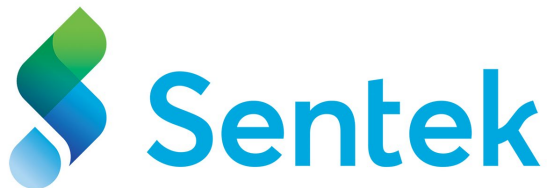


# Sentek IoT

## Installation + Setup Procedure and App Installation Manual

Version: 1.0

Date: July 2023



# Please Read This Manual Before Installing the Sentek IoT DTU

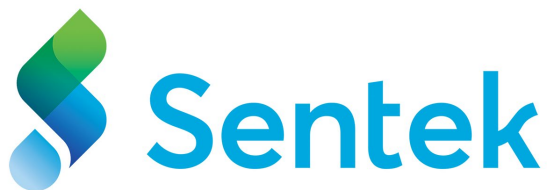


This manual is created to provide the knowledge to install the **Sentek IoT** quickly and correctly.

Reading this manual will assist you with the choice of the right tools and procedures. It should save you time and ensure the correct installation of the DTU and probe.

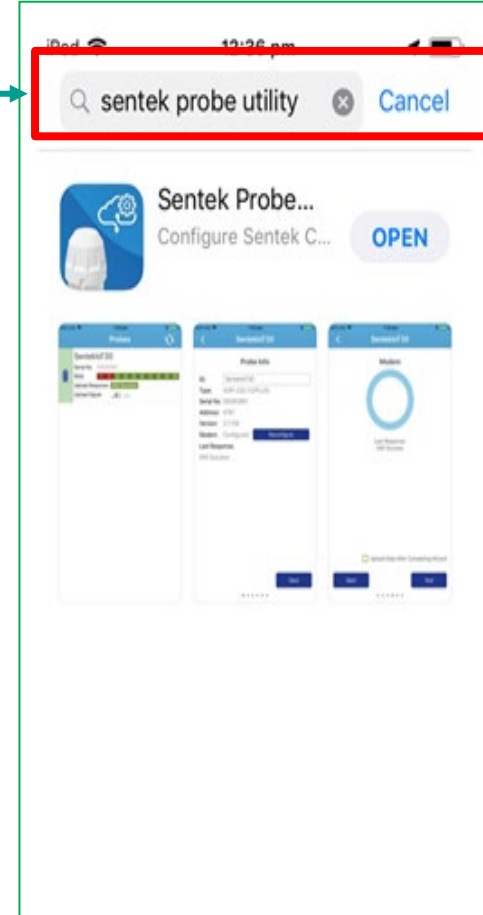
Please test the **App and Sentek IoT DTU** before installing it in the field.

# Installing Sentek Probe Utility App iOS

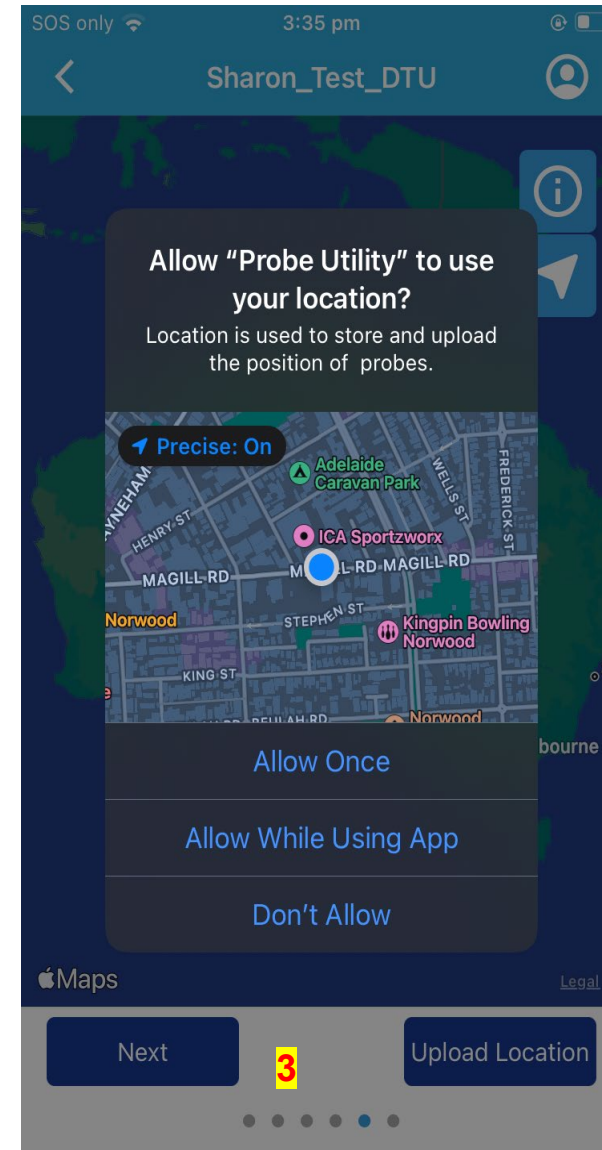
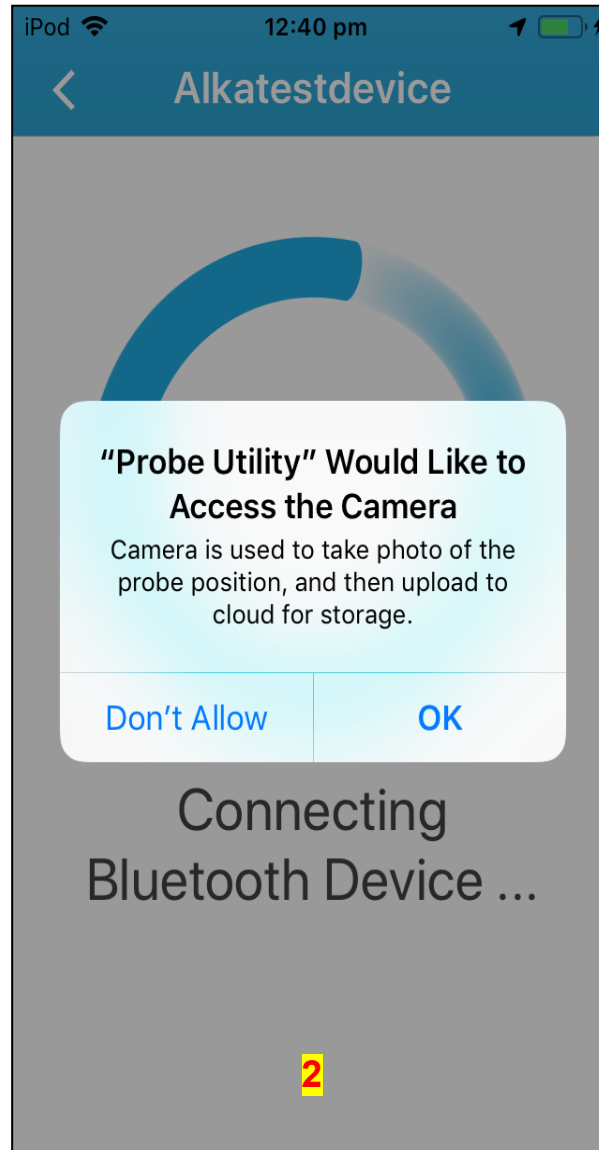
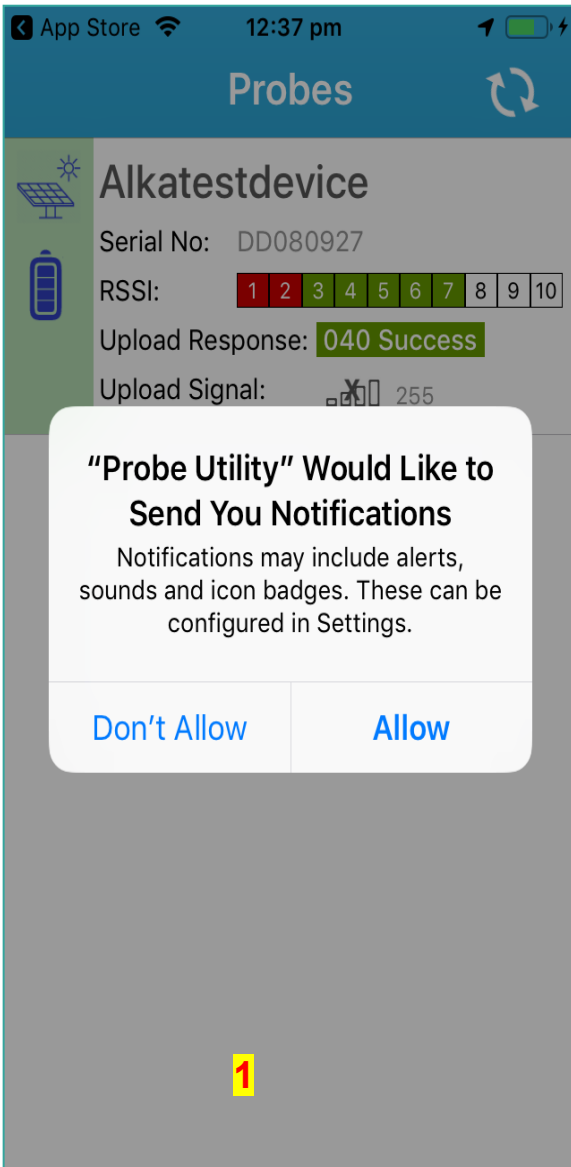


