

MX-220-UT-5G

Advanced Industrial 5G Router

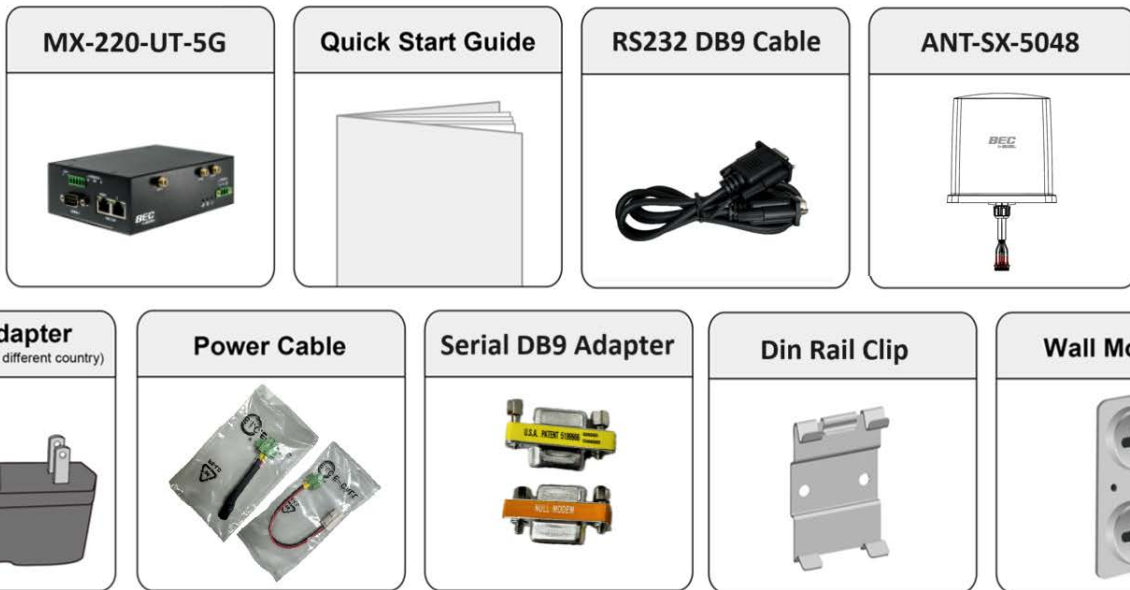
Installation Guide



PLEASE READ THE QUICK START GUIDE AND FOLLOW THE STEPS CAREFULLY. THIS QUICK START GUIDE WILL HELP YOU INSTALL THE DEVICE PROPERLY AND AVOID IMPROPER USAGE.

Package Contents

- MX-220-UT-5G
- RS232 DB9 Cable
- Power Adapter
- Serial DB9 Adapter
- Wall Mounting kit
- Quick Start Guide
- ANT-SX-5048 ant.
- Power Cable
- Din Rail Clip



NOTE: ALL IMAGES SHOWN ARE FOR ILLUSTRATION PURPOSE ONLY.
PACKAGE CONTENTS MAY DIFFER FROM ACTUAL PRODUCTS.



Warning

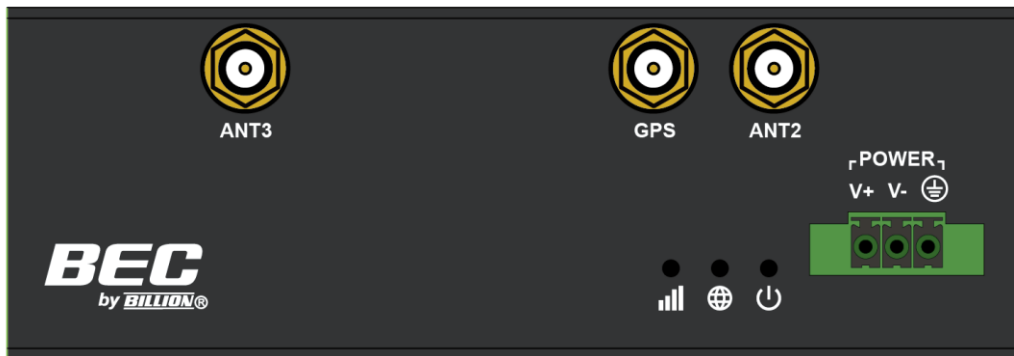
- Do not use the router in high humidity or high temperatures.
- Do not use the same power source for the router as other equipment.
- Do not open or repair the case yourself. If the router is too hot, turn off the power immediately and have it repaired at a qualified service center.
- Avoid using this product and all other accessories outdoors.






Attention

- Only use the power adapter that comes with the package. Using a different voltage rating power adaptor may damage the router.

Device LEDs



Item		Description	
	WAN (Cellular Signal Strength Indicator)	Green	RSSI > -69dBm. Excellent signal.
		Green/ Fast Flashing	-69dBm > RSSI > -81dBm. Good signal.
		Red/ Fast Flashing	-81dBm > RSSI > -99dBm. Fair signal.
		Red/ Slow Flashing	-99dBm > RSSI. Poor signal.
		Red	No signal and the 5G NR module is in service.
		Off	No 5G NR module or 5G NR failure.
	INTERNET	Green	IP traffic via WAN.
		Red	WAN IP request failed.
		Off	No WAN connection or in Bridge mode.
	POWER	Green	System ready
		Red	Boot failure

