ECL4248-2401
Installation Manual

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Revision History

Version	Date	Author/Editor	Comment
1.0	2021.07.30	HW	Initial draft version
	2021.11.05	HW	Re-vision
	2021.11.06	HW	Re-vision
	2021.11.09	HW	Mechanical dimension value correction
	2021.11.10	HW	FCC notice change

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Preface

Purpose of the Manual

This document provides basic installation guide for ECL4248-2401 system, the LTE base station system.

Amendments

The installation manual is being updated continuously. There may be some minor differences due to the continued upgrades and modifications to the system. Please contact us to clarify any confusion arising from such differences.

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Contact

Please contact us for more detailed information on any items described in this installation manual.

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Caution and Other Marks

This Equipment complies with part 15.19 (a)(3) of the FCC Rules.

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.

The intentional or unintentional radiator of this equipment shall not be changed or modified without the approval of EUCAST.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and

used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment complies with FCC RF Radiation exposure limits set forth in an uncontrolled environment. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed to operate with a minimum distance of 100.2 cm between the radiator and the end-user's body.

Changes or modifications not expressly approved by EUCAST could void the user's authority to operate the equipment.

1 Introduction

1.1 System SPEC.

1.1.1 ECL4248-2401 Exterior

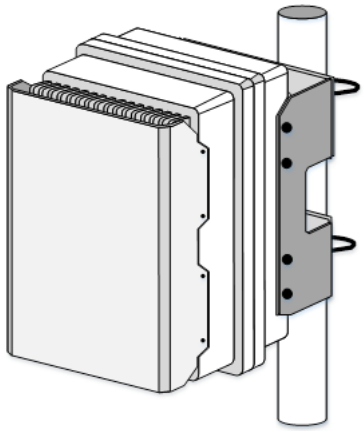


Figure 1. ECL4248-2401 Exterior

1.1.2 Volume & Expansion

ECL4248-2401 supports 1FA / Omni service. Configuration for 1FA/3Sector can be with 3 ECL4248-2401 units.

1.1.3 Electricity consumption.

ECL4248-2401 uses -48 DC Voltage.

The -48 DC Voltage is transformed into a lower DC Voltage in the ECL4248-2401 and distributed for modules.

ECL4248-2401 does not support the Battery. If you need it, use the battery charge/discharge system of rectifier.

ITEM	Specification
Input Power Voltage	-48VDC
Maximum Power Consumption(typ.)	avg. 65 Watts, peak 80 Watts

Table 1.Electricity Consumption

1.1.4 Size and Weight

ITEM	Specification
Size (mm)	210mm x336mm x109mm (without bracket)
Weight (Kg)	Typ. 7.5 kg

Table 2. Size and Weight

1.1.5 Environmental condition

Section	Range	Standard
Operating Temperature	-30 ~ 50°C	
Storage Temperature	-30 ~ 70°C	
Humidity	10% to 95%	

