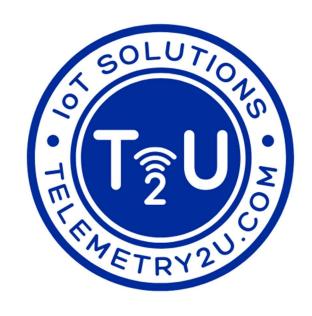
Telemetry2U Pty Ltd



IoT Platform Quick Guide

Version 1.0 <u>Last updated: 12-02-2022</u>

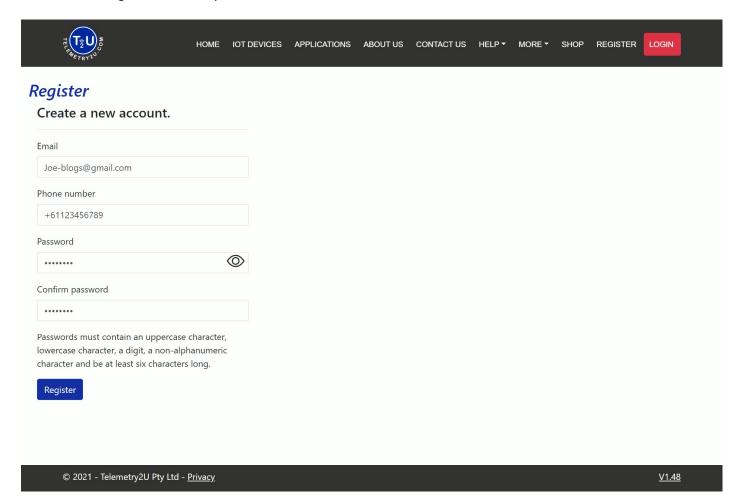
Registering an account with Telemetry2U

You need to register an account with Telemetry2U to get started.

Click the 'Register' button in the top menu and complete the form. You will need to enter your email address, phone number and a password. The password must be greater than 6 characters and contain one capital and one number.

Once you hit the save button, an email will be sent with a confirmation link. Click on the link to complete the registration, otherwise your account will not activate. The confirmation link will land on a page confirming the account registration if it was successful.

You can now 'Login' to Telemetry2U via the button in the main menu.



Setting up your profile

Your first log in will take you to your accounts profile page. You will need to complete this form before you can continue any further. At the very least, you will need to enter your first and last name. It's also important to select your 'Time Zone' and 'Date Format' as this will be used as the time stamp when you start receiving data records.

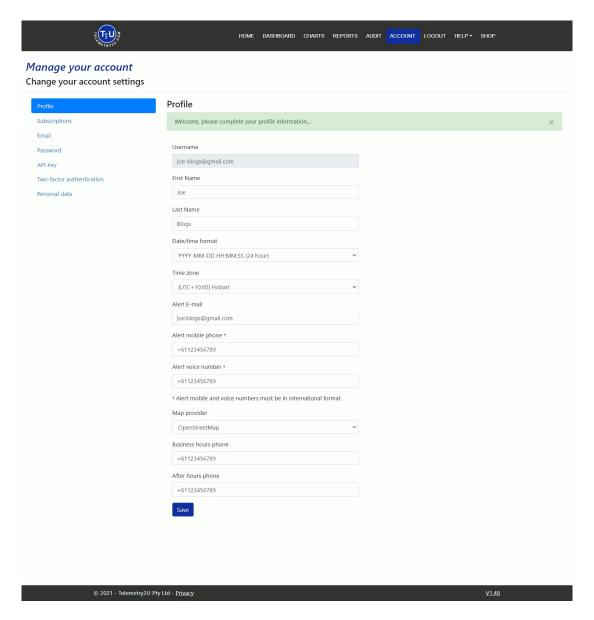
By default, the email you used to register (username) will be used to receive alert notifications, but you may optionally choose to use a different email. You should enter the mobile number(s) to receive SMS and voice alerts. These numbers must be entered in international format (e.g.+61xxxxxxxxxx for Australia).

Click the 'Save' button to complete the process.

If you are an additional user to an existing company account, you need to advise your company administrator that you have completed setting up your profile. Your company administrator will then have to create a new user with the same email address you just used to register to link you to the existing company account. They also need to set your access permissions before you can see any data or make any changes. In this case, you will not have to do anything further.

Your account may be limited depending on how many access permissions your company administrator has granted, thus some of the topics discussed further in this documentation may not apply.

If you are planning to manage your own hardware and account on Telemetry2U, you can start a free 14-day trial as described below.