Device Overview & Hardware Installation

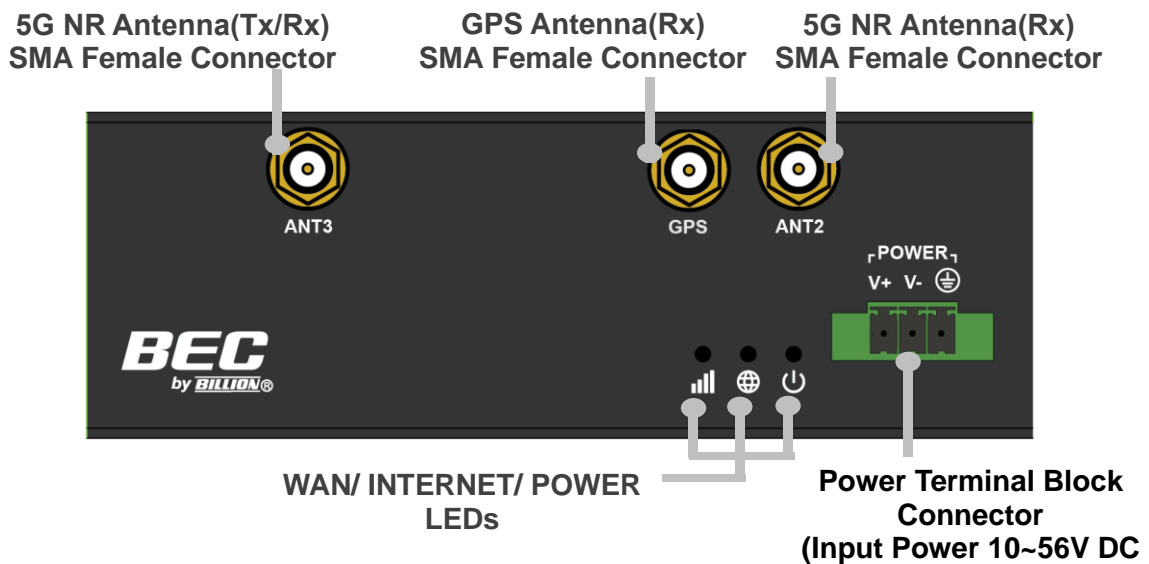
Connect to Power Source

Mode 1. Attach the power converter with 3-pin terminal block to the MX-220-UT-5G and plug in the supplied power adapter or power supply system.

Mode 2. Attach the power **terminal block (TB)** to the MX-220-UT-5G and connect wire leads from a power supply to the **terminal block (TB)** plug. The **Red Wire (V+, Left Connector)** should connect to the positive supply voltage and **Black Wire (V-, Middle Connector)** should connect to the negative supply voltage. Input voltage range is from 9V to 56V. Then connect the grounding cable to the **Right Connector (GND)**.

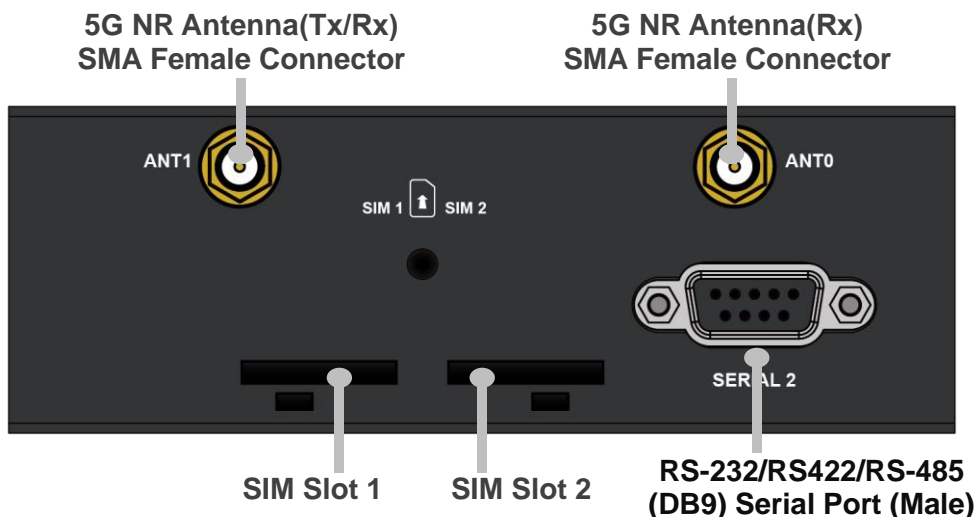
Attach the Antennas

This MX-220-UT-5G has four 5G NR antennas. It is a simple antenna setup for MX-220-UT-5G, screw the male SMA 5G NR antennas tight to the female connectors, and do not over-torque the antenna on the connector.



Insert the SIM card

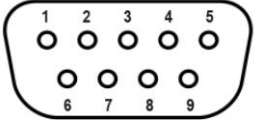
Remove the SIM cover, then insert the SIM card (2FF) with the metal contacts (gold plate) **facing up** into the SIM slot, push it all the way in until you hear a click sound. Then replace the metal SIM cover after inserting the SIM card. Use the SIM 1 first and use the SIM 2 for a secondary/ back-up SIM. (*Note: Power off the device before inserting or removing the SIM card.)



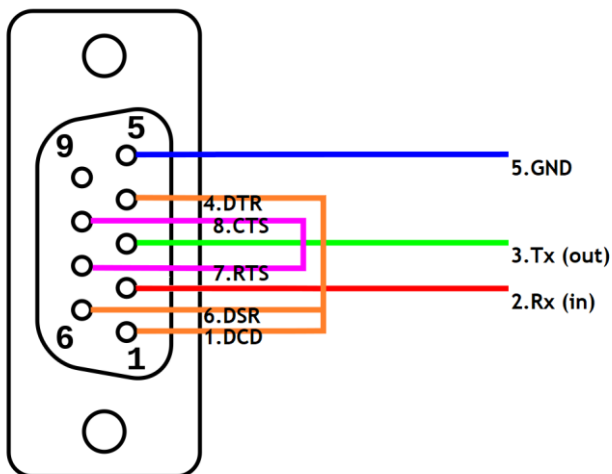
Connect to a Serial Device

Serial port 1 & 2 support RS232, RS485 and RS422, connect one end of the serial cable to the console port of the serial device.

Serial Port (RS-232, RS-485, RS-422) Pin Definition:

 DB9 Male	RS-232 (DTE)	RS-485	RS-422
1	DCD (in)	Data – (in/out)	Tx – (out)
2	RX (in)	Data + (in/out)	Tx + (out)
3	TX (out)	X	Rx + (in)
4	DTR (out)	X	Rx – (in)
5	GND	GND	GND
6	DSR (in)	X	X
7	RTS (out)	X	X
8	CTS (in)	X	X
9	RI (in)	X	X

RS-232 Null Modem Connection:



DB9 Female

Digital Input & Console Terminal Block

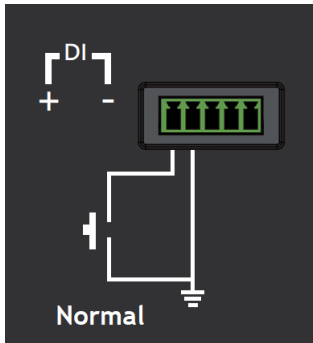
Connect to a digital I/O device to monitor the statuses of measuring devices as well as the relays and operation switches of various types of control circuits.