Table 3. Environmental Requirements

1.1.6 Physical Interface

1.1.6.1 Interface Overview

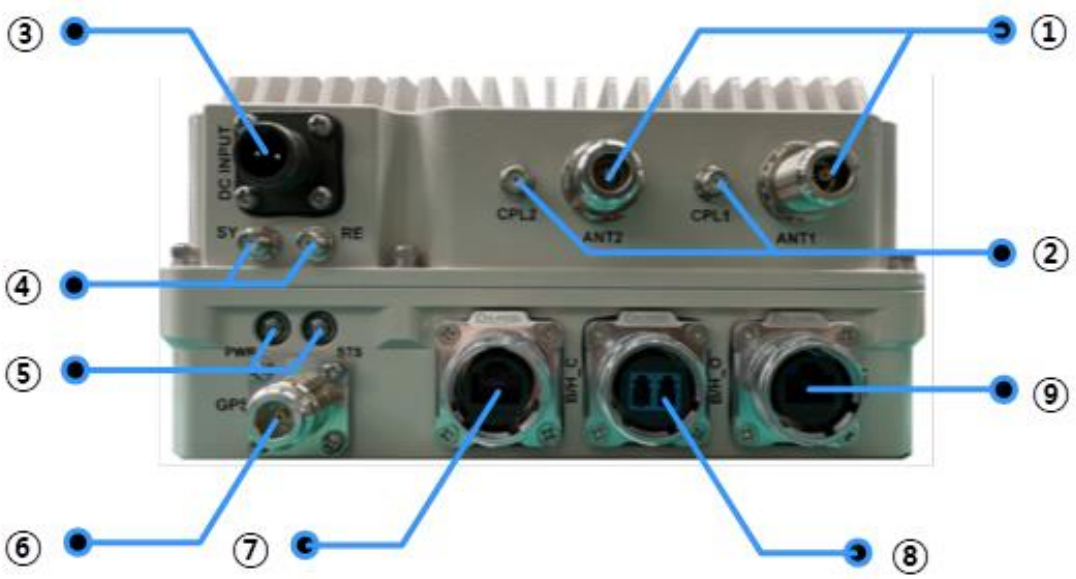


Figure 2. Interface Ports

① ANT1/ANT2: RF antenna connection port.

② CPL1/CPL2: output coupled port(-40dB)

③ DC INPUT: -48VDC input port

④ RE/SY: 10MHz/Sync test port

⑤ LED PWR/STS: PWR/STATUS LED

⑥ GPS: GPS antenna connection port

⑦ BH_C: Backhaul port (RJ45, 1000base-T)

⑧ BH_O: Backhaul port (Optic, 1000base-X)

⑨ LMT: Local management tool, debug and monitoring port (100base-T)

1.1.6.2 Detailed Definition of Interface

No	Name	Connector Type	To/From	Descriptions
1	ANT1/ANT2	N-type Female	RF Antenna /RF Arrestor	RF Output Port, Main/Diversity
2	CPL1/CPL2	SMA Female		Output Coupled Port
3	DC INPUT	MS3102A 10SL-4P	Rectifier	Mating: MS3106A 10SL-4S
4	RE/SY	SMA Female	-	RE: 10MHz test Port SY: Sync test Port
5	LED PWR/STS	LED	-	PWR: Power LED STS: Status LED
6	GPS	N-type Female	GPS Antenna /GPS Arrestor	GPS Antenna Connecting Port
7	BH_C	DH-24-J/RJ45/213/SX-43-404	Backhaul	Backhaul Port, RJ45 Mating: DH-24-C/RJ45/015/PE-43-001
8	BH_O	DH-24-J/LC/213/SX-43-402	Backhaul	Backhaul Port, Optic (LC type) Mating: DH-24-C/LC/015/PE-43-002
9	LMT	DH-24-J/RJ45/213/SX-43-404	-	Local Management Tool Port, RJ45 Mating: DH-24-C/RJ45/015/PE-43-001

Table 4. Interface overview

2 Start installation

2.1 Installation and Workspace

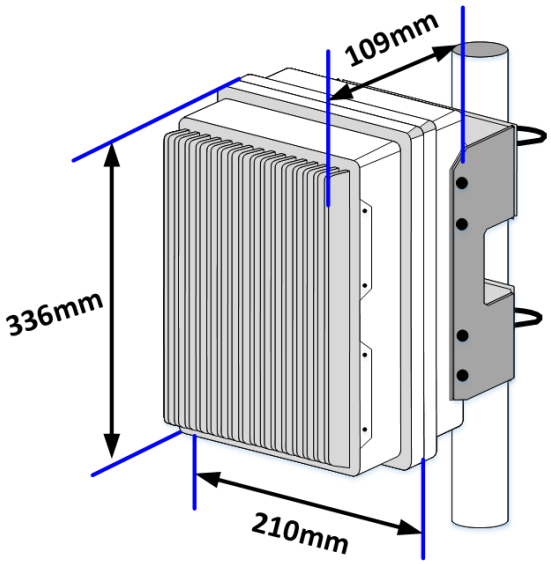


Figure 3. ECL4248-2401 Installation sample.

ECL4248-2401 cannot open the door in the field, and it is recommended to replace it with another ECL4248-2401 in case of failure.

Considering the size and workspace of the ECL4248-2401, the minimum space to be secured is as follows.

We recommend that the ECL4248-2401 is installed at a height of more than 1 m above the floor.

