

User Guide

TxWireless EDGE IG20

Industrial IoT Gateway and device management and software platform

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Industrial IoT Gateway and
software platform

User Guide

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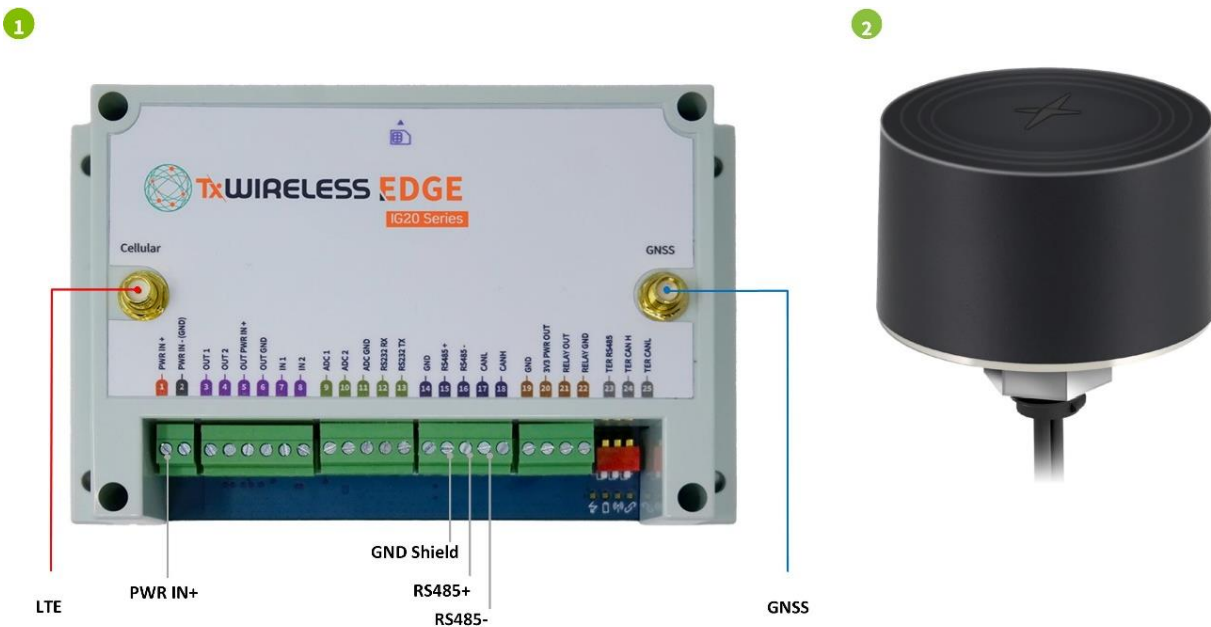
1. Introduction

The TxWireless EDGE IG20 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 Insights Solution the following items should be included in the pack:

1. TxWireless EDGE IG20 industrial gateway
2. Along with the IG20 Series Gateway box you will receive a separate package with the Taoglas MA114 antenna that corresponds to your kit.



For IG20 Installation Guide please see [TxWireless EDGE IG20 Install Guide](#)

For MA114 Installation Instructions support please see [Taoglas MA114 Installation Guide](#)

For MA114 antenna datasheet please see <https://www.taoglas.com/datasheets/MA114.pdf>

1.2 Support

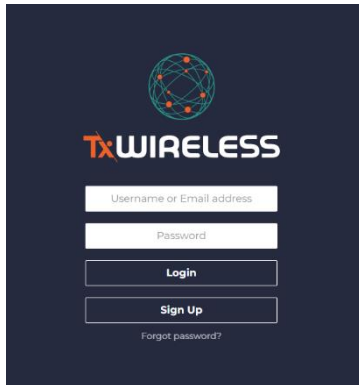
For technical support please contact support@TxWireless.com

1. Go to <https://www.txwireless.com/txw/edge-ig20/> to access
 - a. Datasheet
 - b. User Guides

2. Account Set Up

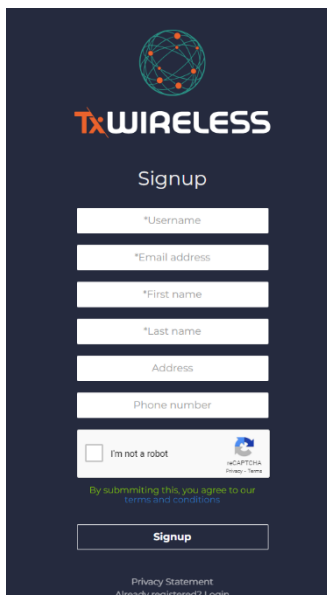
2.1 Account Setup

1. TxWireless To create an EDGE Insights account for your EDGE Connect devices, navigate to industrial.taoglas.com and click on 'Sign Up'.



