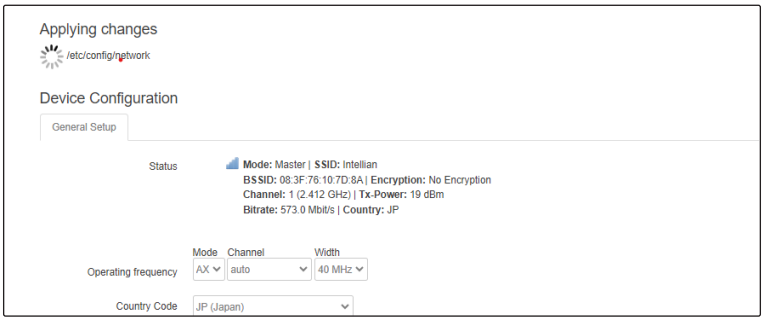


4. From the General Setup section, select the appropriate Country Code from the drop down list.

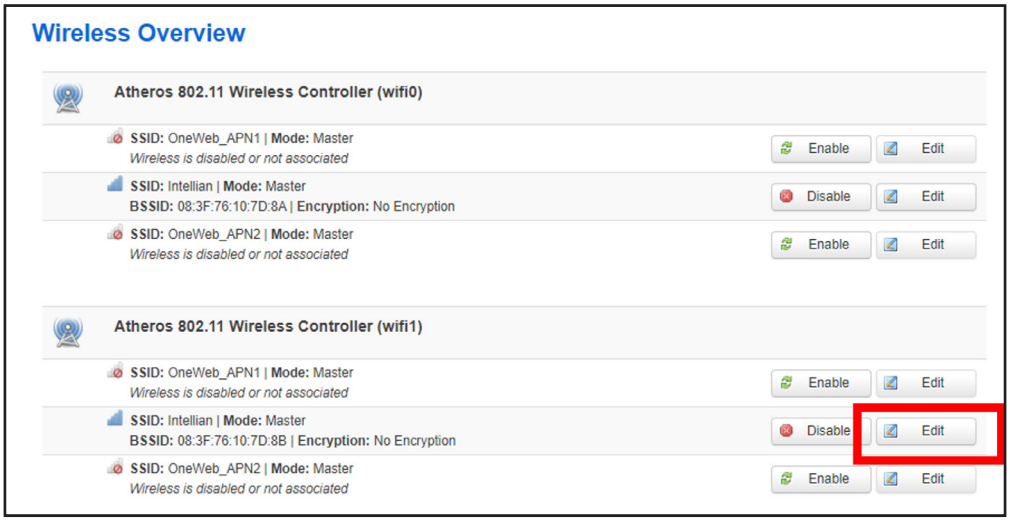
5. Scroll to the bottom of the page and select the Save and Apply button.



6. The screen will display that changes are being applied.



7. Once the changes have been applied, the **Wireless Overview** page will display. The 5 GHz row will also need to be updated. Select the **Edit** button on the **SSID**: Intellian | **Mode**: Master row for 5 GHz (wifi1).



8. Follow steps 1-4 to complete the same procedure.

   Based on the country list provided, here are the operating / allowed Wi-Fi frequency across different countries:

   The following countries have the same data:

   Argentina, Australia, Brazil, Chile, EU (European Union), Indonesia, Mexico, Saudi Arabia, South Africa, South Korea, UK (United Kingdom), and USA.

   - 2.4 GHz Band: 2400–2483.5 MHz
   - 5 GHz Band:
     - UNII-1: 5150–5250 MHz
     - UNII-2: 5250–5350 MHz
     - UNII-2 Extended: 5470–5725 MHz
     - UNII-3: 5725–5850 MHz

   Canada

   - 2.4 GHz Band: 2400–2483.5 MHz
   - 5 GHz Band:
     - UNII-1: 5150–5250 MHz
     - UNII-2: 5250–5350 MHz
     - UNII-2 Extended: 5470–5725 MHz
     - UNII-3: 5725–5825 MHz

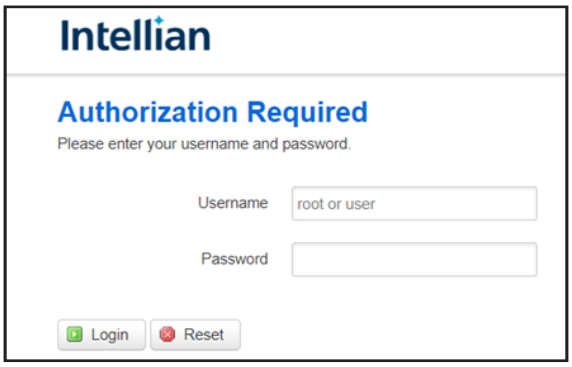
   Japan

   - 2.4 GHz Band: 2400–2483.5 MHz
   - 5 GHz Band:
     - UNII-1: 5150–5250 MHz
     - UNII-2: 5250–5350 MHz
     - UNII-2 Extended: 5470–5600 MHz
     - UNII-3: 5650–5850 MHz
   - 2.4 GHz Band is universally the same across all these countries (2400–2483.5 MHz).
   - 5 GHz Band has variations, especially in the upper ranges and some specific bands.

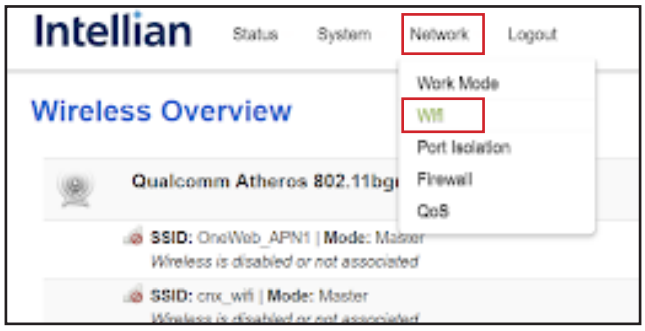
12.7.5 Disabling the Wi-Fi

To disable the Wi-Fi, follow these steps:

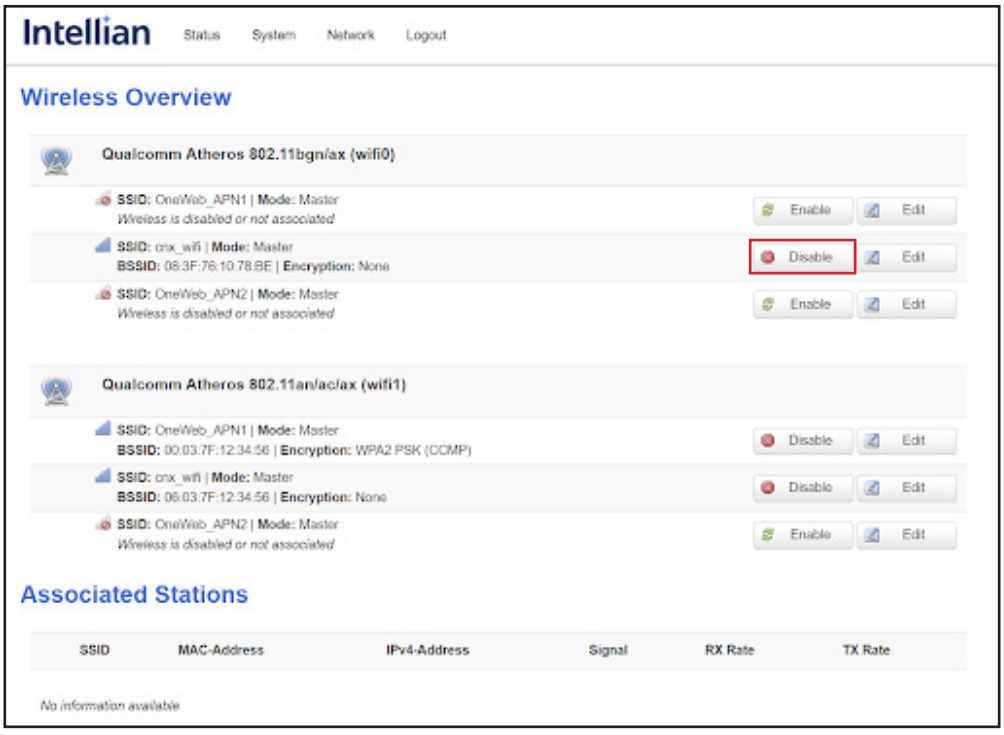
1. Log into the CNX Login page: **192.168.100.3**. The default username is “root.” Use the password you set when first connecting to the CNX. If you forget your password, press and hold the RESET button on the CNX for 10 seconds to reset the system, then set a new password.



2. From the **Network** menu, select Wifi.



3. Select the **Disable** button of the Wifi network you want to disable. Then, Wifi will be disabled, and the **Disable** button will change to **Enable**.



12.7.6 Updating the CNX-Mobility Software

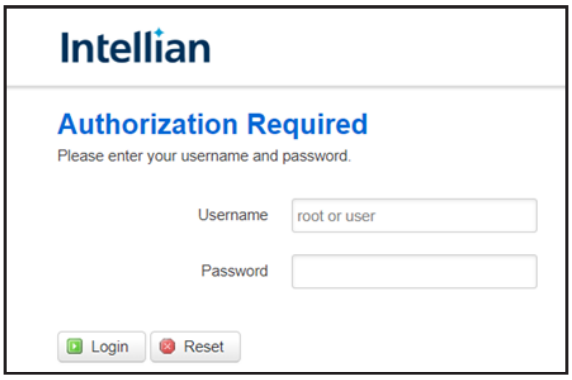
NOTE

Downgrading the CNX-WIFI firmware will result in a loss of functionality. Ensure the firmware version is compatible before proceeding.

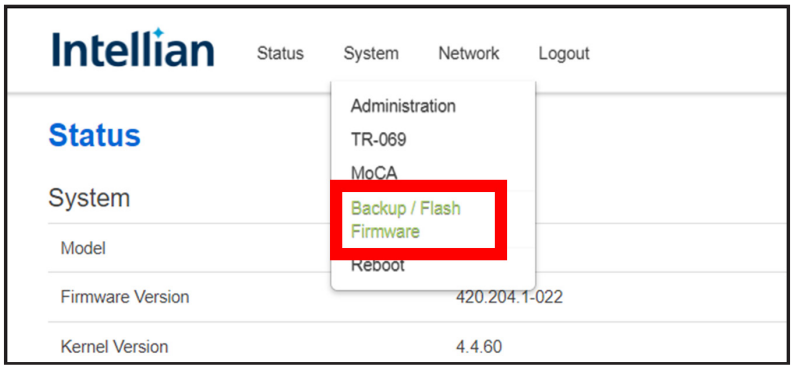
If an incompatible firmware version is uploaded to the CNX-WIFI, the top front LED will display a solid red color. To resolve this issue, upload the correct and updated CNX-WIFI firmware version via the LUI.

To update the CNX-Mobility software, follow these steps:

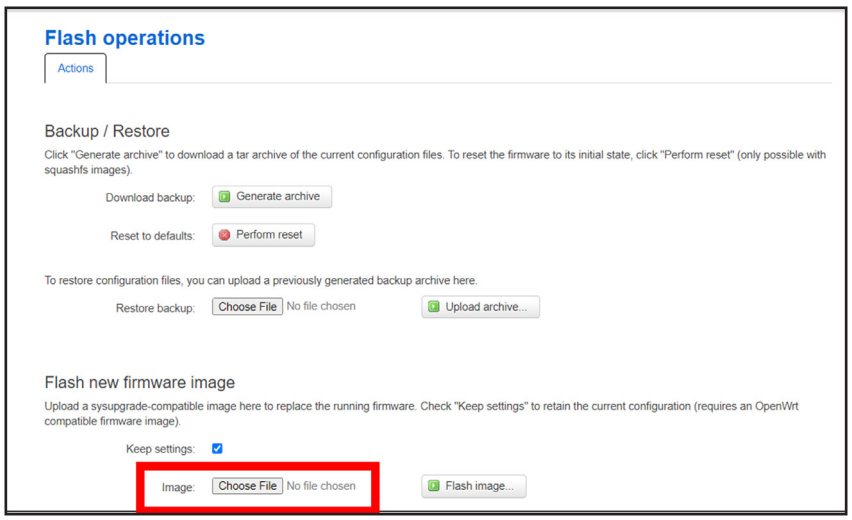
1. Log into the CNX Login page: **192.168.100.3**. The default username is “root.” Use the password you set when first connecting to the CNX. If you forget your password, press and hold the RESET button on the CNX for 10 seconds to reset the system, then set a new password.



