User Guide

TxWireless EGDE RTK Starter Kit

With High Precision GNSS.

TxWireless EDGE RTK Starter Kit

Connectivity device and software platform
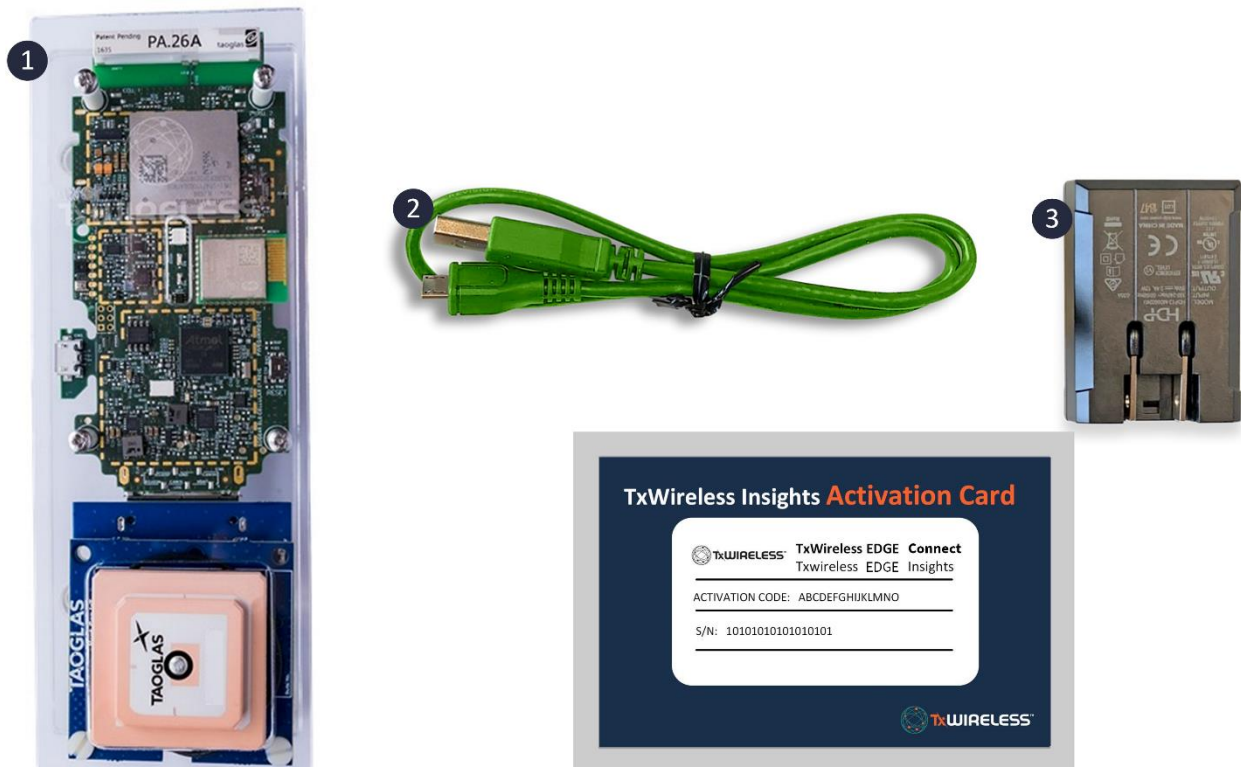
User Guide

Contents

1. Introduction

The **TxWireless EDGE RTK Starter Kit** with **High Precision GNSS** enables real time insights and intelligence to help your enterprise save costs, increase revenue, and enhance compliance. It is a next-generation IoT device with cellular, Bluetooth, and on-board sensor capabilities with a cloud-based connectivity and device management platform.

1.1 What's in the Box?
On receipt of your **TxWireless EDGE RTK Starter Kit Solution** the following items should be included in the pack:

1. Taoglas EDGE RTK Starter Kit with High Precision GNSS
2. Micro-USB Cable
3. USB Power Supply - US Version (Regional adapters supplied with other SKU's)
4. TxWireless EDGE Insights Activation Card