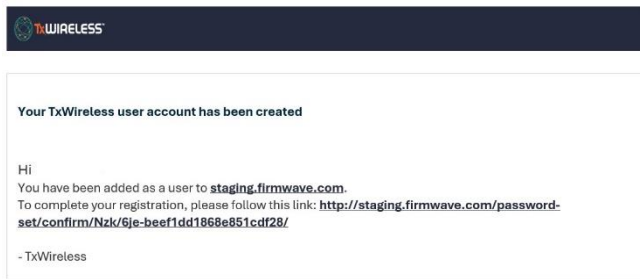
The screenshot shows the TxWireless login page. At the top is the TxWireless logo, which includes a globe icon with network connections. Below the logo are two input fields: 'Username or Email address' and 'Password'. There are two buttons: 'Login' and 'Sign Up'. A link for 'Forgot password?' is located at the bottom of the form area.

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

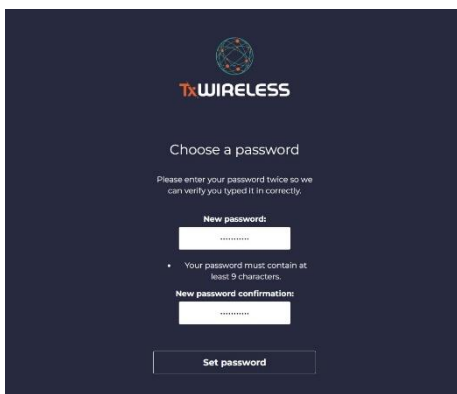


The screenshot shows the TxWireless Signup page. It features the TxWireless logo at the top. Below the logo is the heading 'Signup'. The form contains several input fields: '*Username', '*Email address', '*First name', '*Last name', 'Address', and 'Phone number'. There is a checkbox labeled 'I'm not a robot' with a reCAPTCHA icon. Below the checkbox is a link: 'By submitting this, you agree to our terms and conditions'. At the bottom of the form is a 'Signup' button. At the very bottom of the page, there are links for 'Privacy Statement' and 'Already registered? Login'.

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



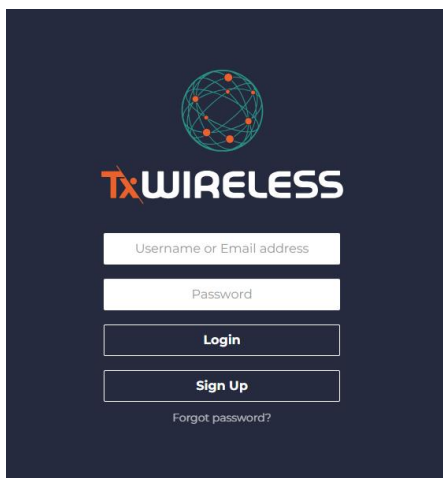
4. Upon clicking the link, a browser will open, and you will be requested to create a password.



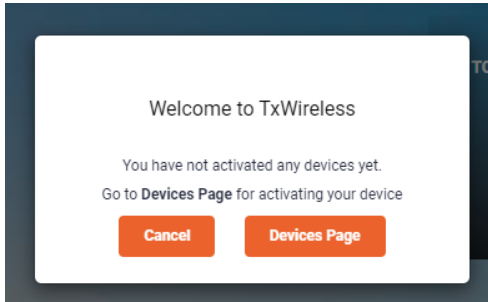
5. After entering and confirming your password, registration is now complete, proceed to device activation.

2.2 Activating your Device

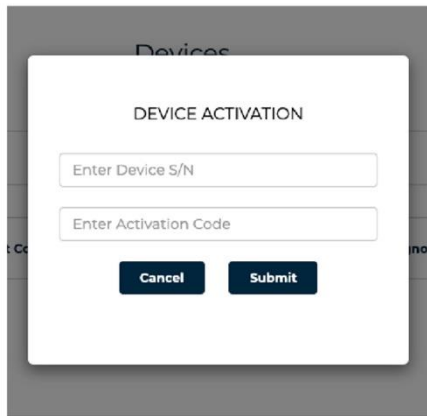
1. Using the details registered in the sign-up process, you will be required to login to the TxWireless Insights platform in order to register your TxWireless EDGE IG20.



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.



- To activate your TxWireless EDGE IG20, click **'Activate New Device'** at the bottom of the page, a popup window will request your TxWireless EDGE IG20 **S/N** and **Activation Code**. After entering these, click **'Submit'** to finish the activation process. The TxWireless EDGE IG20 **S/N** and **Activation Code** can be found on the card included in the box.



