SolSat 5
Satellite Telemetry

User Guide

September 1, 2023

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1.0 Introduction

The purpose of this User Guide is to describe the operation of SolSat 5 Satellite Telemetry, including programing, installation, and data collection.

SolSat 5 Satellite Telemetry is an advanced system designed to send data from Solinst dataloggers in the field via Iridium satellite communication to a secure web portal, or for download via the SolSat 5 Wi-Fi App.

Initial setup for each SolSat 5 is done wirelessly using the integral SolSat 5 Wi-Fi App in your mobile device or laptop browser.

Each SolSat 5 is programmed with a data plan based on your needs. The data plans offer hourly sample rates and various report/transmission rates. The sample rate is the rate at which the SolSat 5 collects data from the attached datalogger, and the report/transmission rate is the rate at which the SolSat 5 reports the collected data via satellite transmission. You can also receive daily current and max/min readings.

High or low level alarms can be set for the connected datalogger. An internal barometer allows barometrically compensated water level data to be reported. Optionally, dataloggers themselves can be set up to record and store data independently of the SolSat 5 as a backup.

1.1 Compatibility

Each SolSat 5 can connect one Solinst datalogger. SolSat 5 Satellite Telemetry is compatible with the Levelogger 5, Barologger 5, Levelogger 5 Junior, Levelogger 5 LTC, and LevelVent 5 using the following firmware versions (or higher):

Datalogger	Firmware Version
Levelogger 5	1.006
Barologger 5	1.006
Levelogger 5 Junior	1.006
Levelogger 5 LTC	1.006
LevelVent 5	1.006

Table 1-1 Compatible Datalogger Firmware Versions

Note: See the Levelogger and Vented Dataloggers User Guides for more information on the dataloggers.

Note: The firmware version of the SolSat 5 can be found in the About section of the Wi-Fi App.

2.0 SolSat 5 Satellite Telemetry Overview

The SolSat 5 is a simple, convenient device designed to wirelessly send data from Solinst dataloggers in the field via Iridium satellite technology to a secure web portal, or for download using the integral SolSat 5 Wi-Fi App.

2.1 SolSat 5 Telemetry Stations

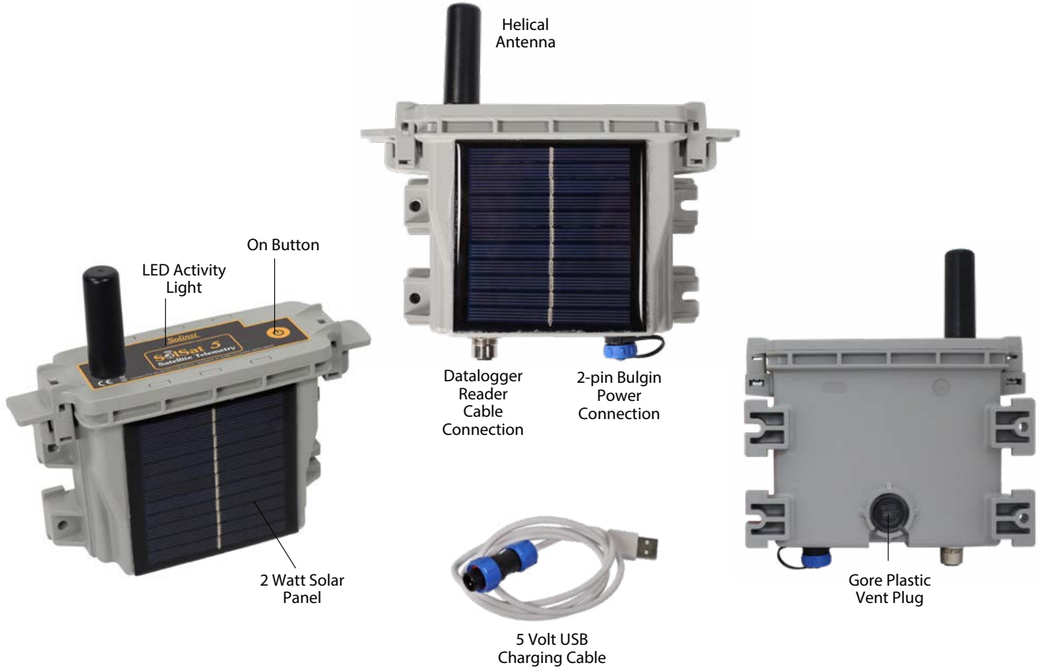
A SolSat 5 Satellite Telemetry station is designed to be used in almost any water monitoring application. It features a robust weatherproof, IP66-rated housing. It has an operating temperature from -20°C to +55°C.

Each SolSat 5 includes a satellite modem, high-performance helical antenna, built-in solar panel and an integral Wi-Fi App for wireless system configuration using any mobile device or laptop. There is an LED activity light on the top of the SolSat 5 that flashes with operation.

There is a power connection for charging the two 3.4 Ah LiPo batteries via USB, or for connecting an additional solar panel.

The internal barometer allows barometrically compensated water level data to be reported and an ambient temperature sensor provides added data. A Gore plastic vent plug in the SolSat enclosure protects the barometer. A SolSat 5 can store up to 100,000 data logs. A GPS module provides geo-tagged data.

Each SolSat 5 station can connect one datalogger.



Note: Reader Cables and Levelogger Direct Read Cables to connect to dataloggers are available separately.

Figure 2-1 SolSat 5 Telemetry Station

SolSat 5 Satellite Telemetry Specifications	
Communication:	9603 Iridium SBD Satellite Modem
Communication Distance:	Global coverage (*clear view to the sky required for best performance and battery life)
Antenna:	High-performance helical (SMA connector)
Data File Type:	Sent via SMS, export as .csv or .xle
Schedule Programming:	Wi-Fi App (browser) on your smart device or laptop
Power Supply:	2 x 3.4 Ah LiPo batteries
Battery Charging:	USB 5 volts, built-in 2 Watt 325 mAh solar panel, optional additional solar panel
Memory Capacity:	100,000 readings (wrap-around memory)
Operating Temperature:	-20°C to +55°C
Weight:	535 grams (18.9 ounces)
Size:	19.1 cm x 16.4 cm x 6.4 cm (7.5" x 6.5" x 2.5")
IP Rating:	IP66
Internal Barometer Range:	30 kPa – 110 kPa
Internal Barometer Accuracy:	±0.1 kPa (1 cm)

Table 2-1 SolSat 5 Specifications

2.2 Data Plan Options

There are three data plan options to choose from when first registering your SolSat 5 Satellite Telemetry at https://portal.solinstsat.com.

The SolSat 5 uses TextAnywhere two-way global satellite messaging service to send the data. The plans do not require any contracts and include logged hourly samples, alarm notifications, battery voltage and 24/7 secured web access.

SolSat 5 Satellite Telemetry Data Plan Options		
Plan	**Sample Rate**	**Reporting Rate**
1x Daily	Samples Hourly	Reports daily min/max and current reading
4x Daily	Samples Hourly	Reports 24 readings per day Includes up to 3 data points (e.g. barometric pressure, depth, battery voltage)
Hourly	Samples Hourly	Reports hourly Includes up to 3 data points (e.g. barometric pressure, depth, battery voltage)

Table 2-2 SolSat 5 Data Plan Options

2.3 SolSat 5 Batteries

A SolSat 5 uses two 3.4 Ah LiPo batteries. They are charged via the built-in 2 Watt solar panel. The SolSat 5 is also supplied with a 5 volt USB charging cord. The same 2-pin Bulgin power connection on the SolSat 5 can be used to attach an optional solar panel to increase the battery charging capacity.

Note: Using a higher voltage (over 6 volts) to charge the SolSat 5 will damage the electronics.

The batteries are fully charged at 4.2 volts, at 3.4 volts the SolSat 5 needs to be recharged. The battery voltage can be checked when connected to the SolSat 5 Wi-Fi App, or can be sent with each data report.

Without an added solar panel, basic usage would allow the SolSat 5 batteries to last over 1 year. On average, the batteries will last 2–3 years based on hourly samples and one satellite transmission per day. With the solar panel recharging, they should last indefinitely.

Note: Contact Solinst if the batteries need replacing. Do not try replacing the batteries yourself.

Keep in mind, a clear view to the sky/satellite is required for best performance and battery life, and more frequent data transmissions will use more battery power.

2.4 Connecting Dataloggers

Each SolSat 5 has a single port to connect one datalogger.

2.4.1 Connecting Leveloggers

Leveloggers are connected to the SolSat 5 using a 6 foot long Reader Cable connected to the Levelogger's Direct Read Cable.

To connect a Reader Cable to the SolSat 5, line up the holes in the connectors, push the Reader Cable connector into the connection on the SolSat 5 and screw the Reader Cable into the SolSat 5 until finger-tight. Connect the other end of the Reader Cable to the top end of the Levelogger's Direct Read Cable.

Note: An L5 Threaded Adaptor can be used in place of a Direct Read Cable when installing a Barologger. The Adaptor can not be submerged.

Note: See the Levelogger User Guide for more information on connecting Direct Read Cables to your Leveloggers.