1.2 Support
For technical support please contact **support@TxWireless.com**

1. Go to **https://www.txwireless.com/txw/rtk-kit/** to access
    a. Datasheet
    b. User Guides

2. Setup

2.1 Device Setup

1. To power on the EDGE RTK Starter Kit press the **Power Button** once.
2. The EDGE RTK Starter Kit should be **fully charged before use**, using the provided power supply. When you plug the EDGE RTK Starter Kit into the provided USB power supply, the **USB Power LED** will illuminate. If the EDGE RTK Starter Kit requires charging, the **Charge Status LED** will illuminate, otherwise the **Charge Status LED** will remain off. The EDGE RTK Starter Kit is not intended to be charged using a computer USB.
3. Once powered on and initialised, the **User LED** will flash white **3 times**.
4. At this stage you can **check the battery level** by pressing the **Power Button once**. The **User LED** will blink a number of times according to the battery level. Find more information on this in the **Device Overview section below**.
5. The device will start uploading to EDGE Insights straight away. To view any uploaded samples, you will need to register an account and activate your device on locate.taoglas.com
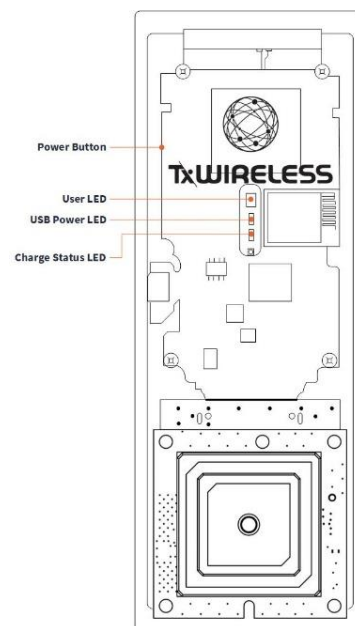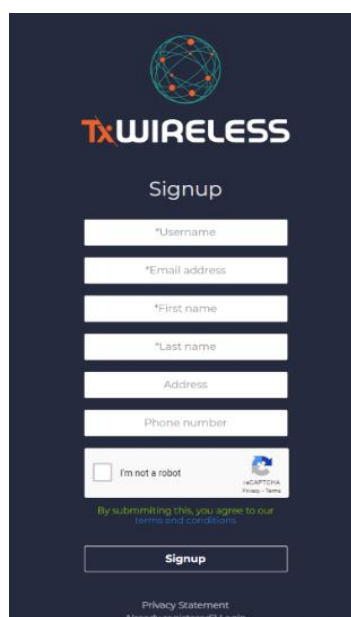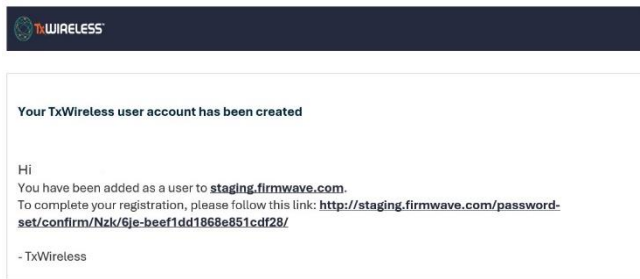

2.2 Account Setup

1. To create an EDGE Insights account for your EDGE RTK Starter Kit devices, navigate to connect.taoglas.com and click on 'Sign Up'.
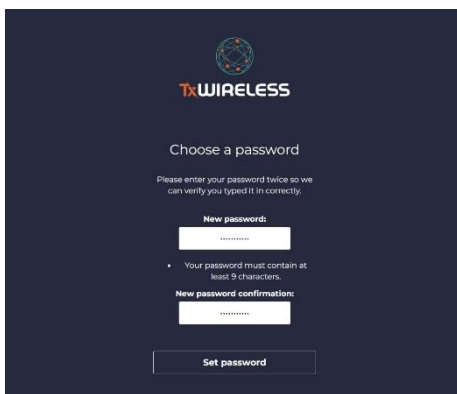

2. Create a **username** and enter your details.

3. Once your information has been submitted, you will need to confirm your registration by clicking the link sent to the email address provided.


**4.** Upon clicking the link, a browser will open, and you will be requested to create a password.

5. After entering and confirming your password, registration is now complete, proceed to device activation.

2.3 Activating your Device

1. Using the details registered in the sign-up process, you will be required to login to the TxWireless Insights platform in order to register your TxWireless EDGE RTK Starter Kit.
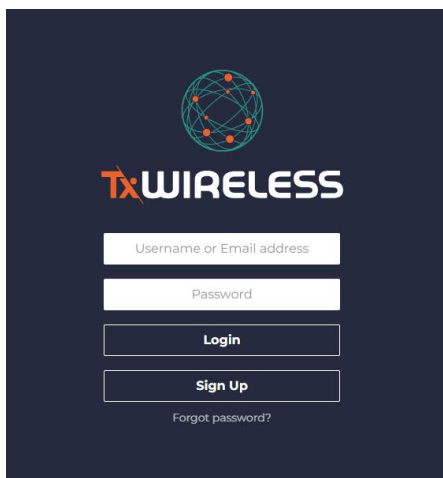