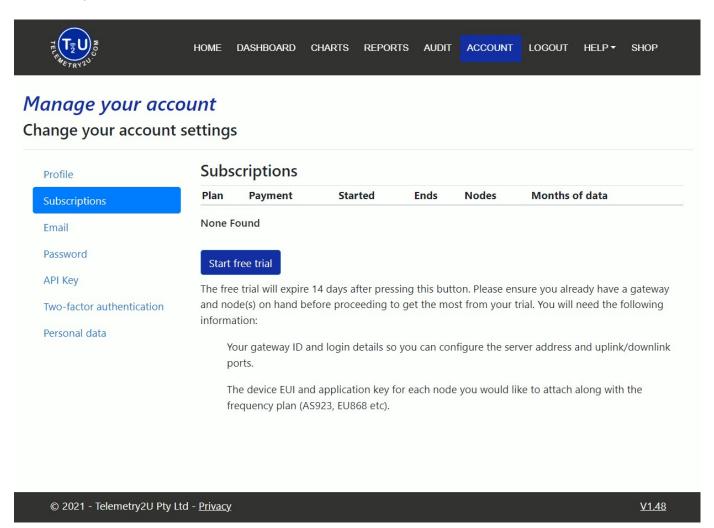


Starting a 14-day trial

If you plan on starting your own account and bringing your own hardware, you need navigate to 'Subscriptions' via the 'Account' page. From here, you can click 'Start free trial'. The trial period runs for 14 days and allows for one gateway with two nodes for a single user. A few features are disabled, including SMS and voice alerts but it is enough for you to get started and confirm Telemetry2U will meet your monitoring requirements. Once you hit the save button, your individual account will be created, and you are ready to get started adding your hardware as described in the latter sections.

Your trial period will last for 14-days but you can upgrade to a paid subscription at any time if you would like to unlock more features.

Your account and data will be deleted after 1-month after the trial period expires if you no not sign up for a paid plan within that period.

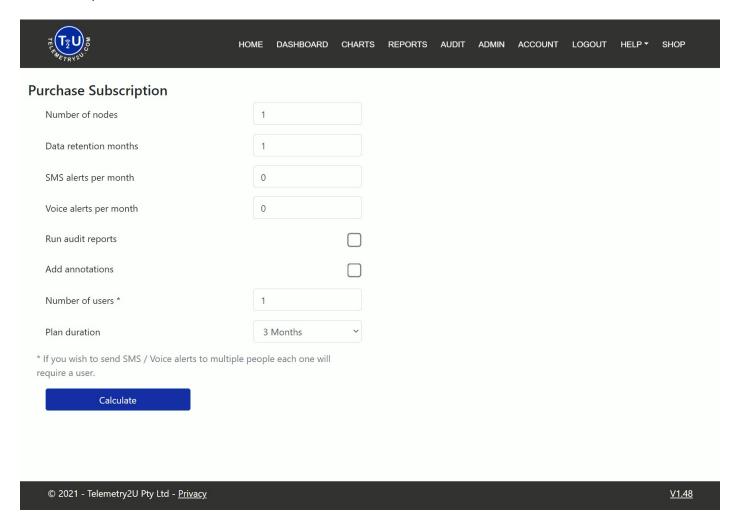


Subscribing to a plan

Once your 14-day trial period has ended, you will need to subscribe to a paid plan to continue using Telemetry2U. You can do this by navigating back to 'Subscriptions' via the 'Account' button. From here, you can click the 'Plan Subscription' button and design a custom plan that perfectly meets your requirements. Complete the form and click the 'Calculate' button and a quote will generated automatically.

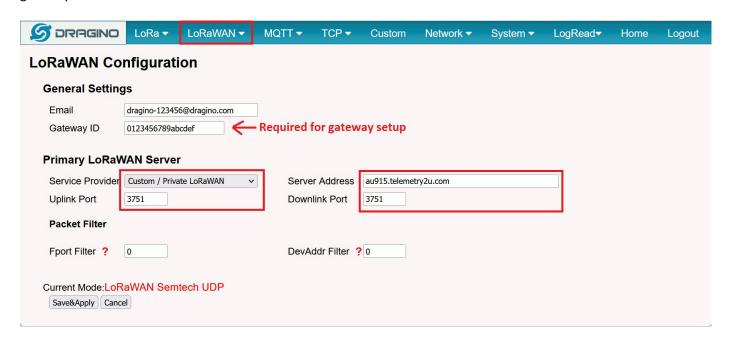
Once satisfied, accept the charges, and complete the transaction with PayPal or with a credit/debit card. You can choose to pay monthly, quarterly or annually.

If you have a large project in mind, please contact us as we may be able offer a better deal through a special customised plan, but this would not be considered for less than 50 nodes.