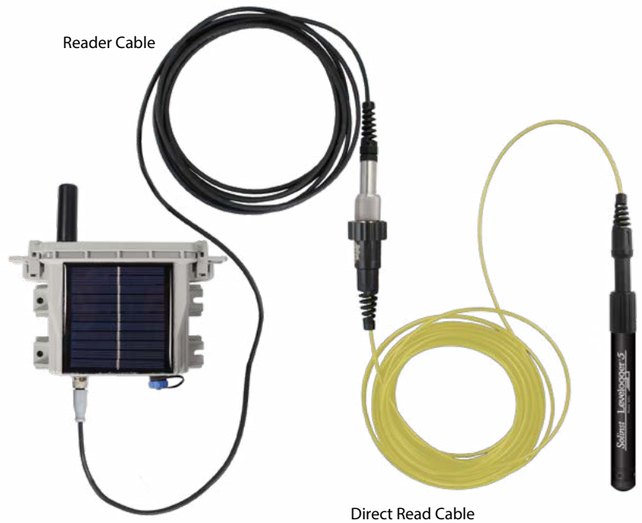


Figure 2-2 Levelogger Connection

2.4.2 Connecting a LevelVent

A LevelVent is connected to the SolSat 5 using a 6 foot long Reader Cable connected to the LevelVent Wellhead.

To connect a Reader Cable to the SolSat 5, line up the holes in the connectors, push the Reader Cable connector into the connection on the SolSat 5 and screw the Reader Cable into the SolSat 5 until finger-tight. Connect the other end of the Reader Cable to the LevelVent Wellhead.

Note: See the Vented Dataloggers User Guide for more information on LevelVent components and connections.

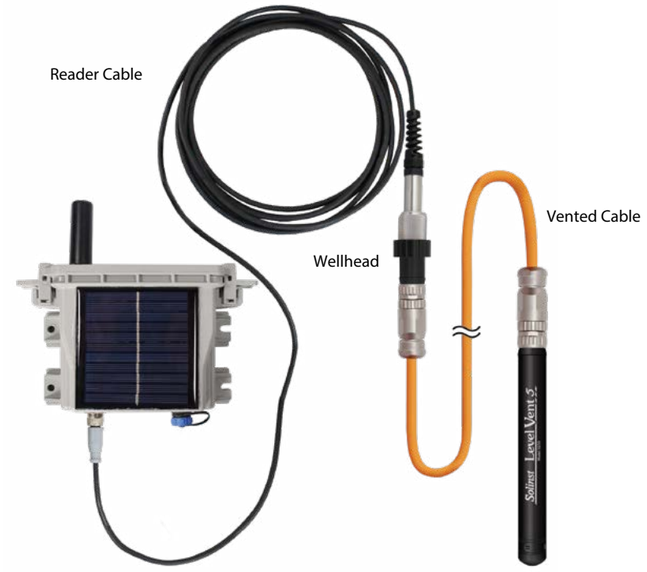


Figure 2-3 LevelVent Connection

3.0 SolSat 5 Wi-Fi App

The SolSat 5 Wi-Fi App provides an easy-to-use graphical interface to configure your SolSat 5 Satellite Telemetry network, view and send information, and download data.

3.1 Connecting to the Wi-Fi App

1. When received, the SolSat 5 will be in deep sleep mode. Turn on/wake up the SolSat 5 by pressing the power button for 2 seconds. Within 1 minute, a Wi-Fi signal will start broadcasting.
2. In your mobile device's Wi-Fi settings menu, select the "SolSat 5" SSID signal. If this does not appear right away, wait an additional 2 minutes, then refresh the Wi-Fi list.

Note: The default password is 8006612023, you can change this later using the Settings in the App.

3. With the Wi-Fi connected, open the web browser on your device and enter "10.10.10.10" in the address bar, then press "go" or enter.

Note: If the App does not open, clear your browser history and try again. If it still doesn't open, check your firewall settings.

4. The built-in App will open. To navigate the App, use the Main Menu at the top left of the screen. The SolSat 5 will stay ON as long as you are connected by Wi-Fi to the App. Once you disconnect or the screen goes blank, it will go to sleep after 3 minutes.

Note: When not in use, turn the SolSat 5 OFF using the Settings menu in the App.

3.2 Wi-Fi App Main Menu

The Main Menu icon at the top left of the App will expand when clicked in a mobile device; it can be viewed fully expanded on a laptop or computer browser.

The first menu item is the **SolSat 5** Main Screen. This screen provides a quick check of current and/or max/min readings from the connected datalogger, internal barometer reading, battery voltage, your satellite connection, and GPS coordinates.

Because the SolSat 5 uses TextAnywhere global satellite messaging, you can use the App to add and edit **Contacts** to send and receive text messages or email in the SolSat 5 **Mailbox**. **Send Email** and **Send Text** allow you to select an added contact, or type in a new contact, to send an email or text message to.

About provides information about your specific device including firmware version, SSID (name that identifies the Wi-Fi network), battery level, and SolSat 5 memory.

Settings has a number of options, including "Wi-Fi Security Setup" to change the security settings for your Wi-Fi connection,"Check Satellite" connection, "Turn Off Power" to the SolSat 5, and "Download Log Files".

The "Setup" allows you to set up your selected data plan/schedule, the time(s) for the data report send, your preferred data measurement parameters (e.g. depth, depth to water), alarm settings, and data transmission preference.

You can also select your preferred "GPS Coordinates Style", and review your network settings and "Status" once programmed.

Figure 3-1 SolSat 5 Main Menu and Settings Menu

3.3 SolSat 5 Wi-Fi App Main Screen

In the **SolSat 5** Main Screen, the current readings from the SolSat 5 will be displayed, including:

SolSat Baro Pressure: the barometric pressure reading from the internal SolSat barometer

Solinst Datalogger Pressure: pressure reading from the connected Solinst datalogger.

Water Depth: the current depth of water calculated by subtracting the barometric pressure from the datalogger pressure.

Water Temp: the temperature reading from the connected Solinst datalogger.

SolSat Battery: the current voltage of the SolSat 5 batteries.

Note: The batteries are fully charged at 4.2 volts, at 3.4 volts the SolSat 5 needs to be recharged.

Ambient Temp: the temperature reading from the internal SolSat thermometer.

LTC Levelogger Conductivity: the conductivity reading from an LTC Levelogger, if connected.

Level min: the minimum water level recorded in the last day (Plan 1).

Level max: the maximum water level recorded in the last day (Plan 1).

The status of the satellite, including network availability and time, is also displayed. The GPS coordinates, and satellite and positioning information is also listed.

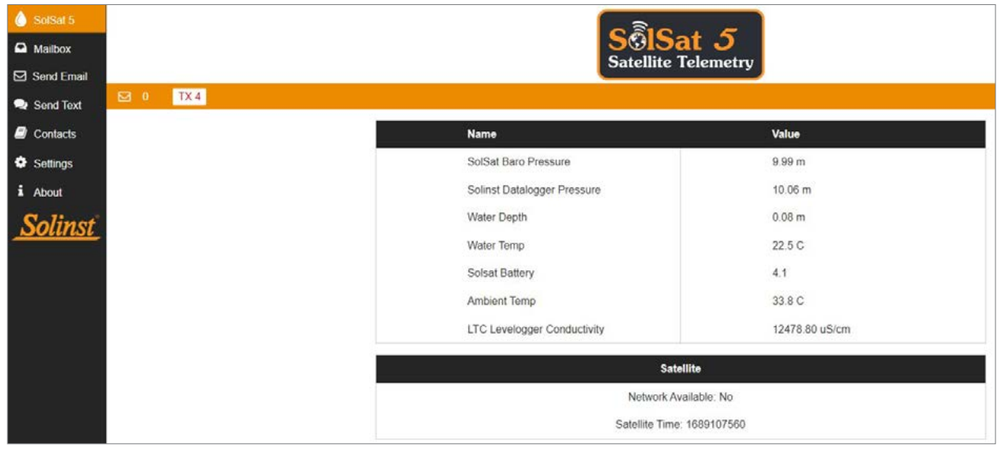


Figure 3-2 SolSat 5 Wi-Fi App Main Screen

3.4 Wi-Fi App Configuration

3.4.1 Wi-Fi Security Setup

It is recommended to change your password from the default. To do this, go to Settings and select “Wi-Fi Security Setup”. Enter your desired password (it is case sensitive).

You can also update your security settings. From the drop-down menu, select either WPA or WPA2 (WPA2 is the most secure)

You can also select a different Channel for your Wi-Fi, if required. Certain channels may have less interference. 1 is the default.

Enter a different SSID (Wi-Fi network identifier/name) if desired.

Click OK once you are finished with the settings.

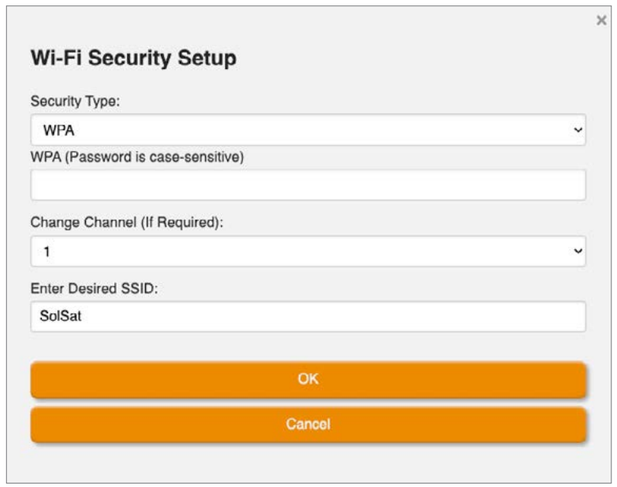


Figure 3-3 Wi-Fi Security Setup

3.4.2 GPS Coordinates Style

To change the GPS Coordinates Style that displays for your data, go to Settings and under “User Preferences” there is a drop-down menu with three options. Decimal Degrees (0.000, 0.000) is default, Degrees Decimal Minutes (0° 0.00’ N, 0° 0.0’ E) or Degrees Minutes Seconds (0° 0’ 0” N, 0° 0’ 0”) are options.