2. The first time you log in, you will receive a popup message notifying you that you have not activated any devices. Click on the **'Devices Page'** button on the pop up, this will direct you to the device list page.
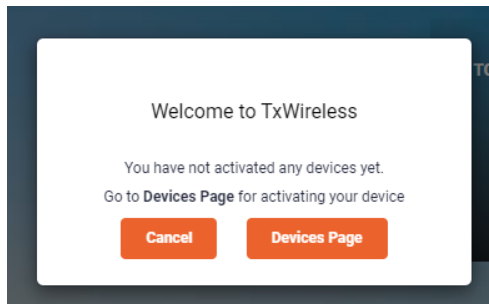
3. To activate your TxWireless EDGE RTK Starter Kit, click '**Activate New Device'** at the bottom of the page, a popup window will request your TxWireless RTK Starter Kit **S/N** and **Activation Code**. After entering these, click **'Submit'** to finish the activation process. The TxWireless EDGE RTK Starter Kit **S/N** and **Activation Code** can be found on the card included in the box.

4. After entering the EDGE RTK Starter Kit **S/N** and **Activation Code**, click **'Submit'** to activate your EDGE RTK Starter Kit.

5. The TxWireless EDGE RTK Starter Kit will now be listed on the devices page, see an example of this below.
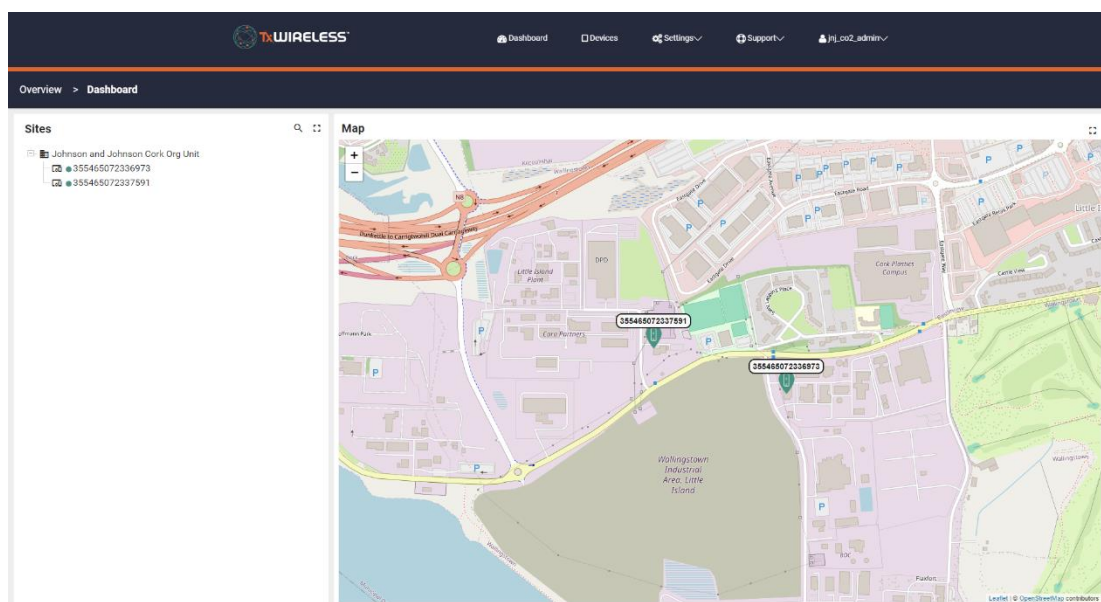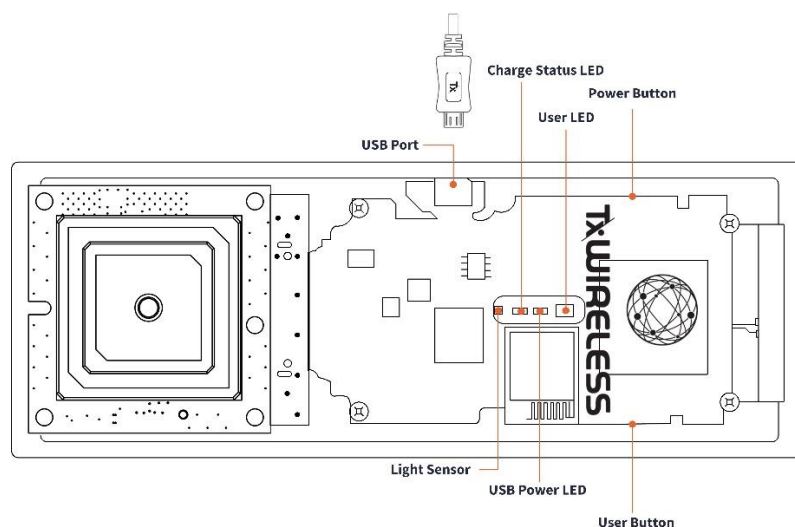