- After entering the EDGE IG20 **S/N** and **Activation Code**, click **'Submit'** to activate your EDGE IG20.
- The TxWireless EDGE IG20 will now be listed on the devices page, see an example of this below.

The screenshot shows the TxWireless dashboard with a navigation bar at the top containing 'Dashboard', 'Devices', 'Settings', and 'User'. The main content area is titled 'Devices' and includes a search bar and a table of active devices.

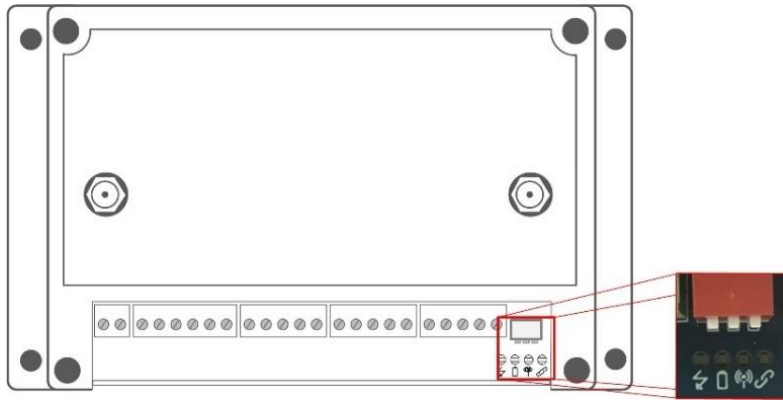
No.	Device	Active	Last Connection	Device Type	Diagnostics	Edit	Delete
1	IG-PL1-005	Yes	2/2/2024, 1:54:54 PM	IG20 Industrial Gateway(Modbus with Sleep)	[Diagnostics Icon]	[Edit Icon]	[Delete Icon]
2	IG-PL1-001	Yes	2/2/2024, 1:55:02 PM	IG20 Industrial Gateway(Modbus)	[Diagnostics Icon]	[Edit Icon]	[Delete Icon]
3	IG-PL1-009	Yes	2/2/2024, 1:55:15 PM	IG20 Industrial Gateway(Modbus with Sleep)	[Diagnostics Icon]	[Edit Icon]	[Delete Icon]
4	IG-PL1-002	Yes	2/2/2024, 1:54:59 PM	IG20 Industrial Gateway(Modbus)	[Diagnostics Icon]	[Edit Icon]	[Delete Icon]

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

3. Using the TxWireless EDGE IG20





3.1 Device Overview

Please refer to the [IG20 Installation Guide](#) for steps on how to install and set up the gateway.



Once it has been installed and powered from a suitable power source, the Power LED will remain illuminated to indicate the power source is sufficient and the device will attempt to connect to an Asset controller and to a cellular network.

Each of the four LED indicators has an icon underneath them to show their function. The Table below shows their meaning.

Icon	Function
	External Power Status
	Battery Status
	Cellular Link Status
	Asset Controller Link Status

The Indicator LED can operate in 5 different states.

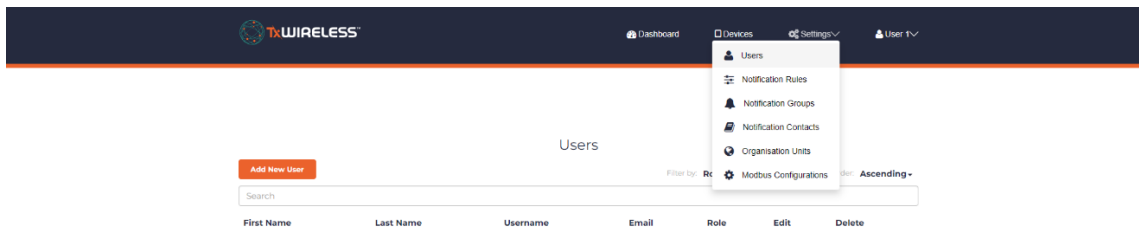
- Off
- On
- Flashing at one flash per second.
- Flashing at one flash every 2 seconds.
- Flashing at one flash every 5 seconds.

Refer to [IG20 Installation Guide](#) to get more information.