# How to install the Sentek Probe Utility App

1. On your iPhone, open the **App Store**.
2. To install the **Sentek Probe Utility** app, sign in with your Apple ID or create one.
3. To search for apps by name, tap **Search**, then type the name of the app: Sentek Probe Utility.
4. Tap **GET**, then tap **INSTALL**.
5. Once the application has finished installing, it shows up on the Home screen of your iPhone. (Probe Utility)



# Permission



Allow the App to send notifications, access the camera and location on the mobile device.

# Main-Screen Showing Probe Information



This screen provides you with the Probe information.

**Alkatestdevice**  
 Serial No: DD080927  
 RSSI: 1 2 3 4 5 6 7 8 9 10  
 Upload Response: 040 Success  
 Upload Signal: 11

**Alkatestdevice**  
 Serial No: DD080927  
 RSSI: 1 2 3 4 5 6 7 8 9 10  
 Upload Response:   
 Upload Signal:

**For Example**, The cloud symbol is used to indicate that a file or data is in the process of being uploaded to the cloud or remote server.






© Copyright Sentek Technologies  
 Version: 1.0.3(21), Build: Jan 20 2023 10:41:44



App Build information refers to your App's version and Build number.

Icon Name	Description
<b>Logger ID</b>	The Logger ID is used to supply the IrriMAX database Logger ID. The logger ID can be up to 16 alpha-numeric characters and underscore. It cannot be blank. The default is the probe's serial number.
<b>Serial No:</b>	The serial number is unique on your device for identification and warranty purposes.
<b>RSSI (Received Signal Strength Indicator) :</b>	The RSSI helps to identify the Signal strength between the Sentek IoT and the phone in which the App is running.  The stronger the signal, the better the quality of the connection. A low RSSI value may indicate a weak or poor-quality signal, resulting in slower data transfer rates or other connectivity issues. In this case, the phone should be moved closer to the DTU.
<b>Upload Response</b>	The Last Response displays the status at the end of the most recent upload or attempt to upload.
<b>Upload Signal</b>	The Upload Signal indicates the cellular signal strength.  Refer to <b>Appendix A</b> for further information. )

# Main-Screen Showing Probe Information

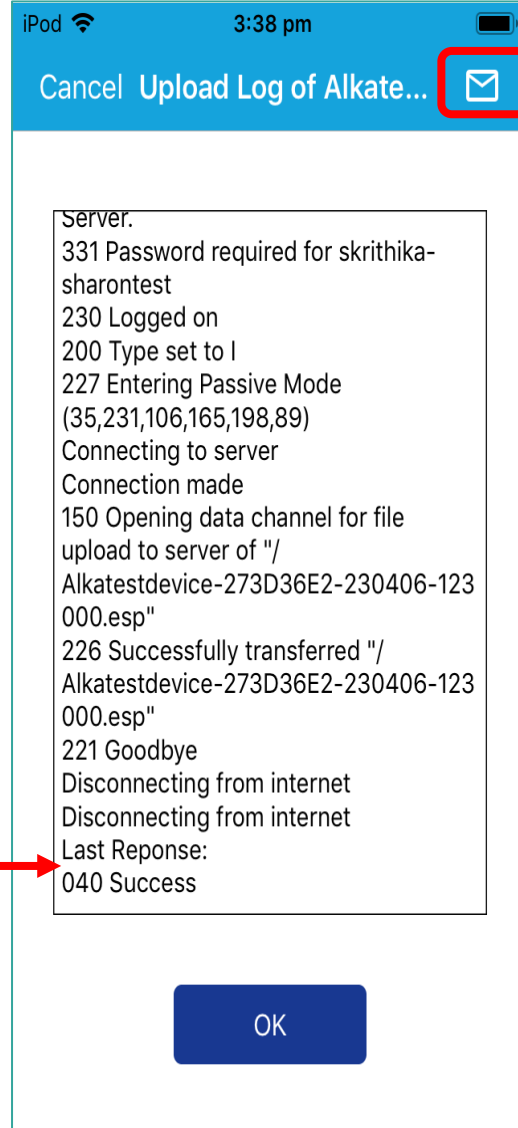
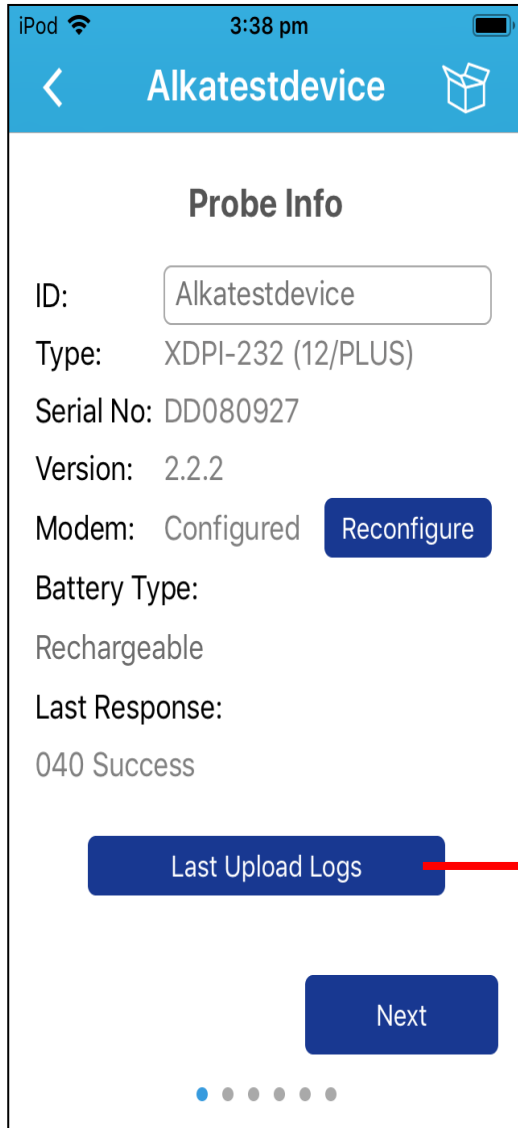