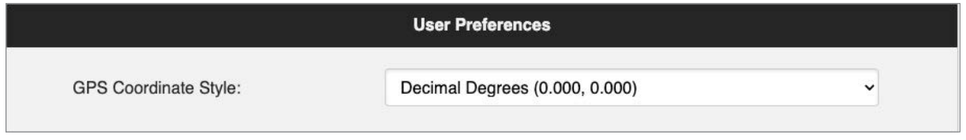


Figure 3-4 GPS Coordinates Style

4.0 SolSat 5 Setup

To set up your SolSat 5 Satellite Telemetry, go to Settings, then select “Setup”.

The first step will provide you with a Glossary of terms to help with the setup.

Barometric Pressure (BP): Atmospheric pressure; measured by SolSat 5.

Water Pressure (WP): Absolute pressure; measured by the Solinst datalogger.

Water Depth (WD): Calculated water height over the Solinst datalogger zero point (WD=WP-BP).

Depth to Water: The distance between the reference point and the water level.

Reference Point: The user-defined point of reference (top of casing, ground level, etc.)

Water Probe Distance: Depth to water + Water depth

Click Next to start the setup.

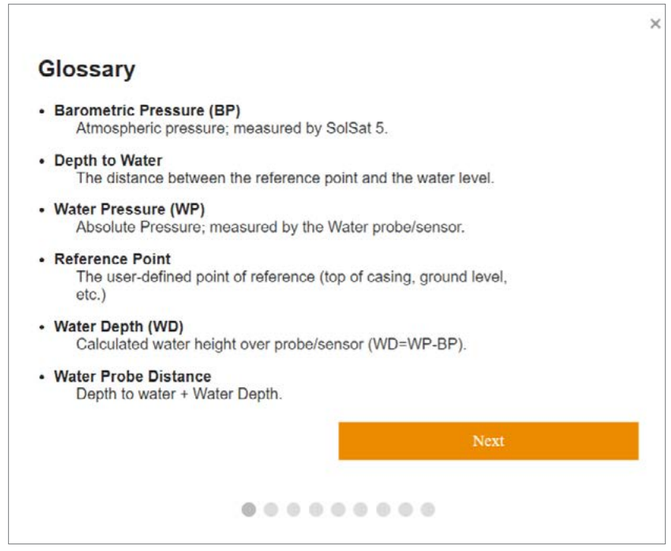
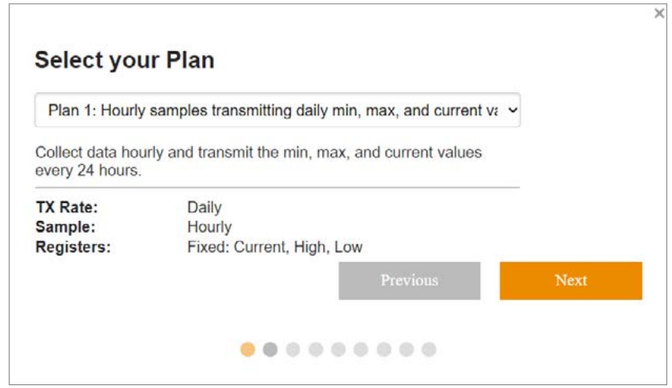


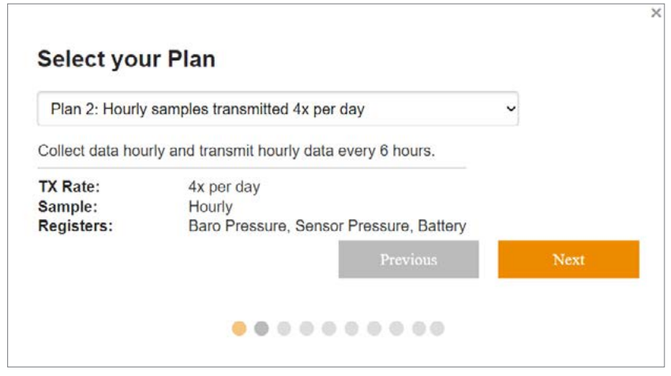
Figure 4-1 SolSat 5 Setup Glossary

4.1 Select Your Plan

Use the drop-down menu to select the data plan that has been registered to your SolSat 5.

Click Next to continue the setup.





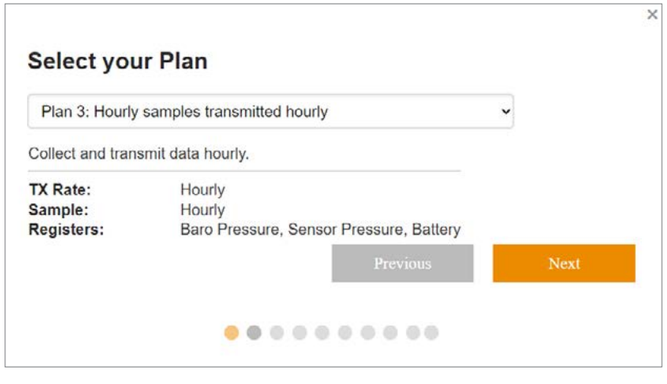


Figure 4-2 SolSat 5 Plan Selection

4.2 Current Time Offset

Use the drop-down menu to select the GMT Time Offset for your SolSat 5 Satellite Telemetry location.

Select the time(s) of day you want to receive data reports.

Click Next to continue the setup.

Note: SolSat settings can be updated remotely using the options in solinstsat.com web portal. See Section 5.1.2.

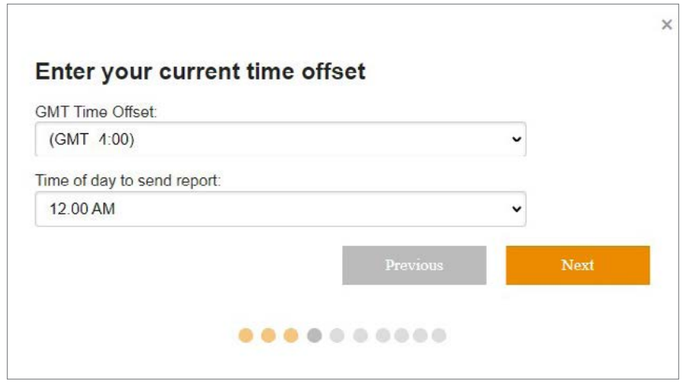


Figure 4-3 SolSat 5 Time Settings

4.3 Data Format

In this step, select the desired data format for the reported data:

Depth: reports the calculated water depth from the Solinst datalogger.

For absolute water level sensors, the barometric data from the internal SolSat 5 barometer is used to subtract from the water level sensor reading, to provide the depth of water above the water level sensor zero point.

Note: For more information on the operating principles of Solinst dataloggers, see the Levelogger and Vented Datalogger User Guides.

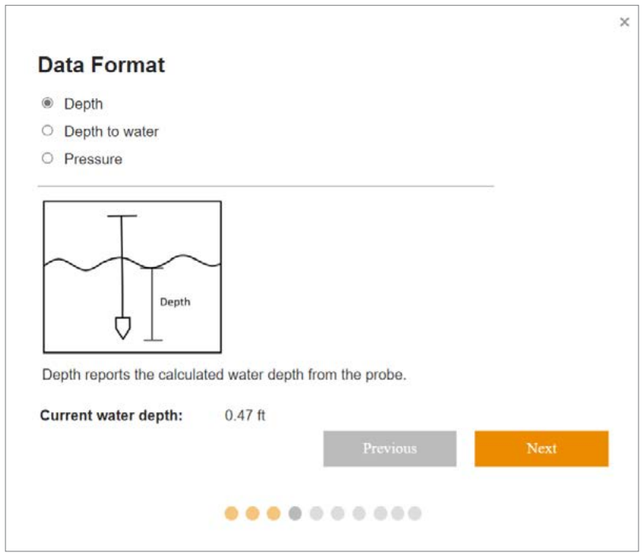


Figure 4-4 SolSat 5 Depth Measurement

Depth to Water: reports the depth to static water level based on a Reference Point.

The Probe Distance is entered as the distance between your selected Reference Point (e.g. top of well casing, ground level) and your water level sensor zero point. The Depth to Water is calculated by subtracting the water Depth (see above) from the Probe Distance.

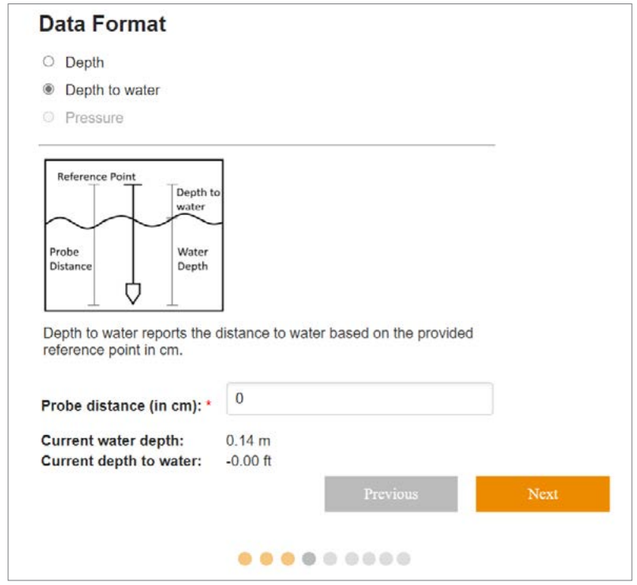


Figure 4-5 SolSat 5 Depth to Water Measurement

Pressure: reports the uncompensated pressure from the connected datalogger.