Configuring gateway settings

Before you can connect a gateway to Telemetry2U, you will need to log into your gateway and configure it correctly. Every gateway is different so you may need to refer to your gateway's user manual. It is important to ensure that your gateway setting match the settings you intend to use on your node(s). Below is an example of a Dragino LPS8 gateway



The gateway must be set to use the 'LoRaWAN Semtech UDP Packet Forwarder'. You will then need to go into the LoRa settings and select which frequency plan you intend to use as well as your choice of Sub-Band (if applicable for the chosen frequency plan). Then go into the LoRaWAN configuration section and choose to use a custom LoRaWAN server. The server address and uplink/downlink port will vary depending on what frequency plan you use. Refer to the table to ensure you use the correct address and port. Make sure you take a copy of the Gateway ID as this will be required in the next step.

Frequency Plan	Server Address	Uplink Port	Dowlink Port
AS923	as923.telemetry2u.com	1700	1700
AS923-2	as923.telemetry2u.com	4462	4462
AS923-3	as923.telemetry2u.com	4463	4463
AS923-4	as923.telemetry2u.com	4464	4464
AU915	au915.telemetry2u.com	3751	3751
CN470	cn470.telemetry2u.com	4466	4466
CN779	cn779.telemetry2u.com	4467	4467
EU433	eu433.telemetry2u.com	4468	4468
EU868	eu868.telemetry2u.com	4469	4469
IN865	in865.telemetry2u.com	4470	4470
KR920	kr920.telemetry2u.com	4471	4471
RU864	ru864.telemetry2u.com	4472	4472
US915	us915.telemetry2u.com	4473	4473

You can <u>read more about gateway configurations and firewall rules here</u> in the documentation.

Add gateway to Telemetry2U

Once you have connected to your gateway and configured it correctly, you will need to navigate to 'Gateway Maintenance' via admin and create a new gateway. Below are the minimum fields required

Gateway ID - This must match the ID used by the gateway. The gateway ID is often found on the label, but it is always available in the gateway settings as described above.

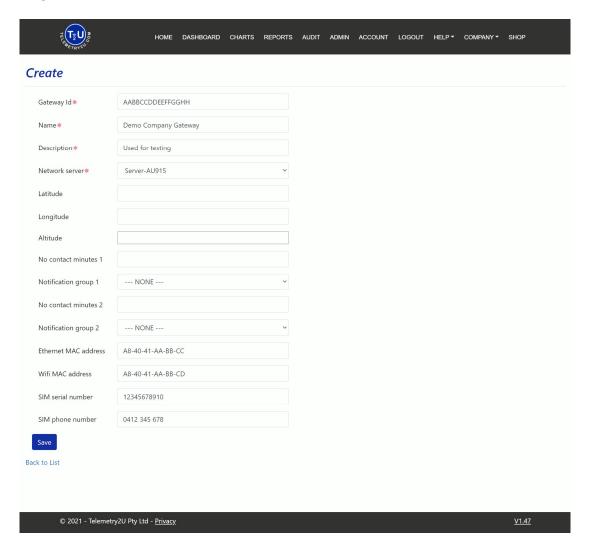
Description – This is the name that will be used to identify your gateway

Network Server – Must match the frequency plan configured in your gateway.

The rest of the fields are optional but can be it handy to keep a record. These fields include the gateways MAC addresses (Ethernet and Wi-Fi) and SIM card details (if you have a 4G gateway).

A LoRaWAN gateway will usually send a 'keep alive' message every 30 seconds and this is used to detect the network connection. You can set 'No contact' notifications so that you will receive a message when the gateway connects/disconnects. When you created your account, an email notification group should have been created automatically that can be used for now. You can later choose to change this so that you receive SMS alerts as well, but you must first configure your notifications groups as described later in this guide.

When you have configured your gateway correctly, you should be able to navigate to 'Gateway Status' via admin to confirm that the gateway has connected to Telemetry2U by observing the 'last seen local time' field. It will say 'Less than a minute ago' if the connection is successful.



Read More

For more detailed information on how to add a new gateway to Telemetry2U, please refer to our <u>gateway Admin</u> section in the documentation.

Configuring node settings

Before connecting your first node, you need to ensure that your gateway is configured correctly and verified that it has connected to Telemetry2U as described in the previous section. It is also important that your nodes settings match the region and frequency sub-band used by your gateway. For more information on how to do this, you will need to refer to your node's user manual.