<p><b>Solar Voltage</b></p> 	<p>This shows the solar voltage as measured by a Sentek IoT.</p>
<p><b>Battery Voltage</b></p> 	<p>This shows the battery voltage as measured by a Sentek IoT.</p>
<p><b>Upload Signal</b></p> 	<p>The Upload Signal indicates the cellular signal strength.</p> <p>The upload response and signal strength details cannot be matched when the app processes the data.</p> <p>Once the upload is completed, the cloud symbol disappears, and the upload response and signal will show the values for the completed upload.</p>
<p><b>Scan</b></p> 	<p>The scan icon starts rotating when scanning for DTU-connected probes and stops once the scan is complete.</p>
<p><b>Upload Data</b></p> 	<p>The cloud icon appears on the screen when the modem is active /on.</p>

<p><b>Battery status</b></p>	
	<p>This indicates the battery status while it is charging.</p>
	<p>This indicates the battery is faulty.</p>



# Probe Info



Value	Description
<b>ID</b>	This name is used to supply the IrriMAX database Logger ID. The default is the probe's serial number.  The logger ID can be up to 16 alpha-numeric characters and underscore. It cannot be blank.  By clicking on the Logger ID, it can be edited or changed as per the user's preferences.
<b>Type</b>	This is the type of probe connected to the DTU.
<b>Serial Number</b>	This shows the serial number of the probe
<b>Version</b>	This is the version of the firmware in the probe.
<b>Modem</b>	This shows the status of the modem.
<b>Reconfigure Button</b>	This button allows the modem to be reconfigured.
<b>Battery Type</b>	This will always be Rechargeable for a Sentek IoT.
<b>Last Responses</b>	This is the result of the recent or last attempt to upload to the Internet.
<b>Last Upload Logs</b>	This is used to view the last upload log from the modem.

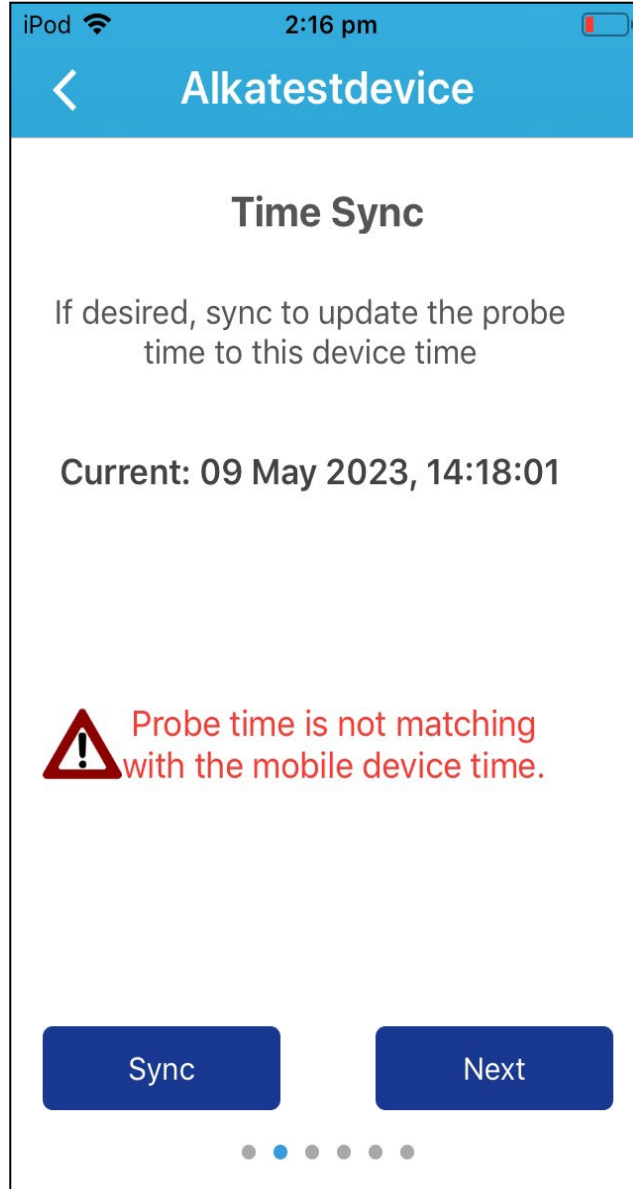
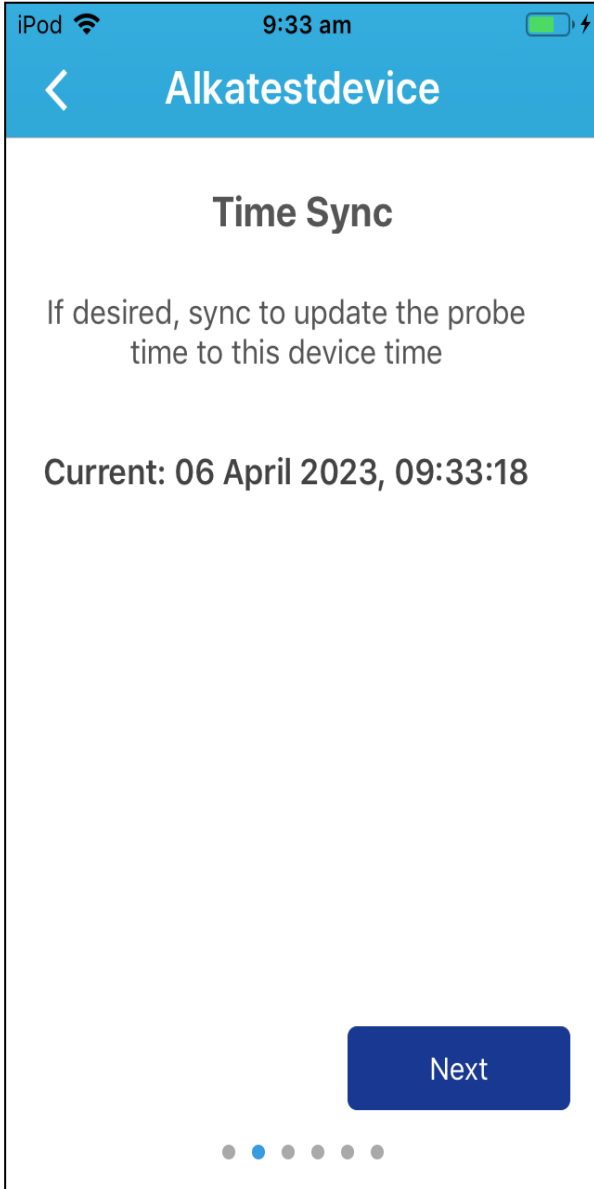


Use this Email button to send upload log information to [support@sentek.com.au](mailto:support@sentek.com.au) or yourself.

Click **Next** to move to the next slide or you can swipe the app screen.



# Time Synchronization



The Sentek IoT automatically updates your probe time. The clock screen shows the probe's date and time. By default, the date and time are visible on the Lock Screen and set based on your location.

The **Sync** button updates the probe time if you are in a different time zone. It allows the App to set the probe time to the device time.









Click **Next** to move to the next screen.

# Sensor Test



iPod 12:39 pm

Alkatestdevice In/mm

Address	Depth	Raw Count	Calibrated Value
Moisture			
 1	5	22601	0.0004 mm
 2	15	28945	0.0000 mm
 3	25	33813	0.0000 mm
 4	35	30376	0.0000 mm
 5	45	27809	0.0000 mm
 6	55	30240	0.0000 mm
Temperature			
 129	5	29716	24.0100 °C
 130	15	29696	23.8100 °C




Retrieve readings ... Next

This section provides you with information about the configuration values.