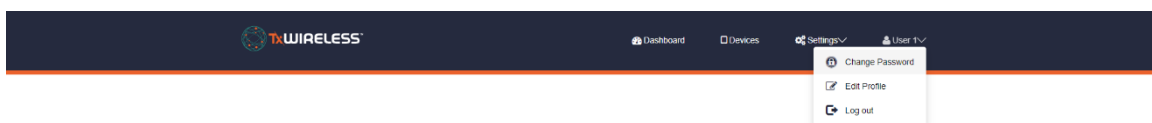
4. Using TxWireless Insights

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 IG20.
 - 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
 - vi. Edit Modbus Configurations

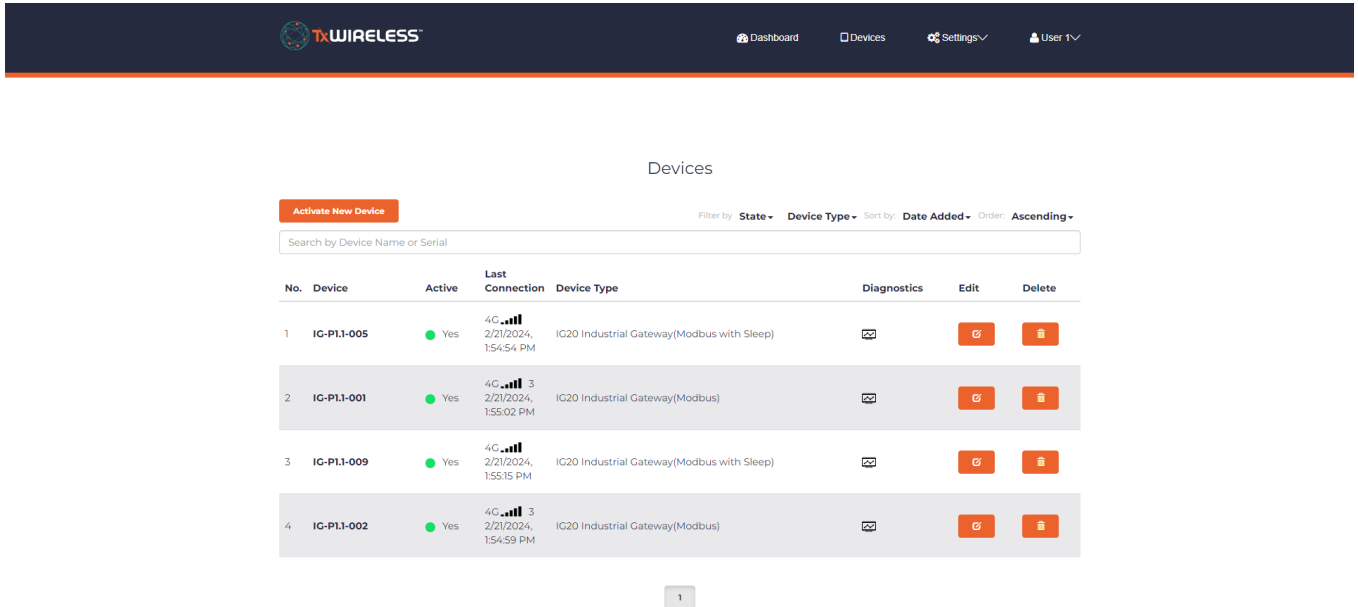


- d. Clicking on **'Username'** will display a dropdown with various account management options, including:
 - i. Changing your password
 - ii. Editing your account details
 - iii. Logging out of your account

