R3210 SERIES O-RAN RADIO UNIT

INSTALLATION GUIDE

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Purpose

The purpose of this document is to guide users in how to set up and configure WNC's R3210 SERIES RU.

Safety Warning/NCC Warning

警告 : 為避免電磁干擾，本產品不應安裝或使用於住宅環境.

保證本公司經銷(或生產)之基地臺，其在販售時會於包裝盒、使用手冊及說明書，標示「電信事業須設置基地臺者設置本基地臺前，應辦理基地臺登錄；已依電信法取得電臺架設許可者，亦同。」。

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

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

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 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.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 126cm between the radiator & your body.

Radio Interference

The R3210 SERIES RU generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause interference to radio communications. There is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, the technician is encouraged to try to correct the interference by performing one or more of the following:

- Re-orientate or relocate the RU
- Increase separation between the RU and/or end devices
- Connect the equipment to a circuit different to what the power source is connected to.

General Warning

- Only qualified/licensed personnel should install, replace, or service the RU. Failure to comply with this recommendation may void the product warranty and may expose the end user or the service provider to legal and financial liabilities.
- This RU may not be sold via retail channels, by mail order, or to the general public. It can only be sold to telcom operators.

Important Safety Instructions

- Carefully read and follow these instructions during installation and operation.
- Failure to follow the instructions may result in physical injury and/or product failure.
- Static sensitive components inside – do not remove the lid or base: No user serviceable parts inside.
- Position the power cord to avoid possible damage; do not overload power circuits.
- Do not place the product near a direct heat source; avoid placing objects on the terminal.
- For cleaning, use a damp cloth. Do not use liquid or aerosol cleaners. Before cleaning, power off the product.
- The RU should not be located too close to power lines or other electrical power circuits, where it can come into contact with such power lines or circuits.

- The radio transceiver must be properly grounded to protect against power surges and accumulated static electricity. It is the user's responsibility to install this device in accordance with the local electrical codes.
- The product must comply with the applicable Safety Standards and regulatory requirements of the country in which it is installed. Consult appropriate regulatory agencies and inspection authorities to ensure compliance when necessary.

Service information

Refer all repairs to qualified service personnel. Do not modify any part of the device, as this will void the warranty.

Disconnect the power to this product and return it for service if the following conditions apply:

1. The terminal does not function after following the operating instructions outlined in this manual.
2. The product has been dropped or the housing is damaged.

Manufacturer

Wistron NeWeb Corporation

Address: 20 Park Ave. II, Hsinchu Science Park Hsinchu 300, Taiwan

Table of Contents

1. Introduction

WNC's R3210 series radio unit (RU) is designed to provide 5G-NR Sub-6 GHz outdoor coverage and optimal 5G network access at throughput speeds of over 1Gbps to satisfy the demands of enterprise, industrial, and commercial venues. The R3210 flexible vRAN solution reduces costs and increases connection speeds via split 7-2x fronthaul network implementation. The RU can be mounted on walls or poles and utilizes internal/external 4T4R antennas to boost coverage and throughput.

This guide provides information and steps for installing the R3210 series RU and its cables. The document is intended for installation personnel only.