- **Address:** This displays the sensor address for each sensor.
- **Depth:** This provides the depth of each sensor.
- **Raw Count:** This displays the raw count for each sensor.
- **Calibrated Value:** After applying the calibration equation, this displays the converted sensor value.
- **In/mm:** To change the unit in In/mm you can click on in/mm at the top-right corner of your screen.

Click **Next** to move to the next slide.

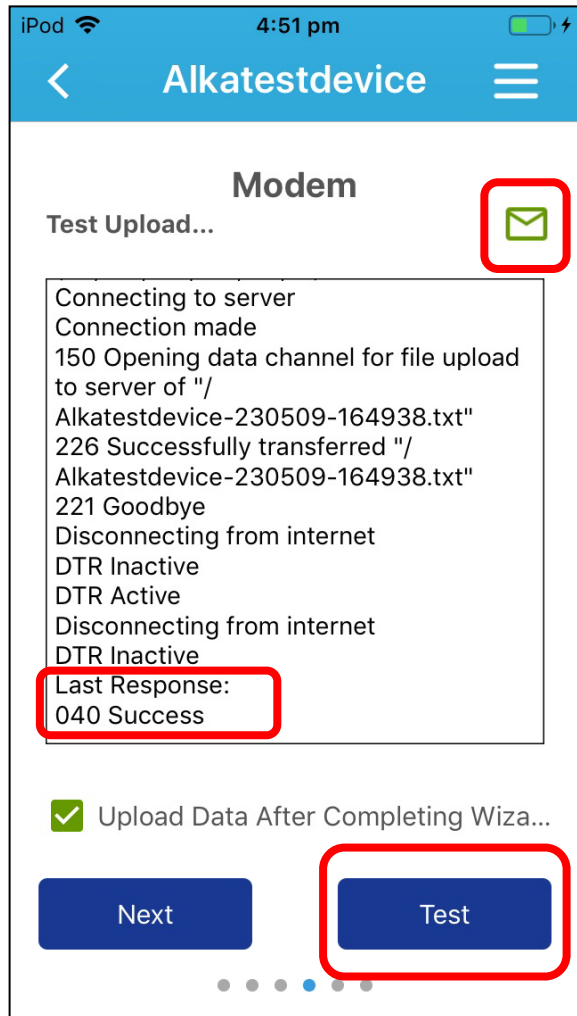
## Sensors symbols and addresses:


-  Moisture sensor addresses start at 1
-  Salinity sensors start at 65
-  Temperature sensor at 129

Click **Next** to move to the next screen.

# Modem

This section provides you with information about the Modem and its responses.




- **Test:** The  button initiates a connection to the Internet but does not upload any readings.

**Note:** The Sentek IoT and probe should not be deployed in the field until a successful test.

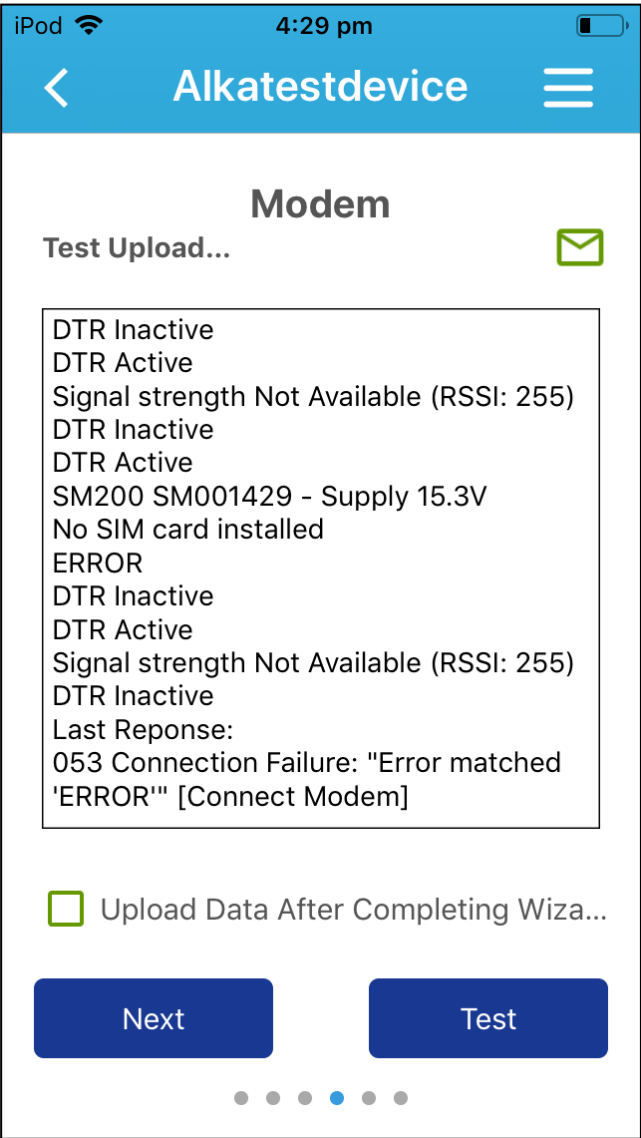
- **Upload Data After Completing Wizard:** This test uploads data in the probe when exiting the wizard. Once you tick the check box and complete the wizard, the app is redirected to the scan screen, where the cloud icon flashes to indicate data upload.

The user can verify that the data has been successfully uploaded to IrriMAX Live with the success code 040.

- **Email icon:** Tapping on the  email icon will open the app's email interface, where users can compose new email messages to [support@sentek.com.au](mailto:support@sentek.com.au) and send their issues.

Click **Next** to move to the next screen.

# Scenario – No SIM Card




If you encounter a 053 Connection Failure error while performing a test upload, it could be due to network connectivity issues or a missing SIM card, as shown in the image.

Click **Next** to move to the next screen.

# Modem



Cancel

**Open Session [Alkatestdevice]  
[DD080927]** 

To: [support@sentek.com.au](mailto:support@sentek.com.au)

Cc/Bcc, From: sentekdemo@icloud.com

Subject: Open Session [Alkatestdevice]  
[DD080927]

Hello Team,

The modem could not upload to the internet.


I would request you to help me with the following.

Thank you.

John Smith

SM200 SM001429 - Supply 15.3V  
No SIM card installed  
ERROR  
DTR Inactive  
DTR Active  
Signal strength Not Available (RSSI: 255)  
DTR Inactive  
Last Reported:  
053 Connection Failure: "Error matched  
'ERROR'" [Connect Modem]

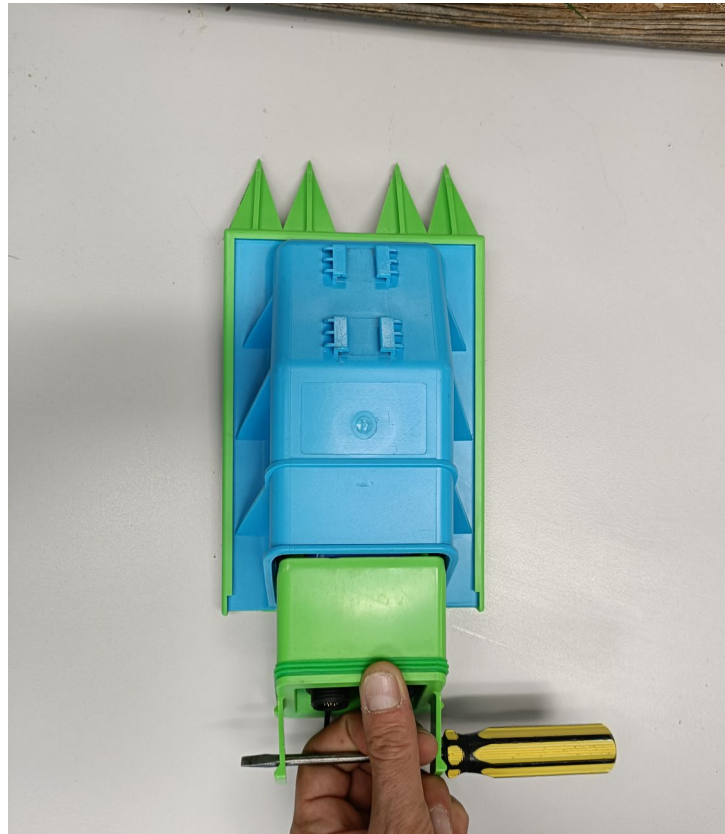
## Steps to send an email to support.