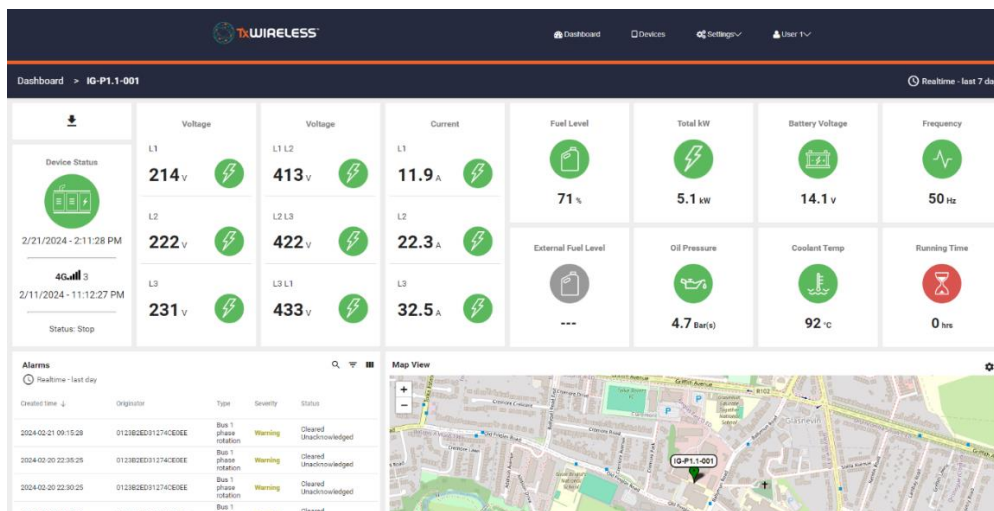


4.2 Dashboard

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 IG20.
 - b. **Address**, here you can enter your address.
 - c. **Upload Interval**, this is the rate at which the TxWireless EDGE IG20 will upload recorded sensor samples to TxWireless Insights.
 - d. **Upload Retries**, in the event where the TxWireless EDGE IG20 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
 - v. Modbus/CAN bus
 - g. The external fuel sensors attached to your gateway, the following can be enabled:
 - i. Analog Fuel Gauge (0.5-4.5V)
 - ii. Digital Fuel Switch (High/Low Switch)
 - iii. BLE Fuel Gauge, an accessory available from TxWireless.

The screenshot displays the TxWireless web application interface. At the top, there is a navigation bar with the TxWireless logo, a 'Dashboard' button, a 'Devices' button, a 'Settings' dropdown, and a 'User 1' profile. The main content area is titled 'Devices' and features a search bar, filter options for 'State' and 'Device Type', and a 'Sort by' dropdown. Below this is a table listing four devices:

No.	Device	Active	Last Connection	Device Type	Diagnos...	State
1	IG-PL1-005	Yes	2/21/2024, 2:04:06 PM	IG20 Industrial Gateway(Modbus with Sleep)	🔍	🔴
2	IG-PL1-001	Yes	2/21/2024, 2:04:39 PM	IG20 Industrial Gateway(Modbus)	🔍	🔴
3	IG-PL1-009	Yes	2/21/2024, 2:04:34 PM	IG20 Industrial Gateway(Modbus with Sleep)	🔍	🔴
4	IG-PL1-002	Yes	2/21/2024, 2:04:30 PM	IG20 Industrial Gateway(Modbus)	🔍	🔴

An 'Edit Device' modal window is open over the second device (IG-PL1-001). The modal contains the following configuration options:

- Battery Life:** 3 Days
- Data Cost:** 3.5MB/12/Month
- External Fuel Configuration Options:**
 - Fuel Switch Enabled: False
 - Analogue Fuel Gauge Enabled: False
 - BLE Fuel Gauge Enabled: False
- Sensors with Modbus:**
 - Battery: 00:00:00
 - Location: 00:00:00
 - Modbus: 00:00:00
- Power Electrical:**
 - Location Sleep: 01:00:00
 - Battery Sleep: 01:00:00
 - Analogue Input 1: 01:00:00
 - Analogue Input 2: 01:00:00
 - Analogue Input 1 Sleep: 01:00:00
 - Analogue Input 2 Sleep: 01:00:00
 - Credence Enabled: False
 - Credence Radius (m): 100
 - Digital Output 1: False
 - Digital Output 2: False

Edit Device

Device Name	<input type="text" value="IG-P13-001"/>	Device IMEI	<input type="text"/>
Device S/N	<input type="text"/>	BLE Name	<input type="text"/>
Address	<input type="text" value="Dublin, Ireland"/>		

Upload Interval	<input type="text" value="00:15:00"/>	Upload Retries	<input type="text" value="3"/>
------------------------	---------------------------------------	-----------------------	--------------------------------

Modbus Config	<input type="text" value="DSE - Prod Copy 27112023 - COM10-19200-2"/>	J1939 Type	<input type="text"/>
BLE Sensor	<input type="text"/>	Device Type	<input type="text" value="IC20 Industrial Gateway(Modbus)"/>

Notification Rules

Device Parameters

Sensors with Modbus

Battery - Battery Sense Interval

Location - Location Sense Interval

Modbus - Modbus reading Interval

Accelerometer - Accelerometer

Acc Threshold - Acc Threshold

Modbus Sleep - Interval to sample Modbus in Sleep Mode

Power Electrics

Location Sleep - Interval between location detections

Battery Sleep - Interval between battery detections

Analogue Input 1 - Analogue Input 1 value

Analogue Input 2 - Analogue Input 2 value

Analogue Input 1 Sleep - Analogue Input 1 value sleep mode

Analogue Input 2 Sleep - Analogue Input 2 value sleep mode

Geofence Enabled - Enable Geofencing

Off

Geofence Radius (m) - Geofence Radius In Meter

Digital Output 1 - Enable/Disable Digital Output 1

Off

Digital Output 2 - Enable/Disable Digital Output 2

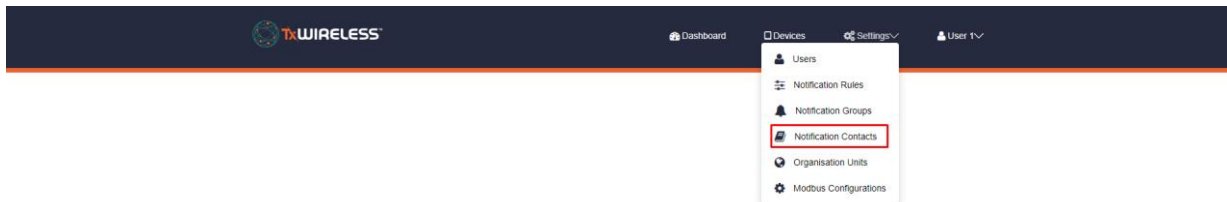
Off

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.