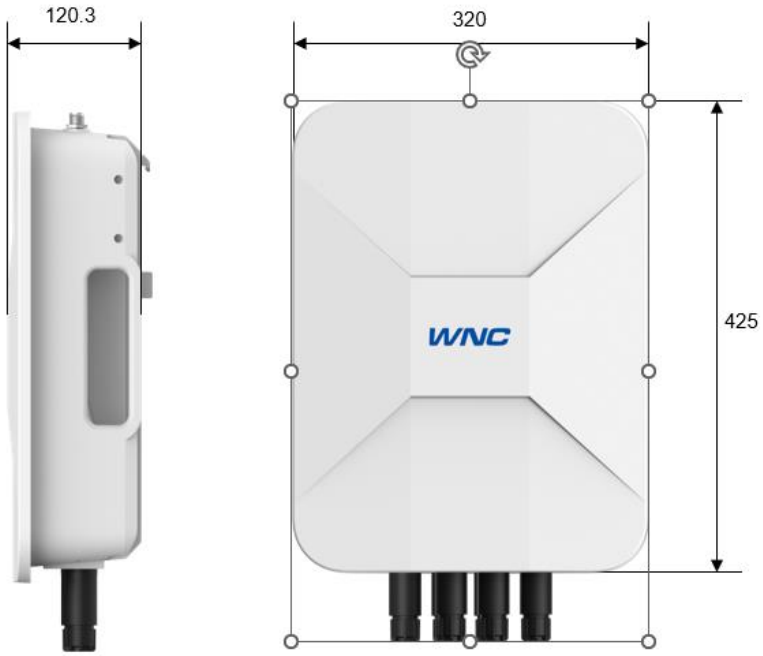
1.1 Package Contents

- R3210 series RU

1.2 Product Overview

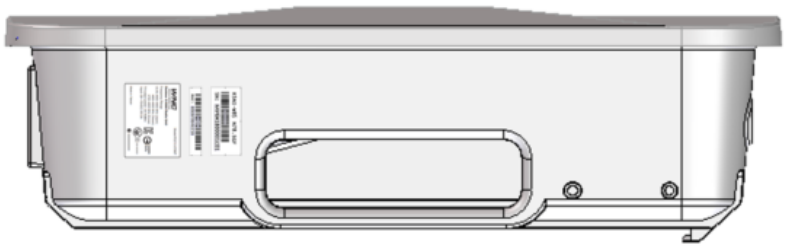
The R1220 series RU is an outdoor product with an operating temperature of between

-40–55 ℃. Dimensions: 320 mm × 425 mm × 120.3 mm

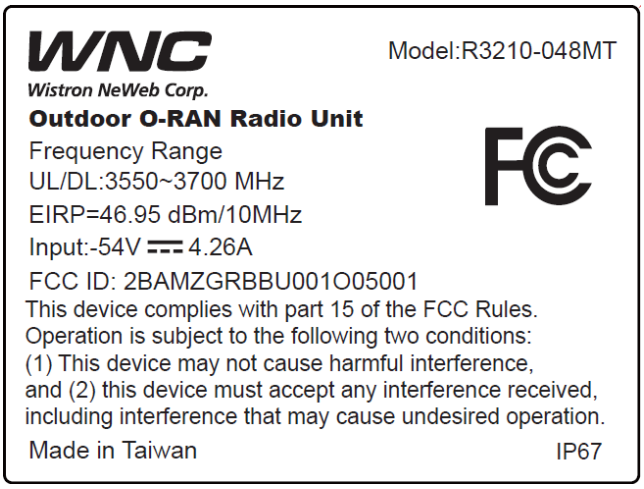


1.3 Product Labels

The following labels will be affixed to the bottom cover of the RU.



- Unit label: The unit label shows the different product models of the RU.
  R3210-077MT stands for N77 O-RU (3.7-4.2 GHz)
  R3210-078MT stands for N78 O-RU (3.3-3.8 GHz)
  R3210-079MT stands for N79 O-RU (4.5-4.9 GHz)
  R3210-048MT stands for N48 O-RU (3.55-3.7GHz)



- Serial number label: Each product SKU has its own serial number for product traceability.

- MAC label: Each unit will be programmed with 2 MAC address.

- Heat warning label:

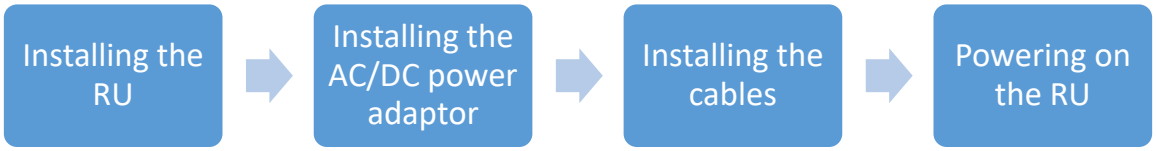
1.4 LED Lights

There is one multi-color LED on the top cover of the RU. The table below summarizes the LED color definitions.