DI Port Switching Circuit

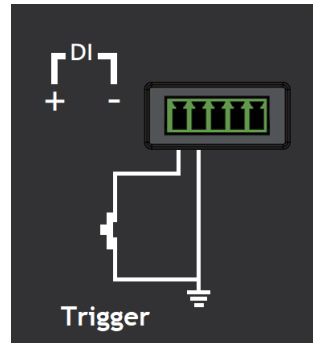
Action	Voltage
Normal (high)	DC 2V ~ 30V
Trigger (low)	DC 0 ~ 0.4V

Type 1:

Normal:

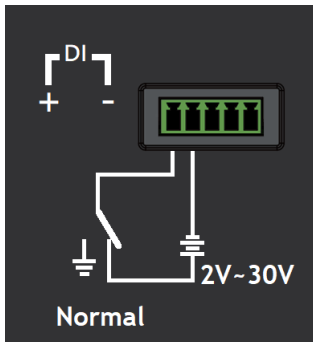


Trigger:

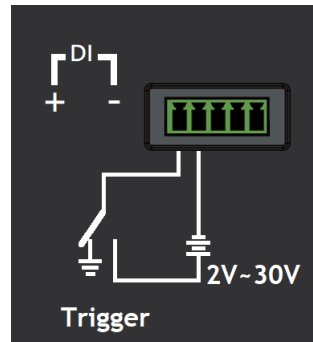


Type 2:

Normal:



Trigger:

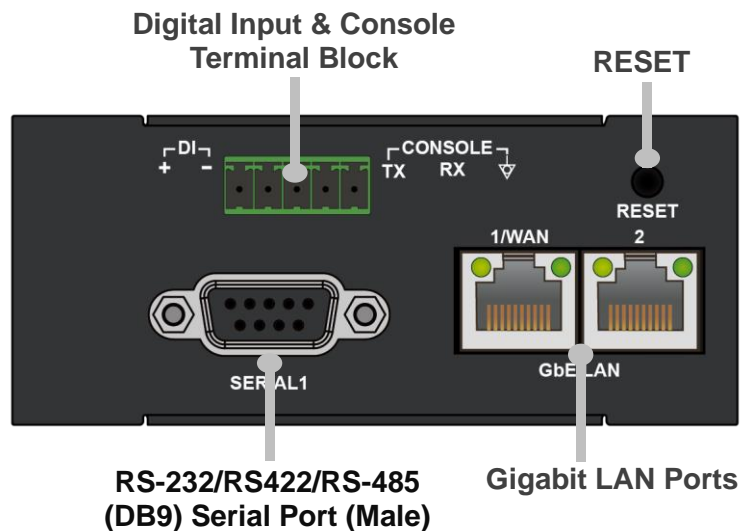


LAN Connection

Connect a Ethernet cable (Cat-5 or Cat-5e) to one of the LAN ports and the other side to the IED/ PLC/ PC's Ethernet interface. (*Note: LAN1 automatically becomes an ethernet WAN port when the ETH WAN internet interface is being selected in the GUI.)

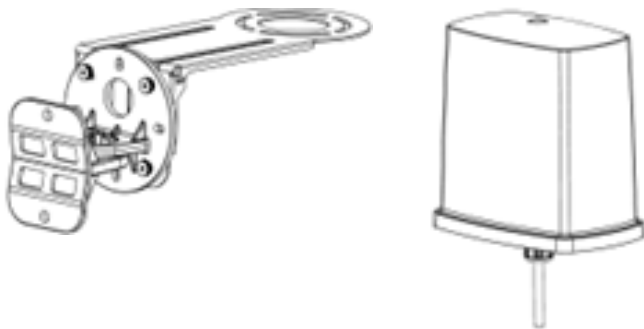
RESET Button

After the device is powered on, press it **6 seconds or above** to restore to factory default settings (this is used when you cannot login to the router, e.g., forgot your password).



ANT-SX-5048 Installation

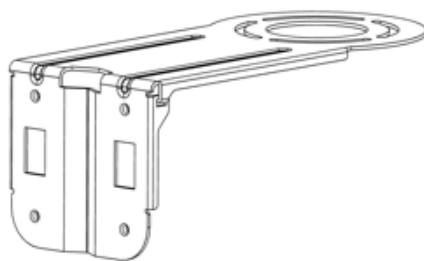
Mounting L-bracket



- Easy Installation
- Industry Grade Design & Reliability
- Heavy Equipment Supporting Capacity