2.2 Survey of installation area

Installer must survey install area before installation

To investigate the site, you prepare drawing of the place where the system is installed, and carry out preliminary inspection on the following matters

- installation space and workspace
- Check the route and method of transporting the system to the installation location
- Direction of equipment installation
- External interface situation
- Electrical capacity and wiring situation
- Status of System Expansion
- Location and wiring method of RF antenna and GPS antenna
- Environment of additional equipment (rectifier, battery etc.)
- Environment that affects safety of installer
- Whether or not to install a lightning rod
- Plan to install communication grounding
- Whether or not to install a GPS Arrestor and RF Arrestor

2.3 Grounding work

Grounding work protects the system from heavy thunderstorm, surge voltage, high frequency voltage & current. also, grounding work provides electrostatic discharge path to protect operator and system.

Grounding works should be done with short and thick wire from the ground.

- Grounding wire burial depth: 75 cm or more
- Resistance value from earth
  - BS grounding: 5 ohm or less
  - Arrestor grounding: 10 ohm or less

Refer to Ground Connections.

Confirm grounding work

It is the most important way to protect the system and operation person from electrical shocks. Please confirm that construction was done properly after completing grounding work.

2.4 Movement of equipment

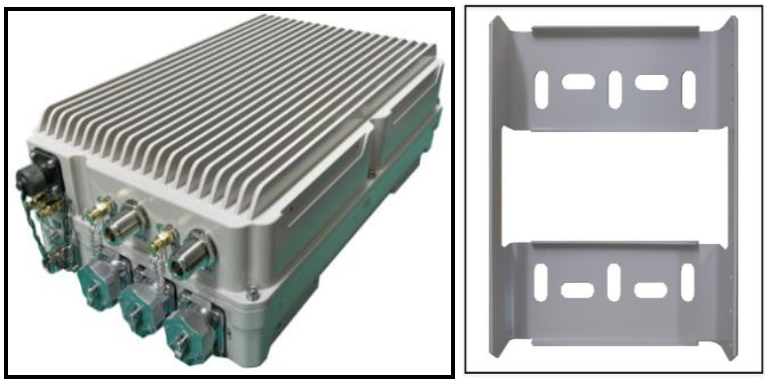
When transporting racks and materials. That must be transported according to the method which be displayed on packaging Specially when it is displayed in the top and bottom, do not carry in the reverse. It is necessary to minimize the occurrence of physical shocks during transportation.

3 System installation

ECL4248-2401 Physical Interface

To install cable, please refer ECL4248-2401 Interface Ports Figure and description (paragraph 1.1.6) necessarily.

3.1 ECL4248-2401 components



A) ECL4248-2401 Main Mechanical B) Brackets

Figure 4. Compositions of ECL4248-2401 Mechanical

3.2 ECL4248-2401 installation

ECL4248-2401's bracket that can be installed in Pole or Wall are provided. (Pole and U - Bolts must be prepared by operation user and installer)

The procedure for installing the ECL4248-2401 is as follows (Pole mount or Wall mount) :

3.2.1 Install order ECL4248-2401 in Pole

3.2.1.1 Bracket drawing and material preparation

The size of the U-Bolt to fix the bracket to the pole is decided by considering the hole size, the position of the bracket drawing, and the diameter of the pole. (60 ~ 80mm recommended)

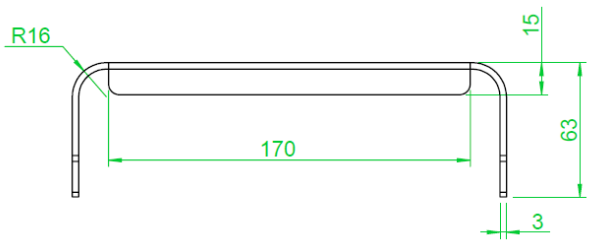


Figure 5. Bracket Plan (upper surface)