Add node to Telemetry2U

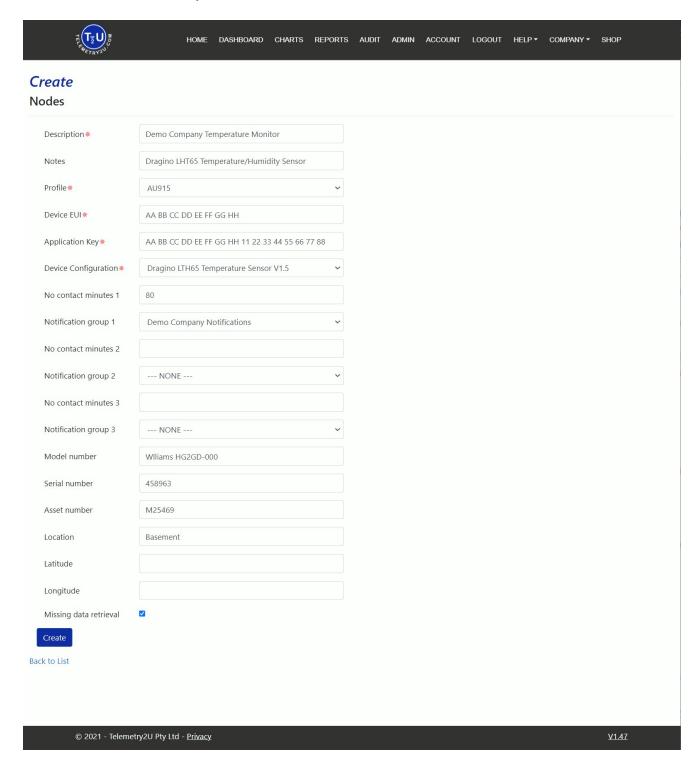
Once logged in, navigate to the 'Node Maintenance' section via 'Admin' and create a new node. Enter all the required details of your node. The following are the minimum settings that are required

- Description This is the name that will be used to identify your node
- Profile Must match the frequency plan selected for use in your gateway. If you intend to use your node in Class-C, you need to select profile XXX-C
- Device EUI A unique HEX key that can often be found on your nodes label. If not, you will need to
- physically connect to your node as described in your node's user manual
- Application Key Also often found on the node label. If not, you will need to physically connect to your node as described in your node's user manual
- Device Configuration This must match the node that you are using. If the node you are attempting to use is not in the list, please contact us and we will look into adding it for you.

There are some optional fields (model number, serial number, asset number, location) that you may choose to enter but they are not required to proceed.

The 'No contact minutes' and corresponding 'notification group' can be used to notify you when a node comes on and offline. You should set this for 3 times the nodes transmit interval (60 minutes if transmit interval is 20 minutes). When you created your account, an email notification group should have been created automatically that will be available in the dropdown box and can be used for now. You can later choose to change this so that you receive SMS alerts as well, but you must first configure your notifications groups as described later in this guide.

Add node to Telemetry2U - Continued



Once you hit the create button, you will be taken back to the node maintenance screen.

You may choose to click on the 'Input Labels' button where you can give each sensor input a unique name. If you choose not to complete this step, each sensor input will be identified by the default name. You may also choose to hide any input that are not in use.

You can now power up your node and confirm that the node has connected to Telemetry2U and is sending in data OK by checking its last receive time on the 'Reports' page linked in the main menu

Read More

For more detailed information on how to add a new node to Telemetry2U, please refer to our <u>Node Admin</u> section in the documentation.

Create and configure notification groups to receive alert messages

When sensors trigger alerts (or when a node/gateway has lost contact), an Email, SMS or voice alert can be sent to all users within a notification group(s).

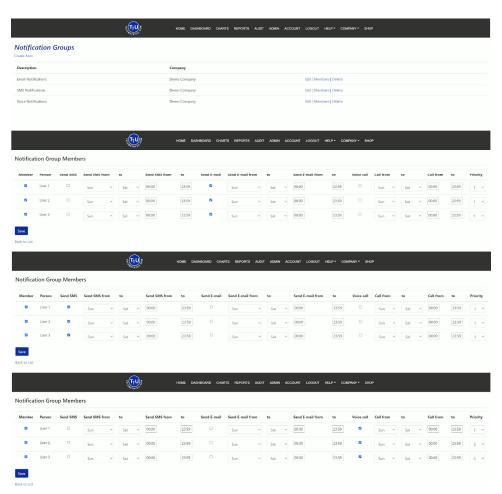
If you created a 14-day free trial account, a notification group would have been created automatically and configured to send emails 24/7. The group will be labelled 'Email xxxxxx xxxxxx' (the first name and last name used in your account profile). You can modify the time filters, if necessary, but you will not be able to configure SMS and voice alerts as they are not available on the trial subscription.

If you have a paid account with SMS and voice, we normally recommend that you create separate notification groups for each type of alert - Email, SMS, and voice. This will offer more flexibility when creating and configuring alerts later.

When editing a notification group, you will see all the users attached to your account and you can select which 'Members' should receive which alerts and during what times. The voice call is persistent, meaning it will contact members in the priority selected. If the first member does not pick up and acknowledge the call with a key press, another call will be made to the next member in the order of the selected priority (Range: 1-3).