Mounting Installation Package Content

STEP 1 – Mounting Kit



L-bracket x 1



Bracket-to-L x 1



Bracket-to-Pole x 1



M8x40 Screw Bolts x 1



M8 Nut x 1



M8 Washer x 1



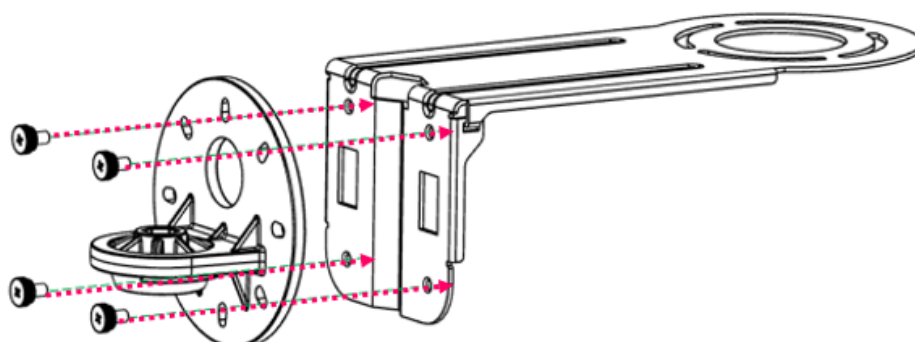
M8 Spring Washer x 1



M5 Hand Screw x 8

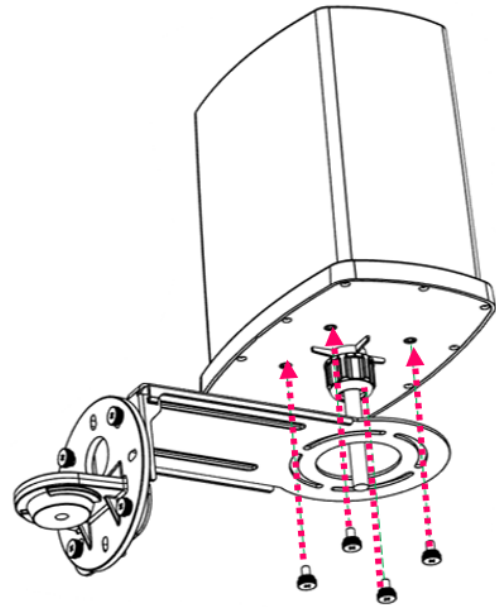
1. Combine Bracket-to-L and L-Bracket

Combine the Bracket-to-L to L-Bracket by using 4pcs M5 hand screws.



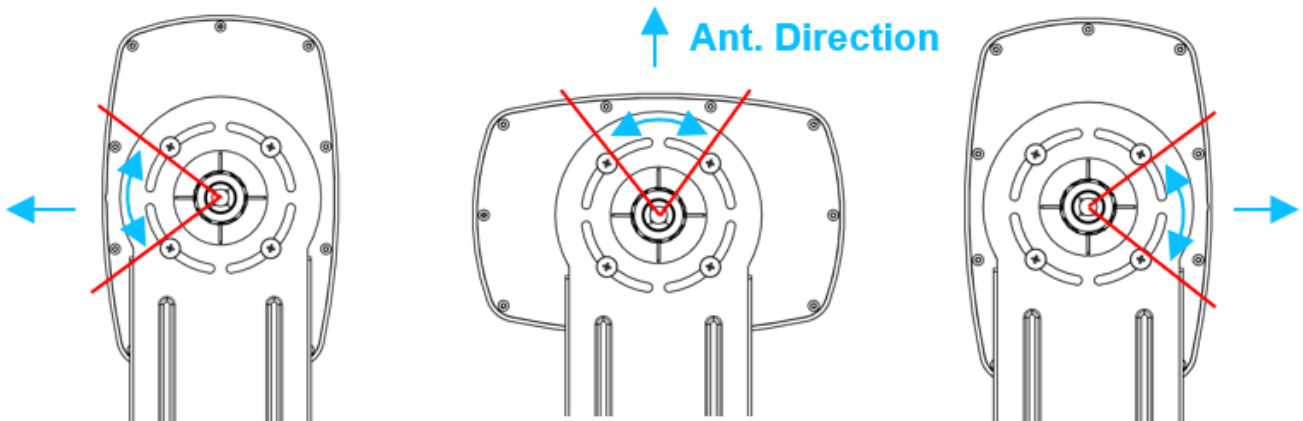
2. Install Antenna on the L-Bracket

Fix the antenna onto the L-Bracket by using 4pcs M5 hand screws after confirming which direction the antenna needs to be directed.



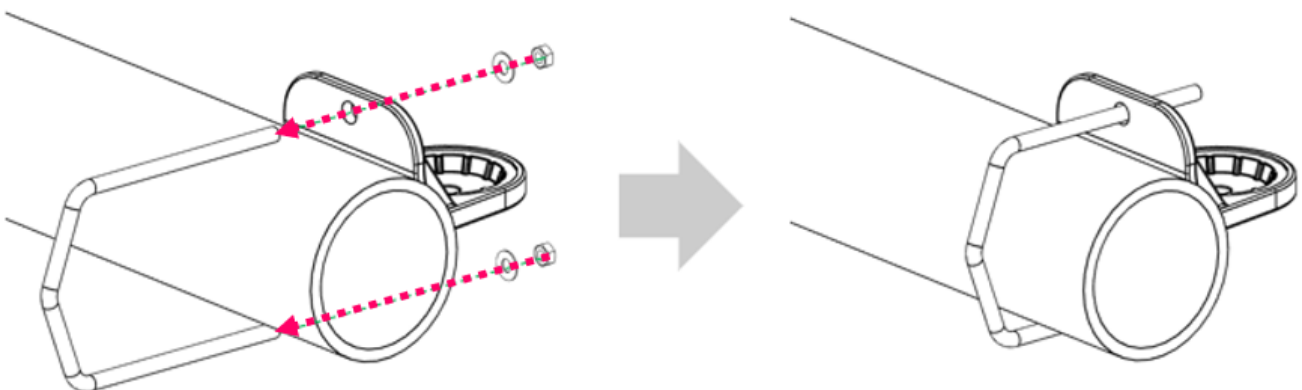
2-1 Adjust antenna direction

The antenna can be rotated left and right up to 32 degrees in the above three installation situations.

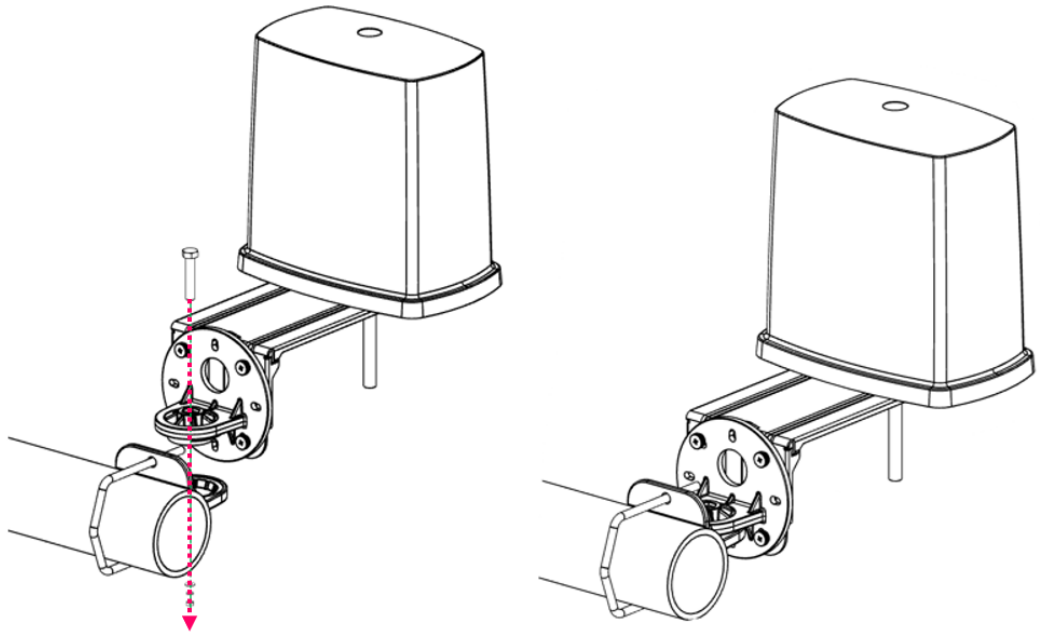


3. Install Bracket-to-Pole

Fix the Bracket-to-Pole to pole by using the U-bolt.