- Click on the email icon  to start composing an email.
- In the “**To**” field, [support@sentek.com.au](mailto:support@sentek.com.au) will be auto-filled.
- In the “**Subject**” field, the user’s Logger ID and Serial number will be auto-filled.
- The error message will be included in the “**Body**”. The user can provide more detailed information about the issue or question.
- Review your email to ensure that it is clear.
- Click the **Send** button to send the email to the support team.

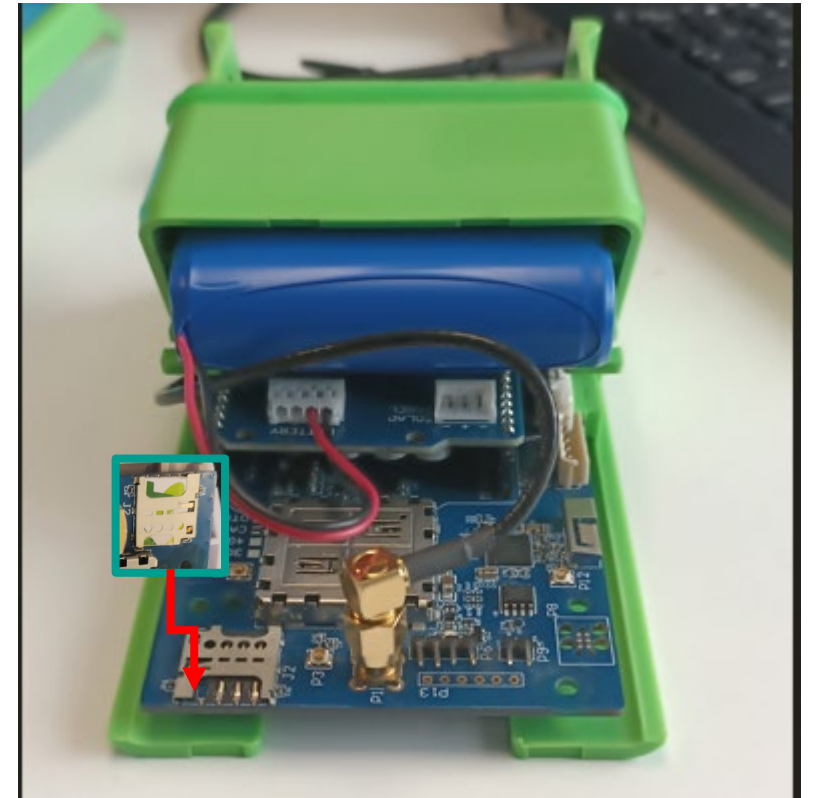
# Inserting own sim card



Ensure the **DTU** box is disconnected from the probe and antenna cables when opening the **DTU**.

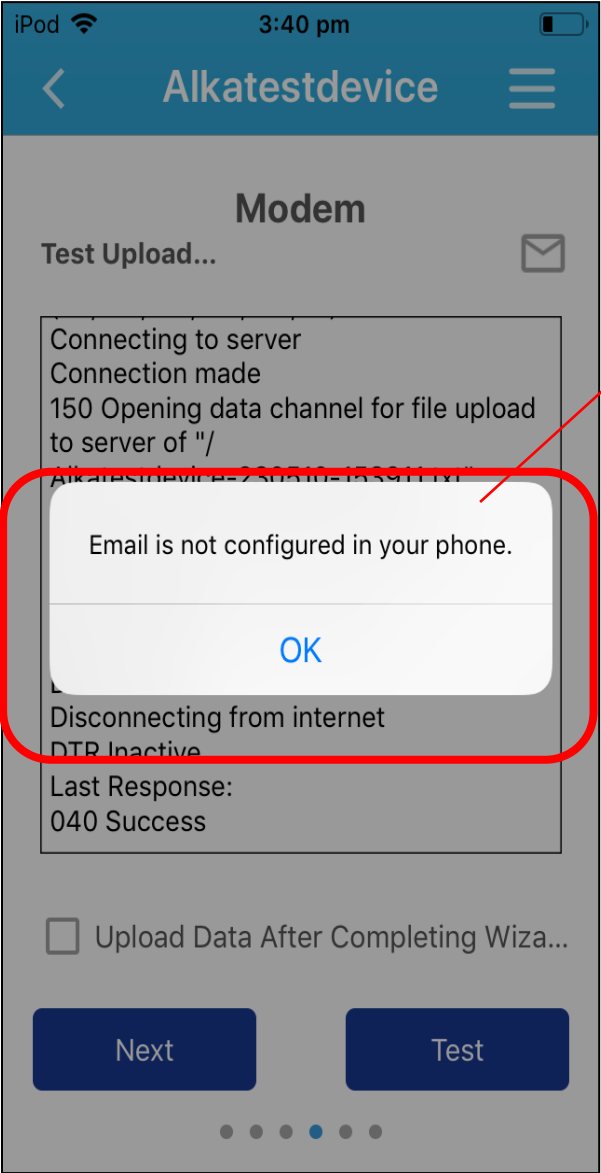


Carefully remove the cover or casing from the **DTU** box using a screwdriver.



Insert the **sim card** into the **sim holder**.

# If email cannot be sent from the iPhone



In case you receive the following error while sending an email to support, please follow the step-up process by clicking on the link below:

<https://support.apple.com/en-au/HT211082>

# Test/Upload Result Codes

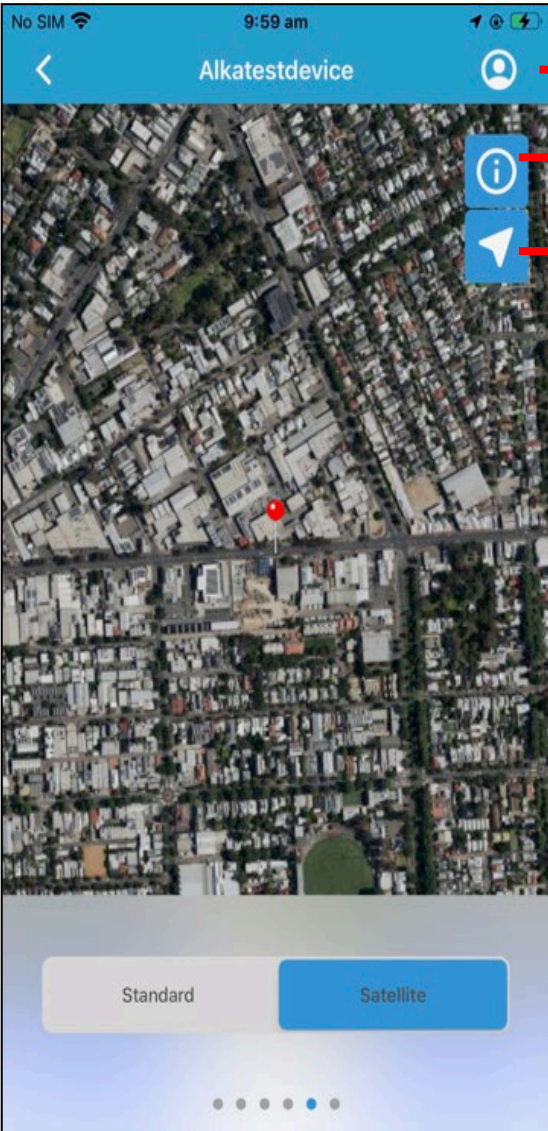


<b>053</b>	<b>Connection Failure</b>	Modem not responding to commands, or could not connect to internet (see note below)
<b>054</b>	<b>Server Error</b>	Problem communicating with FTP server.
<b>041</b>	<b>Success (No Data)</b>	No new data to upload. This occurs when the user ticks the option to upload data after completing the wizard, and there is no data to upload.