Note: SolSat settings can be updated remotely using the options in the solinstsat.com web portal. See Section 5.1.2.

Click Next to continue the setup.

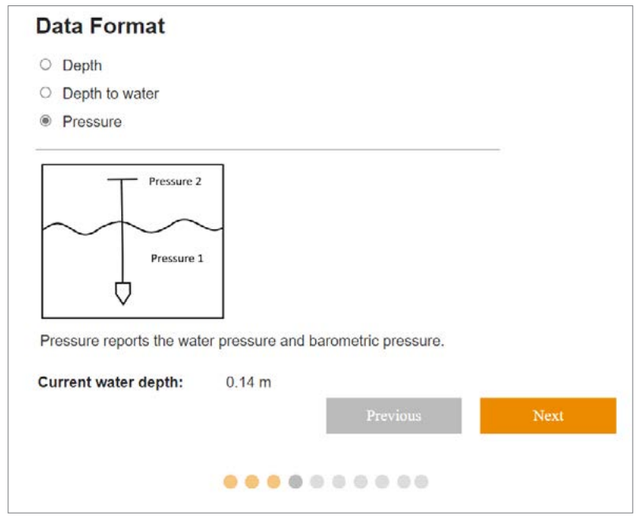


Figure 4-6 SolSat 5 Pressure Measurement

4.4 Alarm Settings

If set, an alarm message will be sent once per day if the alarm parameter is met.

For Plans 1 and 2, select the check-box to Set the Alarm. The alarm will be based on your selected data format (see Section 4.3).

Note: If you have selected Plan 3, you can set alarms using the solinstsat.com web portal. See Section 5.1.3.

You can select a Value (positive or negative) that if the sampled measurement goes Above or Below will trigger an alarm message to be sent.

Click Next to continue the setup.

Note: Alarms can also be set remotely using the options in the solinstsat.com web portal. See Section 5.1.3.

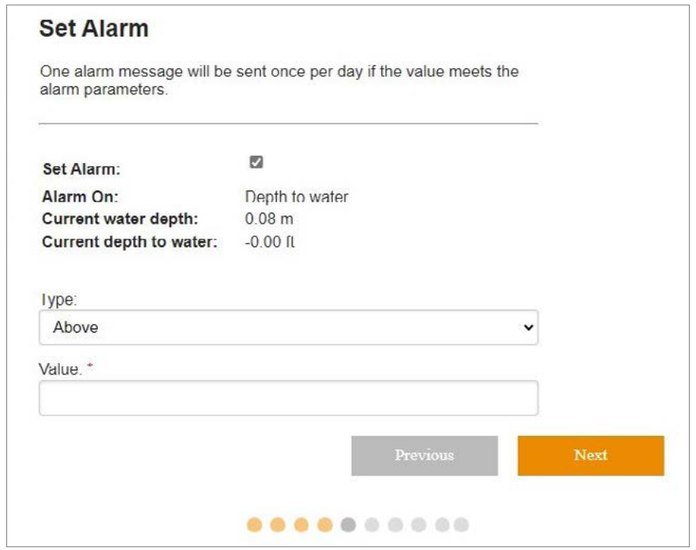


Figure 4-7 SolSat 5 Alarm Setup – Plans 1 and 2

Figure 4-8 SolSat 5 Alarm Setup - Plan 3

4.5 Parameter Settings

In the next steps you will select the parameters and units of measurement that you want to use for reporting the temperature, pressure, and conductivity if you are using an LTC datalogger.

First, select the unit of measurement for the temperature sensor.

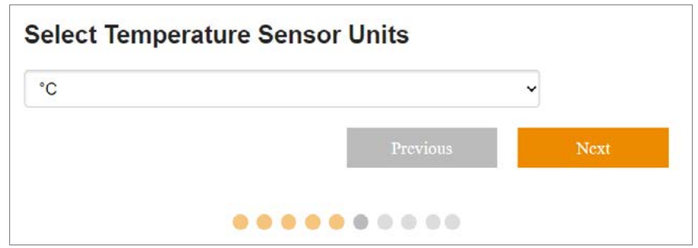


Figure 4-9 SolSat 5 Temperature Sensor Units

Based on your data plan, select which parameters you would like to be reported. Click Next. There will be no Option for Plan 1.

Figure 4-10 SolSat 5 Temperature Sensor Units

Based on the selected options, select the units of measurement for each parameter.

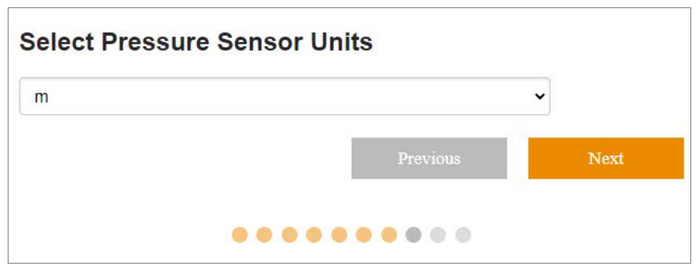


Figure 4-11 SolSat 5 Pressure Sensor Units

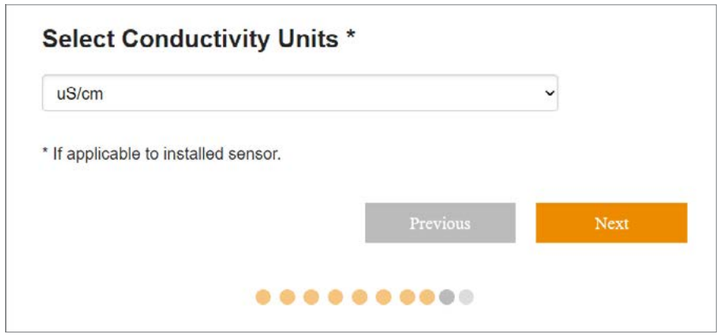


Figure 4-12 SolSat 5 Conductivity Sensor Units

4.6 Data Transmission Settings

In this step, select the data that you want sent with each report/transmission.

The options are:

Transmit GPS and current values.

Transmit current values.

Do not transmit, save only. You can download the data directly from the SolSat 5 using the Wi-Fi App when within range (see Section 5.2). The SolSat 5 can store up to 100,000 data logs.

Click Submit to finish the setup.

Figure 4-13 SolSat 5 Data Transmission Settings

5.0 SolSat 5 Data and Site Management

5.1 Solinstsat.com Web Portal

An account is created when you register a SolSat 5 using https://portal.solinstsat.com, which includes access to this secure web application for viewing and exporting data from all of your SolSat devices.

To access your data, go to: https://www.solinstsat.com, then enter your username and password.

Note: solinstsat.com also allows you to create reports, manage account users, project sites, devices and alarms.

5.1.1 Site Index

The Site Index shows a summary of your sites, including the number of devices, the last report time, and the alarm status.

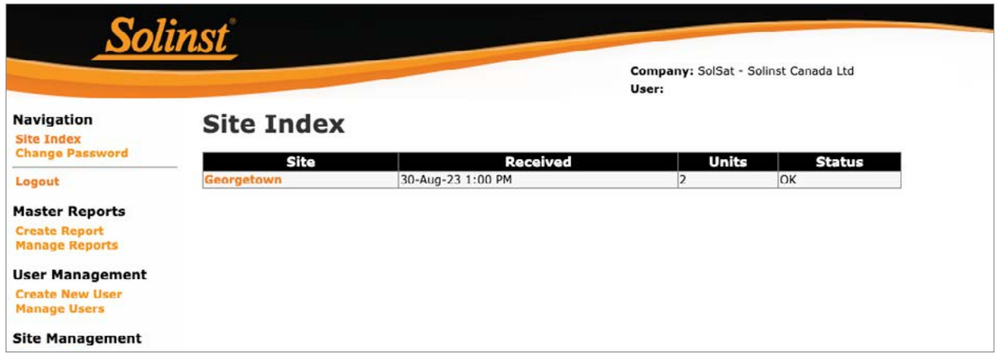


Figure 5-1 Site Index

5.1.1.1 Site Management

To create a site, go to Manage Site under Site Management in the side Navigation menu. Click Add New Site then enter a name for the site and click Create New Site. Use the tree view on the left to assign devices to the site.

The Site Configuration page also allows you to change the appearance of your site (Manage Image), Delete the site, as well as define the incoming data from your devices using the navigation tree (Site Index and Site Graph).

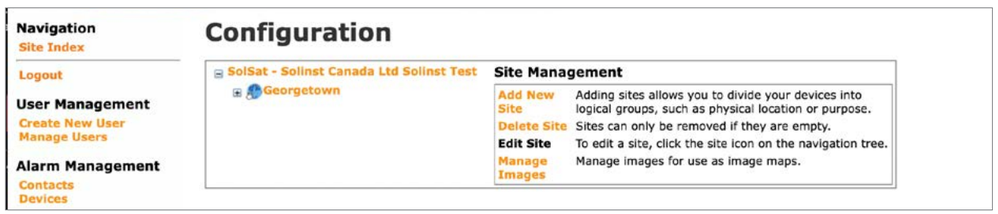


Figure 5-2 Site Configuration

5.1.1.2 Manage Virtual Units

The Virtual Unit System allows a virtual device to be created that generates its data based on values returned by other physical units. Data generated by virtual units pass through all existing systems (such as alarming), but is generated at least 15 minutes after physical units return their data. Click Create Virtual Unit to add a new Virtual Unit, or click Manage Virtual Unit to Edit or Delete a Virtual Unit.