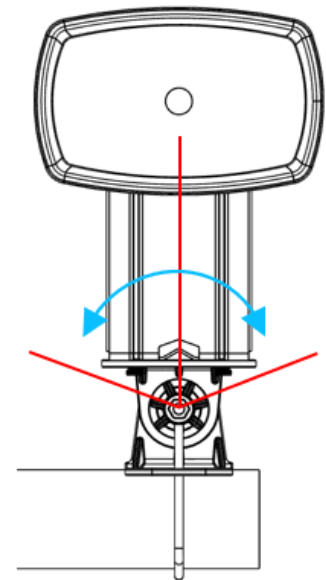


4. Combine Mounting

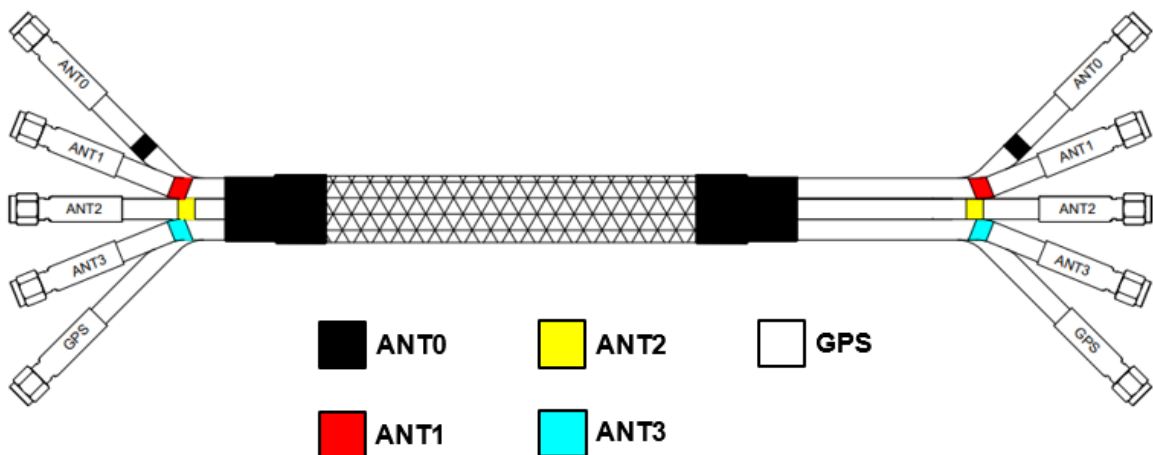


Fix the Bracket-to-L and Bracket-to-Pole by using M8x40 bolts, nut, spring washer and washer.

The mounting can be turned left and right up to 60 degrees.

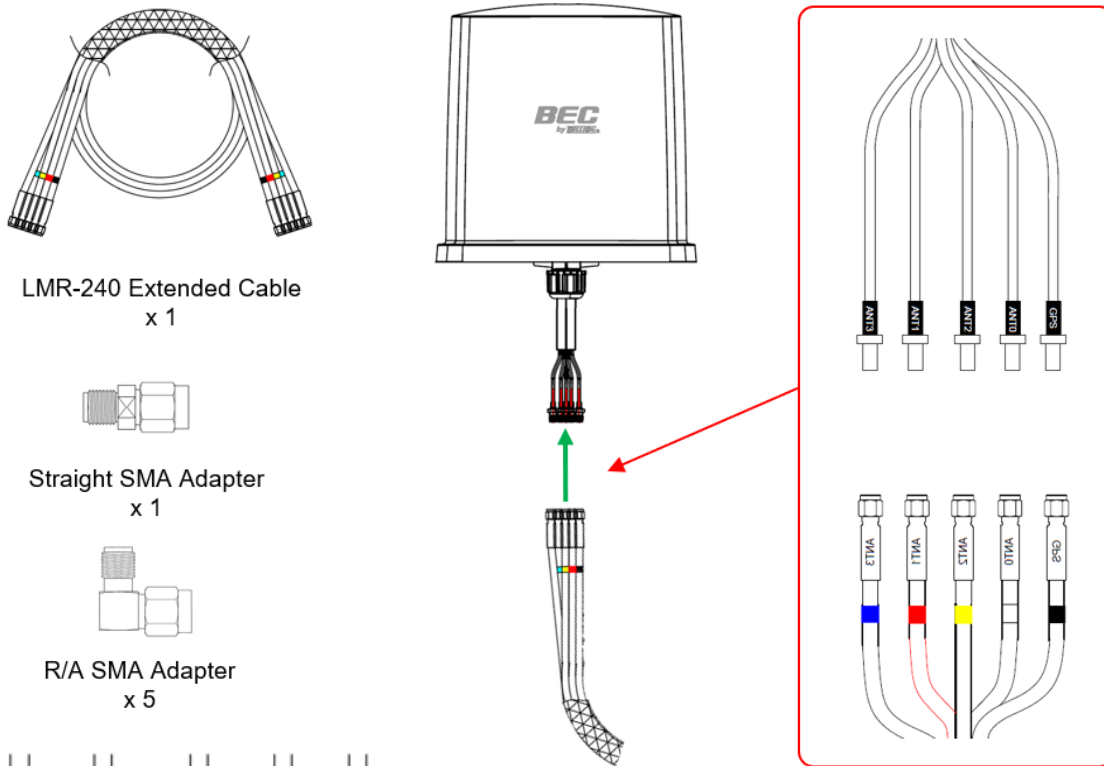


LMR-240 5-in-1 Extended Cable



Connect Antenna and LMR-240 Extended Cable

Connect the LMR-240 extended cable (SMA male) to antenna (SMA female).



