

4 PRE-INSTALLATION PREPARATIONS

4.1 Pre-installation checks

- Before installation please check the gateway for any physical damage.
- Open the gateway box to check if the internal wirings are intact.

4.2 Selecting location for Gateway

Selecting the correct locations for the Gateway and Node is essential, especially if more than one Node is installed at the site and connected to a single gateway.

The initial task involves placing the Gateway in a position where it has a clear line of sight to all installed Nodes or, at the very least, to most of the Nodes. The optimal placement should be decided on-site. It is advisable to ensure a robust connection between the Gateway and the Node to achieve optimal performance, ideally with a signal strength exceeding -100 dBm. It's important to emphasize that stronger signal strength will yield superior results.

Selecting the correct locations for the Gateway and Node is essential, especially if more than one Node is installed at the site and connected to a single gateway.

The initial task involves placing the Gateway in a position where it has a clear line of sight to all installed Nodes or, at the very least, to most of the Nodes. The optimal placement should be decided on-site. For best results, the link between the gateway and the Node should be strong, preferably better than -100 dBm. Please note, the stronger the link, the better the results. **When mounting the gateway's antenna, it's crucial to position it at least 6 feet (1.8 meters) away from any surface, including roofs, hills, or walls. This clearance helps ensure optimal signal propagation and minimizes interference.** It is advisable to ensure a robust connection between the Gateway and the Node to achieve optimal performance, ideally with a signal strength exceeding -100 dBm. It's important to emphasize that stronger signal strength will yield superior results.

4.3 Setting up the Gateway & Nodes

It is recommended that the setting up and configuration of nodes and gateway is done before mounting the nodes and gateway at respective installation location.

The gateway configuration needs to be done before nodes. Configuration of gateway is discussed in Section-5 of this manual. For setting up and configuring the nodes and wireless tilt meters, please refer to respective User's Manual.

5 CONFIGURING GATEWAY

5.1 Gateway setup

- Remove the screw protection cover as shown in figure 5-1. Unscrew the gateway cover using appropriate screw driver and open the gateway cover. Description of each part of the gateway is given in the figure 5-2.