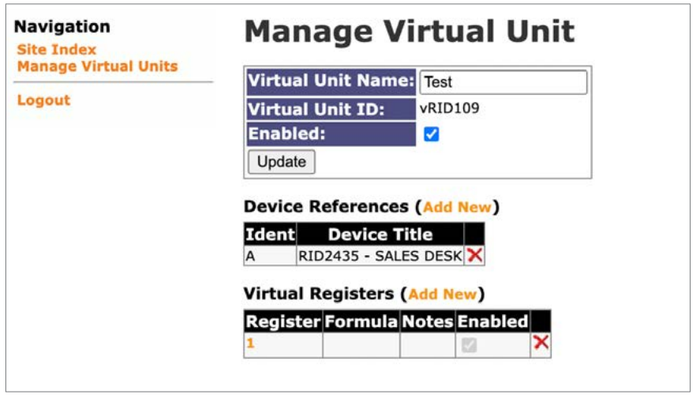


Figure 5-3 Manage Virtual Unit

5.1.1.3 Manage Notifications

To add a Transmission Notification, go to Manage Notifications and click Add, then enter the required information and Save. To Edit a notification, click on the Name of the Transmission Notification in the table. You can add a contact to receive an email notification when a transmission has occurred at the specified time interval. You can also Delete a Transmission Notification.

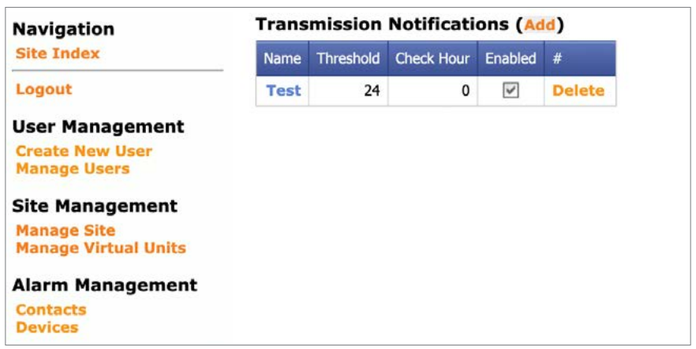


Figure 5-4 Transmission Notifications

5.1.2 Device Index

Click on a site name from the table in the Site Index to view the Device Index. The Device Index shows a list of each SolSat 5 at that site and their last report time and alarm status. Click on a device name to view the Device Detail. Any Virtual Units created will also be listed (a small "v" in front of the name indicates a virtual unit). Click on a device name to view the Device Detail.

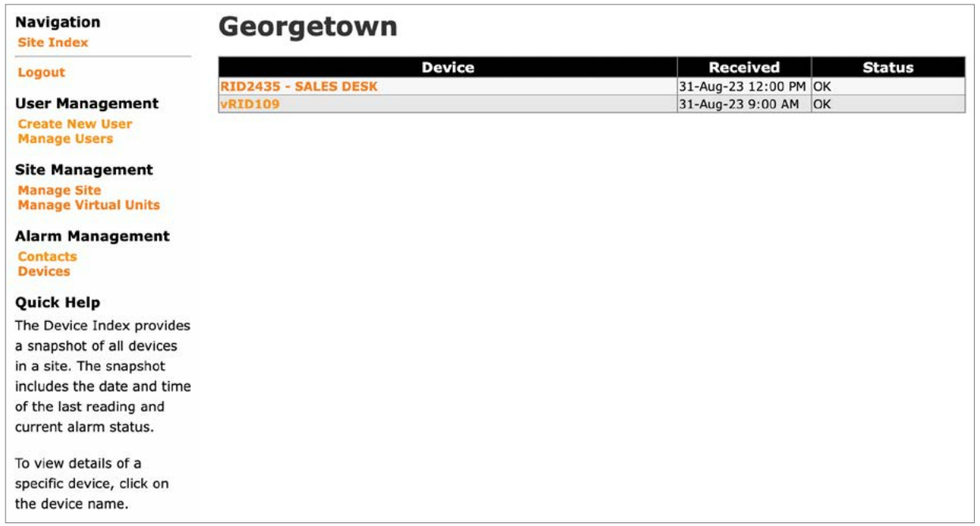


Figure 5-5 Device Index

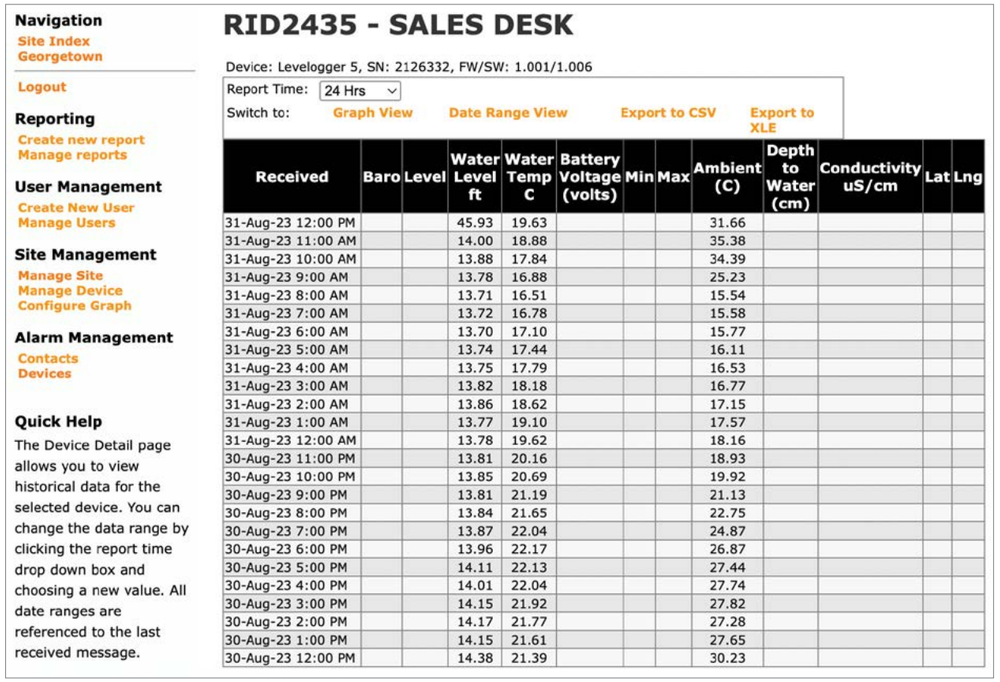
5.1.2.1 Device Detail

The Device Detail page allows you to view historical data for the selected device. Along with the water level and temperature data, each report includes battery voltage for the SolSat 5 as well as geographic coordinates.

You can change the data range by clicking the Report Time drop-down box and choosing a new value. All date ranges are referenced to the last received message.

Data can be exported as a .csv or .xle file. Clicking “Export to CSV” or “Export to XLE” automatically creates a file and saves it in the Downloads folder on your device.

Data can also be accessed in Graph View or you can select Date Range View to view a range of data in more detail.