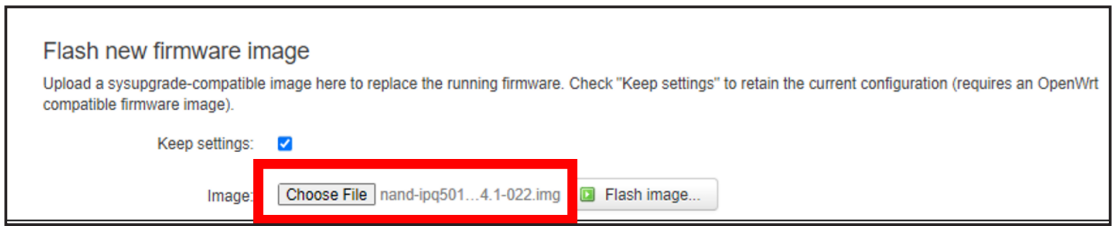
2. From the **System** menu, select **Backup / Flash Firmware**.



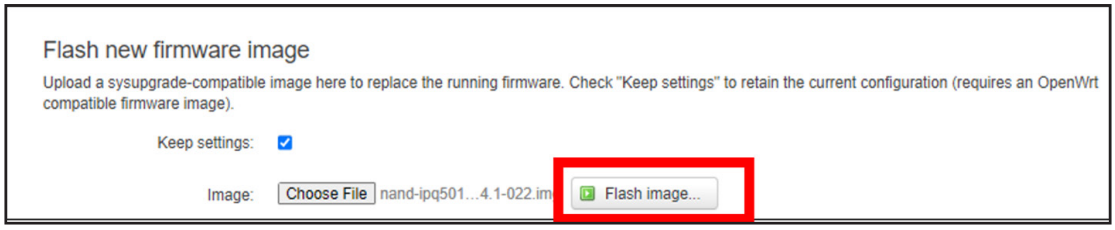
3. Go to the Flash new firmware image section and select the Choose File button to get the appropriate file.



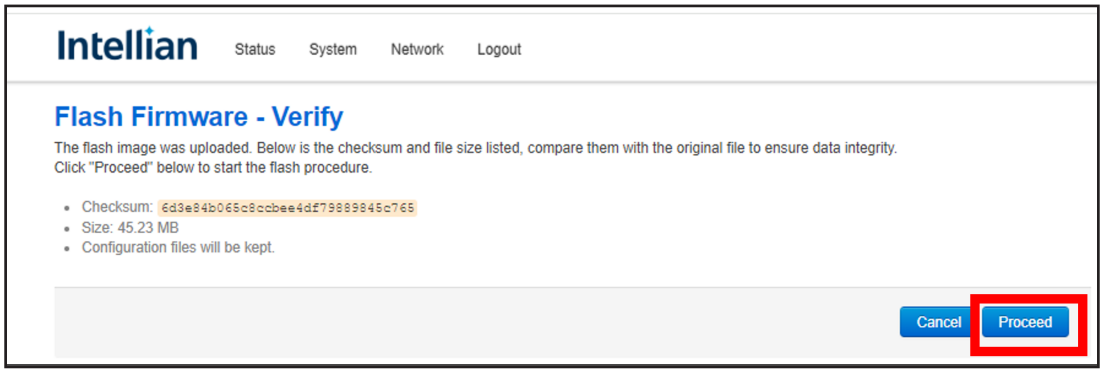
4. The file name will display next to the Choose File button.



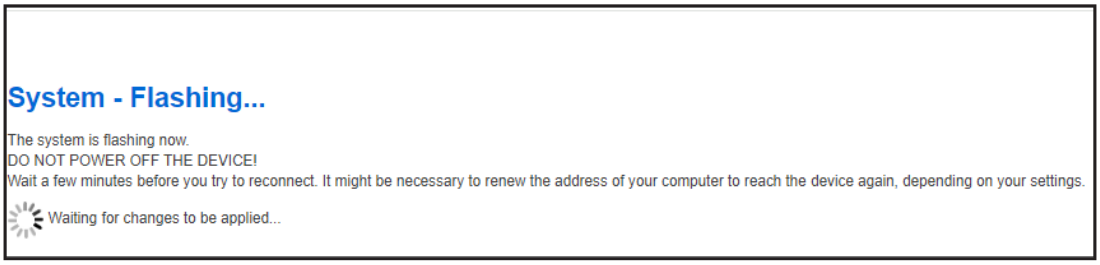
5. Select the **Flash image** button to begin upgrade.



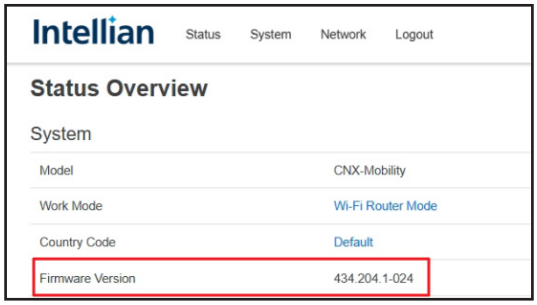
6. The **Flash Firmware - Verify** page displays with the file information. Select the **Proceed** button.



7. The System Flashing screen will display while the updates are being done.



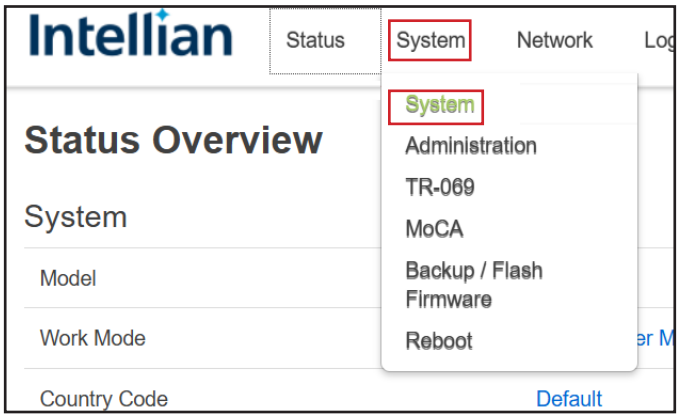
8. Once the update is complete, log back into the system and verify that the software has been updated on the **Status** page.



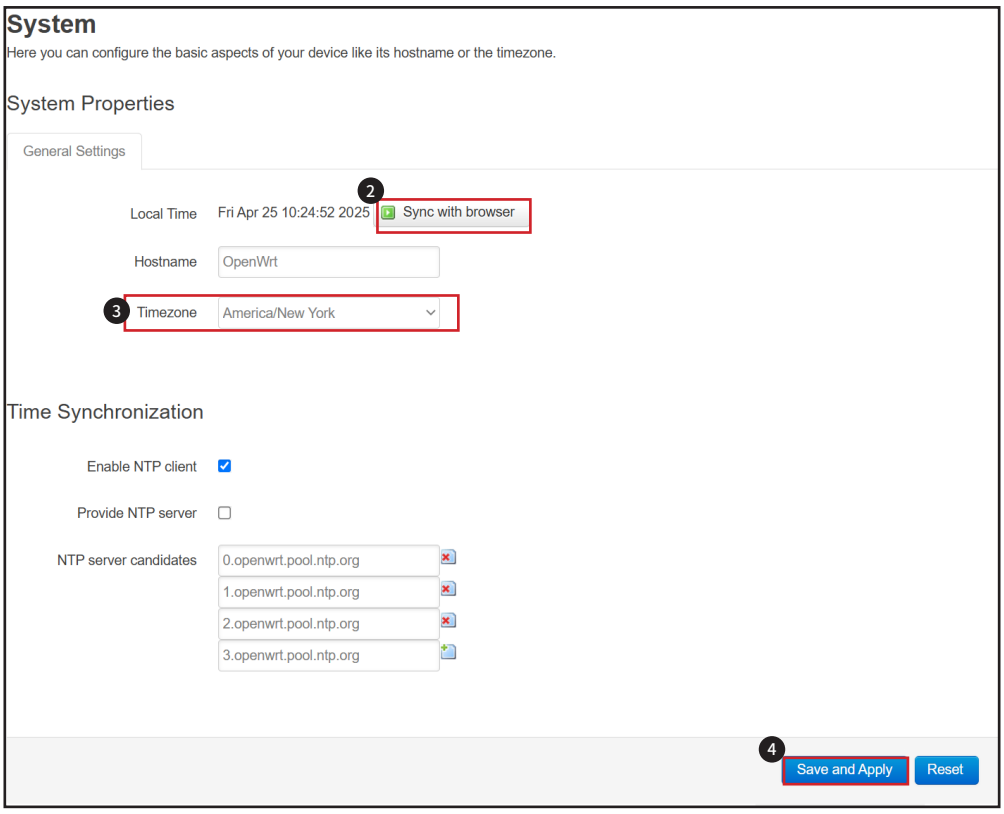
12.7.7 Updating CNX-Mobility Local Time

The local time on the CNX-WIFI can be updated via the System tab. To do that:

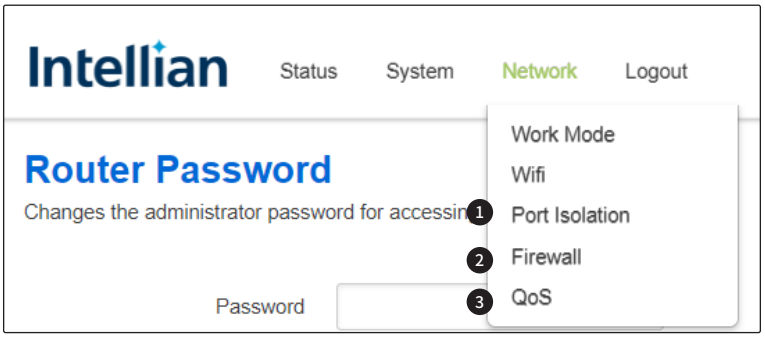
1. Select the System tab in the System drop down.



2. Click the "Sync with Browser" button
3. Select your relative Time Zone.
4. Save and Apply.

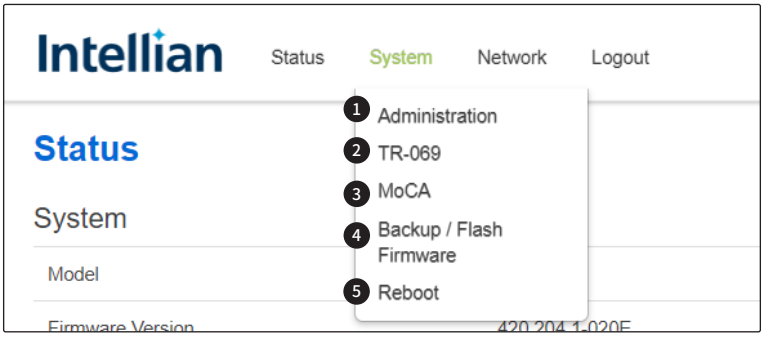


12.7.8 Network Configuration Options



No.	Item	Description
①	Port Isolation	Shows the WAN interfaces that cannot communicate with one another when the router mode is turned on.
②	Firewall	Firewall- Port Forwards is an advanced network configuration that allows external devices to access internal ports.
③	QoS	Quality of Service is an advanced network configuration that allows users to set traffic priority for different services/ protocols.

12.7.9 System Options



No.	Item	Description
①	Administration	Change CNX password.
②	TR-069	TR-069 Settings is an advanced WAN management protocol enabling service provider to access peripherals remotely.
③	MoCA	MoCA Settings is used to change coaxial cable options such as the operating frequency and transmit power limit.
④	Backup / Flash Firmware	Flash Operations enables backup and restoration of CNX operating system as well as an option to update the CNX firmware image.
⑤	Reboot	Reboots the operating system of the CNX.

Chapter 13. Using Local User Interface (LUI)

13.1 Introduction

With the embedded Local User Interface (LUI) software, the ODU can be monitored, controlled, and diagnosed remotely through a web browser. It saves your time and cost generated by various maintenance activities such as operating firmware upgrades, tracking parameter resets, and system diagnosis, etc.