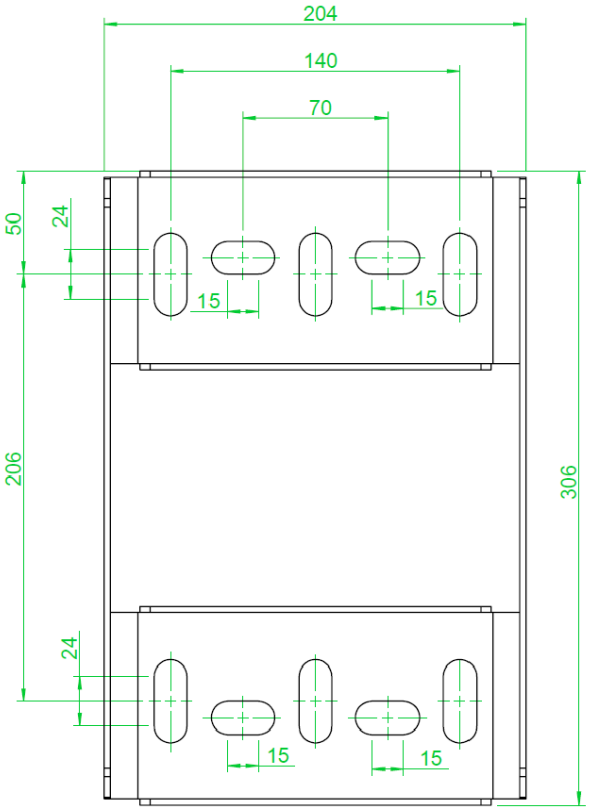
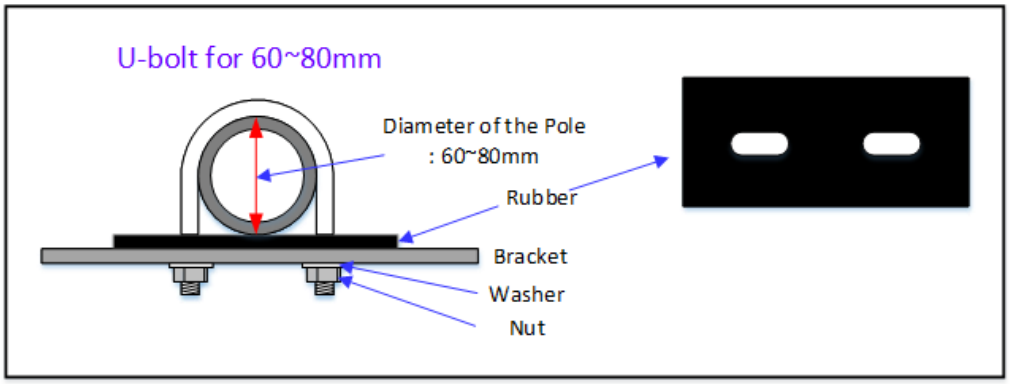


Figure 6. Bracket Plan (the front and side)

3.2.1.2 Fix the Pole to the ground

3.2.1.3 Fix Bracket to Pole using U-bolt.

Fix the top and bottom of bracket using 2 U-bolt.



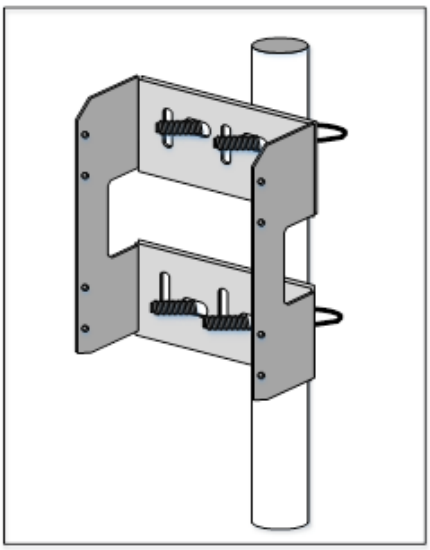


Figure 7. Bracket Installation Example (Poll Mount)

3.2.1.4 Assembling the ECL4248-2401

(1) Assemble the Solar Cover on the ECL4248-2401 chassis as follows. (Fix both sides of the Solar Cover with the fastening screw.)