To learn about the test and upload code, please click on the link <https://sentektechnologies.com/download/sentek-plus-all-in-one-compact-manual-v1-1/>



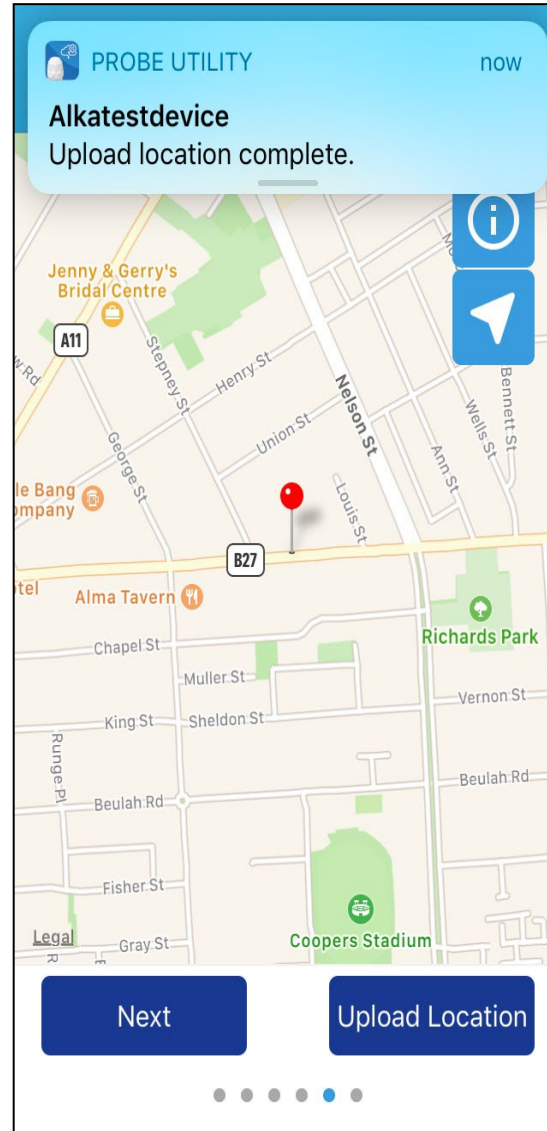
# Upload Location



Tap to enter your IrriMAX Live account login details.

Tap to change the map view (Standard/Satellite)

Tap to recenter the position.



This section provides information on how to upload your Probe's location directly to your IrriMAX Live account.

Enter IrriMAX Live account login details to upload the location.

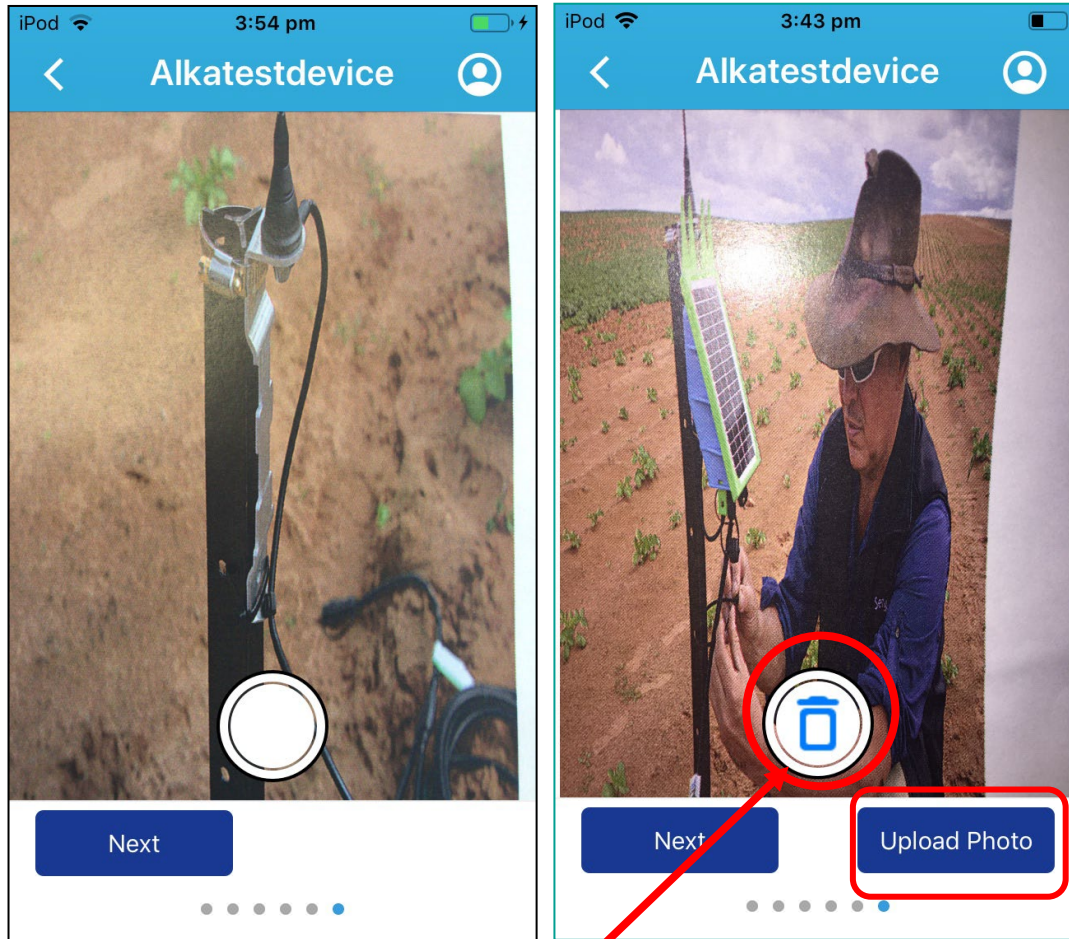
- Tap and hold the pin until you see it appear under your finger and drop it to your desired location. 📍

Click **Upload Location** to upload the probe's location or skip to the next screen.

Once the location is successfully uploaded, you get a notification at the top of the screen.

Click **Next** to move to the next slide.

# Upload Photo



This section provides information on directly uploading the photo into your IrriMAX Live Account.

You can follow these simple steps to upload a photo directly into your IrriMAX Live Account.