13.2 Requirements to Access Eutelsat OneWeb Web Interface

The LUI can be accessible by Chrome web browser using the URL 192.168.100.1 (Default).

NOTE

- Intellian recommends using Chrome web browser when operating ***LUI***
- If you amend the UT IP address, ensure that the UT and the CNX are configured to be on the same subnet (e.g., 192.168.100.x) for proper communication.

13.3 LUI (Local User Interface) webpage

The network is automatically configured by DHCP with no additional PC IP configuration.

1. Connect an Ethernet cable from the **MGMT** port on the CNX. The Data LED indicator will turn Green if CNX is connected.

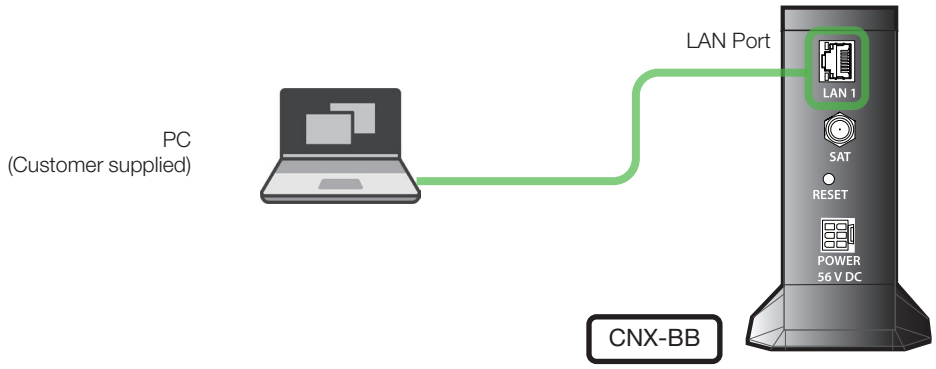


Figure 66: Back Panel LAN Port Connection with CNX-BB

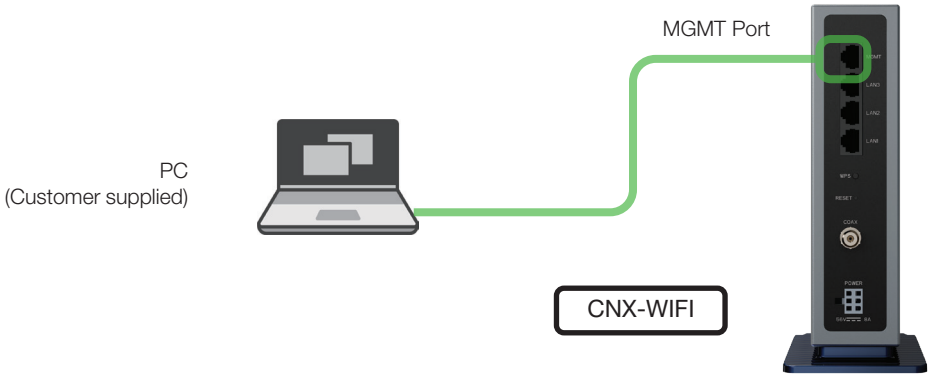


Figure 67: Back Panel LAN Port Connection with CNX-WiFi

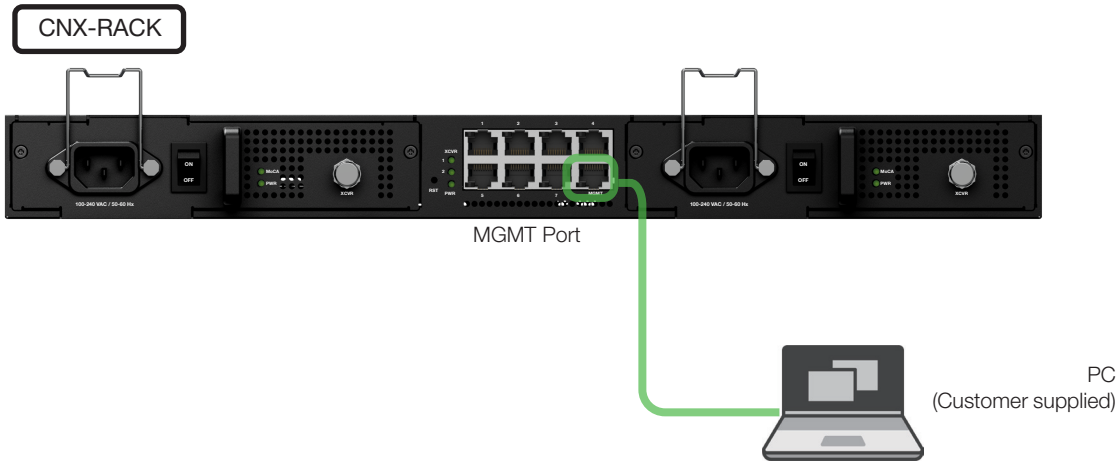


Figure 68: Back Panel LAN Port Connection with CNX-RACK

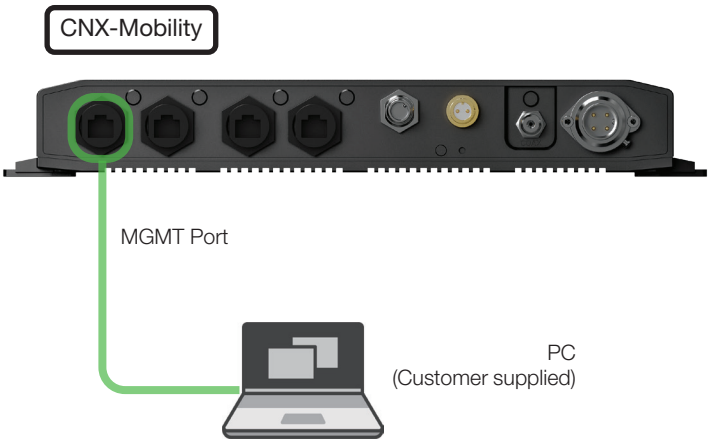


Figure 69: Back Panel LAN Port Connection with CNX-Mobility

2. Enter the IP address into your web browser's address bar to log in to the Local User Interface (LUI).

NOTE

The ODU has to be connected to the CNX and powered up in order to access the webpage. The CNX should be connected to a power adapter before connecting between the ODU and CNX.

13.4 LUI Webpage Layout

Once you log in, the following information and menus are displayed.

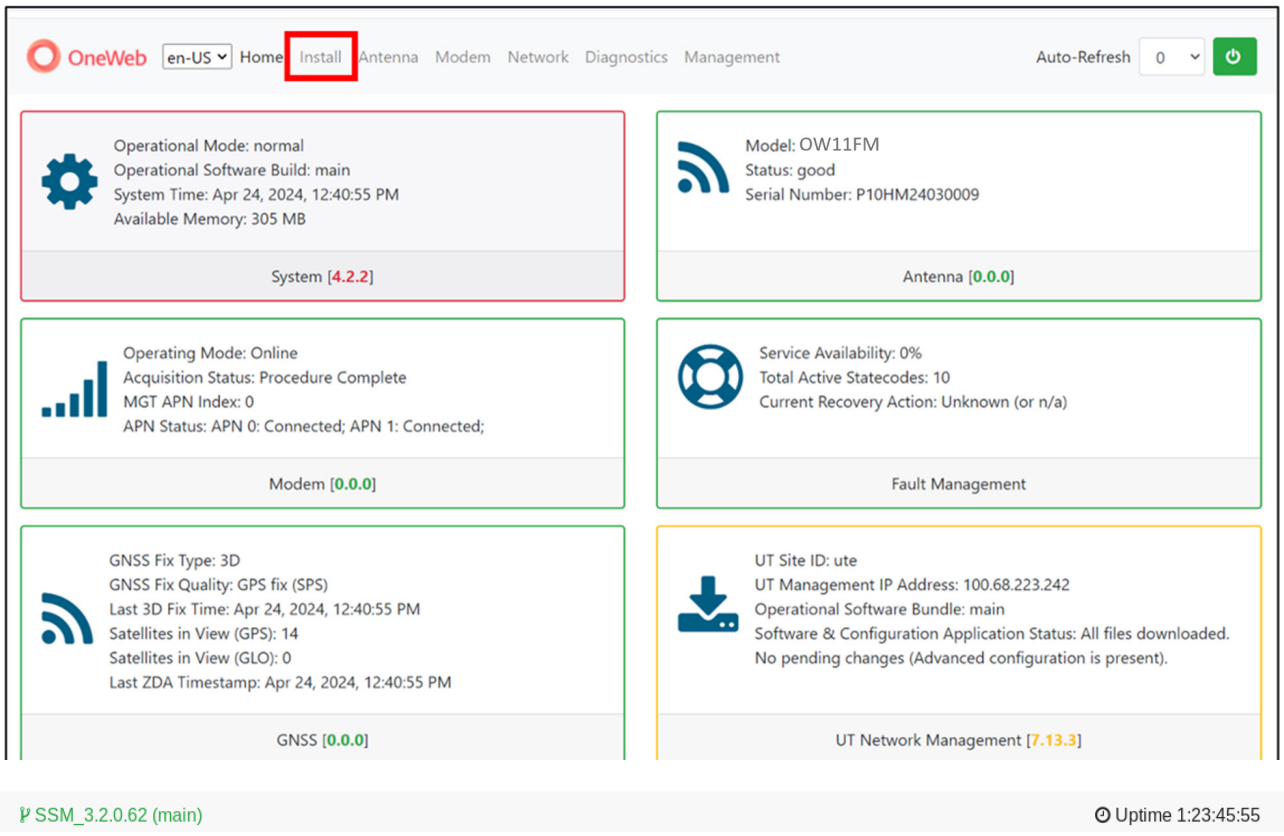
13.4.1 Navigation bar

The navigation bar as shown below is the primary way being able to navigate the LUI. The navigation bar is persistent across all LUI pages.

No.	Item	Description
①	Logo	This is the banner that displays the branding logo. Clicking on this logo on any given page will return the LUI to the homepage.
②	Language Drop Down Menu	The language drop-down menu lists all supported languages. Picking a language from the drop-down menu will change all text to the specified language immediately.
③	Navigation Items	These are the navigation items on the navigation bar. Clicking on a section will take you to a different part of the LUI. The sections are as follow: • Home: The homepage of the LUI displays a high-level overview of most components via a card layout. • Install: Guides the user through the installation process. • ODU: Displays ODU Information such firmware version, configuration and status. • Modem: Displays Modem Information (IMSI, IMEI, Manufacturer, Software Version, etc.), Modem Status (Call Status, Operating mode, etc.), Eutelsat OneWeb Extension Statistics, and GNSS Statistics. • Network: Displays statistics for all the network interfaces on the SSM such as the CNX interface, MGT interface, and WAN interface. • Diagnostics: Contains most of the SSM related statistics and configuration. Displays information such as the UT Status, Sensor Information, Host Processor Logs, and Event Logs. • Management: Displays UT Network Management Information such as SDL Information and UCR Statistics.
④	Auto-Refresh	This is the auto-refresh dropdown. Choosing an interval other than 0 will, refresh the display, fetch the data again at the specified interval.
⑤	Reboot	This is the reboot button. Clicking this button will trigger an SSM reset. While the SSM is rebooting, the reboot button turns from green to red. Upon successful reboot, the LUI will automatically refresh the page and the reboot button will go back to being green.

13.4.2 Home Page

The home page consists of several cards that display a high-level overview of certain components such as the UT System, ODU, or UT Network Management. Each card has a border that, depending on the status of the subsystem, changes color. If the subsystem has an issue present, the card is outlined in red. If the subsystem is behaving as normal, then the card is outlined in green. Clicking on a card will take you to the webpage where you can find more detailed information about the subsystem.



13.4.3 Footer

The footer, like the navigation bar, is persistent throughout all LUI pages. The footer contains two pieces of information.

Software Version Display:

- The current software version running on the Host Processor (SSM) is shown at the bottom left of the screen.
- The operational software mode follows the software version:
  - Factory Mode: Text color is red.
  - Main Mode: Text color is green.
- Clicking on the version text takes you to the UT Status section of the Diagnostics page.