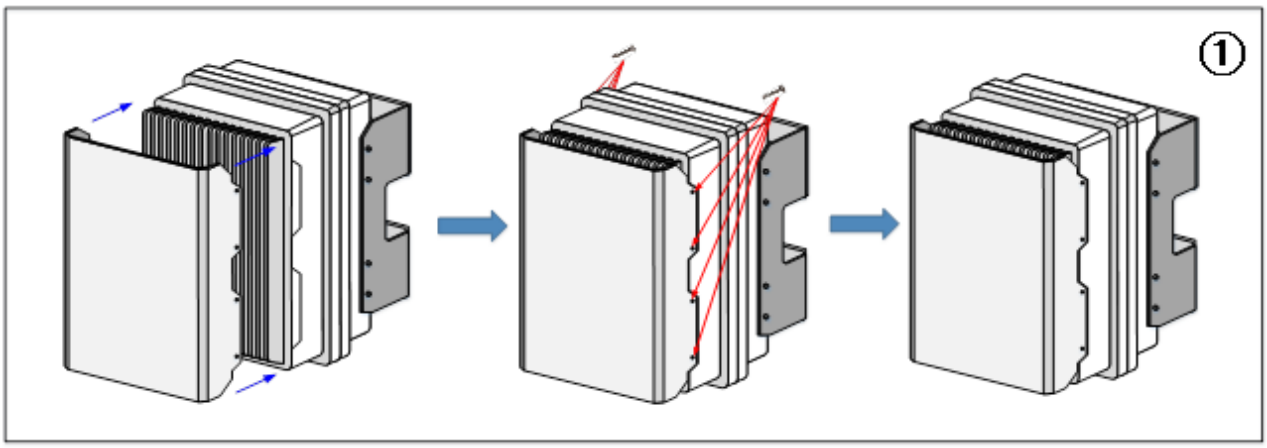


Figure 8. Assembly Sequence

In case of delivery of ECL4248-2401, Solar Cover is assembled and delivered. On site, Solar Cover is attached to the main chassis. additional Solar Cover work is not needed.

(2) Assemble the bracket at the ECL4248-2401 as follows.

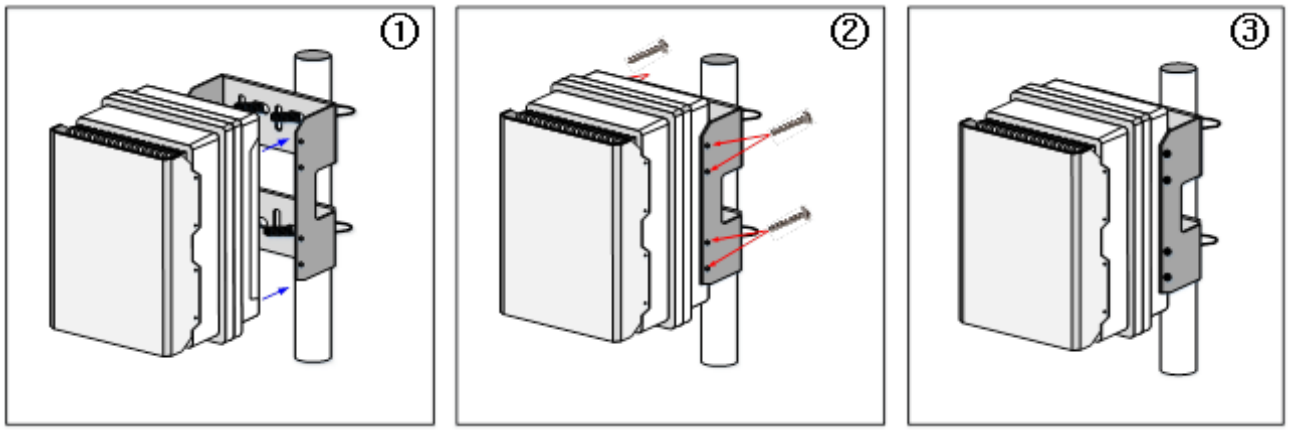


Figure 9. Assembly order

1) Lift the ECL4248-2401.

2) Align the ECL4248-2401 and the bracket to match 12 holes. (Left, right, up and down move)

3) Fix 8 point using the fixing screws in Bracket.