6. If device activation fails, please contact TxWireless support at **support@TxWireless.com**

3. Using the EDGE RTK Starter Kit

3.1 Device Overview

The EDGE RTK Starter Kit has 2 buttons and 3 LED's. See the diagram below for an overview of the LED's and buttons.

☀ This device must be used outdoors with a clear view of the sky

- To power on the EDGE RTK Starter Kit, push the **Power Button** once. When the EDGE RTK Starter Kit is powered on and has successfully initialised, the **User LED** will flash white **3 times** in quick succession.

- To power off the EDGE RTK Starter Kit, hold the **Power Button**, while the EDGE RTK Starter Kit is powering down the User LED will blink red continuously. The **User LED** will stop blinking when the EDGE RTK Starter Kit has completely powered off.

- When you plug the EDGE RTK Starter Kit into the provided USB Power supply, the **USB Power LED** will illuminate. If the EDGE RTK Starter Kit requires charging, the **Charge Status LED** will illuminate, otherwise the **Charge Status LED** will remain off.

- Once powered, the EDGE RTK Starter Kit will automatically connect to EDGE insights to gather configuration information. The EDGE RTK Starter Kit will continue to operate at the sampling and upload intervals set on EDGE Insights, for more information on these intervals see **Device Management Section.**

- The EDGE RTK Starter Kit can be forced into making a connection with EDGE Insights outside of the upload interval using either of the following methods:
  - A single press of the **Power Button**, followed by a single press of the **User Button** will trigger the EDGE RTK Starter Kit to connect to EDGE Insights and gather new configuration information.
  - A single press of the **Power Button**, followed by a longer push of the **User Button** (more than 4 seconds) will trigger the EDGE RTK Starter Kit to sample all configured sensors and upload them to EDGE Insights.

- The EDGE RTK Starter Kit uploads its battery level to EDGE Insights, however, the battery status can also be checked by pushing the **Power Button** once. This will cause the **User LED** to flash red a number of times according to the battery level, as per the table below:

20%	1 Flash
40%	2 Flashes
60%	3 Flashes
80%	4 Flashes
100%	5 Flashes

4. Using TxWireless EDGE Insights

4.1 Insights Navigation

1. When you login to your account, you will land on the **Dashboard** page.

2. You can use the links on the top of TxWireless Insights interface to navigate between your dashboard and account management pages depending on the role associated with your user you may also be able to see the device list page.

   a. Clicking on **'Dashboard'** will bring you to your dashboard where you can see all the sensor data uploaded by your TxWireless EDGE RTK Starter Kit.

   b. Clicking on **'Devices'** will bring you to your device list page, from here you can manage each of the devices you have activated on your account.

   c. Clicking on **'Settings'** will display a dropdown with various account management options, including:

      i. Add/edit Users

      ii. Edit Device Notification Rules

      iii. Edit Device Notification Groups

      iv. Edit Device Notification Contacts

   v. Add/edit Organization Units
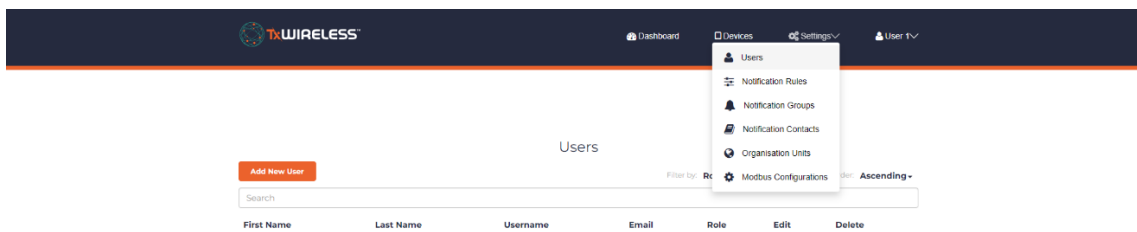
   d. Clicking on **'Username'** will display a dropdown with various account management options, including:

      i. Changing your password

      ii. Editing your account details

      iii. Logging out of your account

4.2 Dashboard

1. When the dashboard view loads initially, you are presented with an overview of all your devices.

   a. The top left shows each device your user role allows you to view, broken down by organization unit.