Once you have created/modified the notification group(s), you may choose to go back into the node and gateway sections and change 'No Contact' notification.

It is important to note that Email notifications are unlimited, but SMS and Voice Calls are limited monthly. The number you can send is dependent on your plan options selected during sign-up. The trial account offers Email only, however, you can upgrade to a paid plan at any time if required.



Read More

For more detailed information on how to create and edit Notification Groups on Telemetry2U, please refer to our Notification Group section in the documentation.

Create and configure email, SMS and Voice Alerts on sensor inputs

Once you have configured your notification groups, you can create an alert group that will trigger selected notification groups when a sensor passes its limits. Navigate to 'Alert Maintenance' via Admin and create a new alert group with a unique name. You can then edit the alert to configure what sensors you want to monitor and what notification groups will be notified.

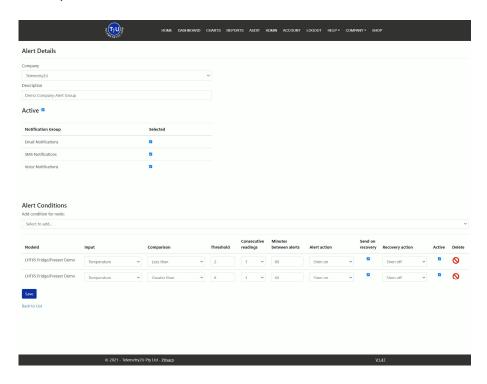
First, select which notification groups you would like to receive the alerts under the 'Notification Group' section at the top of the page. This list will be populated with the notification groups you created in the last section.

To add an alert condition to a sensor, select a node form the 'Add conditions for node' drop-down box. This will add it to the table below. Now select an 'Input' along with a 'Condition'. The most used conditions are 'Greater than' and 'Less than'. The most recent sensor value is compared against the 'Threshold' to trigger a notification.

You can add some filtering with the 'Consecutive readings' option (range: 1-3). If this is set to three, the sensor must be outside its limit for three readings in a row before a notification is triggered and therefore determines the alert delay. Again, with a setting of three consecutive readings and a sensor set for 20-minute sampling means the sensor would need to be outside the limit for 60 minutes before any notifications are sent.

The 'Minutes between alerts' option defaults at 60 and means an alert can only be sent every 60 minutes. This ensures that you won't receive multiple alerts if a sensor hovers around the limit for any reason.

When the 'Send on recovery' box is ticked, another notification will be sent when the sensor falls back within range.



Alert conditions are active by default, but you can turn off individual sensor conditions with the 'Active' checkbox.

Alerts can also be used to trigger actions. An action consists of a command that can sent to a node in the event of an alert. This can be used to control the power to a siren, turn on a water supply, or change the logging rate of a node for example. It offers a level of automation but is not required for basic monitoring applications. This will be covered further in the next section.

Make sure to hit the 'Save' button when you have finished.

Read More

For more detailed information on how to create and edit alerts on Telemetry2U, please refer to our <u>Alerts section</u> in the documentation.

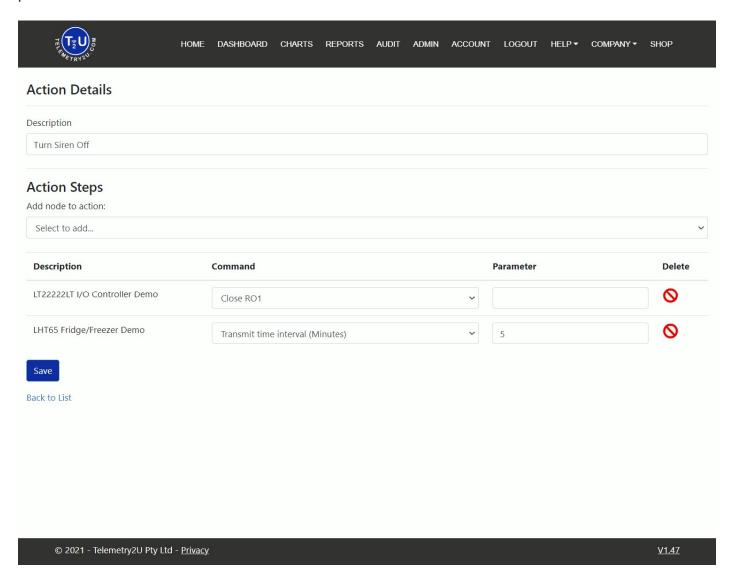
Create and configure actions that can be triggered from alerts

As well as trigger notifications during an alert condition, you can also trigger actions. Actions consist of downlink commands that are automatically sent to a node when a sensor either goes into alert or recovers from an alert. This feature can be used to provide a level of automation. Below are some examples where an action may be useful.