LMR-240 Extended Cable
x 1

Straight SMA Adapter
x 1

R/A SMA Adapter
x 5

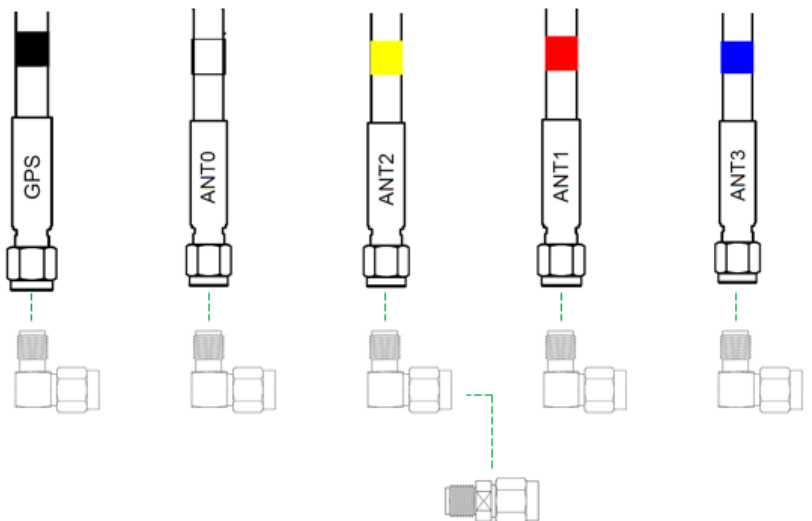
After finishing connection, bundle each SMA connector by using waterproof tape.



Install SMA & R/A SMA Adapter

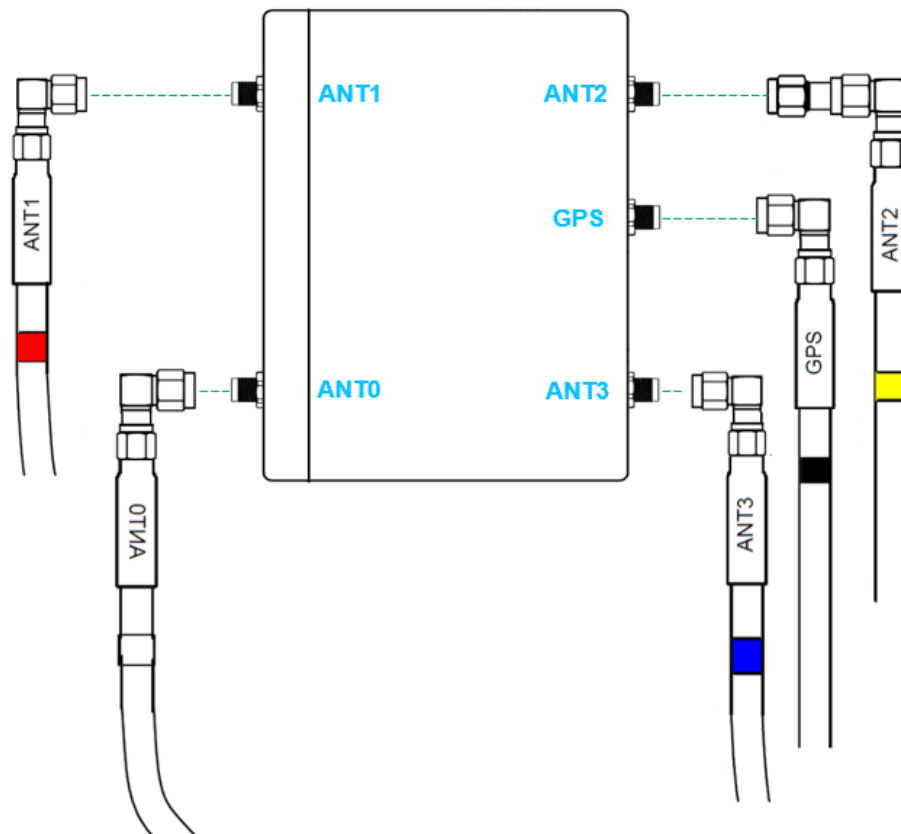
STEP 1: Connect the R/A SMA Adapter to each SMA male on the other end of LMR-240 extended cable.

STEP 2: Connect the Straight SMA Adapter to the R/A SMA Adapter of ANT2 (Yellow).



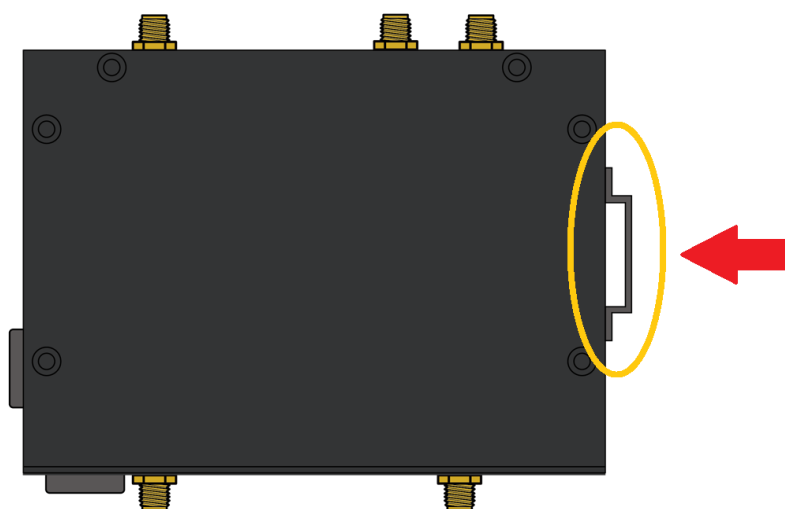
Connect LMR-240 Extended Cable to Device

After finishing the previous two steps, connect the LMR-240 Extended Cable to the corresponding connector of device.



Hardware Installation

Before installation, please attach and fasten the wall mounting kit or din rail clip to the bracket holder of the MX-220-UT-5G.