LED color	Mode	Description
Off	Solid	System is powered off.
Green	Solid	System is powered on but not ready for service.
	Slow blinking	1. System is powered on but not ready for service. 2. Correct synchronization messages are received but not locked yet.
	Fast blink	1. System is powered on but not ready for service. 2. C/U plane eCPRI messages are received.
Blue	Solid	System is in service.
	Fast blink	1. System is in service. 2. C/U plane eCPRI messages are received.
Yellow	Solid	System is in service but performance issues were found.
	Fast blink	1. System is in service but performance issues were found. 2. C/U plane eCPRI messages are received.
Red	Solid	A fatal system issue was detected. (FH linkdown or overheating)

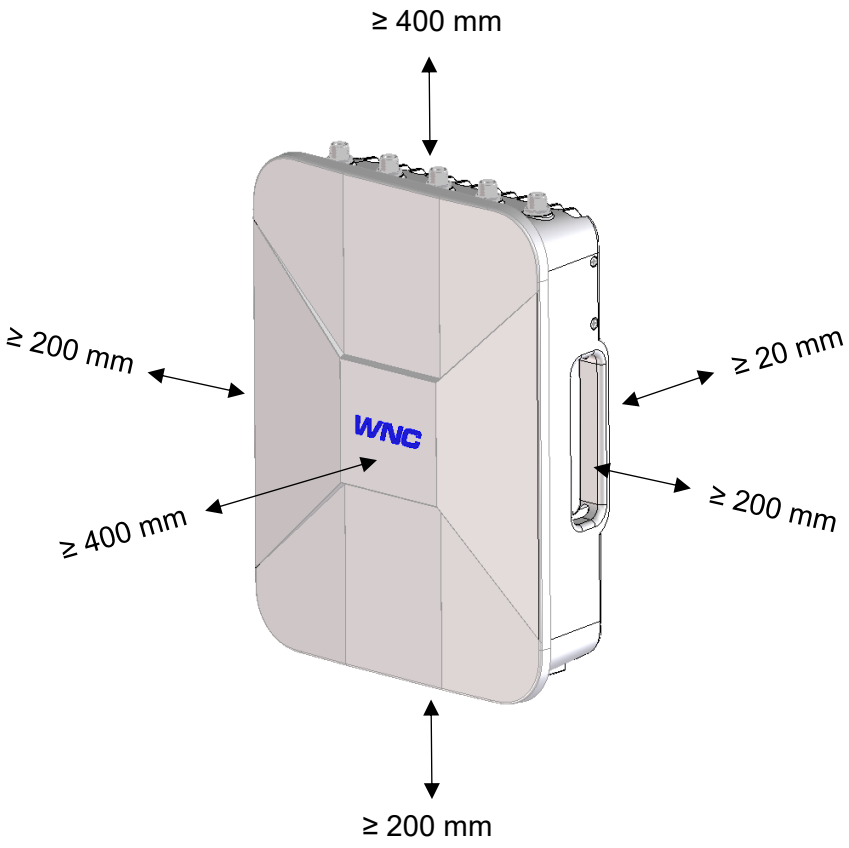
2. Installing the R3210 SERIES RU

This chapter covers the step-by-step installation procedures for assembling and installing the R3210 series RU.



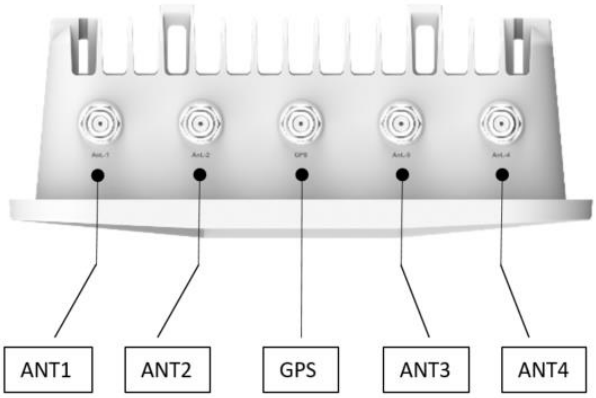
2.1 Installing the RU

The RU can be installed on a wall, pole, or on the ceiling. The following section describes installation in different scenarios as well as the suggested space requirements.