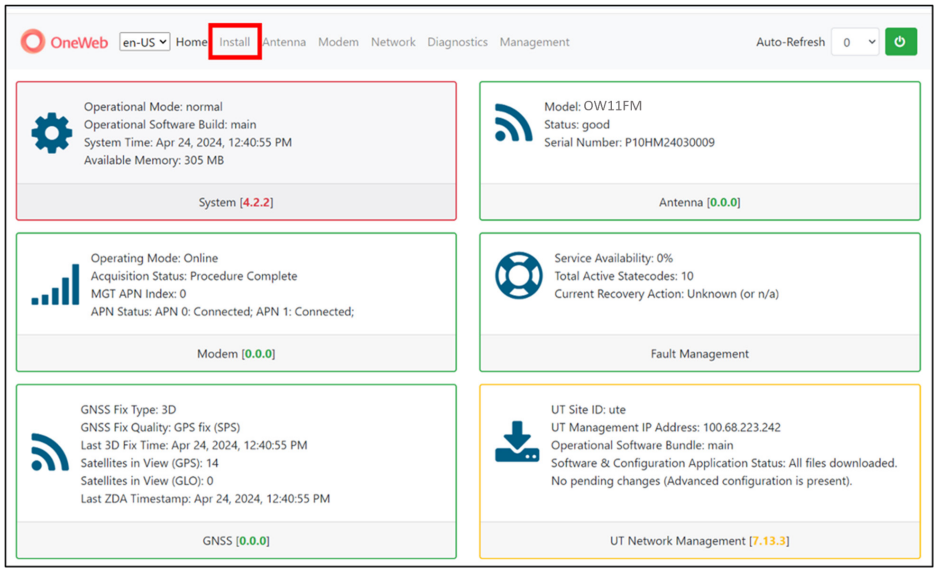
System Uptime Display:

- Shown on the right side of the screen.
- Displays the time elapsed since the last reboot.
- Format: days:hours:minutes:seconds.

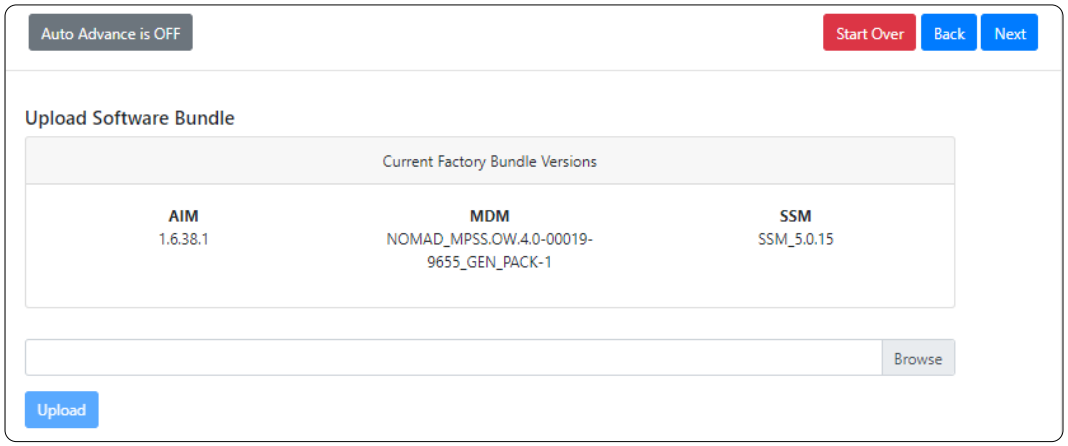
13.5 Software

13.5.1 Verify Software

Go to the Install page from the menu bar to verify the software version.



The Software Bundle page displays the current software versions running on each component.



13.5.2 Downloading and Upl the Ephemeris file

Ephemeris Data contains current information about the orbits of the satellites in the OneWeb constellation. The ODU uses ephemeris data to determine the positions of the satellites in the sky at any given time.

The file must have been downloaded within 30 days to be used. Once ODU is commissioned this will be updated automatically.

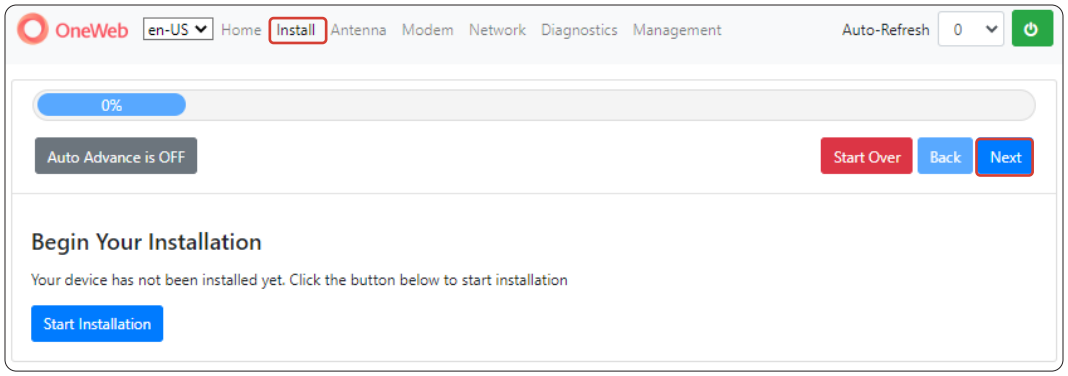
This is only needed if the ODU is set up for the first time or has been off for over 30 days.

Downloading Ephemeris file

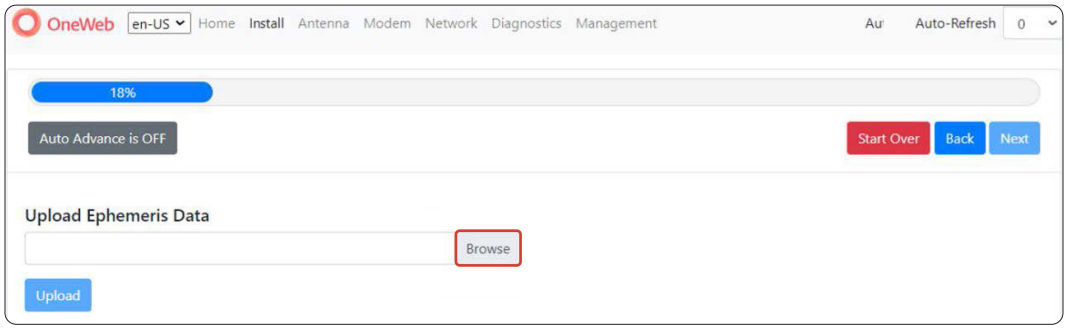
1. From a web browser, navigate to https://ephemeris.oneweb.net/ltef/
2. Select the **ltef.csv** file to download.

Upload Ephemeris file

1. Go to the LUI main page and select **Install** from the menu.
2. Select the **Next** button skip to the step where you can upload the Ephemeris Data.

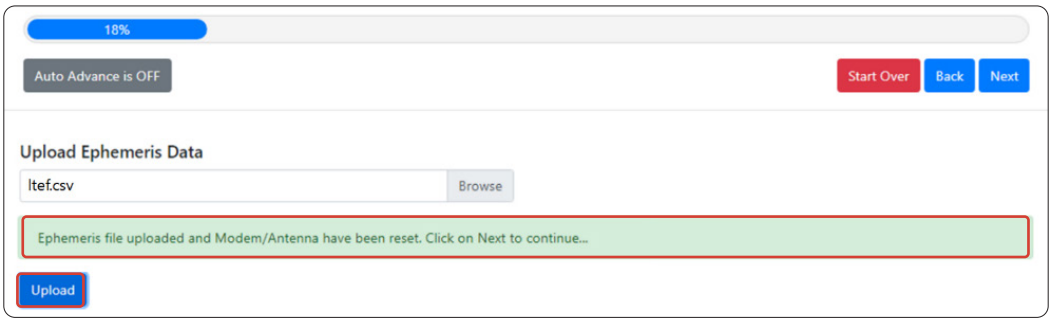


3. Select the **Browse** button on the Upload Ephemeris page.



4. Select the **Itef.csv** file and click **Open**.
5. Select the **Upload** button.

   When the upload has completed, a message will display that it has been reset.



The ODU is now ready to go OTA.

NOTE

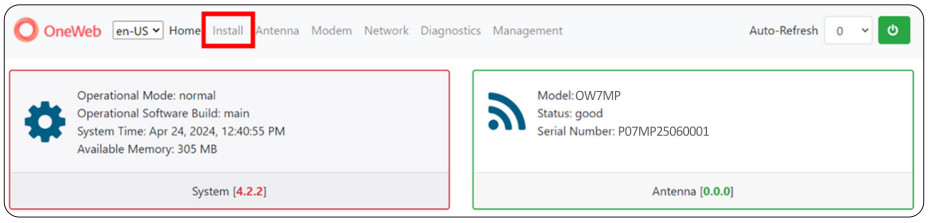
When using the LUI, check the "Current Position" section to monitor the ODU's roll, pitch, and yaw. This section reflects the ODU as a whole, while the "Navigation System" section refers to internal components. During installation, ensure the ODU is level within ±2° for pitch and ±2° of -180° for roll, as these use different reference points. The yaw indicates the ODU's pointing direction, which does not require adjustment due to automated true north alignment.

13.5.3 Updating the Software Bundle

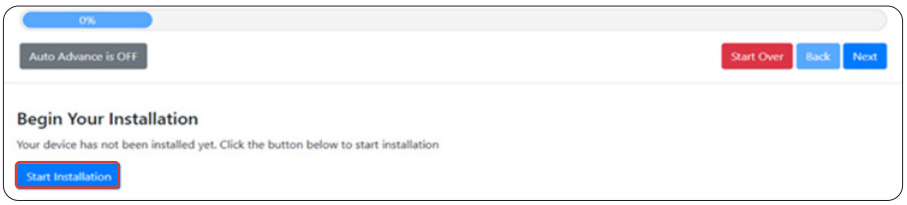
The software bundle on the user terminal may also be updated using the Local User Interface (LUI). This process is recommended for recovery purposes only. It can also be followed for new installations if desired.

OneWeb ODU Software Update Procedure via LUI

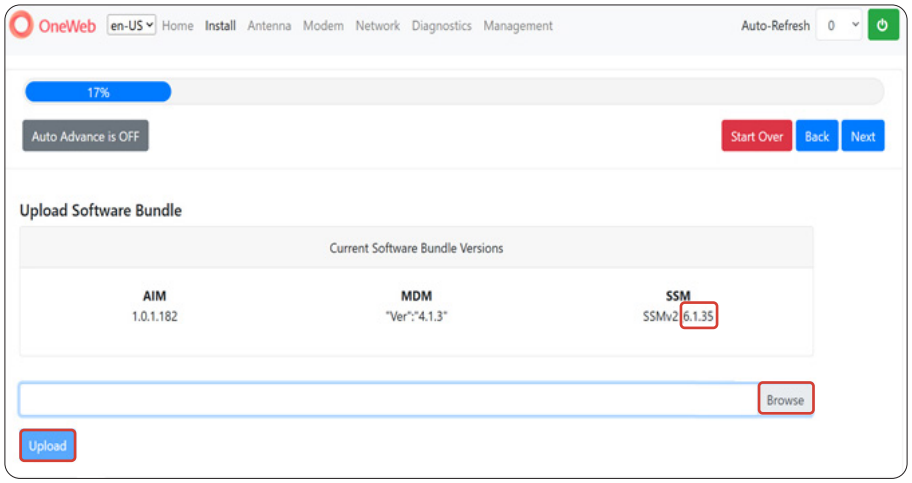
1. Go to the LUI main page (192.169.100.1) and select **Install** from the top menu.



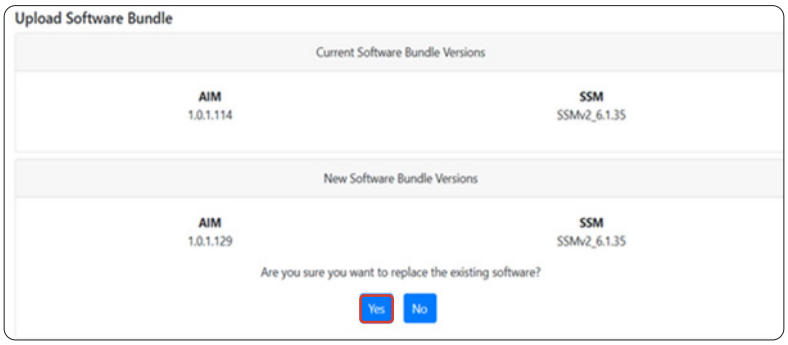
2. Select the **Start Installation** button on the Begin Your Installation page.