   b. The right shows a map of each device your user role allows you to view.

   c. The bottom of the page shows an overview of the table for important parameters on your devices.
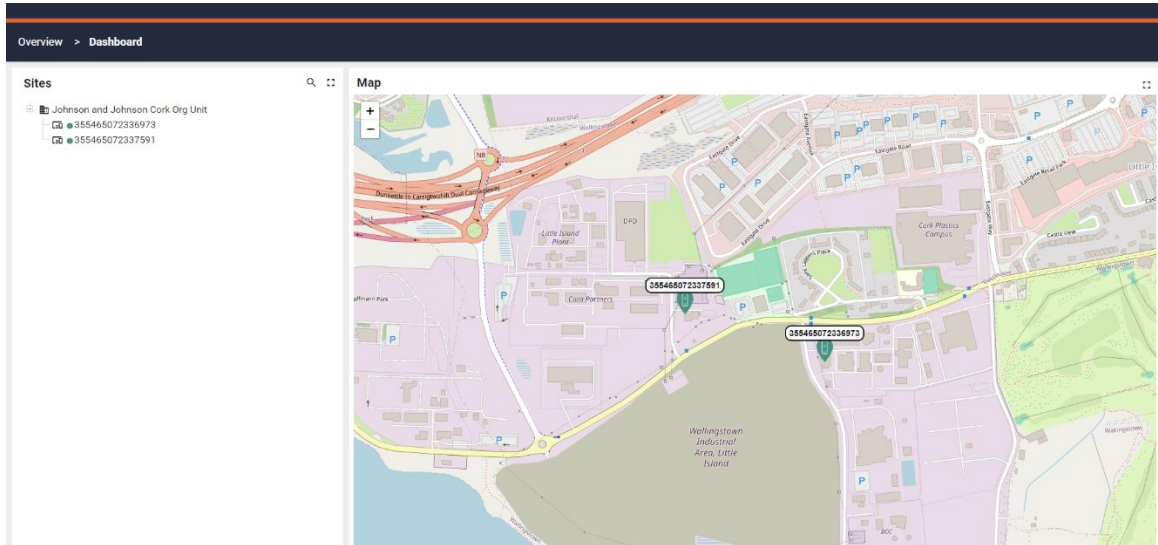
2. To get more details for a particular device, you can click on either the device in the panel on the top left or on the device overview table at the bottom of the screen. You will be presented with the following dashboard page.

3. Realtime and historic sensor data for each of your devices can be viewed on the dashboard tab of TxWireless Insights.
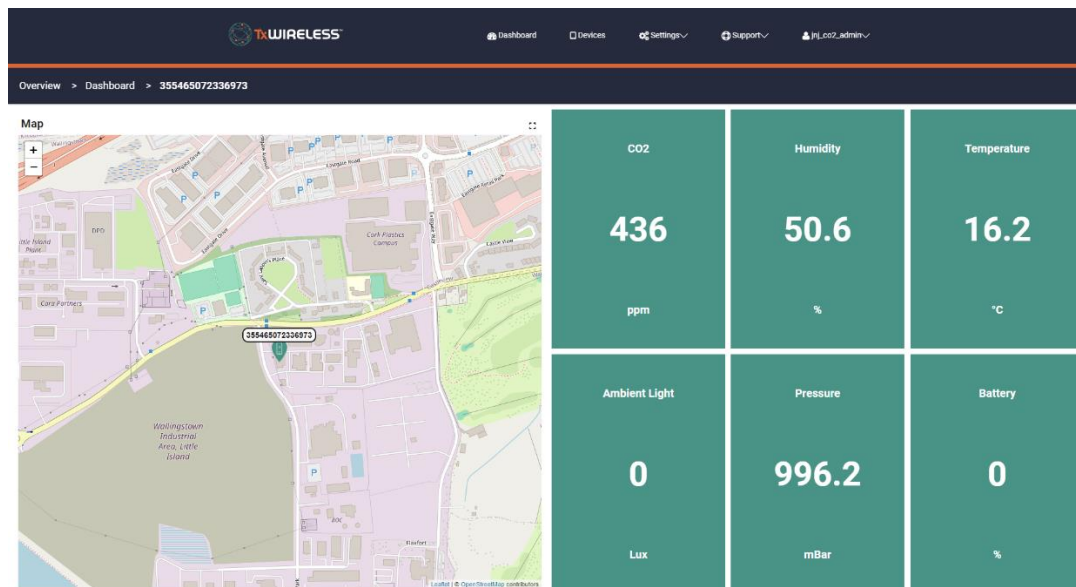
   a. From this page you can see live sensor data from the gateway, the latest cellular network information and the gateway's location on a map.

   b. To view the historical information for a device you can click on a widget to view a graph of the last 30 days.

   c. By clicking on the pin on the map you will be given the option to:

      i. Open the device location on google maps.

      ii. View the route map of the device showing its location over a period of time.