When an external antenna is required, the recommended clear space for installing a single RU is as follows:

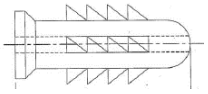
- At least 400 mm above the RU;
- At least 200 mm under the RU;
- At least 200 mm on the two sides of the RU;
- At least 400 mm in front of the RU, and
- At least 20 mm at the rear of RU.



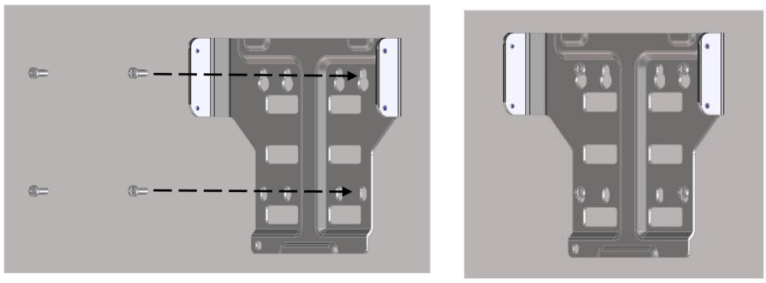
2.1.1 Wall Mount

Refer to the steps below to mount the RU to a wall.

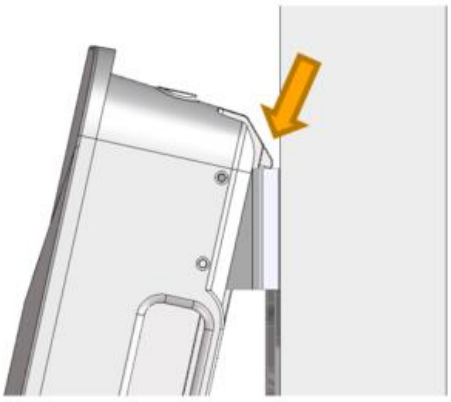
1. Use a power tool to drill four holes,then insert the wall anchors into the holes.

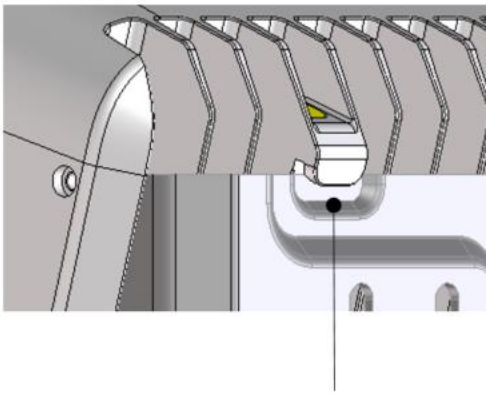


2. Apply the four wall mounting screws into the wall anchors and fix the bracket.



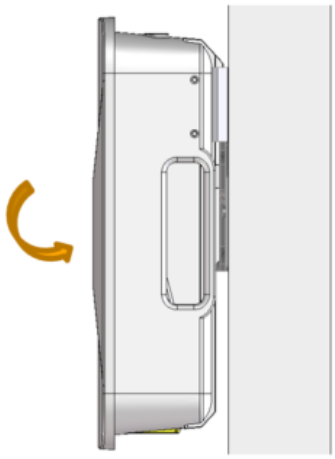
3. At the bottom of the RU, place the two hooks into the corresponding feature on the bracket and slide it into the bracket.