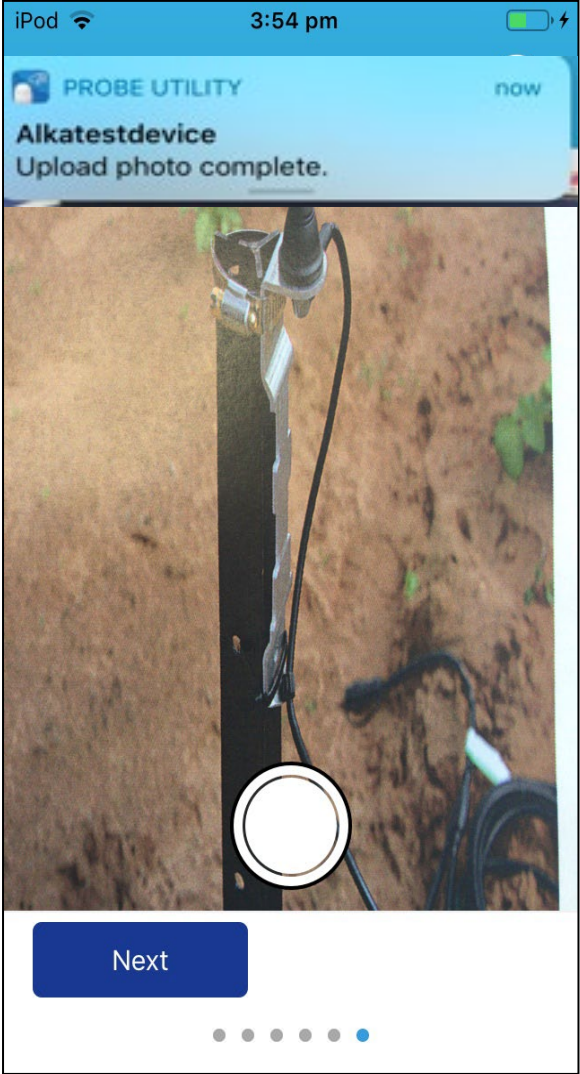
- Take a photo of the probe or location you want to upload using your mobile device's camera.
- Then, tap the Upload Photo button at your screen's bottom right.

**Note:** Once the database is created, the photo can be viewed on IrriMAX Live.

The photo will be added to your IrriMAX Live Account's database after the upload. You can then view the photo within the IrriMAX Live platform.

**Discard Photo** –If you are unhappy with the photo, click the **Discard Photo** icon to delete the image.

# Upload Photo (continued)



The app displays a notification message when the photo has been uploaded.

# Appendix A – Probe Utility App (Upload Signal)

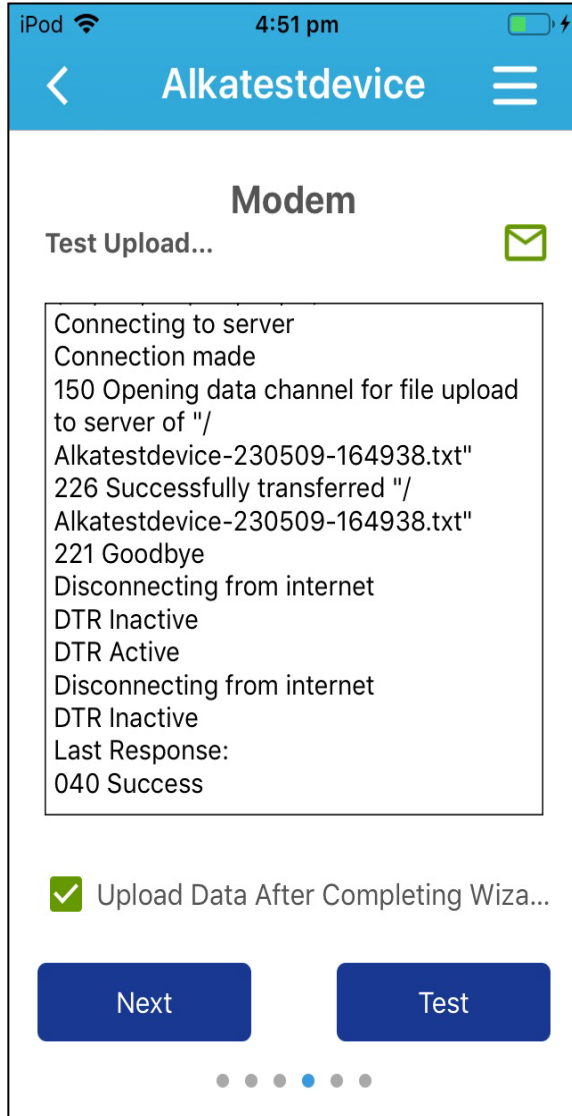


RSSI (Received signal strength indicator)	Condition
No Signal	
0 Bars	
1 Bar	
2 Bars	
3 Bars	
4 Bars	

The Probe Utility App identifies the modem's upload signal in the DTU.

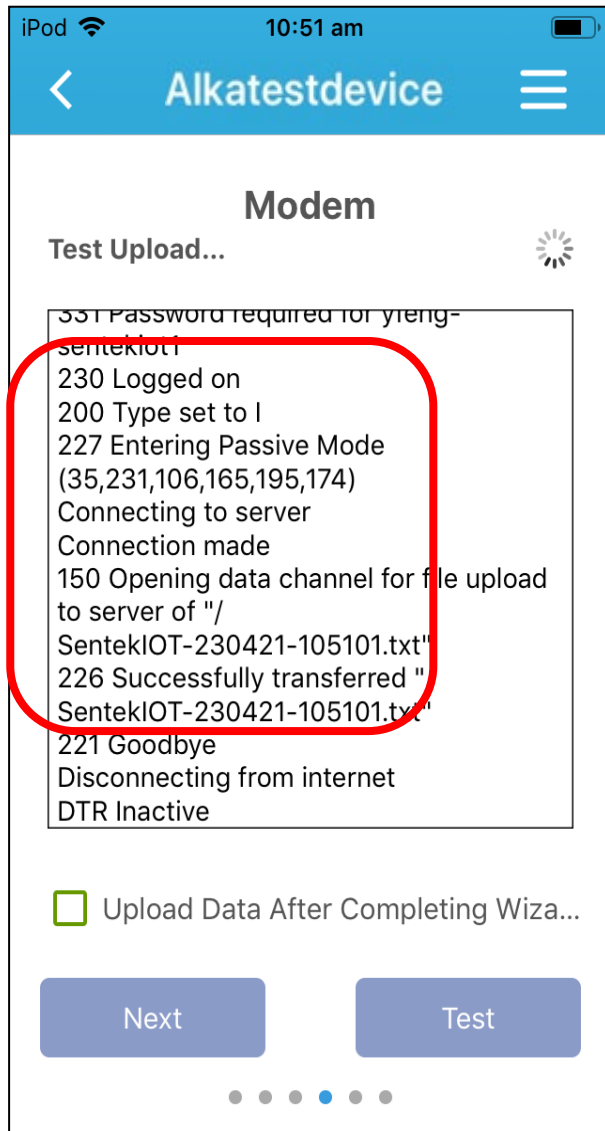
- If you receive 2 bars or more, the signal quality is considered good.
- If you receive only 1 bar, it indicates a weak signal. Despite the weak signal, the Data Terminal Unit (DTU) will still attempt to upload data, but there may be occasional failures in the upload process.