4.3 Device Management

1. Depending on the role assigned to a user they can edit the details for an individual device by clicking the edit icon(⬛) on the **devices** page.

2. This will direct you to the **Edit Device** page, from here you can amend the following:

   a. **Device Name**, here you can enter a customized name for your TxWireless EDGE RTK Starter Kit.

   b. **Address**, here you can enter your address.

   c. **Upload Interval**, this is the rate at which the TxWireless EDGE RTK Starter Kit will upload recorded sensor samples to TxWireless Insights.

   d. **Upload Retries**, in the event where the TxWireless EDGE RTK Starter Kit fails to upload samples, this is the number of times it will attempt to upload before backing off.

   e. Depending on the permissions associated with your users, you may be able to select the following:

      i. Controller Type

   f. The sampling intervals for both sleep and real time modes:

      i. Battery

      ii. Location

      iii. Analogue Inputs

      iv. Digital Inputs

Dashboard   Devices   Settings∨   Support∨   jnj_co2_admin∨

Edit Device

Parameters   Display Mode

Device Name   355465072336973

Device S/N   355465072336973

Device IMEI

BLE Name

Address   Wallingstown, County Cork, T45 P663, Ireland

Upload Interval   00:15:00

Upload Retries   3

Notification Rules   Select Rules

Device Parameters

Edge-Connect-CO2

Temperature - Temperature Sense Interval
15 minutes

Humidity - Humidity Sense Interval
15 minutes

Ambient Light - Ambient Light Sense Interval
15 minutes

Battery - Battery Sense Interval
15 minutes

Pressure - Pressure Sense Interval
15 minutes

Shock - Shock Sense Interval
15 minutes

CO2 - CO2 Sense Interval
00:02:00

Cancel   Submit

4.4 User

1. To add a new user so that they can view the devices you have activated on your account, click 'Settings' followed by 'Users'.

2. The users list page will appear, click 'Add New User', which will bring you to a page which allows you to add a new user.

3. On this page enter the:

   a. User's email address

   b. User's username

   c. User's First name

   d. User's Last name

   e. User's Address

   f. The role associated with the user; this controls the permissions associated with the user.

   g. See Appendix 5.1 for information on the different permissions for each role.

   h. The organization units the user can view.

4. Click 'Submit' to add the user.

5. A new user will be emailed informing them of their new account.

4.5 Notification Rules/ Groups

1. TxWireless Insights allows you to notify a group of contacts based on an uploaded sensor value.

2. To do this you will first have to add a contact to TxWireless Insights, click **'Settings'** followed by **'Notification Contacts'** at the top of the screen.

3. A page listing all the contacts associated with your account will appear, this will be empty if no contacts have been added. Click the **'Add New Contact'** button.
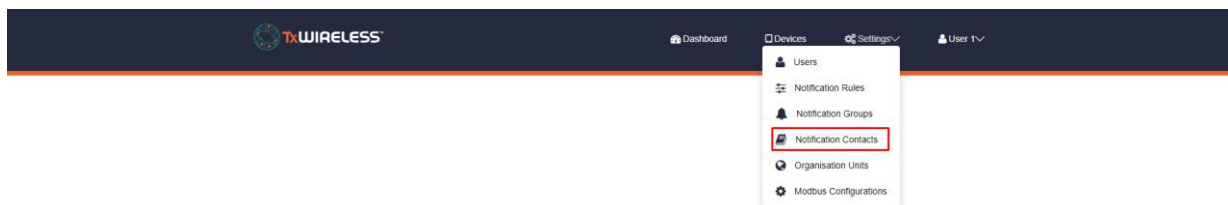
4. On the next screen, enter the name and email address of the contact you want to notify, then click **'Submit'**.

5. Repeat steps 3 and 4 multiple times to add multiple contacts, regardless of whether or not they are TxWireless Insights users.