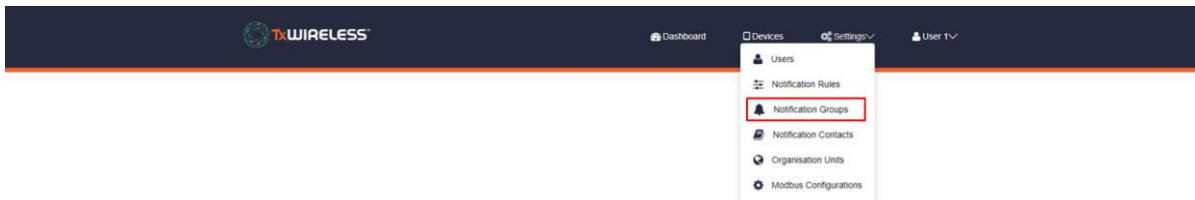


4. On the next screen, enter the name and email address of the contact you want to notify, then click **'Submit'**.

The screenshot shows the 'Add New Contact' form in the TxWireless dashboard. The form includes fields for Name, Email, and Phone. The Phone field has a dropdown for country code (set to +1) and a text input for the number (201-555-0123). There are two toggle switches: 'Receive Email Notifications' (set to On) and 'Receive SMS Notifications' (set to Off). At the bottom right, there are 'Cancel' and 'Submit' buttons.

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.

The screenshot shows the 'Notification Groups' screen in the TxWireless dashboard. At the top left, there is an 'Add New Group' button. Below it is a table with columns for 'No.', 'Name', 'Edit', and 'Delete'. The table is currently empty.

- 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:

Information:

Name:

Severity:

Enable:

Devices:

Apply to:

Threshold:

Level:

Notification List:

Select the group that will receive the notifications

Group:

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

Device Name: Device IMEI:

Device SIN: BLE Name:

Address:

Upload Interval: Upload Retries:

Modbus Config: 31939 Type:

Ble Sensor: Device Type:

Notification Rules:

Device Parameters

Sensors with Modbus

Battery - Battery Sense Interval:

Location - Location Sense Interval:

Modbus - Modbus reading Interval:

Accelerometer - Accelerometer:

Acc Threshold - Acc Threshold:

Modbus Sleep - Interval to sample Modbus in Sleep Mode:

Power Electrics

Location Sleep - Interval between location detections:

Battery Sleep - Interval between battery detections:

Analogue Input 1 - Analogue Input 1 value:

Analogue Input 2 - Analogue Input 2 value:

Analogue Input 1 Sleep - Analogue Input 1 value sleep mode:

Analogue Input 2 Sleep - Analogue Input 2 value sleep mode:

Geofence Enabled - Enable Geofencing:

Geofence Radius (m) - Geofence Radius in Meter:

Digital Output 1 - Enable/Disable Digital Output 1:

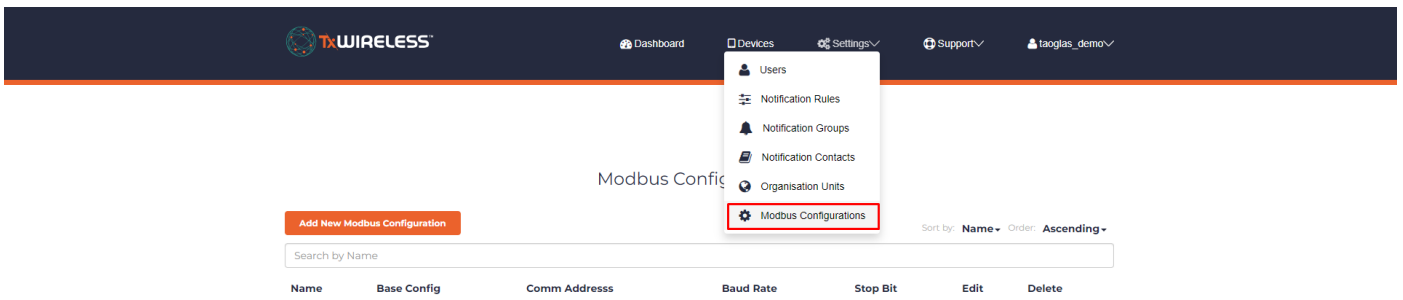
Digital Output 2 - Enable/Disable Digital Output 2:

4.6 Organization Units

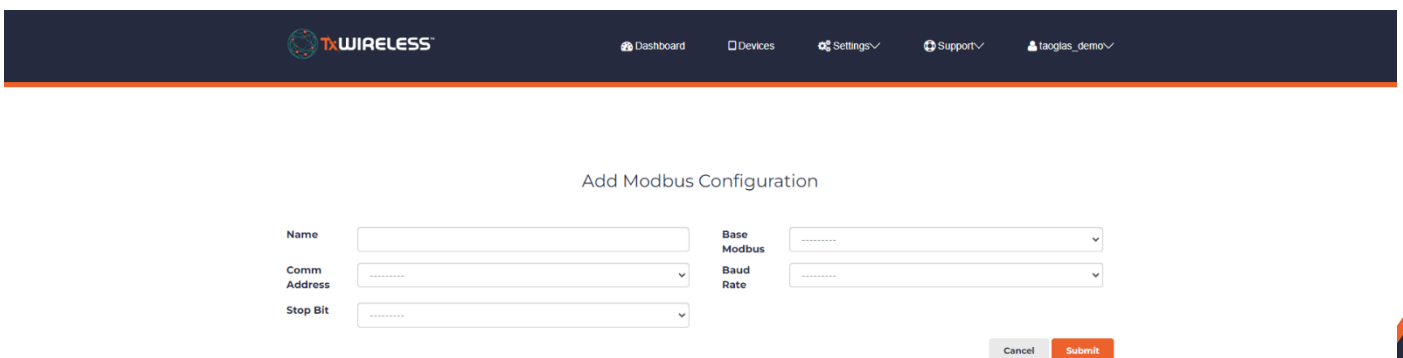
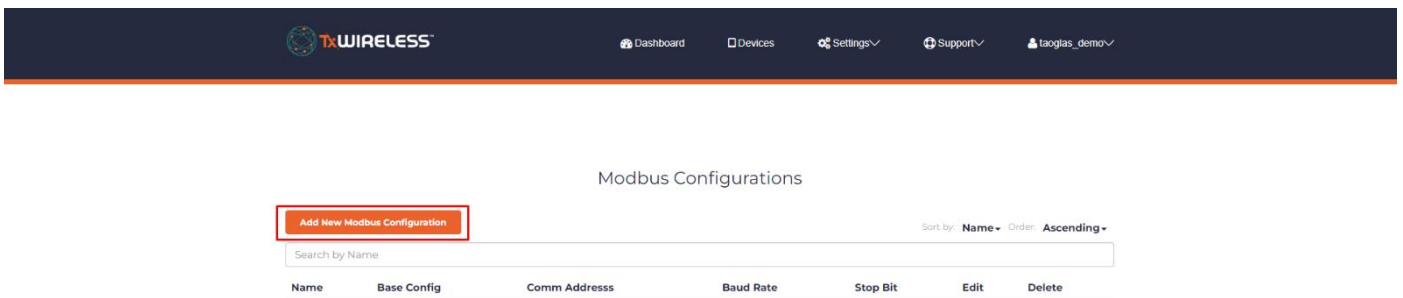
1. TxWireless Insights allows users to manage the deployment of IG20 series devices using organization units, this allows blocks of devices to be assigned to subgroups with different permission levels.
2. To add a new user so that they can view the devices you have activated on your account, click 'Settings' 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 Modbus Configuration

1. TxWireless Insights allows users to modify the communication parameters for each Modbus Slave device, this always users to easily update Baud Rate, Slave Address and Stop bits from the cloud portal.
2. To add a new configuration, click 'Settings' followed by 'Modbus Configurations'.