Wall MOUNTING

There is a mounting location on the bracket holder of MX-220-UT-5G to mount the Wall mounting kit. The Wall mounting kit is designed to securely attach and mount the MX-220-UT-5G onto a wall. Please follow the steps to complete wall mounting installation.

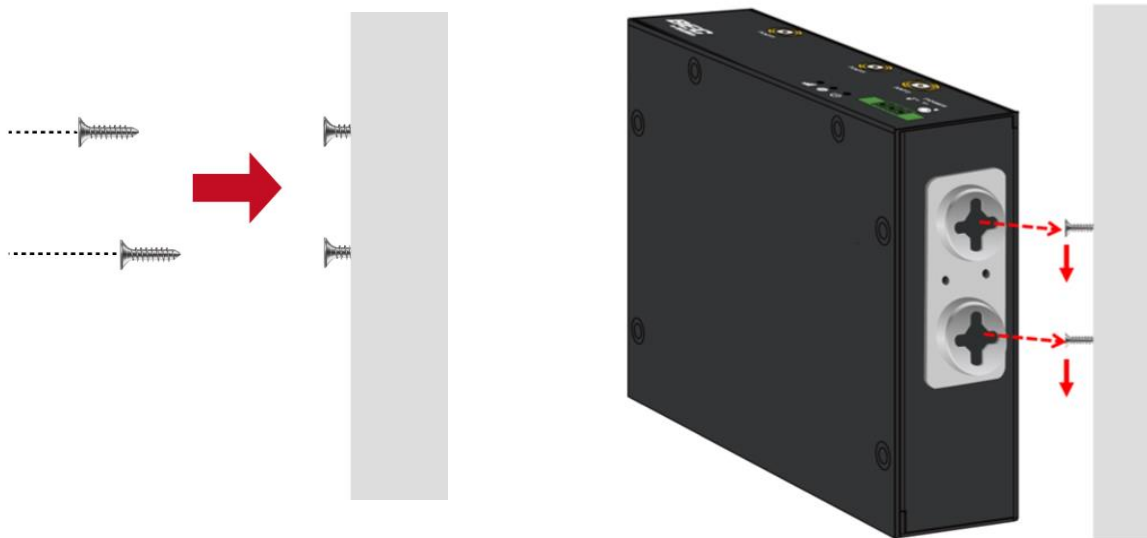
Step 1.

Install clip in the appropriate position. Attach and fasten the wall mounting kit to the bracket holder of the MX-220-UT-5G using two mounting screws included in this mounting kit.



Step 2.

1. Hold the wall mount up to the wall at the installation site and mark each screw location on the wall.
2. Screw the screws into the wall at each location and hang the wall mount on the two screws.



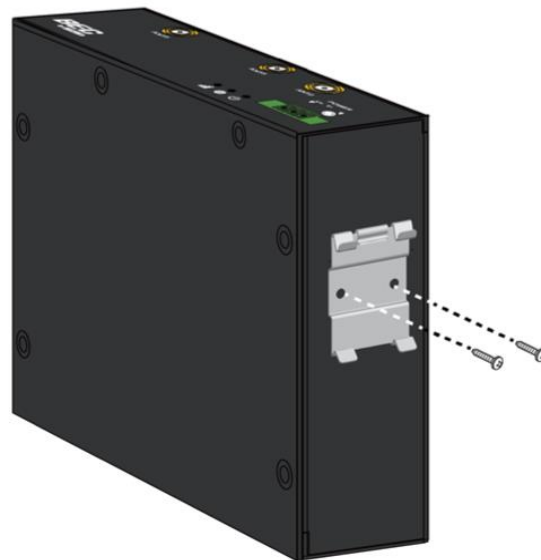
DIN RAIL MOUNTING

There is a mounting location on the bracket holder of MX-220-UT-5G to mount the DIN rail clip. The DIN Rail mounting kit is designed to securely attach and clip the MX-220-UT-5G onto a TS35 or standard 35mm top hat (EN 500022/BS 5584). Please follow the steps to complete the DIN rail mounting installation.

Attaching to a DIN Rail

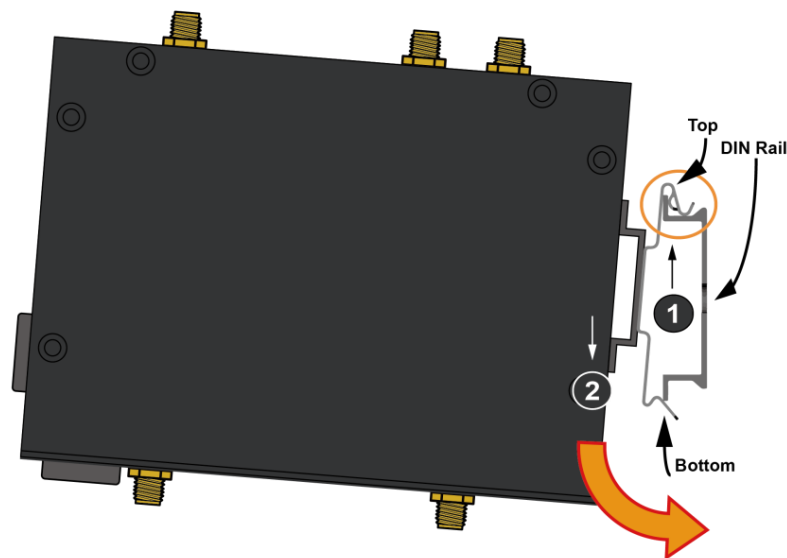
Step 1.

Install clip in the appropriate position. Attach and fasten the DIN Rail clip (known as clip) to the bracket holder of the MX-220-UT-5G using two clip mounting screws included in this mounting kit.