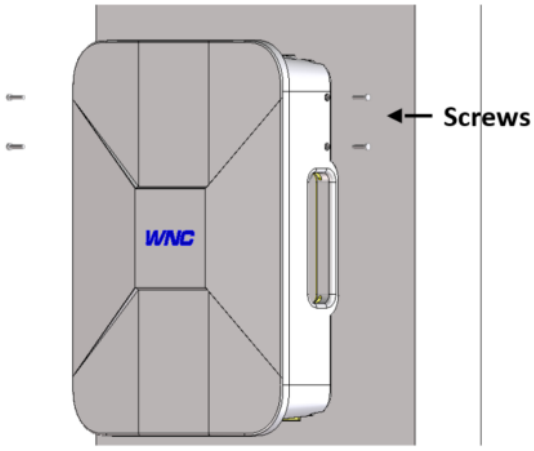


Hook and corresponding feature on bracket

4. Use the hook feature as rotation axis to place RU to the vertical position.

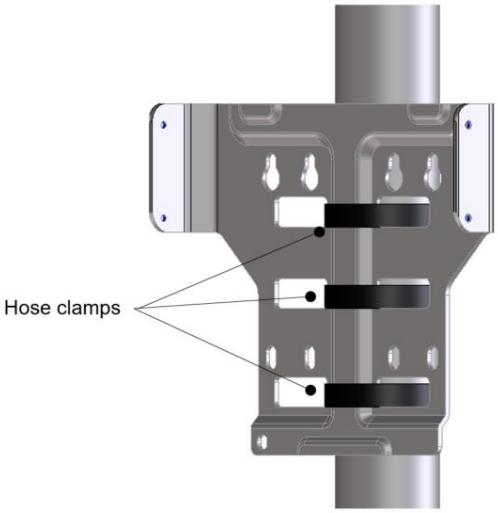


5. Apply four screws and finish assembly.

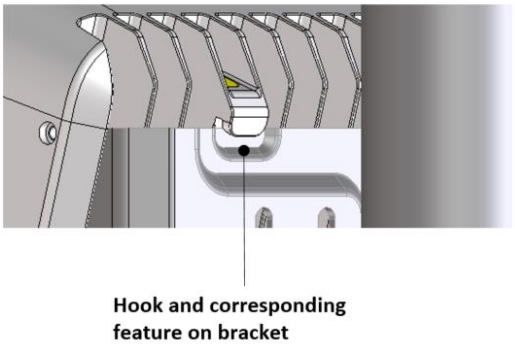


2.1.2 Pole Mount (60 mm–400 mm)

1. Install three hose clamps and secure the bracket to the pole.

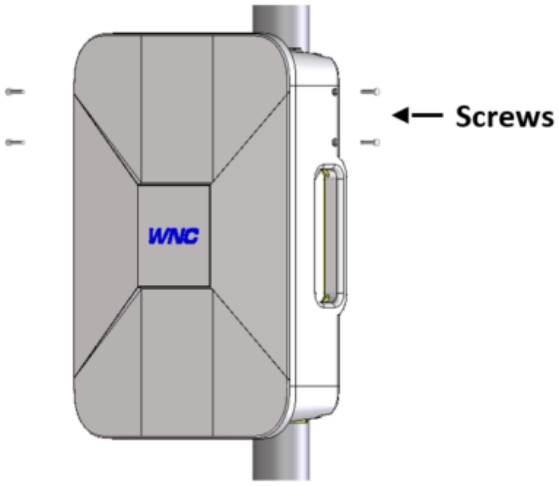


2. At the bottom of the RU, place the two hooks into the corresponding feature on the bracket and slide it into the bracket.