3. The Current Software Bundle Versions will display. If the SSM version is older than 5.0.65 then a Transition Bundle is required.
4. Select the desired file using the **Browse** button and then select the **Upload** button on the Upload Software Bundle page.
   - The Transition Bundle is available here: i-ESA_2.0.0.9T.
   - Prior to selecting the i-ESA_2.0.6.1 bundle, ensure you have selected the appropriate release based on the CNX version.



5. Verify the New Software Bundle Versions, and to continue to the software installation, select **Yes**.

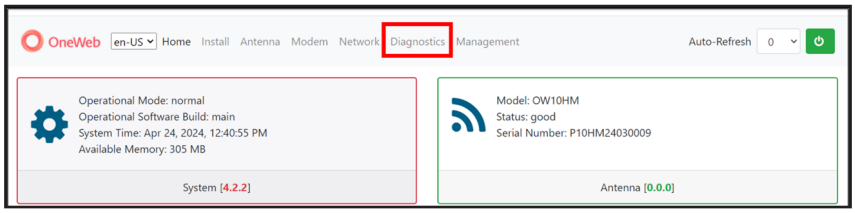


6. The screen will display the progress of the update and application of new software.
7. Once the software has been updated, a “Software has been updated!” message will display. The system will automatically reboot. The page will automatically refresh, when complete.

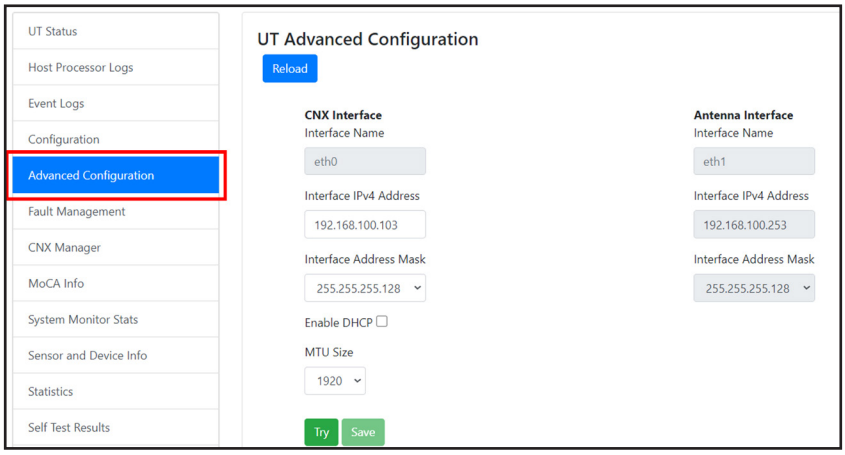
13.6 Updating the UT IP Address

There is an option to update the UT IP address if needed. Customers **should not** change the subnet. Only changing the "x" in the IP address 192.168.100.x is acceptable. This will ensure that the communication does not break between the CNX and the UT. To change the UT IP address, follow these steps:

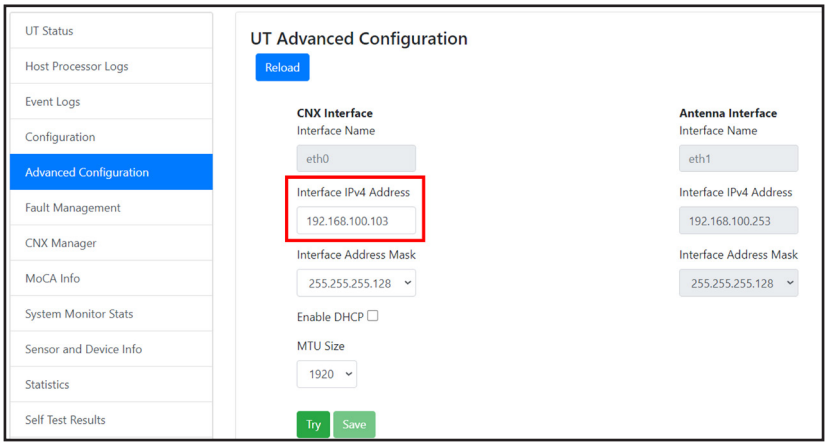
1. Log into UT LUI: **192.168.100.1** and select **Diagnostics** from the menu at the top of the page.



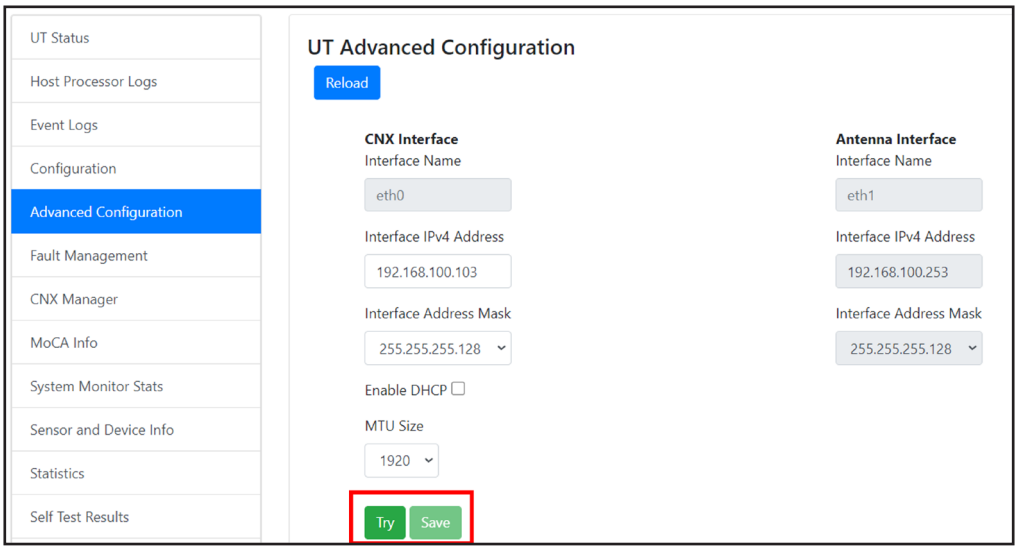
2. Select **Advanced Configuration** from the menu on the left of the page.



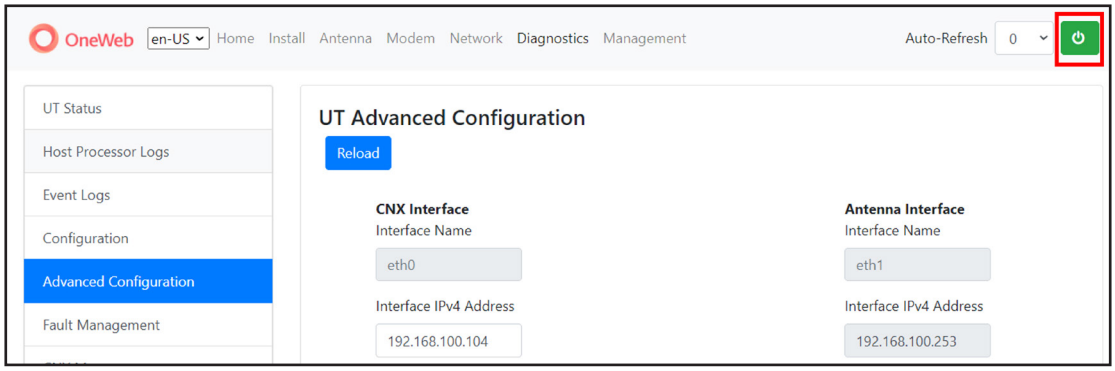
3. Go to the Interface IPv4 Address field to make the update. Reminder: Only the last section of the IP address should be changed.



4. After changing the UT IP address, select the **Try** button and then the **Save** button.



5. To apply the changes, reboot the system.



Chapter 14. Specification

14.1 Technical Specification

14.1.1 ODU Specification

Item	Specification
Dimensions	56 cm x 45 cm x 12 cm (22 in x 17.7 in x x 4.7 in)
Weight	12.2 kg (27 lb)
Power	Max 180 W
Power Consumption	Max 165 W
Operating temperature	-40°C to +55°C (-40°F to 131°F)
G/T	9 dB/K
EIRP	+ 39 dBW (single carrier) + 42 dBW (dual carrier)
Field of View	± 55° from zenith 360° azimuth
Ingress	IP66
Interface	F-type port
Ethernet Cable	RJ45 port
Shock and vibration	BS EN50155:2021 13.4.10

14.1.2 CNX-WIFI Specification

Item	Specification
Dimensions	21 cm x 17 cm 8 cm (8.3 in x 7 in x 3 in)
Weight	0.6 kg (1.3 lb.)
Power	Max 18 W
Operating temperature	0°C to +40°C (32°F to 104°F)
Data Interface	Embedded WiFi 6 AP 4 GigE RJ45 ports
Power Input	Normal : +56VDC min +47VDC, max +59VDC (Based on the 250W AC-DC adapter or 480W DC-DC converter)
Ingress	IP44

14.1.3 CNX-BB Specification

Item	Specification
Dimensions	13 cm x 12 cm x 4 cm (5 in x 2.7 in x 1.6 in)
Weight	0.25 kg (1.2 lb)
Operating temperature	0°C to +40°C (32°F to 104°F)
Data Interface	1 GigE RJ45 port

14.1.4 CNX -Rack AC & DC Specification

Item	Specification
Dimensions	44.2 cm x 25 cm x 4.4 cm (19 in x 1 RU chassis)
Weight	6.3 kg (13.9 lb.)
Power	Max 30 W
Operating temperature	-25°C to +55°C (-13°F to 131°F)
Data Interface	8-port GigE RJ45 1x USB (Type-A) 1x NMEA0183, 1x NMEA2000 (Not supported with Flat Panel UTs.)
Power Input	Dual 450W PDM AC : 100V ~ 240V/50Hz ~ 60Hz DC : -40.5V ~ -57V
Ingress	IP31

14.1.5 CNX-Mobility Specification

Item	Specification
Dimensions	30 cm x 20 cm x 4 cm (11.8 in x 7.9 in x 1.6 in)
Weight	1.5kg (3.3 lb.)
Power	Max 20 W
Operating temperature	-25°C to +55°C (-13°F to 131°F)
Data Interface	Embedded WiFi-6 Access Point 4-port GigE RJ45 1x NMEA0183, 1x NMEA2000 (Not supported with Flat Panel UTs)
Power Input	Normal : +56VDC min +47VDC, max +59VDC
Ingress	IP56

Chapter 15. Warranty

Subject to the terms and conditions set forth in this Intellian Standard Global Warranty, the Agreement and/or any other terms and conditions agreed upon by Distribution partners and Intellian, Intellian satellite ODU products are warranted against defects in parts and workmanship for a period of one (1) year in respect of defects in parts and for a period of one (1) year in respect of the factory labor.

Warranty Time Period: Warranty periods commence from the date of shipment from an Intellian facility.

If installation occurs within six months of the date of shipment from an Intellian facility then Intellian will extend the duration of the warranty by the number of days between shipment and installation of the terminal. If installation occurs on or after six months of the date of shipment then the duration of the warranty will not be extended.

This Warranty shall be void for any Product which has been subjected to **"Intellian Standard Global Warranty"**.

Warranty Claim Procedure: Information on Intellian’s warranty policy and coverage can be found on the Intellian Partner Portal. Intellian’s warranty policy aims to reimburse Distribution partners for a reasonable percentage of costs and time that would be incurred when repairing an Intellian system. Intellian’s warranty policy does not cover any other costs including those incurred by Distribution partners to support End Users.

Intellian shall maintain and abide by an industry standard return material authorization (RMA) process to enable the managed return of defective products, warranty assessment, customer communication, and RMA status updates.

To submit a Warranty Claim with Intellian. Please follow the directions in **"Intellian Standard Global Warranty"**.

Chapter 16. Appendix

16.1 Selecting Pole Mount for Land Fixed (Optional)

The Land Fixed installation has multiple mount types. Several mounting types are available for the Land Fixed UT to meet specific environmental conditions.

These accessories are available for purchase separately and are provided in a separate box when supplied. All accessories require a 60mm pole. These mounting types all share the same Adjustable Mount Adapter.