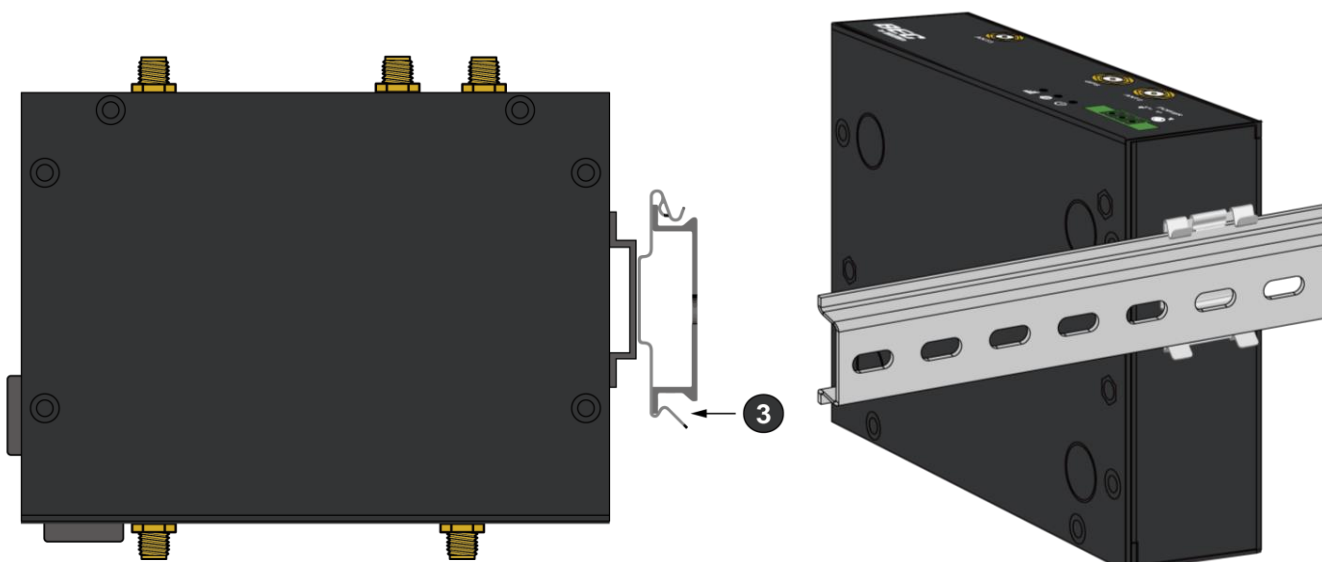


Step 2. Clip and secure the MX-220-UT-5G onto a DIN Rail.

- ❶ Hook the top of the clip onto the top edge of the DIN Rail. Make sure the clip is firmly against the rail.
- ❷ Push down the bottom of the MX-220-UT-5G to snap it onto the lower edge of the DIN rail.

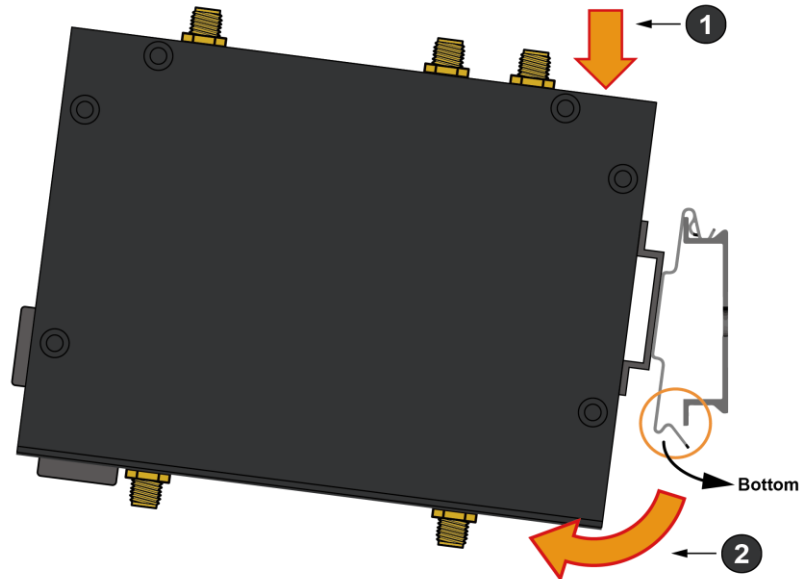


- ❸ The MX-220-UT-5G is now mounted on the DIN Rail.

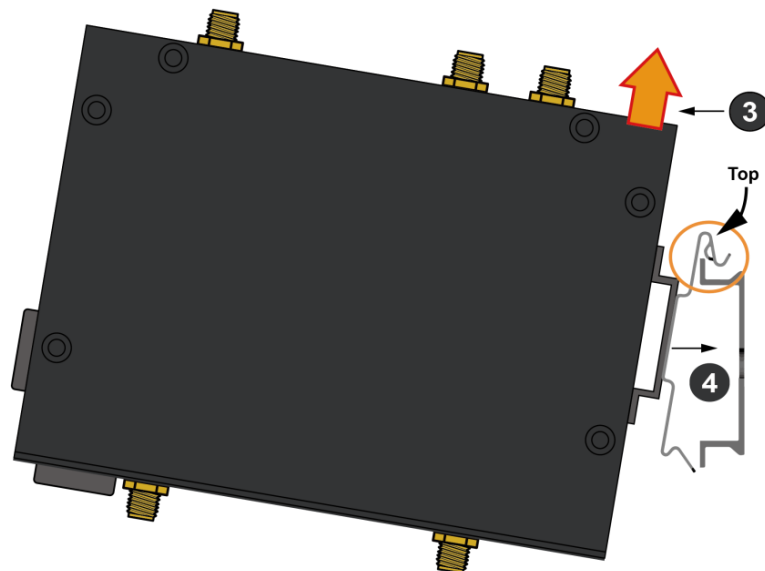


Removing from a DIN rail

- 1 2** Remove MX-220-UT-5G from the DIN Rail. Push down the MX-220-UT-5G to free the bottom of the clip from the DIN Rail.



- 3 4** Unhook the top of the clip and pull the MX-220-UT-5G away from the DIN Rail.



Connecting to the Router

1. Open the web browser and type <http://192.168.1.254> in the browser's address box. This number is the default IP address for this router. Press **Enter**.
2. A username and password window will appear. **The default username is “admin”, and password is “admin”**. Press **OK** to proceed.
3. You will get a status report web page and main menu screen.

Contact Billion

WORLDWIDE

<https://www.billion.com>

BEC Technologiesn Inc. (U.S.A.)

<https://bectechnologies.net>

Federal Communication Commission Interference Statement

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.

CAUTION: Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

FCC Caution:

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

RF Exposure warning

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.