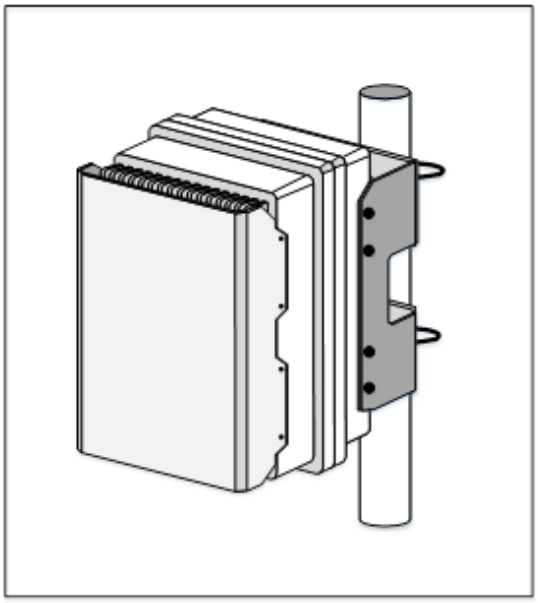


Figure 10. Complete Assemblies

3.2.1 How to install the ECL4248-2401 on the wall

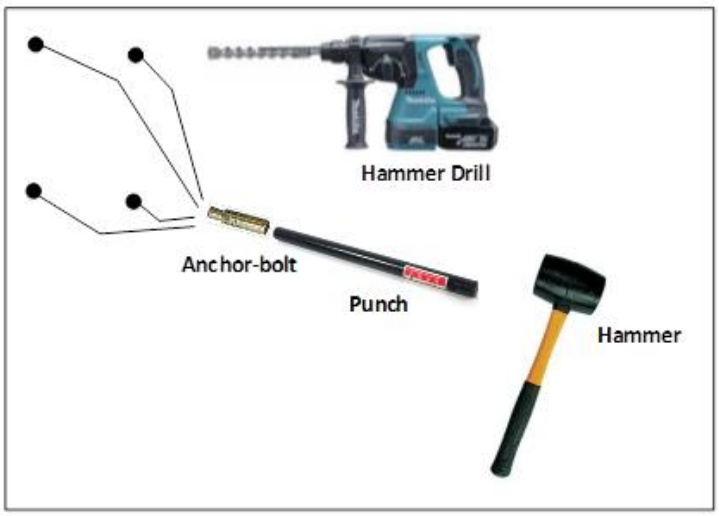
3.2.1.1 Material confirmation

Item	EA	Discription
Anchor-Bolt & Nut	4	
Punch	1	
ECL4248-2401 Bracket	1	

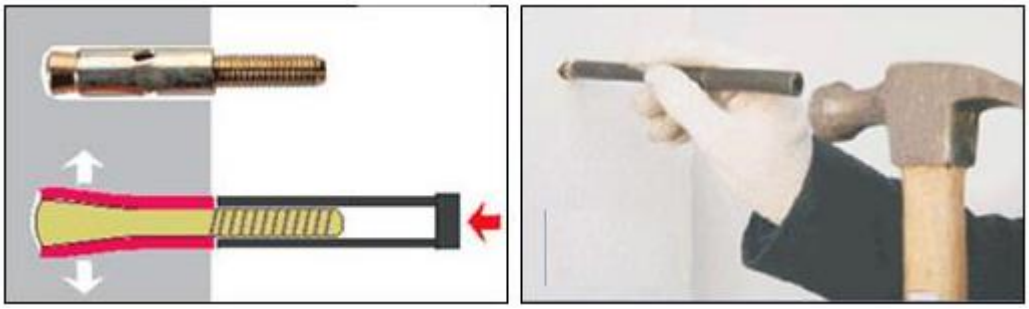
3.2.1.2 Fix to the wall

In the Bracket drawing, check the position of 4 Hole positions.

In the same place, create a hole in the wall using Hammer Drill.



After inserting the bolt into the Anchor hole, hit Anchor Punch with Hammer and fix it strongly



Fix the Nut and the Bolt using Wrench.