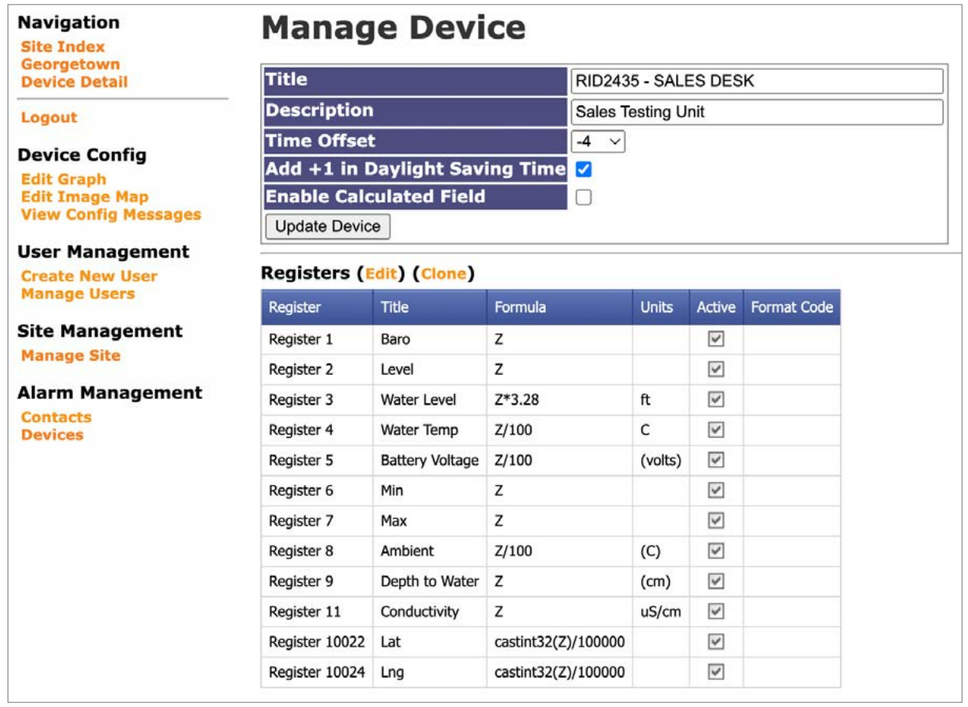


Received	Baro	Level	Water Level ft	Water Temp C	Battery Voltage (volts)	Min	Max	Ambient (C)	Depth to Water (cm)	Conductivity uS/cm	Lat	Lng
31-Aug-23 12:00 PM			45.93	19.63				31.66				
31-Aug-23 11:00 AM			14.00	18.88				35.38				
31-Aug-23 10:00 AM			13.88	17.84				34.39				
31-Aug-23 9:00 AM			13.78	16.88				25.23				
31-Aug-23 8:00 AM			13.71	16.51				15.54				
31-Aug-23 7:00 AM			13.72	16.78				15.58				
31-Aug-23 6:00 AM			13.70	17.10				15.77				
31-Aug-23 5:00 AM			13.74	17.44				16.11				
31-Aug-23 4:00 AM			13.75	17.79				16.53				
31-Aug-23 3:00 AM			13.82	18.18				16.77				
31-Aug-23 2:00 AM			13.86	18.62				17.15				
31-Aug-23 1:00 AM			13.77	19.10				17.57				
31-Aug-23 12:00 AM			13.78	19.62				18.16				
30-Aug-23 11:00 PM			13.81	20.16				18.93				
30-Aug-23 10:00 PM			13.85	20.69				19.92				
30-Aug-23 9:00 PM			13.81	21.19				21.13				
30-Aug-23 8:00 PM			13.84	21.65				22.75				
30-Aug-23 7:00 PM			13.87	22.04				24.87				
30-Aug-23 6:00 PM			13.96	22.17				26.87				
30-Aug-23 5:00 PM			14.11	22.13				27.44				
30-Aug-23 4:00 PM			14.01	22.04				27.74				
30-Aug-23 3:00 PM			14.15	21.92				27.82				
30-Aug-23 2:00 PM			14.17	21.77				27.28				
30-Aug-23 1:00 PM			14.15	21.61				27.65				
30-Aug-23 12:00 PM			14.38	21.39				30.23				

Figure 5-6 Device Detail

5.1.2.2 Manage Device

To update a device with new details including name and registers (parameters) go to Manage Device in the Navigation menu. You can also Clone your Registers set up to apply to another device.



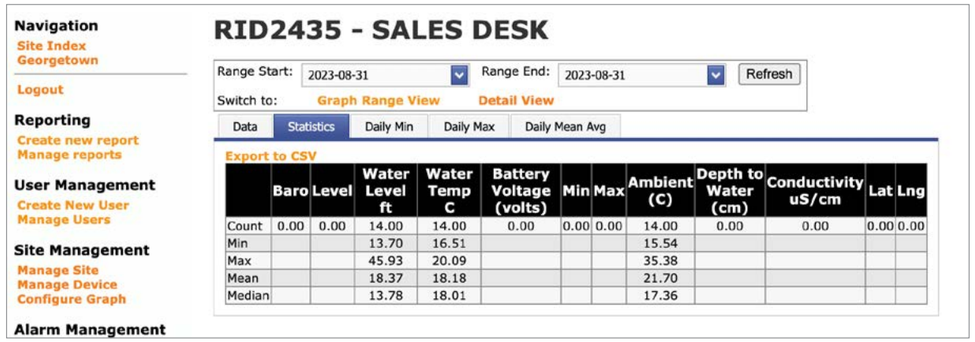
Register	Title	Formula	Units	Active	Format Code
Register 1	Baro	Z		☑	
Register 2	Level	Z		☑	
Register 3	Water Level	Z*3.28	ft	☑	
Register 4	Water Temp	Z/100	C	☑	
Register 5	Battery Voltage	Z/100	(volts)	☑	
Register 6	Min	Z		☑	
Register 7	Max	Z		☑	
Register 8	Ambient	Z/100	(C)	☑	
Register 9	Depth to Water	Z	(cm)	☑	
Register 11	Conductivity	Z	uS/cm	☑	
Register 10022	Lat	castint32(Z)/100000		☑	
Register 10024	Lng	castint32(Z)/100000		☑	

Figure 5-7 Manage Device

Form here, using the Navigation, you can also Edit the Graph parameters, Edit the Image Map; which allows you to set an image for the site and create hot spots (e.g. where devices are located), and View Configuration Messages that provide a record when updates to devices were made.

5.1.2.3 Date Range View

In Date Range View, You can change the data range by selecting the Range Start and Range End dates in the calendar boxes. All date ranges are referenced from midnight of the start date to 23:59:59 of the end date. This will provide you with statistics and daily max, min and mean average data.



	Baro	Level	Water Level ft	Water Temp C	Battery Voltage (volts)	Min	Max	Ambient (C)	Depth to Water (cm)	Conductivity uS/cm	Lat	Lng
Count	0.00	0.00	14.00	14.00	0.00	0.00	0.00	14.00	0.00	0.00	0.00	0.00
Min			13.70	16.51				15.54				
Max			45.93	20.09				35.38				
Mean			18.37	18.18				21.70				
Median			13.78	18.01				17.36				

Figure 5-8 Date Range View

5.1.2.4 Configure Graph

Go to Configure Graph from the Navigation menu (or Edit Graph in the Manage Device section) to set up the axis and parameter information for your graph.

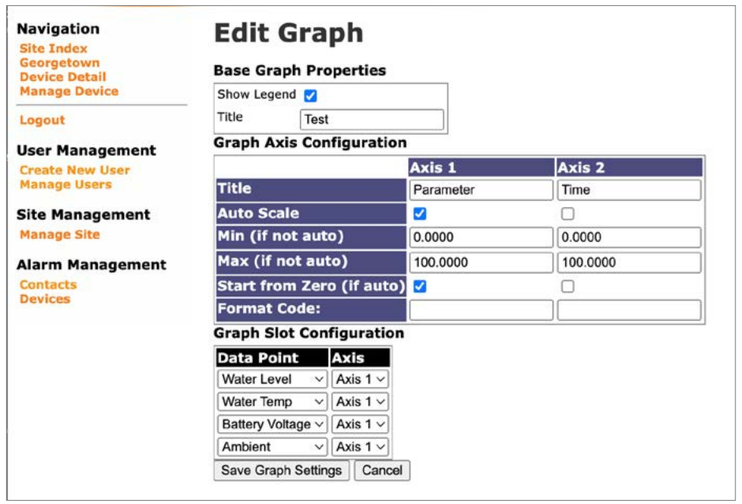


Figure 5-9 Edit Graph

5.1.2.5 Graph View

The Graph View page allows your to view historical data for the selected device in a line chart. You can change the data range by clicking the Report Time drop-down box and choosing a new value. All date ranges are referenced to the last received message. You can select Graph Range View to view a range of data in more detail.

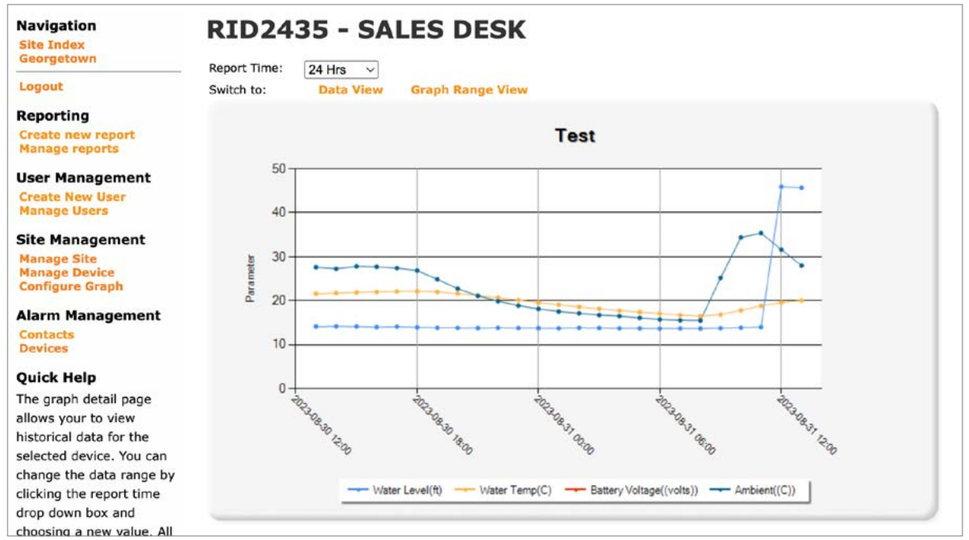


Figure 5-10 Graph Detail

5.1.2.6 Graph Range View

In Graph Range View, You can change the data range by selecting the Range Start and Range End dates in the calendar boxes. All date ranges are referenced from midnight of the start date to 23:59:59 of the end date.

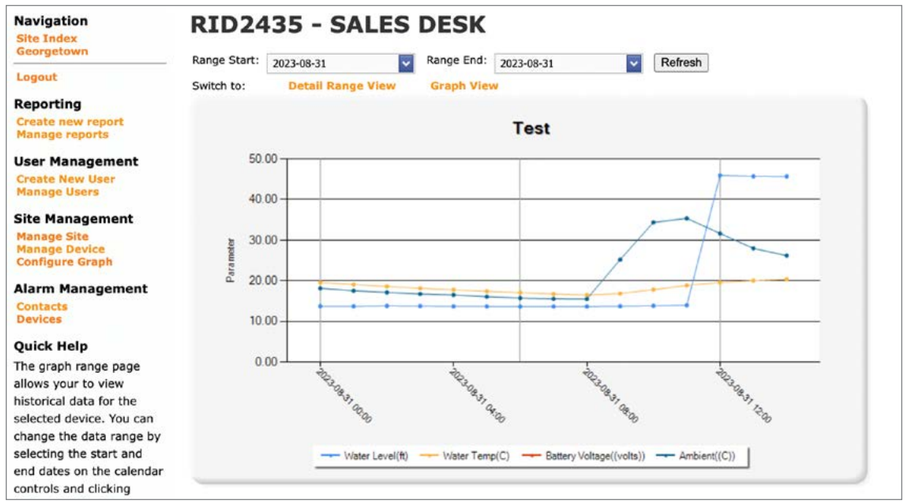


Figure 5-11 Graph Range View

5.1.3 Alarm Management

5.1.3.1 Alarm Contacts

To add a new contact to receive alarm notifications, select Contacts under Alarm Management in the Navigation menu. To create a new contact, enter a contact name into the text box and click Create Contact. To delete a contact, place a check mark next to the contacts to delete and click Remove Contact.