For more information about the Adjustable Mount Adapter, please refer to "5.3 Mounting ODU Using Adjustable Mount Adapter" on page 36.

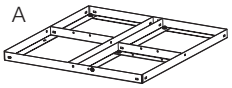
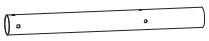
16.1.1 Installing Non-Pen Mount (NPM) (Optional)

This accessory is the generally recommended mount.

Assembling Base Panel of Non-Penetrating Mount (NPM)

Tool required: 13 mm wrench (Not supplied)

FASTENERS				TOOLS
No	**ITEM**	**DESCRIPTION**	**Q'ty**	
1		5/16"-18*3-1/8" hex-head cap screw	4	
2		5/16"-18*5/8"Round flat head Square screw	2	
3		5/16"-18 washer	10	13 mm wrench
4		5/16"-18 nylon nut	6	
5		Ø8.5/Ø12.5*L60 Bush	1	
6		5/16"-18x1-1/4" hex flange screw	1	
7		5/16"-18 kepts k-lock nut	2	

DESCRIPTION	Q'ty	DESCRIPTION	Q'ty	DESCRIPTION	Q'ty
Ground Mounting Base(#A)	1	Mast Pole(#B)	1	Side Supporting Rods(#C)	4
A 		B 		C 	

- Size of assembled NPM: 87 cm x 90 cm x 62 cm

NOTE

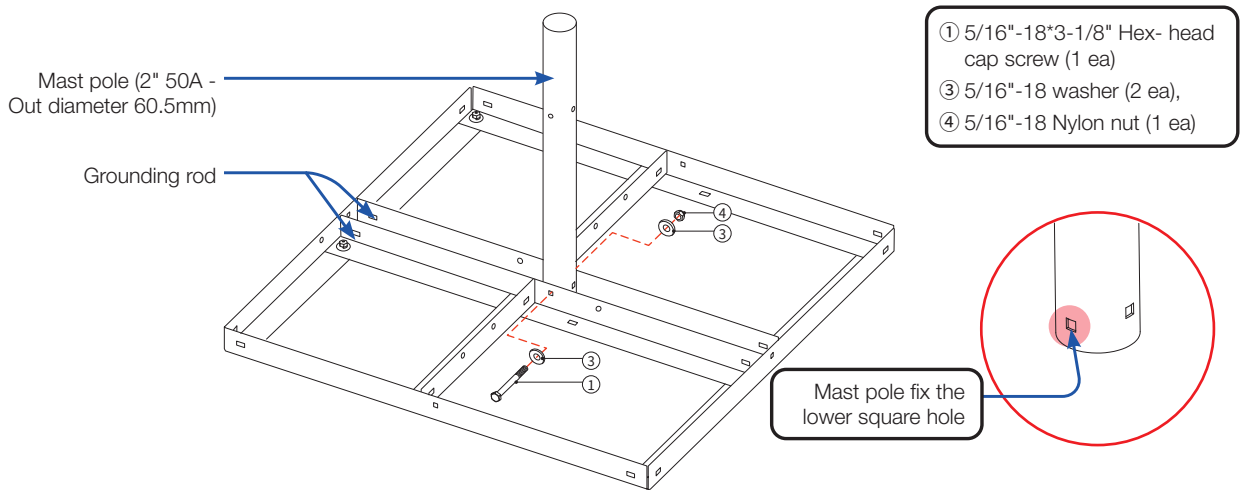
A rubber mat to put under the NPM is optional.

Tighten and Torque Hardware: Tighten all hardware with sufficient force to ensure maximum strength of the installation. Refer to the installation torque figures **"16.2 Tightening Torque Specification" on page 164**. If a torque wrench is not available, the installer must use their judgment.

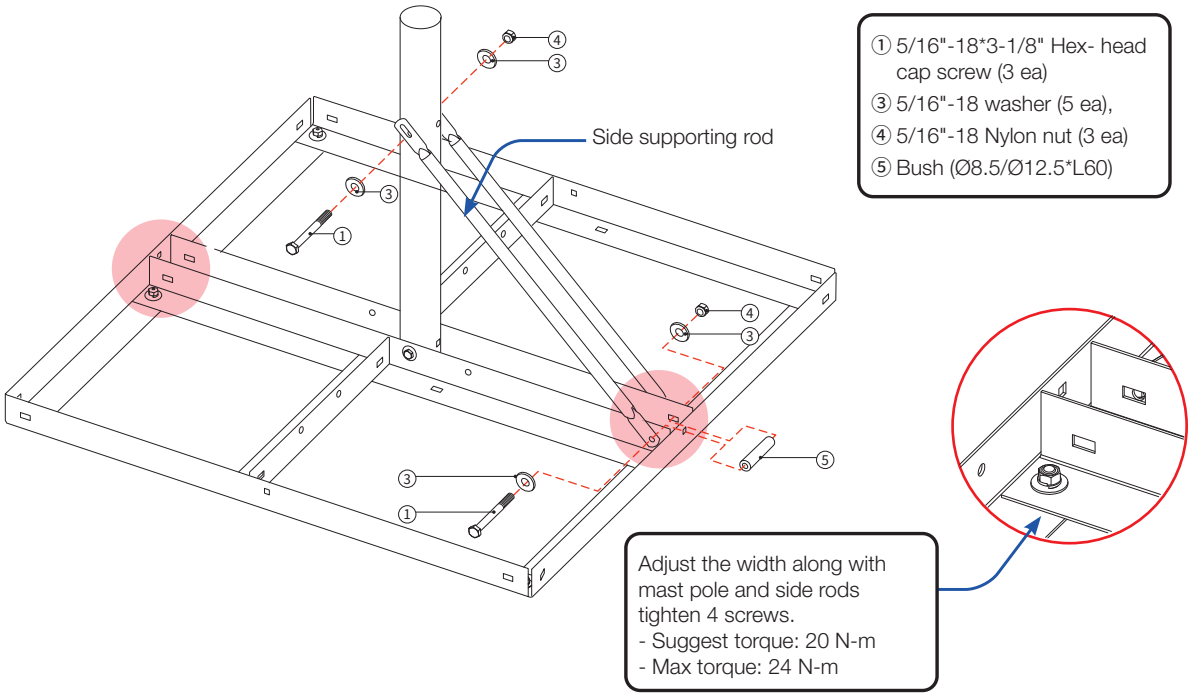
- If a fastener is over-torqued, it may strip or break.
- If a fastener strips or breaks, it must be replaced.

If a mount adapter is fabricated or purchased outside of Intellian's recommended list, it shall be no greater than 3 mm in material thickness on the mounting surface. Additional M6 screws must be used to achieve at least 6mm of thread engagement. The Hex Key for the M6 mounting hardware is 5 mm. A 1.7 cm clearance below the fans is required for sufficient air flow and cooling.

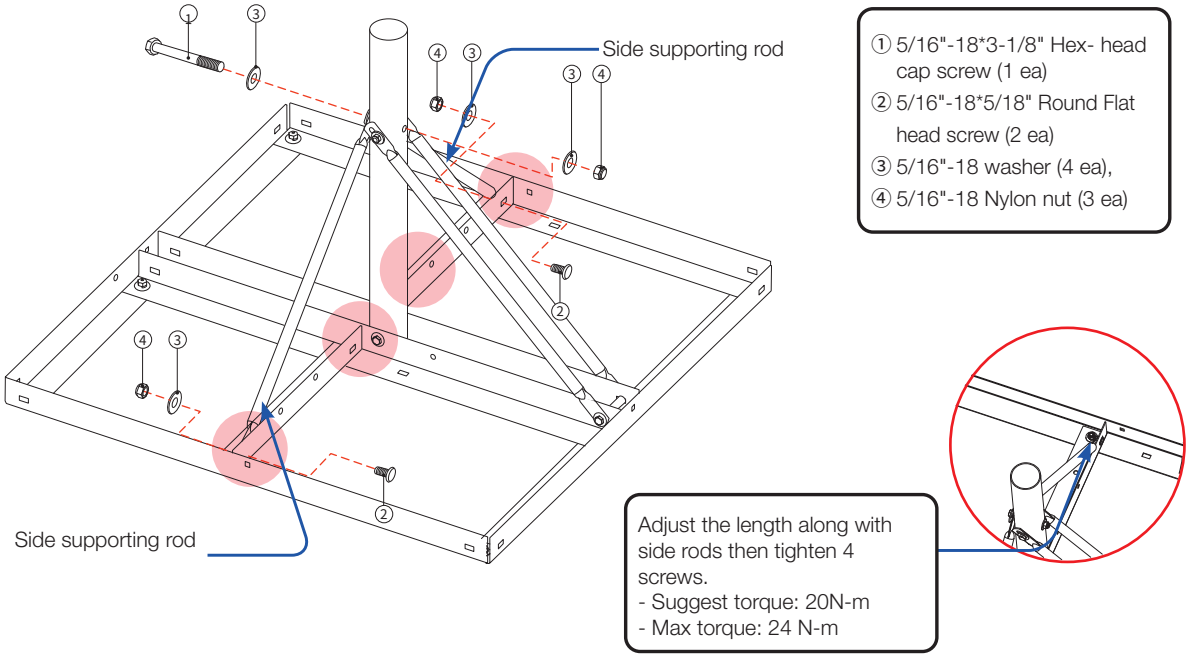
1. Loosen the ground base 8 bolts.



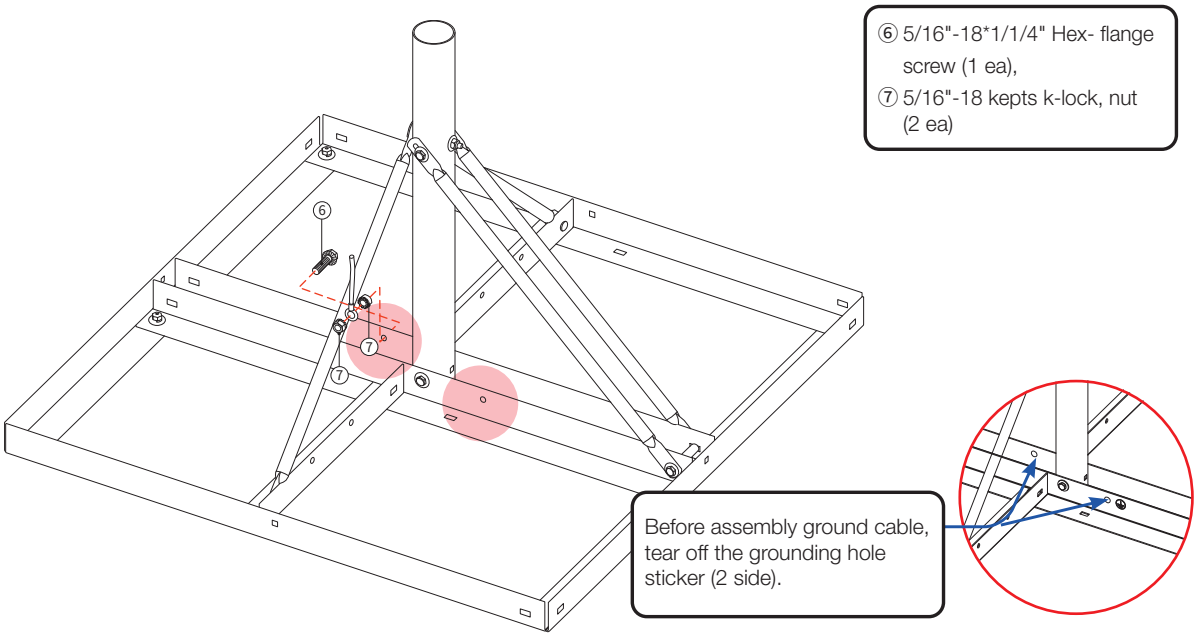
2. Assemble 2 side supporting rods with bolt kits



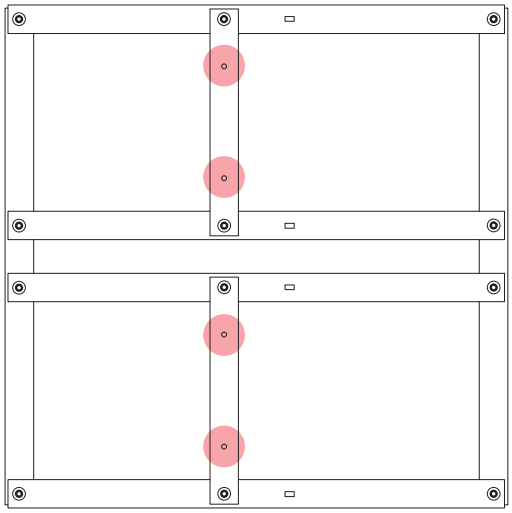
3. Assemble 2 side supporting rods with bolt kits



4. Assemble ground cable with bolt kits.



Penetrating fastener option:
For directly mounting using fasteners, place appropriately fasteners, at the locations circled in the below diagram



Placing Concrete Blocks on Base Panels

1. Place the concrete blocks on the base panel to hold the weight of the ODU.
   One concrete block is 39 x 19 x 19 cm (15.3 x 7.5 x 7.5 inches) /17.56 kg (38.7 lbs).
   The area of the assembled base panel is 87 x 90 x 62 cm (34.3 x 35.4 x 24.4 inches).