- Turn on a relay for a few seconds to sound a siren if a temperature input deviates
- Turn a water pump on if the soil moisture levels drop too low
- Change the transmission rate from 20-minutes to 5-minutes when a sensor deviates

Create a new action group under 'Action Maintenance' in the admin sections and give it unique name. You can then configure the action to send the required downlink command(s) to any node under your account. A single action can send commands to multiple nodes when called. To do so, firstly, select the node you wish to control from the dropdown box and select which command you want to send. Some commands require a variable 'Parameter' which you can also configure.

Once complete hit the save button. The action will then be available for use in the Alerts page as described in the previous section.



Create a new user(s) and set their access permissions

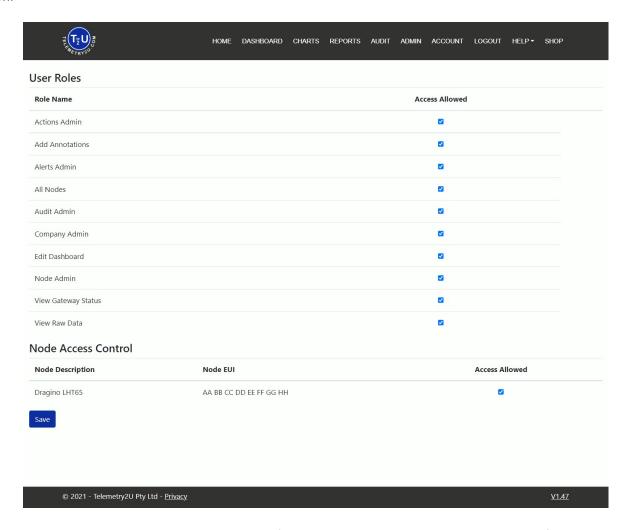
Depending on the plan you subscribed to, you may have the ability to add extra users to your account. There are a couple of options here.

You can create a new user without them registering an account on Telemetry2U they will be able receive alerts, however they will not be able to log in to Telemetry2U and see any data or make any changes.

You can ask the new user to register an account with Telemetry2U first. When you then create a new user under your account with the same email address used for the new registration, their account will be linked to your account, and you can configure their account accordingly.

You can create a new user by navigating to 'User Maintenance' in the Admin section and selecting 'Create User'. Enter all the required fields including the Email, Name, Data format, Time zone, Map provider and contact numbers. Please ensure that the phone numbers are entered in international format otherwise they may not work when notifications are sent.

As the account administrator, you have the control to limit user accounts. You may not want a user to be able to edit alerts or see all nodes for example. This can be done under 'User Access' back on the 'Node Maintenance' page. The checkboxes will define what level of access the user has. If the 'All Nodes' checkbox is ticked, the user will have access to all nodes under the account, otherwise, you need to select which nodes they have access to in bottom section.



At this point, you may want to go back into you notification groups to add the new users and configure their notification settings

Read More

For more detailed information on how to create and manage user accounts on Telemetry2U, please refer to our <u>Company Admin section</u> in the documentation.

Configure audit reports that email automatically on a schedule

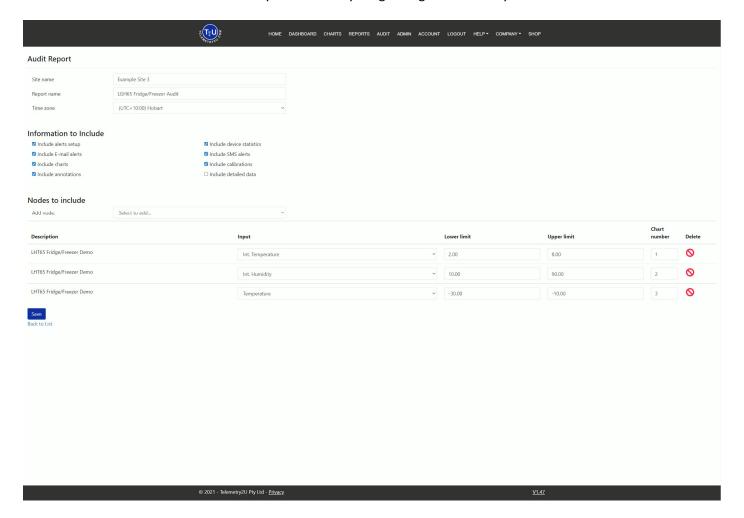
Audit reports provide a complete overview of a node's performance over a selected time frame as well as display the upper and lower limit lines on the charts page(s). Audit reports can be manually downloaded via the "Audit' link in the main menu, but one must firstly be created under 'Admin'.