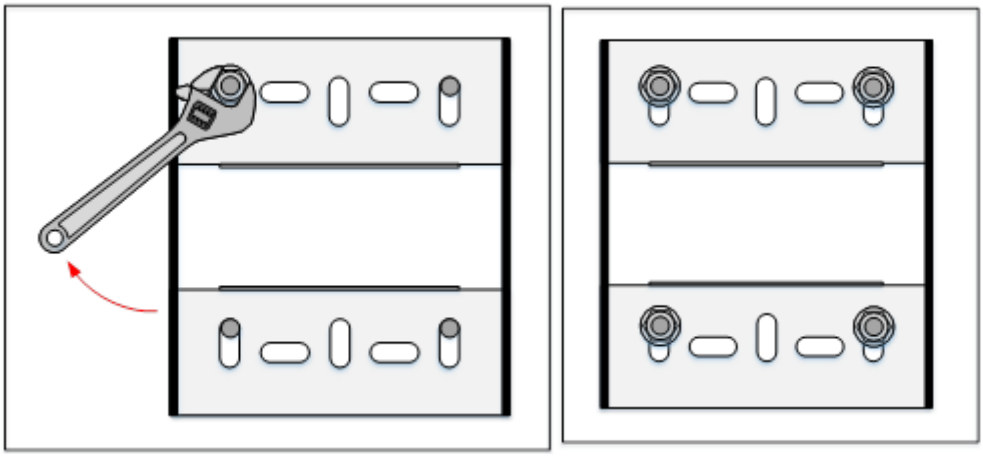


Figure 11. Bracket Installation Example (Wall Mount)

3.3 Installing GPS Antenna and Cable

3.3.1 GPS antenna installation parts

GPS antenna installation parts

GPS Coaxial Cable, Connector for GPS Coaxial Cable, Ground Panel and Pole for GPS Antenna must be prepared by the operator or installer.

Item	EA	Discription
GPS antenna	1	
Small Pole	1	
Clamp	1	
GPS Arrestor	1	
GPS Antenna Set Pole	Local	Recommendation: 45 ~ 55 mm
GPS cable (Recommendation LMR400)	Local	
GPS cable connector	Local	
Panel	Local	

Considerations when installing GPS antenna

- The GPS antenna has a built-in low-noise amplifier (LNA) with a gain of about 36dB.

GPS antennas should be spaced at least 1m to prevent interference between the two antenna.

- Because the GPS antenna receives +5V DC from the receiver inside the ECL4248-2401, the connection point between the GPS antenna and the feeder cable must be waterproof.

  (The GPS antenna connector has to be waterproofed using Insulation tube.)

  If a cable short circuit occurs, damage to the power supply of the equipment.

- Because GPS is a device that receives very low level signals, it needs to be separated from the surrounding radio sources (another communication equipment, RF antennas, etc.).

- Installing the GPS antenna closely to the ground terminal of the building or the external conductor, the signal power is attenuated. so, install it as far as possible.

- The GPS antenna must always be level.

3.3.2 Installation GPS cable

The GPS feeder is selected that the loss is less than 30dB at 1575.42MHz.

The loss value of the cable is different depending on the Cable Type and Using Cable length. The cable must be selected and used according to the installation environment.

Cable Type	Attenuation in 1.57542GHz
RC8	0.31 dB/m
RG58	0.63 dB/m
RG213	0.35 dB/m
RG214	0.328 dB/m
LMR400	0.203 dB/m

Table5. RF cable attenuation characteristics (example)

Using of RF Coaxial cable

No all-Coaxial cables have the same Attenuation and Shielding Quality. depending on production company and model.

3.3.3 Installation of Arrestor

We recommend installing Arrestor to prevent lightning strikes.

Arrestor connects to the proximity point where the cable enters the building.

3.4 Installation B/H Link Cable

The B / H Link supports either Copper Ethernet or Optic Ethernet Link.

Check your B/H Link type.

To	Cable Connector Type	Cable Type	Max Length	Cable Length
ETH B/H		UTP Cable: CAT5E/6E and shield (Recommend) DH-24-C/RJ45/015/PE-43-001	< 100m	User Defined
OPTIC B/H		Optic Cable : Single Mode Optic Fiber (Recommend) DH-24-C/LC/015/PE-43-002	Related SFP Transceiver, >10Km	User Defined

Table 6. B/H cable connector type

3.5 Installation Electrical Power Cable

3.5.1.1 Connection between ECL4248-2401 and Rectifier

ECL4248-2401 does not support input power on / off switch function.
on / off switch function uses a rectifier.
For other method, switch box is installed outside.

- ECL4248-2401 Input Power：-48 VDC
- Cable diameter: Maximum 16 AWG
- Connector type

	Power Cable Connector	Remark
	MS3106A 10SL-4S	

- Connector Pin Map: A (GND), B (+48V)

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