2. Arrange 8 concrete blocks on the base panel in a single layer.
   The total weight of 8 concrete blocks is 140 kg (~ 308.6 lbs.).

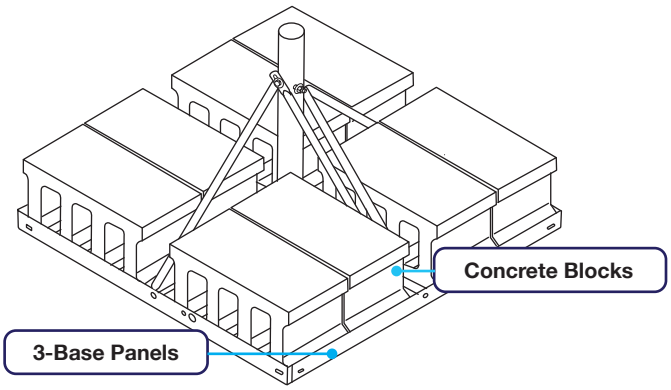


Figure 70: Concrete Blocks Arrangement

NOTE

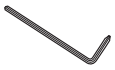
If you want to use alternative weights instead of concrete blocks as shown above, ensure sure that total weight of the alternative meets required evenly distributed weight, 140 kg. (~ 308.6 lbs.).

16.1.2 Installing a TriMast Mount (Optional)

The TriMast mount is an alternative Mount type. It can be installed on a vertical, horizontal, or inclined surface.

Assembling TriMast Mount

Check the requirement tool before assembling the TriMast Mount.

FASTENERS				TOOLS
No	**ITEM**	**DESCRIPTION**	**Q'ty**	
1		5/16" flange nut	9	
2		5/16"*7/8" round-head screw	6	
3		5/16"*3-1/8" round-head screw	1	6mm hex key
4		5/16"*1-1/8" round-head screw	2	
5		5/16"*3" Anchor Bolt	6	
6		#12*3/4" METAL TEK SCREW	2	
7- 10	N/A	N/A		13 mm wrench
11		∅60 Mast	1	
12		Mounting Foot (W61)	1	
13		Mounting Plate	2	
14		Strut Clamp	2	
15		Link Bracket (t4)	2	
16		Bar, Inner (t1.5*531L)	2	
17		Bar, Outer (t1.5*427L)	2	

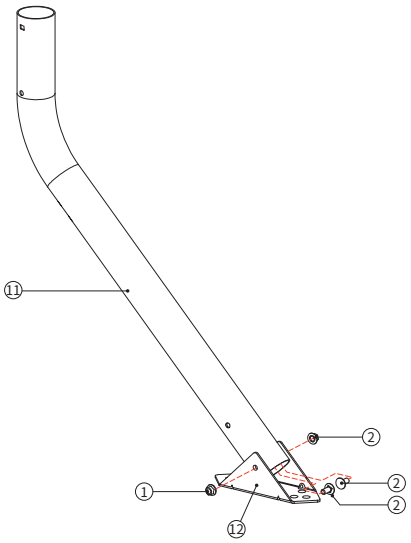
- Size of assembled TiMast: 92 cm x 58 cm x 71 cm
- Weight of assembled TriMast: 5.6 kg (12.5 lbs)

NOTE

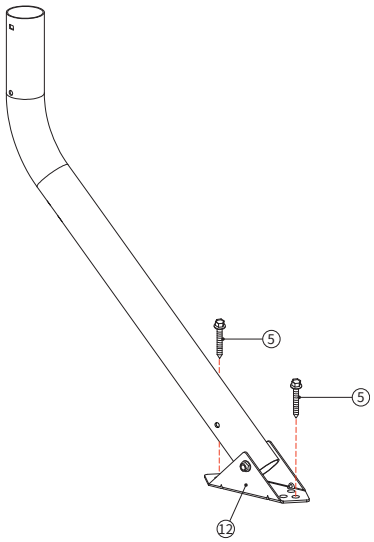
Tighten and Torque Hardware: Tighten all hardware with sufficient force to ensure maximum strength of the installation. Refer to the installation torque figures **"16.2 Tightening Torque Specification" on page 164**. If a torque wrench is not available, the installer must use their judgment.

- If a fastener is over-torqued, it may strip or break.
- If a fastener strips or breaks, it must be replaced.

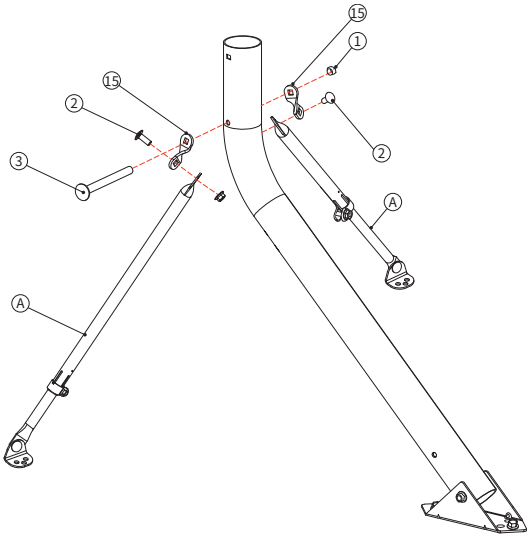
1. Assemble the Mast: Attach the ⑪ mast to the ⑫ mounting foot using two ② 5/16"*7/8" round-head screws and one ① 5/16" flange nut.



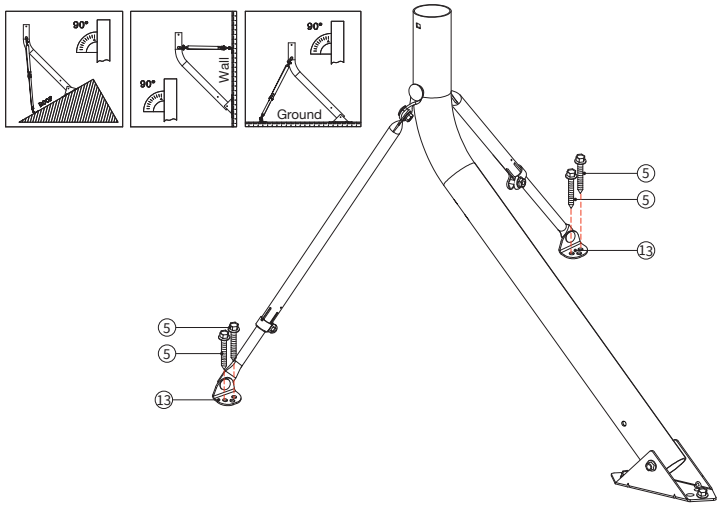
2. Fix Mounting Foot: Secure the ⑫ mounting foot to the ground in the desired azimuth using 2x ⑤ anchor bolts.



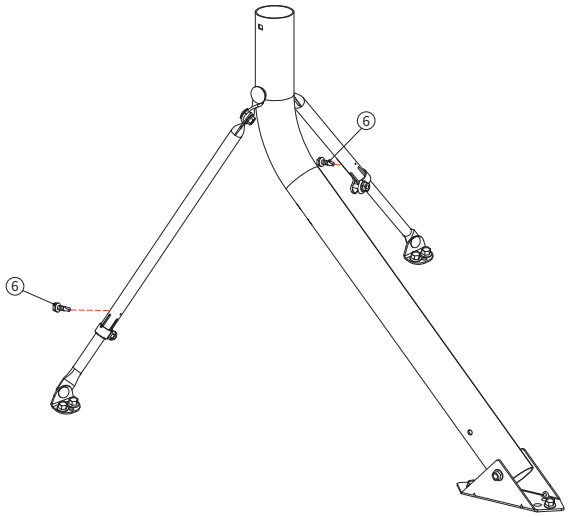
3. Attach Ⓐ adjustment strut to the mast:
   a. Assemble the two ⑮ link brackets on the left and right sides of the ⑪ mast using the ③ 5/16"*3-1/8" round-head screws and the ① 5/16" flange nut.
   b. Attach the Ⓐ adjustment strut (2ea) to the left and right sides of the ⑪ mast using the two ② 5/16"*7/8" round-head screws and one ① 5/16" flange nut.



4. Adjust the Mast: Ensure the mast is vertical to the ground and at the optimum angle. Adjust the strut to the proper length, then fix the ⑬ mounting plates to the ground with ⑤ anchor bolts.



5. Secure the TriMast Mount : Secure with the two ⑥ #12*3/4" Metal tek screw on the left and right Ⓐ adjustment struts.



16.1.3 Installing a Quadpod Mount (Optional)

This is an optional accessory. Verify the parts in the shipping box.

Assembling Quadpod Mount

Check the requirement tool before assembling the Quadpod Mount.

No.	Description	Q'TY
1	M8x16 Low head screw	4
2	M8x16 Hex-head cap screw	1
3	Spring washer	1
4	Washer	1

No.	Description	Q'TY
5	Mast Pole(∅60X400L)	1
6	Mounting Foot	4
7	Mast Base	1
8	Plastic Cover	1

- Size of assembled QuadPod: 83 cm x 60 cm x 50 cm
- Weight of assembled QuadPod: 4.2 kg (9.1 lbs)

Tools required: M8 Allen wrench (not supplied)

NOTE

Tighten and Torque Hardware: Tighten all hardware with sufficient force to ensure maximum strength of the installation. Refer to the installation torque figures **"16.2 Tightening Torque Specification" on page 164**. If a torque wrench is not available, the installer must use their judgment.

- If a fastener is over-torqued, it may strip or break.
- If a fastener strips or breaks, it must be replaced.

1. Assemble the Mast Pole and Main Part: Attach the ⑤ mast pole to the ⑦ die-cast main part. Pinch push tabs in and align as needed until a click is heard and they protrude from their set points.

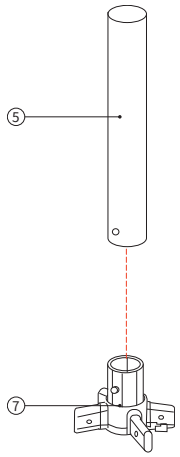


Figure 71: Assembling the Mast Pole and Main Part

2. Assemble the Mounting Feet: Attach the ⑥ mounting foot using ① low-head screws in the sequence of steps 1 to 4. Use a hexagonal wrench to tighten the screws. (Recommended torque: 4.3 Nm)

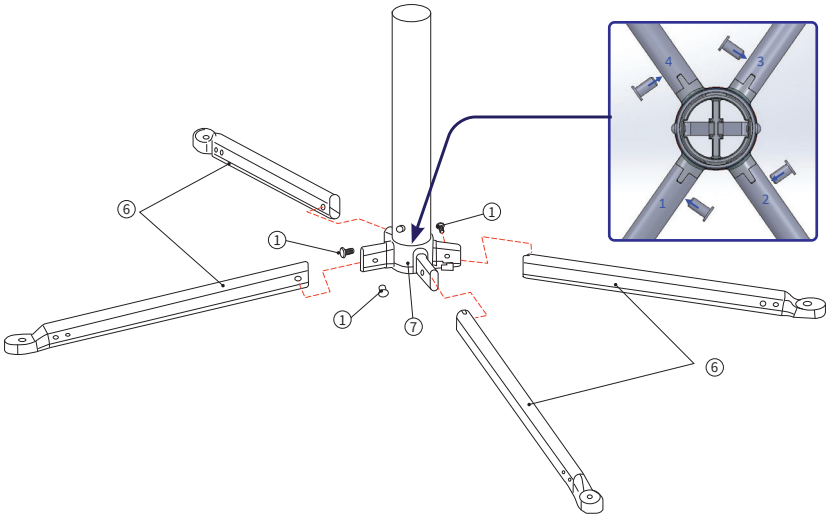


Figure 72: Assembling the Mounting Feet

3. Install the Plastic Cover: Slide the ⑧ plastic cover from the top of the ⑤ mast pole to the bottom. Ensure it fits tightly and snaps into place.