Click the 'Audit Report' button in the admin section and create a new report. You will need to define a 'Site Name' and a 'Report Name' before saving. You can then edit the Audit Report and select which node(s) you would like to include, and the level of information required.

You can add a node from the drop-down box and then select the 'Input' of interest and define the 'Upper limit' and 'Lower limit'. These limits will be displayed both on the main 'Charts" page and on the audit report charts. Once you hit the save button, the audit report will be available for download.

As well as downloading Audit Reports manually, you can also set them to be email automatically to a notification group by setting up a 'Scheduled Job' under the admin section. To do so, create a new job and give it a clear description. Select which notification group you would like the report sent to and choose 'Run audit report' as the 'Job type'. Select a frequency anywhere from 1-day to 1-year and define what time of day you would like the Audit Report to be sent.

Remember to hit the 'Save' button once you have everything configured correctly.



Read More

For more detailed information on how to create and edit Audit Reports on Telemetry2U, please refer to our <u>Audit report section</u> in the documentation.

Create a dashboard(s) and share with other users

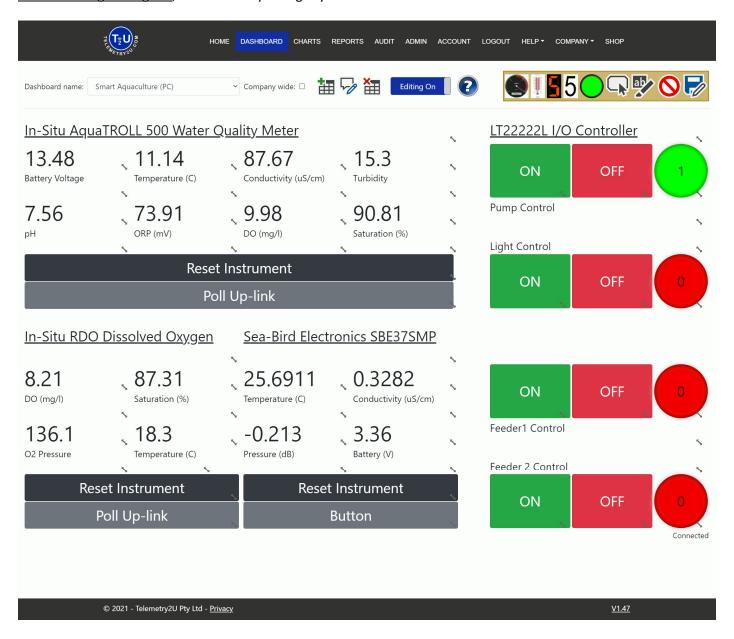
Creating a real-time dashboard can be done on the main 'Dashboard' page linked in the main menu. There are buttons to create, rename and delete dashboards as well as an editing button. You should already have a blank dashboard labelled 'Default' on the main page so you can edit that to get started.

With editing turned on, a new menu should pop up where you can select from a range of widgets that include gauges, indicators, buttons, and text blocks. If you click on a widget, it will land on the main page. The main page is essentially a grid that is 25x blocks across and will go as deep as required. You can drag and drop widgets into position as well as resize them with the arrow in the bottom right corner. This in combination with the widget styling attributes offers plenty of flexibility.

Double click on any widget in the grid to attach a sensor input to be displayed. Select the 'Node' and the required 'Inputs' from the dropdown boxes. Where applicable, you can also adjust the styling attributes. There is no limit to how many widgets you can add to a single page.

To delete a widget from the main grid, make it as small as possible and drag it by the centre over the 'delete' icon in the editing menu.

Once you have finished setting up your widgets, it is important that you hit the save icon in the top right corner before turning editing off, otherwise any changes you make will be lost.



Create a dashboard(s) and share with other users - Continued

When you are satisfied with your dashboard layout, you have the option to make the dashboard 'Company Wide' so that it will be available to all users linked to your account. This can be handy since you can turn off 'Dashboard Editing' for user(s) (under 'User Access' back in 'Node Maintenance) so that only your shared dashboards will be visible to them. This can help keep things simple and consistent for all users.

You can also copy any dashboard to another user's account via the "Copy Dashboard" button in the admin section. Select what dashboard you want to copy to what user account and give the dashboard a name. If you assign a dashboard name that perfectly matches an existing dashboard, the old dashboard will be overwritten with the new.

Notes

- Dashboards can only be edited on a PC you cannot edit a dashboard on a smart phone or tablet.
- You can choose the last receive time for a node from the input list so you can easily see how old the last record received is.
- A widget in the grid with a red border around it indicates that the node has a sensor that is currently in alert
- You can click on any widget that is linked to a sensor input and it will take you the charts page.

Read More

For more detailed information on how to create and manage dashboards on Telemetry2U, please refer to our <u>Dashboard section</u> in the documentation.