6. After adding all the contacts, you wish to notify, click **'Settings'** followed by **'Notification Groups'**. This will display a list of your notification groups, which will be empty initially.
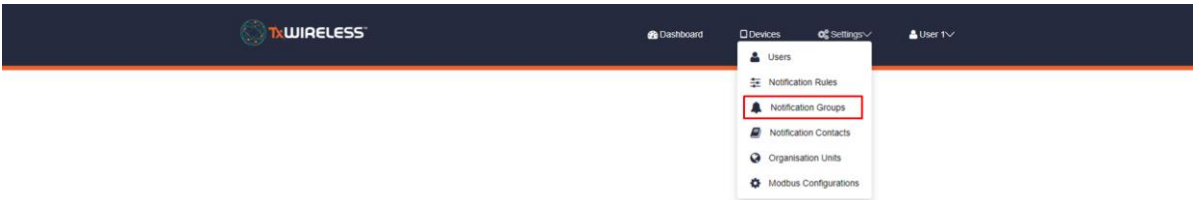
7. Click, **'Add New Group'**, on the screen that follows, please:

    a. Enter the name you wish to give the notification group

    b. Select the contacts you wish to add to the group.

c. Select the max frequency you wish to notify the group, for example selecting **'Once a day'**, will only notify the group once in a 24-hour period, regardless of the number of times the rule associated with the notification is triggered.

8. Once you have entered the above information, click **'Submit'** to create the group.

9. Now that the group has been created, you will be required to add a rule which will trigger the notification. Click **'Settings'** followed by **'Notification Rules'**. This will bring you to your list of rules. To add a new rule, click **'Add new Notification Rules'.**

10. On the window that appears:

    a. Give the rule a name.

    b. Select the sensor you wish to base the rule on.

    c. Select the operator.

    d. Enter a threshold.

    e. Select the notification group.

Create a new Notification Rule

Select Metric: [dropdown]

Information:

Name: [ ]

Severity: [WARNING]

Enable: [On]

Devices:

Apply to: [Select Devices]

Threshold:

Level: [Less-than (<)] [0]

Notification List:

Select the group that will receive the notifications

Groups: [dropdown]

Notification Message:

Message sent by email when the notification is triggered

The above screenshot will trigger the notification if a temperature sample with a value less than 0°C is uploaded to TxWireless Insights.

11. Once all the information has been completed, click **'Submit'.**

12. The rule is now available to apply to the devices associated with your account.

13. To do this, navigate to the devices list page by clicking **'Devices'**.

14. Click the edit icon(🖉) on the device you want to add the rule to, this will bring up the device edit page.

15. Select the rule from the **'Notification Rules'** dropdown as in the screenshot below and click **'Submit'**.

Edit Device

4.6 Organization Units

1. TxWireless Insights allows users to manage the deployment of RTK Starter Kit devices using organization units, this allows blocks of devices to be assigned to subgroups with different permission levels.

2. To add a new user so that they can view the devices you have activated on your account, click 'Settings' followed by 'Organization Units'.

3. The users list page will appear, click 'Add New Organization Unit', which will bring you to a page which allows you to add a new organization unit.

4. Using this page you can:

   a. Name the Organization Unit

   b. Select the parent organization unit to which the new organization unit belongs from the 'Parent Organization Unit' drop down.

   c. Select the devices which belong to this org unit using the 'Devices' dropdown.

   d. Select which users should be able to view this org unit using the 'Users' dropdown.

   e. Enter the 'Address' where the organization unit is based.

   f. Click 'Submit' to add the organization unit.

4.7 Support

1. To access Product Support, click 'Support' followed by 'Contact US' which will bring you give you up to date contact information for the TxWireless team.
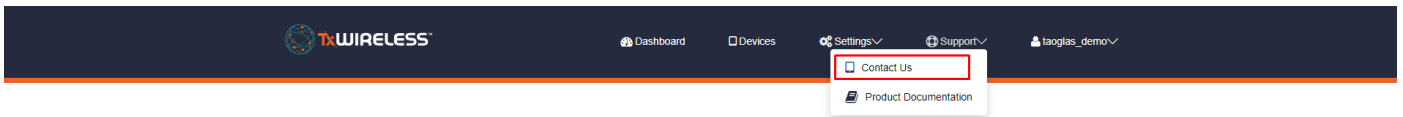
2. To access the User Guide and other product documentation click 'Product Documentation', which will bring you to the documentation portal on the TxWireless website.
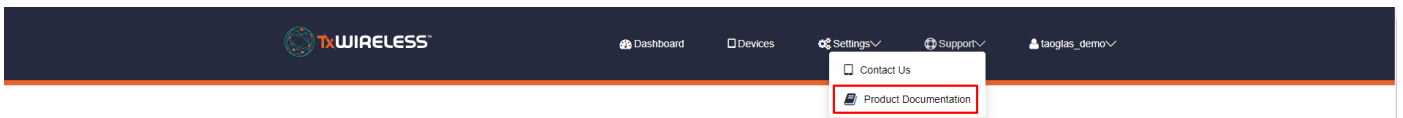
5. Appendix