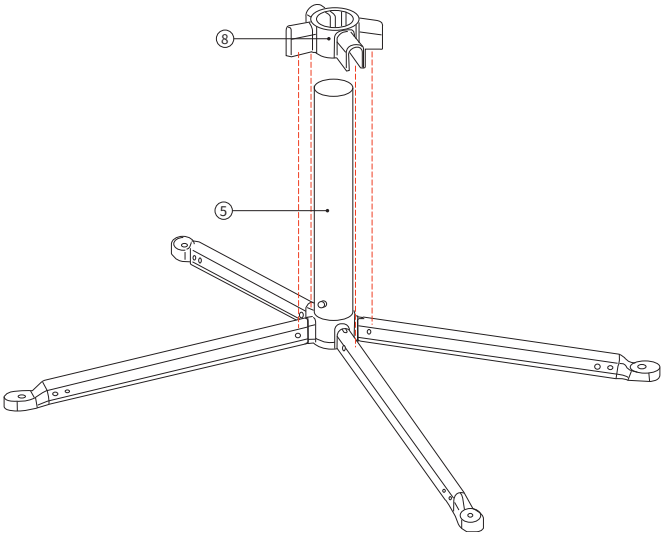


Figure 73: Installing the Plastic Cover

4. Insert and Tighten the Screw: Insert ② M8 hexagonal screw with ③ spring washer and ④ flat washer in sequence. Screw them into the M8 screw holes. Use a 12mm wrench to tighten them. (Recommended torque: 4.3 Nm)

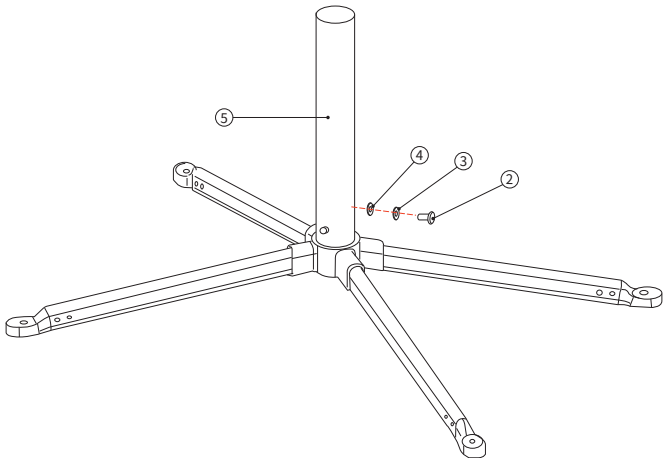
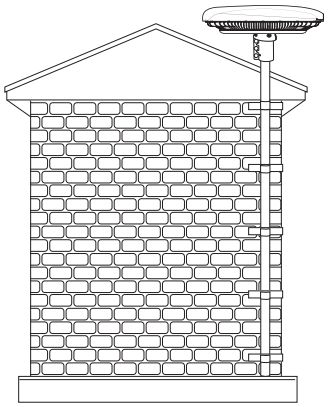


Figure 74: Insert and Tighten the Screw

16.1.4 Installing Customized Pole Mount

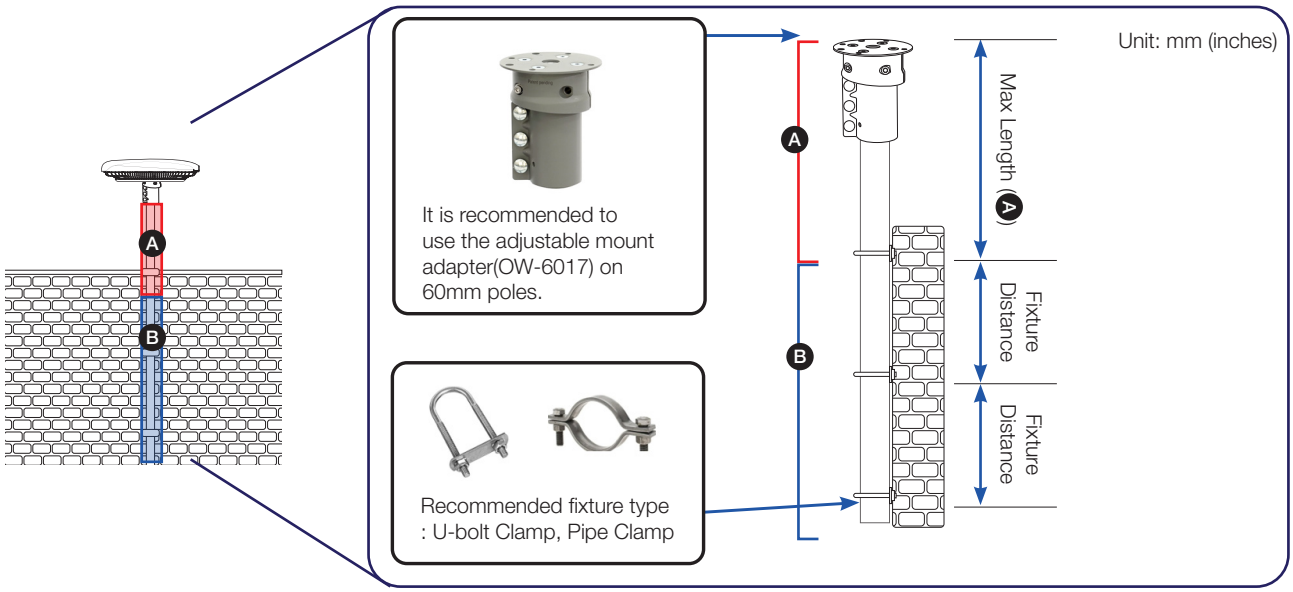
Customized pole mounts must be correctly installed to be robust enough to prevent any flex, vibration, and sway when an external force is exerted with the ODU attached.



Designing the Customized Pole Mount

When designing the pole consider the pole types and their maximum length. The Fixture Distance is the distance between the fixtures. Refer to the following table for more details.

Pole Type	Pole Diameter	Pole Thickness	Max Length (Ⓐ)	Fixture Distance
50A (Recommended)	60 mm (2.4")	2 mm (0.1")	500 mm (19.7")	400 mm (15.8")



- For example, if using 50A of pole type for the ODU installation, maximum length of Ⓐ cannot exceed 500 mm remaining pole, Ⓑ should be fixed with minimum 3 pcs of fixtures and the distance among them should be 400 mm.
- The Max Length of Ⓐ is the length without the additional Ⓑ to use the tilt adjustable mount adapter, it is recommended using a pole type 50A. To use the recommended. To use the recommended Ⓐ pole type 50A, the maximum length should be 500mm. If the pole type is different from the recommended type, check the maximum length for a pole type according to the table.

- There are no Ⓑ pole length limits but it must be installed on a place of sufficient structural integrity to prevent any flex, vibration and sway from such wind or external force. The Ⓑ pole can be used as a thicker pole type than the Ⓐ pole. The fixtures should be installed at recommended intervals (see the Fixture Distance from Figure 34: Customized Pole Mount Details). Recommended fixture types are a U-bolt and a pipe clamp.
- We recommend using the adjustable mount adapter to adjust the tilt level. (Refer to "5.3 Mounting ODU Using Adjustable Mount Adapter" on page 36.)

16.2 Tightening Torque Specification

This table has the recommended torque values.

Bolt Size	Tightening Torque (N m)
M2	0.5
M2.5	1
M3	1.5
M4	3
M5	6
M6	12
M8	27
M10	50
M12	85
M14	130
M16	200

16.3 Maintenance

16.3.1 Fan Replacement

1. Remove two screws from the fan that is to be replaced.

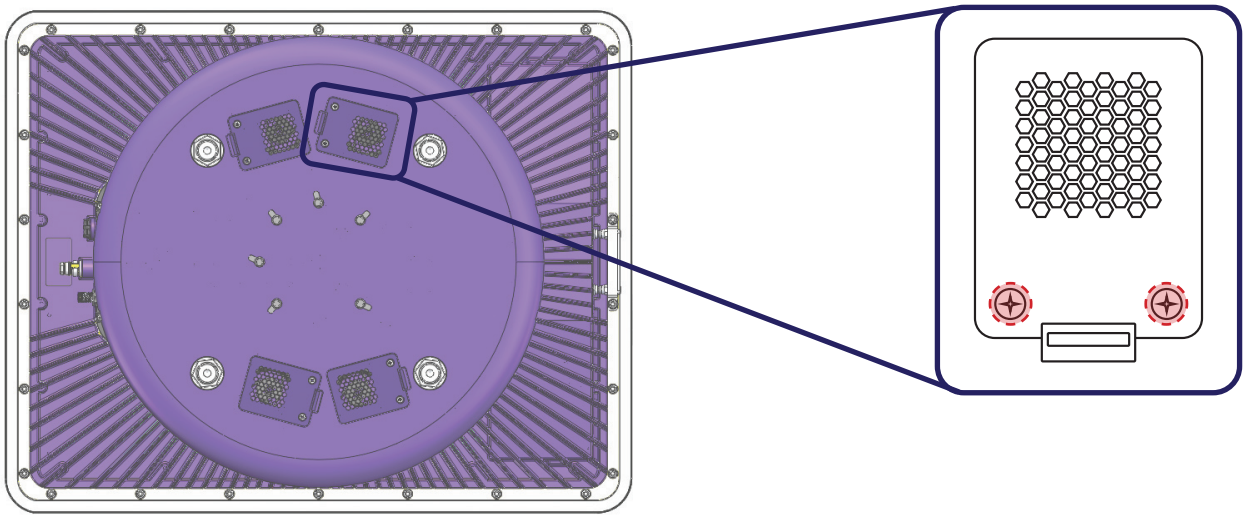


Figure 75: Removing Screws

2. Unclip the fan and remove it from the ODU.

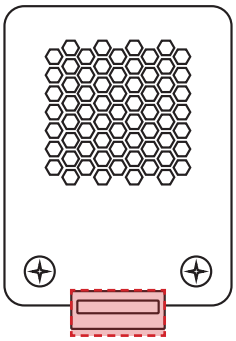


Figure 76: Unclipping Fan

3. Disconnect fan cable from the ODU.

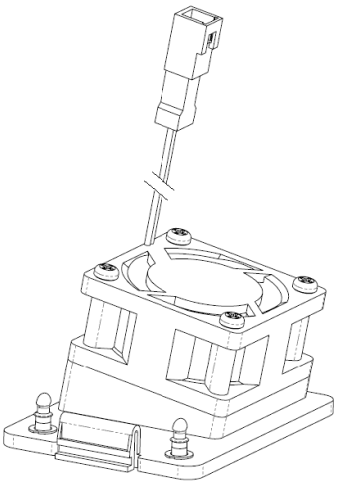


Figure 77: Disconnect Fan

4. Connect the new fan to the cable.
5. Place fan back into the ODU.
6. Reconnect the two screws.

16.4 Surface Maintenance Guide

The ODU surface layer has a superhydrophobic coating. Please read the following statements to maintain the coating for an extended period. By handling the ODU carefully, you can ensure optimal performance for a long time.

1. Due to the natural oils in the skin, excessive handling of treated materials with bare hands can cause a reduction in performance.
2. Excessive abrasion will lessen or eliminate superhydrophobic performance.
3. Soaps and alcohols applied to the surface will cause it to “wet out” until the soap and alcohol are removed using low-pressure water. The surface will lose its properties if treated with detergents, soap, some solvents, or high-pressure water. Cleaning of the surface should be performed using a low-pressure water spray (less than 30 psi or typical garden hose pressure).
4. When washing a car, "do not apply a high-pressure water jet or use an automatic car wash tunnel."
5. Exposure to ultraviolet (UV) light will reduce the coating's longevity to one year or less.