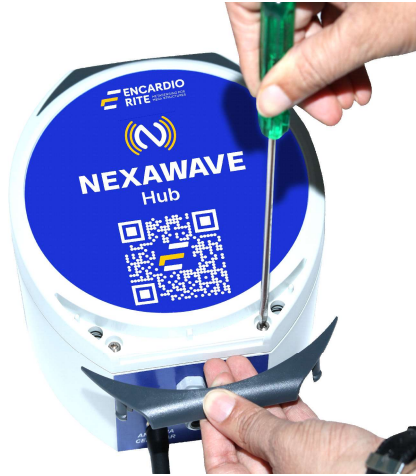


Figure 5-1

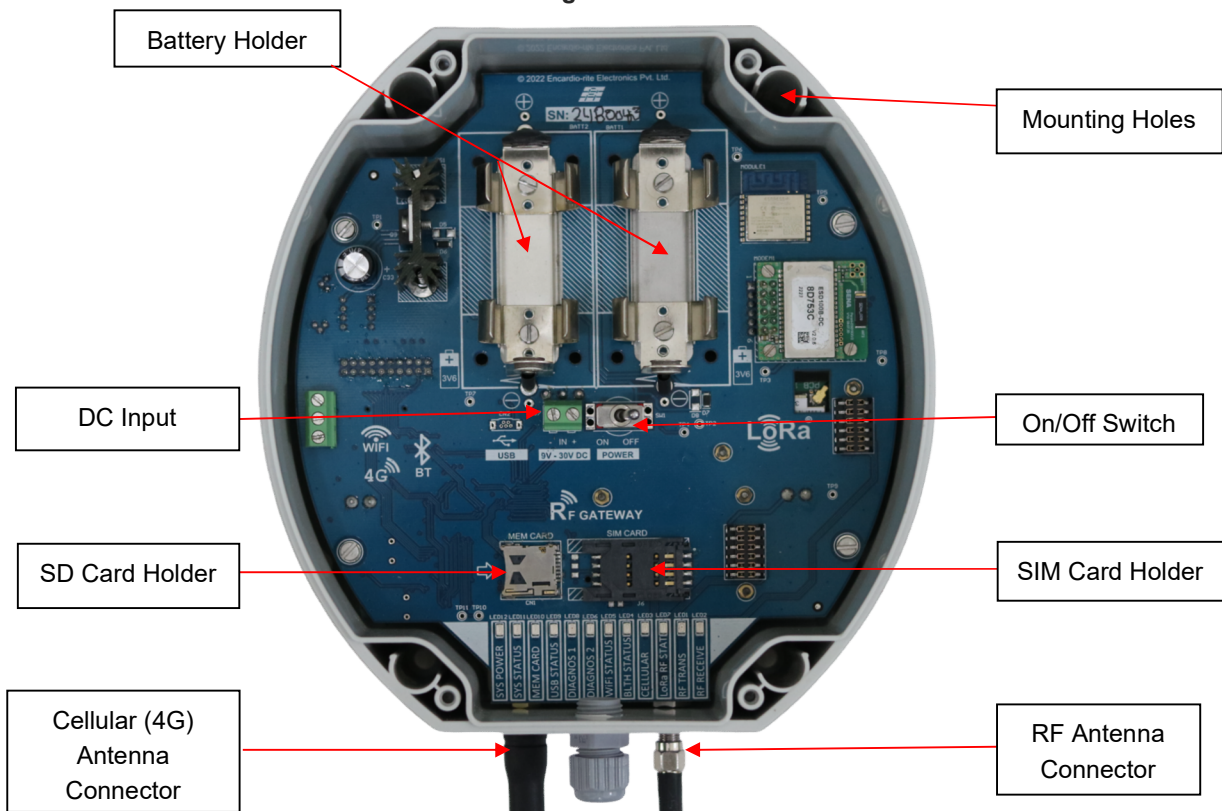


Figure 5-2

- Connect both the antenna's (cellular and RF) provided with the supply to their respective antenna adaptor as shown in figure 5-3.



Figure 5-3

- Insert the SIM card into SIM card holder. Lock the SIM holder after inserting the SIM.
- The gateway is normally supplied with a 32 GB CD card. Check that the SD card is available and is fixed properly. If it is not available, please insert a 32 GB/64 GB SD card in the SD card holder.

5.2 Battery Installation

- Align the positive (+) side of the batteries with the + indicator in the battery holder.
- Slide the positive end of the battery inside the compartment first. Installing the positive end first allows the battery to slide into the compartment more easily. Just push the positive end of the battery into the lever, flattening it down into the holder. Apply a bit more pressure, if necessary, to snap the negative end of the battery securely into place.
- Check for any looseness in the positive and negative clip terminals of the holder. If they are loose, press them down to ensure proper contact with the battery.
- Connect any standard DC power adaptor (9-30 V, 1 A) into "DC Input". Alternatively, if required, Encardio Ritemake solar battery charger can also be used (available against order).
- Switch on the gateway. After power up, wait for 1 minute as during this time gateway performs internal operations.

5.3 Gateway LED'S Status

LED Name	Status		Action
SYS POWER	Blink	Description	Replace the battery immediately if LED start toggling 1 times.
	1 times	Battery Low	
	2 times	Running on internal Battery	
	3 times	Running on external power	
MEM CARD	Blink	Description	Mount the memory card properly
	1 times	Memory card not mounted	
	2 times	Memory card mounted	
BLTH STATUS	Blink	Description	
	OFF	Bluetooth not mounted	
	1 times	Bluetooth not configured	
	2 times	Bluetooth configured	
	3 times	Bluetooth not connected	
	4 times	Bluetooth connected	
CELLULAR	Blink	Description	
	OFF	Modem off	
	1 times	Modem on	