3. Use the hook feature as rotation axis to place RU to the vertical position.

4. Apply four screws to finish assembling the RU on a pole.

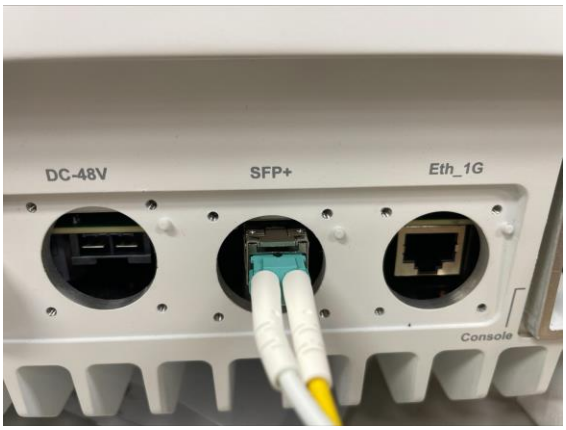


2.2 Installing the cables

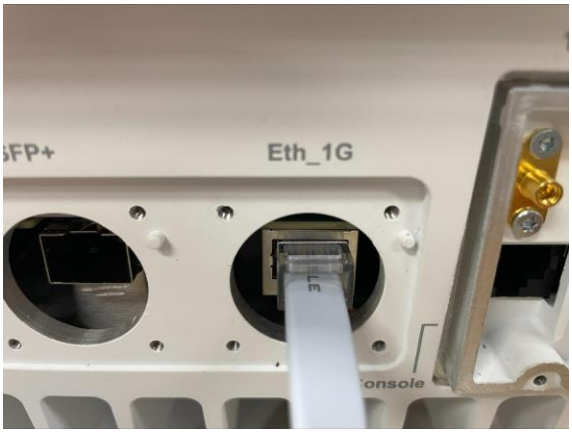
Follow the steps below to install the cables.

1. Insert the SFP+ transceiver module in the port as shown in the figure below.

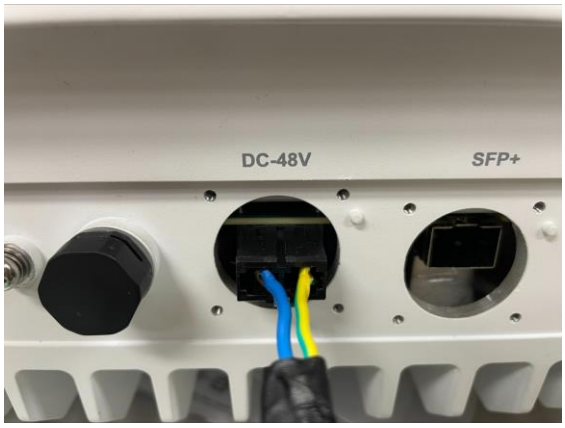
2. Insert the SFP+ fiber cable as shown in the figure below.



3. Insert the RJ45 cable into the RJ45 port as shown in the figure below.



4. Insert the power cable into the DC connector port as shown in the figure below.



2.3 Powering on the RU

The RU can be powered via a DC adaptor or DC power source.

The steps below describe ways of powering on the RU.

1. RU power source:

Scenario	RU power source
RJ45 Ethernet cable is connected to device.	Insert the DC power connector. The RU needs to be powered up by a DC power source.

2. When the RU is powering on, the LED light turns from dark to solid or blinking green.

LED	Mode	Description
Green	Solid	System is powered on but not ready for service.
	Slow blinking	1. System is powered on but not ready for service. 2. Correct synchronization messages are received but are not locked yet.
	Fast blink	1. System is powered on but not ready for service. 2. C/U plane eCPRI messages are received.

3. After the RU is powered on and is ready for service, the LED light turns from green to blue.

Blue	Solid	System is in service.
	Slow blinking	1. System is in service. 2. Correct synchronization messages are received, but are not locked yet.
	Fast blink	1. System is in service. 2. C/U plane eCPRI messages are received.

If LED illuminates yellow or red, RU may have performance or fatal issues. Please refer to the LED definition section.

3. Technical Specifications

Model Name	R3210
FPGA	Intel Arria 10
RF IC	ADI ADRV 9025
5G NR	■ 5G NR TDD 4T4R ■ Supported bands: n77, n78, n79, n48 ■ 100 MHz bandwidth, 30KHz SCS
Fronthaul	O-RAN Split option 7.2X
TX power	37dBm per RF antenna par
Max Bandwidth OBW	100MHz
Antenna	Embedded/external
Data interface	10Gbps SFP+
Synchronization	PTPv2 w/ G.8275.1/GNSS
Holdover	1.5 µs over 4 hours
M-plane	O-RAN compliant Netconf protocol and Yang model
Power Supply	DC -54V/4.26A
Dimensions	320 mm × 425 mm × 120.3 mm
Weight	10Kgs
Operating Temperature	-40 ℃ to 55 ℃
Installation	Wall/Pole mount

Note: The applicable temperature of the product will depend on the power supply chosen. The temperature will depend on the poorer specifications.

Operation Frequency Range

R3210-077MT	N77 O-RU (3.7-4.2GHz)
R3210-078MT	N78 O-RU (3.3-3.8GHz)
R3210-079MT	N79 O-RU (4.5-4.9GHz)
R3210-048MT	N48 O-RU (3.55-3.7GHz)