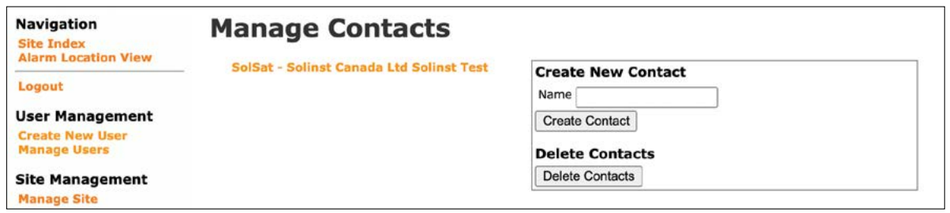


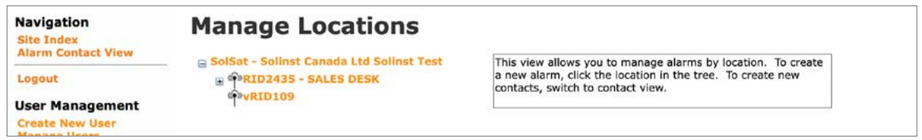
Figure 5-12 Alarm Contacts

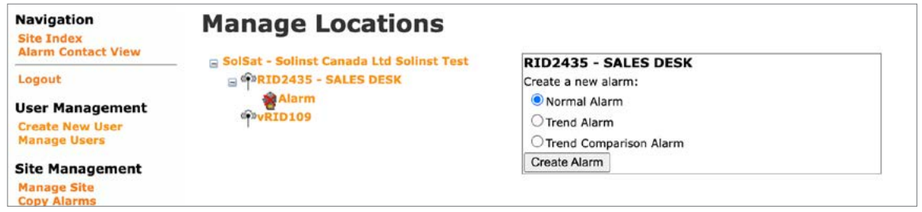
5.1.3.2 Create Alarm

To create a new alarm or edit an existing one, go to Devices under Alarm Management in the Navigation Menu. To create a new alarm, choose one device (Location) to connect the alarm to by clicking the device on the navigation tree.

There are two types of alarms: Normal Alarms and Trend Alarms. A Normal Alarm allows you to trigger based on a single value (such as if a value is greater than 5 or less than 3). Normal alarms also allow aggregation to create alarms such as “alarm if the average value for the last 3 days is over 10 units”. Trend alarms compare a current value to a previous value. A typical alarm could be “Alarm if the current reading has changed more than 5 units from the reading 7 days ago”. Select the desired alarm type, then click Create Alarm. Then select the alarm from the navigation tree to complete the alarm setup.

Note: You can copy an alarm from one device to another by going to Copy Alarms in the Navigation menu while managing your alarms.





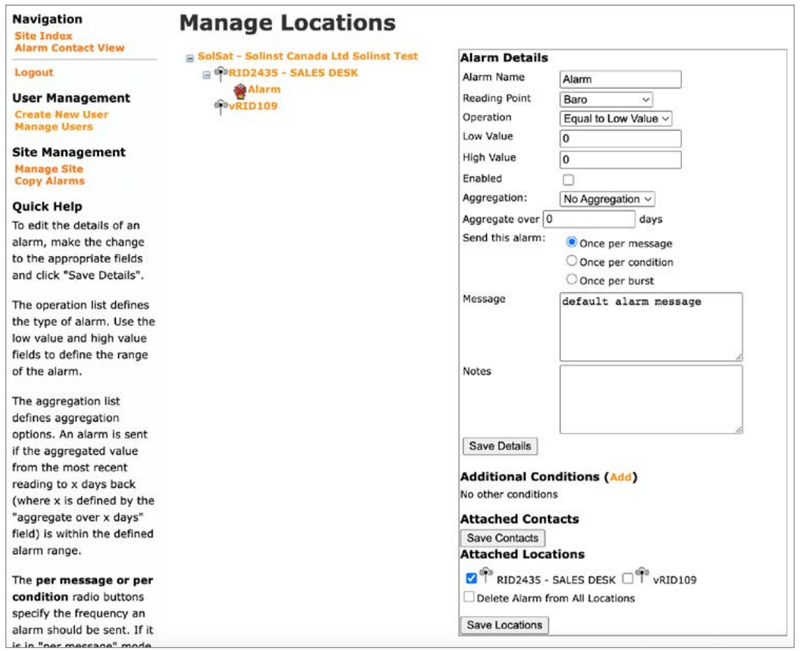


Figure 5-13 Alarm Details

5.1.4 Master Reports

5.1.4.1 Create Report

To create a blank report, enter a report name and click Create Report. You will then be taken to the report editing page.

To add a new data point, select the device and click "set", followed by choosing the data point to be added and click "Add Data Point. The default name of the data point will be its title. You may want to include the device's name in the title for clarity.

Data points can be re-ordered by clicking the arrow buttons or removed by clicking the "x" button.

Figure 5-14 Creating a Master Report

5.1.4.2 Manage Reports

The master report system allows reports to be generate across multiple devices. To run a previously generated report, click "Run Report". To edit the reading points on a report, click "Edit Report". To permanently remove a report, click "Delete".

Figure 5-15 Managing Reports

5.1.5 User Management

5.1.5.1 Create New User

To create a new user go to Create New User in the Navigation menu, and enter the information in the fields then click Create User. If the user needs site administration privileges, place a check next to 'Set as site admin'.

User names must be at least 5 characters long. Passwords must be at least 6 characters long. Click Create User.

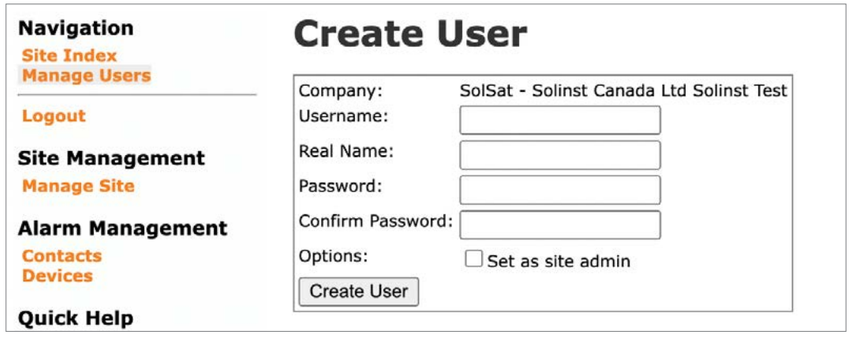


Figure 5-16 Create User

5.1.5.2 Manage Users

Go to Manage Users to make any changes to the account users. To edit a user, click 'edit' beside the user's name. To reset a user's password, click 'Reset Password'. To delete a user, click the Delete icon.

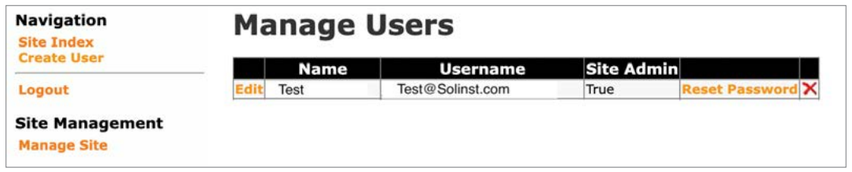


Figure 5-17 Manage Users

5.2 Download Data Logs

When connected to the SolSat 5 via the Wi-Fi App, you can download stored data logs from the SolSat 5 directly to your connected mobile device or computer. The SolSat 5 can store up to 100,000 data logs (wrap-around memory).

Note: The memory status of the SolSat 5 can be viewed in the About section of the Wi-Fi App.

To download the data logs, go to Settings and select "Download Log Files". A progress bar and percentage will be shown as the data is downloading.

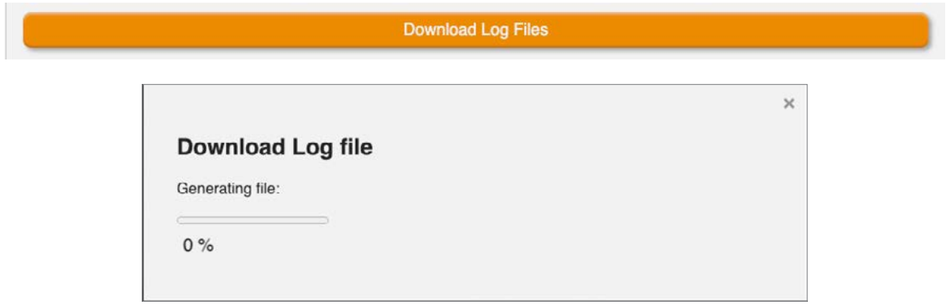


Figure 5-18 Download Log Files

6.0 SolSat 5 Email and Text Messages

Because the SolSat 5 uses TextAnywhere global satellite messaging, you can use the Wi-Fi App to send and receive email and text messages.

6.1 SolSat 5 Mailbox

The SolSat 5 Wi-Fi App Mailbox allows you to view email or text messages sent to the SolSat 5. The status bar across the top of the Wi-Fi App will show if there are any unread messages by a number beside the mail icon. You can get to the Mailbox using the Main Menu or by clicking the status bar.