	2 times	Performing TEST FTP	
	3 times	Processing Commands	
	4 times	Processing reply commands	
	6 times	Uploading the data to FTP server	
LoRa RF STATUS	Blink continuously during RF communication		
RF TRANS	Blink continuously during RF transmission		
RF RECEIVE	Blink continuously during RF reception		

5.4 Quick Setup

On the home screen, click on "QUICK SETUP" to configure the HUB. This simple five-step process guides you through the setup. A brief, step-by-step guide is provided below:

Step 1: Set the Configuration, (As shown in Figure 5-7)

- **Hub ID:** Input "Hub-ID" of their choice. Try to input some meaningful ID so that it becomes convenient for other users also.
- **Installation Date:** Click on the "Calendar Icon" to enter the installation date of the gateway.
- **Frequency Plan:** Select the "Frequency Plan" from the drop down. This depends on the installation location, to comply with the local regulations. User can select the region and associated frequency by tapping on the search icon.
- **Network ID:** User can select any of the Network ID from the "Network ID" drop-down menu. It is important to remember that the network ID should remain consistent throughout the entire network, including all nodes and the gateway. Note down the configured Gateway Network ID as it will be necessary for node configuration.
- **Location:** For setting Latitude and Longitude of respective installation location:
 - If user knows the installation location coordinates, enter the Latitude and Longitude information manually.
 - If user does not know the installation location coordinates, select the button "Select on map" for automatic location setup. This needs to be done at the installation site location only. Ensure that the internet connectivity is there in the phone during this process.
- **Device Date & Time:** To set the RTC (date and time) of hub, click on the "Calendar" and "Clock" icons given in line with "Hub date" and "Hub time". Click on the "Update Date/Time" tab to save it. To synchronize the hub RTC with Phone's RTC, click on the "Sync with phone" tab. Make sure that the Phone's RTC is up to date and correct.
- Click on the Save & Next button to move step-2.

The screenshot shows the 'Quick Setup' screen with a progress bar at the top indicating four steps. Step 1 is highlighted in green. Below the progress bar, the title 'Set the Configuration' is displayed. The form contains the following fields: 'Hub ID' with the value 'RF-GATEWAY'; 'Installation Date' with the value '2022/01/01' and a calendar icon; 'Frequency plan' with the value 'IN865-868 (867.5)' and a 'Filter by Country' link; 'Network ID' with the value '10'; 'Location' with a 'Select on map' link; 'Latitude' with the value '26.835697576935225'; 'Longitude' with the value '80.89786699839999'; 'Device Date & Time' with the value '2025/01/13 14:35:18' and a 'Sync with phone' link. At the bottom, there are two buttons: 'Skip' and 'Save & Next'.

Figure 5-7**Step 2: APN & FTP to upload data** (As shown in Figure 5-8)

This screen is to set the FTP parameters required for uploading the data to a remote FTP server. Fill in all the parameters correctly, then click the Save & Next button to move the step-3.

The screenshot shows the 'Quick Setup' screen with a progress bar at the top indicating four steps. Step 2 is highlighted in green. Below the progress bar, the title 'Set APN & FTP to Upload Data' is displayed. The form contains the following fields: 'APN' with the value 'jionet'; 'FTP to Upload Data' section with 'Server IP Address' (35.200.172.133), 'Port' (21), 'Username' (test23), 'Password' (masked with dots), and 'Confirm Password' (masked with dots). At the bottom, there are two buttons: 'Back' and 'Save & Next'.

Figure 5-8**Step 3: Test the Modem signal** (As shown in Figure 5-9)

- To check the signal strength of the 4G network at the installed location click on the “Test Signal” button. Please do not forget to turn off the modem through the same button which will turn into “Stop Test” after turn on action.