Configure the Charts page to display your sensors

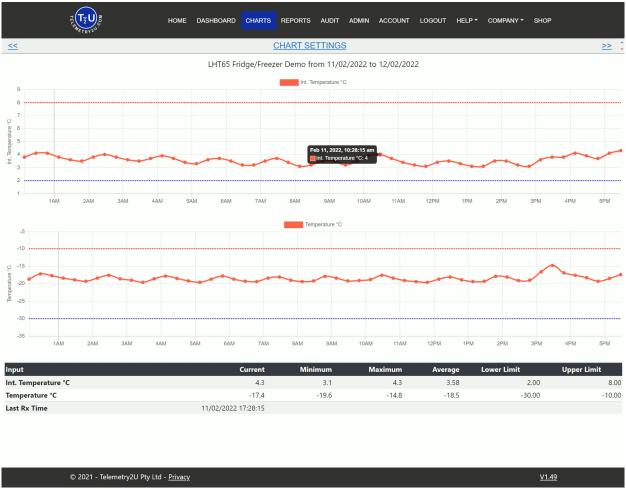
The 'Charts' page linked in the main menu provides a quick and convenient way for you to check on your sensor(s) history as well as the current status and statistics.

The charts page will always load to the last viewed page with the current days data. Click on the 'Chart Settings' link at the top of the page to configure your chart's appearance.

Firstly, select the 'Node' of interest from the list and select your required date range. You can either use the buttons to display a block of data (1-day, 2-days,1-week, or 1-month), or you can use the date pickers to select a custom date range and then click the 'Load' button. Use the '<<' and '>>' buttons at the top of the page to quickly navigate backwards and forwards over your selected period.

Most nodes will have more than one sensor input that you can plot. You must select which sensors you want plotted as well as how many different charts you would like them plotted on (range: 1-4).

Once you have finished making you changes, hit the 'Load' button. The settings will be saved for the node selected and the charts page will be updated.



If you configured an audit report as described in section 8, the sensors chart will display limit lines as defined by the upper and lower limit used for that sensor in the audit report.

The bottom of the charts page displays the statistics for each selected sensor. These include the minimum, maximum and average reading as well as the audit reports upper and lower limits (if any).

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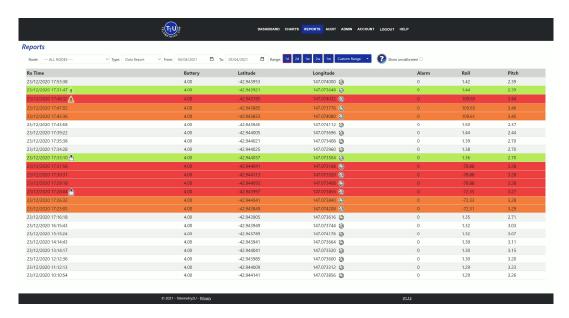
For more detailed information on how to configure the charts page on Telemetry2U, please refer to our <u>Charts section</u> in the documentation.

View table data on the reports page and add annotations to alert events

The 'Reports' page linked in the main menu offers another way to quicky view your sensor(s) data and status as well as add annotations to alert events that will later appear in the audit reports.

From the main page, you can see the last record from all your sensors. The colours (if any) clearly indicates if a node has a sensor that is heading towards, currently in, or has recovered from an alert. You can click the appropriate icon(s) to leave annotations on alert events. Read more below.

You can view a nodes history in table format by clicking on the nodes name or by selecting the node of interest from the dropdown box. Change the time range using either the buttons to display a block of data (1-day, 2-days,1-week, or 1-month), or the date pickers to select a custom date range before clicking the 'Load' button.



Icon Description

An orange background on a record indicates that the node has a sensor input that has triggered an alert condition but has not yet had enough 'Consecutive Readings' to send any Notifications.

A Red background indicates that the node has a sensor that is currently in alert and has sent notification messages.

A Green background indicates that the alert condition has recovered, and all sensors are back within range.

The Yellow warning icon indicates that a sensor on the node is currently in an alert condition. If you are on a plan that allows for annotations, you can click this icon to leave a note on the record. These annotations are then available for review in the audit reports.

The Green recovered icon indicates that that an alert conditioned has cleared. If you are on a plan that allows for annotations, you can click this icon to leave a note on the record. These annotations are then available for review in the audit reports.

The Pin-Board icon indicates that an annotation has already been left on that record. You can click it again to modify the annotation.

A globe icon will be present next to any record with a GPS position. You can click this icon to show the location on the map. The map used will depend on the 'Map provider' selected under your profile (OpenStreepMaps, Google Maps or Bing Maps).

Read More

For more detailed information on how to use the Reports page on Telemetry2U, please refer to our Reports section in the documentation.