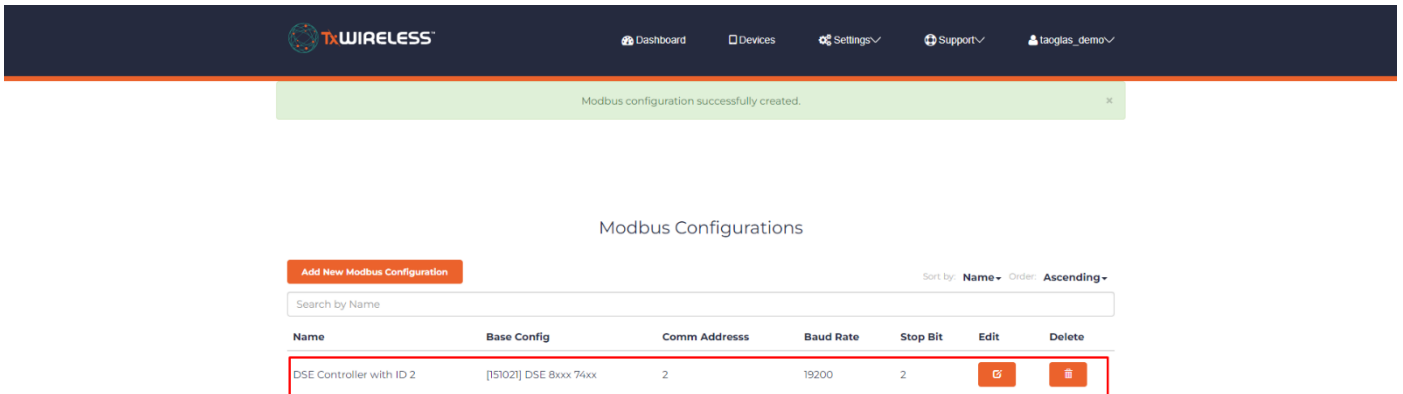
3. The Modbus Configurations list will appear, click 'Modbus Configurations' this will load the create/edit Modbus Configuration page.



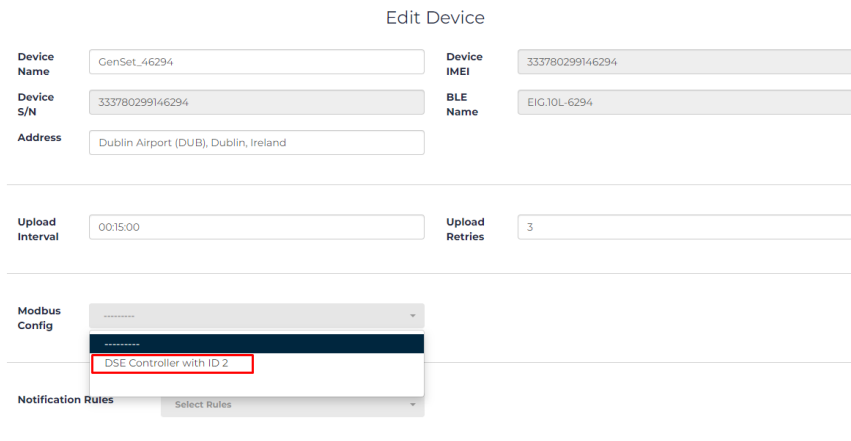
4. Using this page, you can:

- a. Enter a name for the configuration.
- b. Select the 'Base Modbus' configuration for which you want to set the communication parameters for. If the base configuration you want to use is not visible, please contact your TxWireless support representative.
- c. Select the 'Comm Address' for the Modbus Slave device.
- d. Select the 'Baud Rate' for the Modbus Slave device.
- e. Select the number of 'Stop Bits' the Modbus Slave device is expecting.
- f. Click 'Submit' to add the configuration.

5. After clicking 'Submit' the Modbus Configuration list will load again and the newly created configuration will appear.

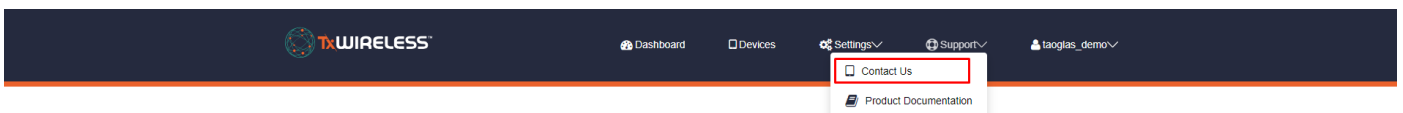


6. To set a device to use this new configuration, go to a device and under the 'Modbus Config' drop down menu select the newly created configuration. Make sure to click 'Submit' at the bottom of the page to save the change.

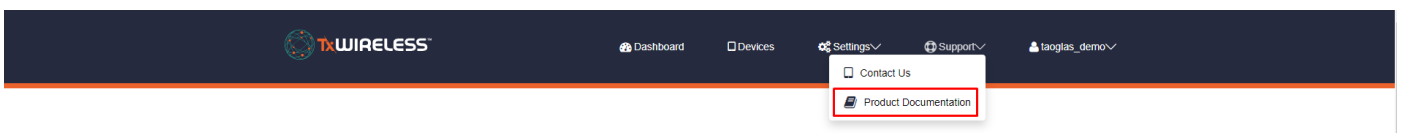


4.8 Support

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 IG20 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 IG20 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 IG20 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 power 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.



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