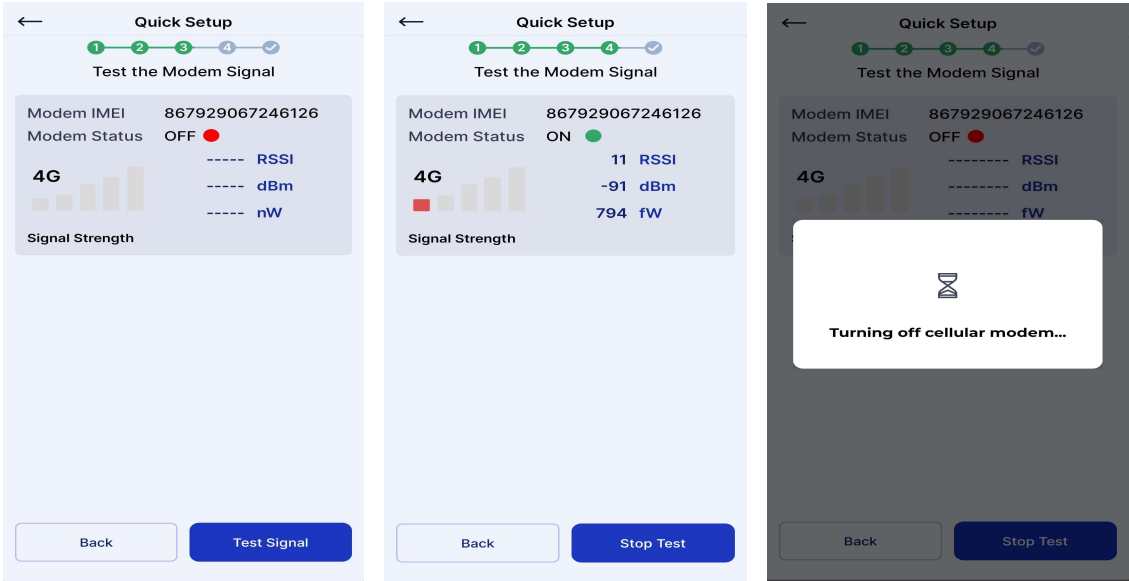


Figure 5-9

Step 4: Test the FTP (As shown in Figure 5-10)

- User can verify whether entered FTP parameters are correct or not. To do so user can hit the “Run FTP Test” button as shown in the figure 5-10. In this case gateway will try to connect to the server and upon successful connection it will upload a “TEST FTP” file which can be seen at the server.

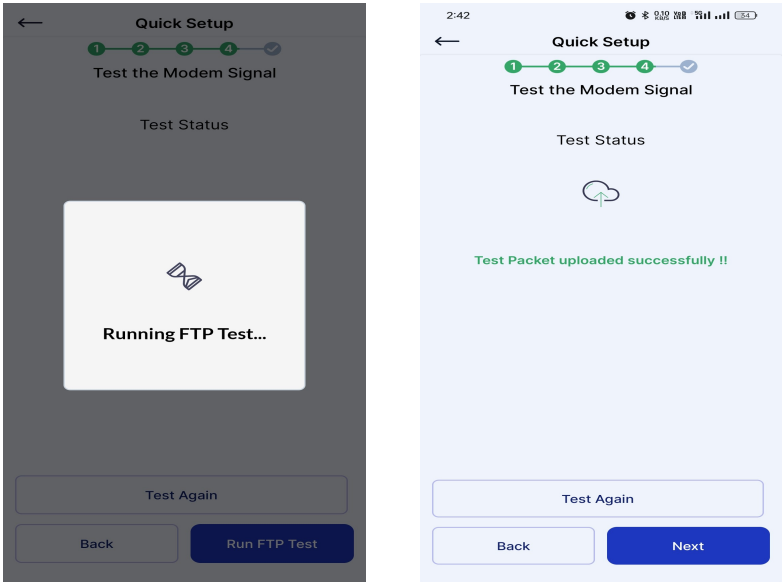


Figure 5-10