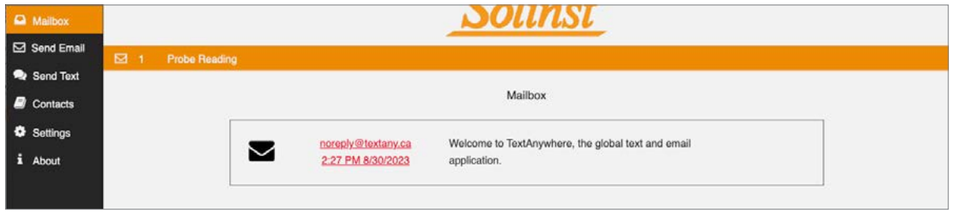


Figure 6-1 SolSat 5 Mailbox

6.2 SolSat 5 Contacts

To add a Contact to email or text message, go to Contacts from the Main Menu and select “Add Contact”. Enter the Contact’s name and phone number/email address in the appropriate fields, then click “Add Contact”.

A list of the Contacts will be shown. You can Delete or Edit a Contact.

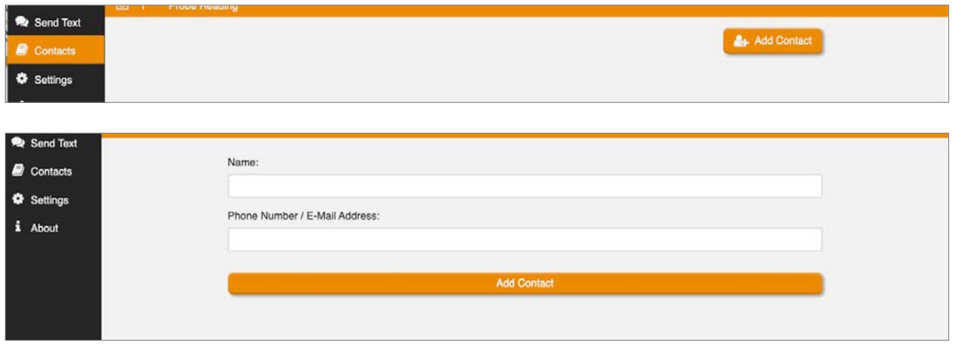


Figure 6-2 SolSat 5 Contacts

6.3 Send Email

To send an email, go to Send Email in the Main Menu.

In the Recipient field, use the drop-down menu to select a Contact or manually type in an email address.

The body of the email can be a maximum of 160 characters.

Click Send when ready.

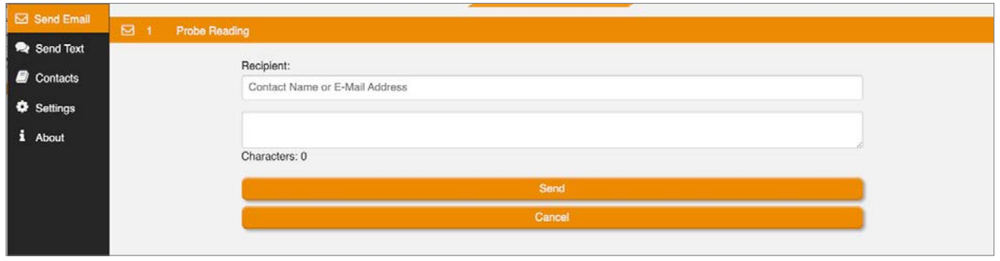


Figure 6-3 SolSat 5 Send Email

6.4 Send Text

To send a text message, go to Send Text in the Main Menu.

From the drop-down menu, select the region you are sending the text from. Messages can be sent globally, and without extra fees in some regions.

In the Recipient field, use the drop-down menu to select a Contact or manually type in the phone number.

The body of the text can be a maximum of 160 characters.

Click Send when ready.

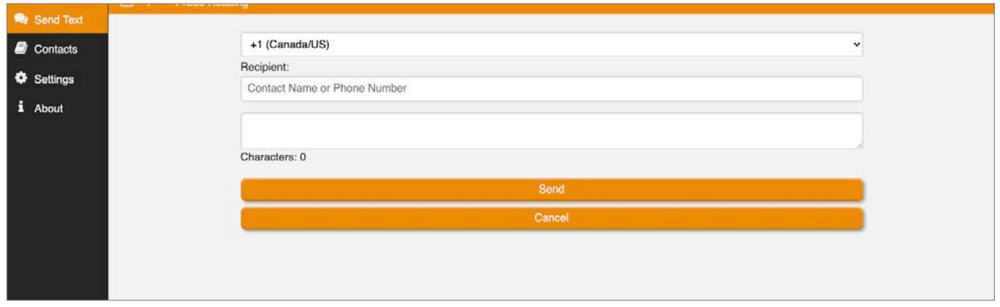


Figure 6-4 SolSat 5 Send Text

7.0 SolSat 5 Installation

The SolSat 5 robust weatherproof enclosure is designed to be installed anywhere that suits your water monitoring application.

Remember, a clear view to the sky is required for best performance and battery life.

The SolSat 5 has an IP rating of 66, so it is dust-proof and can withstand heavy rain, but can not be submerged. The operating temperature range is -20°C to +55°C.

The SolSat 5 comes with a high-performance helical antenna. It is designed to work in any situation. The antenna uses an SMA connection, therefore, you can source other antennas or an antenna cable extension with an SMA male connector, if required.

See the Levelogger and Vented Dataloggers User Guides for details on proper deployment of these instruments.

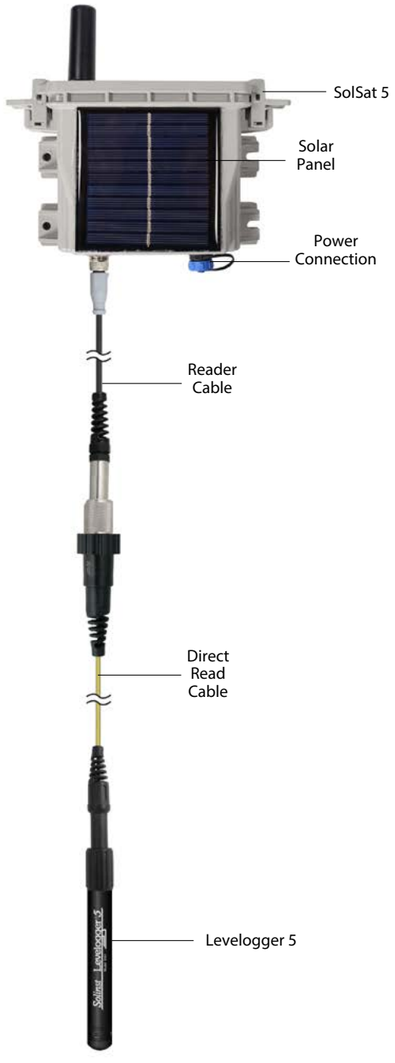


Figure 7-1 SolSat 5 with Levelogger 5 Connected

7.1 Optional Solar Panel

The SolSat 5 has a built-in 2 Watt solar panel to charge the 2 x 3.4 Ah LiPo batteries.

However, if you wish to increase the battery charging capacity and prolong the battery life, an additional solar panel can be connected to the SolSat 5 via the 2-pin Bulgin power connection.

Keep in mind, the batteries have nearly 7ah of capacity and the built in charging circuit for the SolSat 5 is rated at 1 amp, so any external power supply over 1 amp has no additional benefit. Also, using higher voltages (over 6 volts) to charge the SolSat 5 will damage the electronics. Contact Solinst for more information if you are interested in adding a second solar panel.

An extra solar panel is recommended when you have more frequent transmission rates, or if you are deploying your system in a remote or hard to access area and want to extend the time needed between trips to the field for maintenance.

8.0 SolSat 5 Maintenance

As with any groundwater or surface water monitoring project, you should select the proper equipment and determine a maintenance schedule based on the monitoring environment specific to your application.

For the SolSat 5, and Solinst dataloggers, this means selecting the appropriate pressure range, ensuring the monitoring temperatures are within the instruments specifications, and making sure the wetted materials are compatible with site chemistry. See the Levelogger and Vented Dataloggers User Guides for important information about maintaining your dataloggers.

Recharge the batteries as required. The SolSat 5 is fully charged at 4.2 volts, at 3.4 volts the SolSat 5 needs to be recharged.

Note: Contact Solinst if the batteries need to be replaced. Do not try replacing them yourself.

When not in use, the Reader Cable and power cable should be disconnected and the dust cap replaced on the power connection. The SolSat 5 should also be powered down; you can turn the SolSat 5 OFF using the Settings menu in the Wi-Fi App.

Note: If the SolSat 5 is stored without turning it off, the batteries will slowly drain. Once 2.6 volts is reached, the batteries may not recover or lose storage capacity.

9.0 SolSat 5 Diagnostics & Troubleshooting

Each report from the SolSat 5 includes battery voltage, therefore it can be monitored remotely and action taken only when needed.

Note: The batteries are fully charged at 4.2 volts, at 3.4 volts the SolSat 5 needs to be recharged.

When connected to the Wi-Fi App, you can view important status information in the SolSat 5 Main Screen, including battery voltage and satellite network availability.

If there is a suspected network issue, you can check the satellite connection in Settings by selecting “Check Satellite”. The Settings section also displays the Status of the SolSat 5, including network availability and if an Alarm has been set.

The **About** section also displays the battery voltage, as well as firmware version and SolSat 5 memory, all which could also help diagnose a potential problem.

Alarms can also be set and monitored for various parameters in the Solinstsat.com web portal.

www.solinst.com

High Quality Groundwater and Surface Water Monitoring Instrumentation

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