5.1 FAQ

For technical support please contact **support@TxWireless.com**

5.2 Security

The TxWireless EDGE RTK Starter Kit device security is provided by four mechanisms:

1. Connection to the Cloud-based components via HTTPS, with the server's public certificates held on the TxWireless EDGE RTK Starter Kit device.
2. Authentication of the device by the TxWireless Insights Platform, with the unique and individual private key held securely in a cryptographic coprocessor.
3. Whitelisting of the domains to which the TxWireless EDGE RTK Starter Kit APN can connect –TxWireless Insights and TxWireless Insights Platform and NTP servers only.
4. The device periodically reports its configuration hash, firmware versions, and certificate bundle version to the TxWireless Insights Platform. A report is sent each time a device is powered up, or when the configuration, certificate or firmware has changed.

5.3 Safety and Regulatory Requirements

Warning: Failure to follow instructions could pose a risk to safety and noncompliance with regional laws and regulations.

Warning: DO NOT SHORT CIRCUIT, DISASSEMBLE, CRUSH, PENETRATE OR INCINERATE.

BATTERY MAY LEAK OR EXPLODE IF HEATED ABOVE 100 °C (212 °F).

Warning: HAZARDOUS AREA WARNING: This instrument has not been designed to be intrinsically safe for use in areas classified as hazardous locations. For your safety, DO NOT use it in hazardous (classified) locations.

Caution: In the case of an emergency, degraded performance will occur if wireless reception is inhibited.

Note: The device has an operating range between -20 and +60 degrees Celsius (-4 to 140 Fahrenheit).

The device can be safely charged in an ambient temperature range of between 0 – 40 degrees Celsius (32-104 degrees Fahrenheit).

Note:

a) Do not disassemble or open crush, bend or deform, puncture or shred.

b) Do not modify or remanufacture, attempt to insert foreign objects into the battery, immerse or expose to water or other liquids, expose to fire, explosion or other hazard.

c) Only use the battery for the system for which it is specified.

d) Only use the battery with a charging system that has been qualified with the system per CTIA Certification Requirements for Battery System Compliance to IEEE 1725. Use of an unqualified battery or charger may present a risk of fire, explosion, leakage, or other hazard.

e) Do not short circuit a battery or allow metallic conductive objects to contact battery terminals.

f) Replace the battery only with another battery that has been qualified with the system per this standard, IEEE-Std-1725. Use of an unqualified battery may present a risk of fire, explosion, leakage or other hazard. Only authorized service providers shall replace battery. (If the battery is non-user replaceable).

g) Promptly dispose of used batteries in accordance with local regulations

h) Battery usage by children should be supervised.

i) Avoid dropping the device or battery. If the device or battery is dropped, especially on a hard surface, and the user suspects damage, take it to a service center for inspection.

j) Improper battery use may result in a fire, explosion or other hazard.

Caution: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Federal Communication Commission Interference Statement

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.

This device 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 or more 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 the equipment.
• The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

RF Exposure Information (SAR)

This device meets the government's requirements for exposure to radio waves. This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

The exposure standard for wireless device employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg. *Tests for SAR are conducted using standard operating positions accepted by the FCC with the device transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power level, the actual SAR level of the device while operating can be well below the maximum value. This is because the device is designed to operate at multiple power levels so as to use only the poser required to reach the network. In general, the closer you are to a wireless base station antenna, the lower the power output.
The highest SAR value for the model device as reported to the FCC when worn on the body, as described in this user guide, is 1.1 W/Kg (Body-worn measurements differ among device models, depending upon available accessories and FCC requirements.)

While there may be differences between the SAR levels of various devices and at various positions, they all meet the government requirement.

The FCC has granted an Equipment Authorization for this model device with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines. SAR information on this model device is on file with the FCC and can be found under the Display Grant section of **www.fcc.gov/oet/ea/fccid** after searching on FCC ID: WYPEU0312.

For body worn operation, this device has been tested and meets the FCC RF exposure guidelines for use with an accessory that contains no metal and be positioned a minimum of 1 cm from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

TxWireless.com