# Modem last upload response code



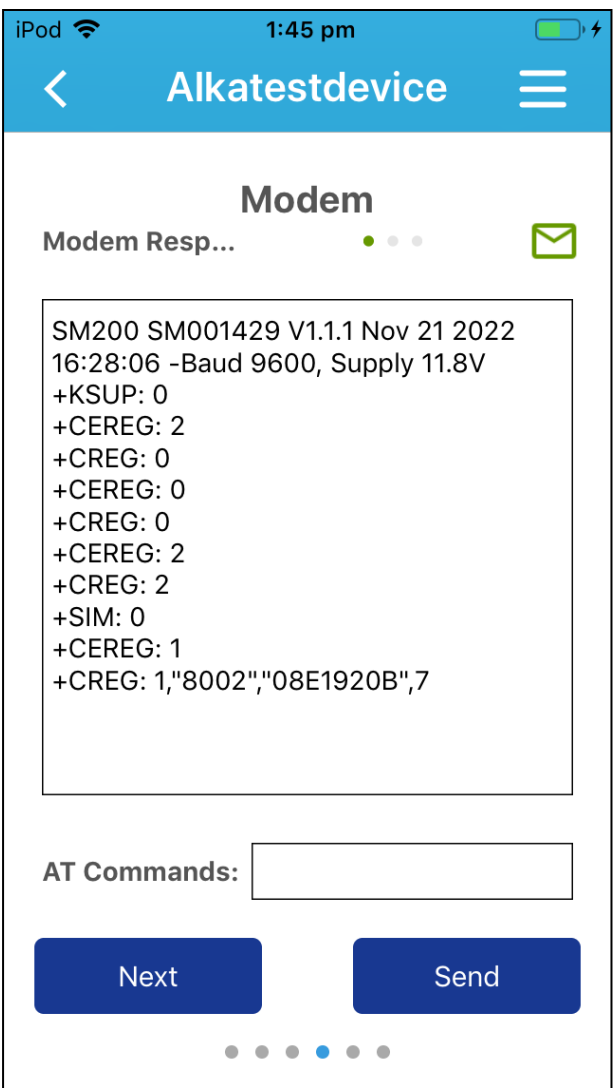
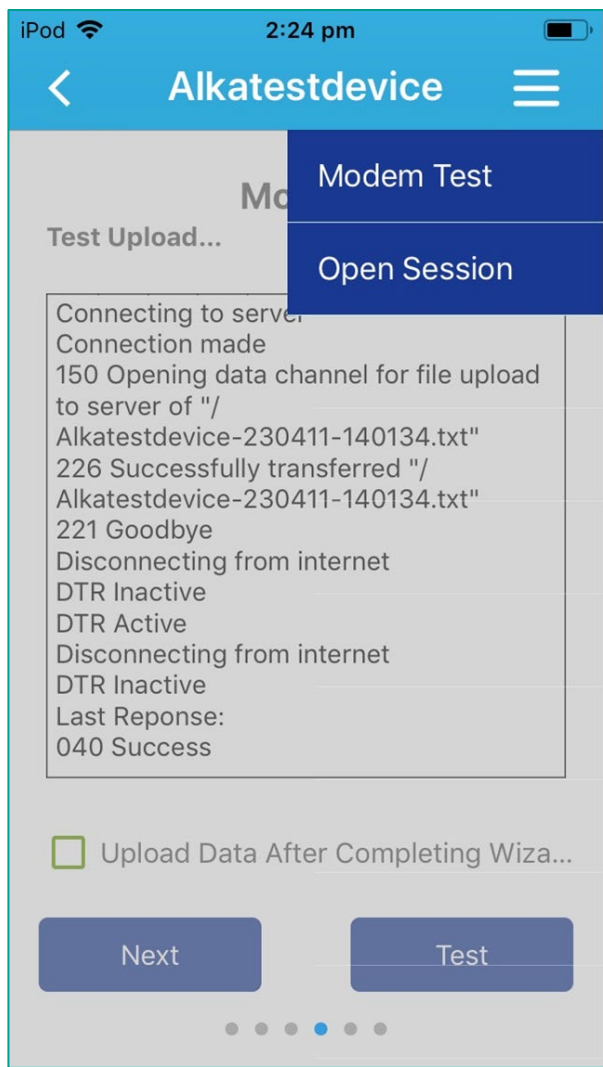
Last response	Description
040-049	Success
041	No Data
042	Upload Cancelled by User
050-079	Failure
080	Modem In Use
081-082	Uploading
083-099	Failure
000-039	Check
199	Initialising (Shown upon first power on, before and while Sentek IoT communicates with probe).
198	No Probe Found (Shown in Grey) After initialisation if no probe was found.

# Server Upload Codes (FTP server)



Upload Code	Description
230	User logged in, proceed.
200	The requested action has been successfully completed.
227	Entering Passive Mode
150	File status okay; about to open data connection.
226	Closing data connection. Requested file action successful.
221	Service closing control connection. GoodBye
220	Welcome to IrriMAX Live

# Modem



**Open session** - This turns the modem on and allows the sending of AT commands to the modem.

**Modem Test** – This option returns to the Modem Test mode allowing for a Test upload to be initiated.

# Querying the APN in the Sentek IoT



iPod 4:50 pm

Sharon Test DTII Alkatestdevice

### Modem

Modem Resp...

```
+CEREG: 2
+CEREG: 1
+CEREG: 4
+CEREG: 1
SM200 SM001924 V1.1.1 May 2 2023
13:34:50 -Baud 9600, Supply 10.5V
+KSUP: 0
+CEREG: 2
+CEREG: 0
+CEREG: 2
+SIM: 0
+CEREG: 1
+CEREG: 4
+CEREG: 1
```

AT Commands:

Next Send

SOS only 3:17 pm

Alkatestdevice

### Modem

Modem Response

```
+CREG: 4
+CEREG: 1
+CEREG: 1,"8002","08E1920B",7
SM200 SM001429 V1.1.1 Nov 21 2022 16:28:06 -Baud
9600, Supply 12.3V
+KSUP: 0
+CEREG: 2
+CEREG: 0
+SIM: 0
+CEREG: 0
+CEREG: 0
+CEREG: 2
+CEREG: 0
+CEREG: 0
+CEREG: 0
+CEREG: 2
+CEREG: 2
+CEREG: 1
+CEREG: 1,"8002","08E1920B",7
[SEND] AT+CGDCONT?
AT+CGDCONT?
+CGDCONT: 1,"IP","telstra.m2m",,0,0,0,0,,0,,,,
+CGDCONT: 2,"IPV4V6",,,0,0,0,0,0,,,,
OK
```

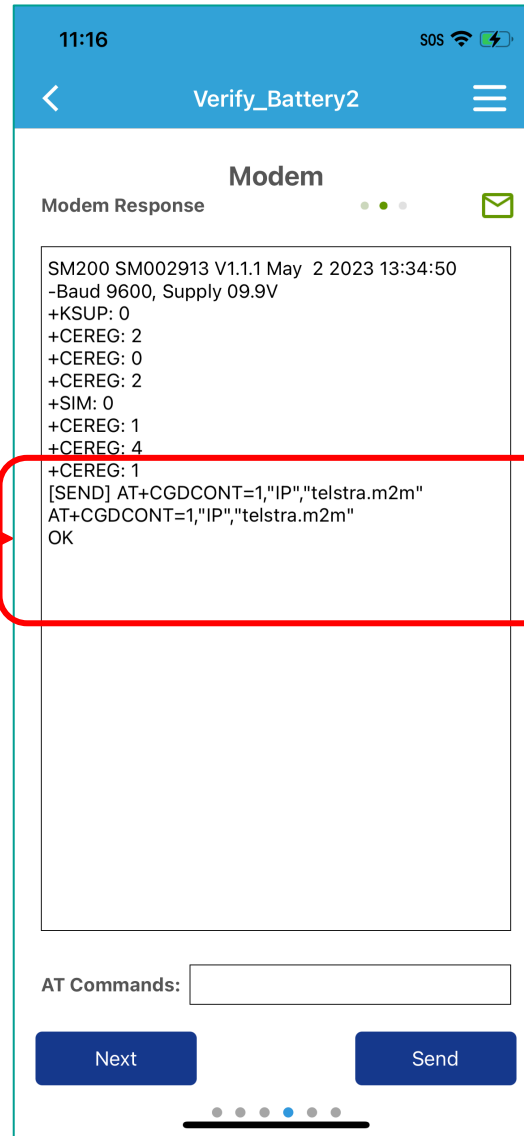
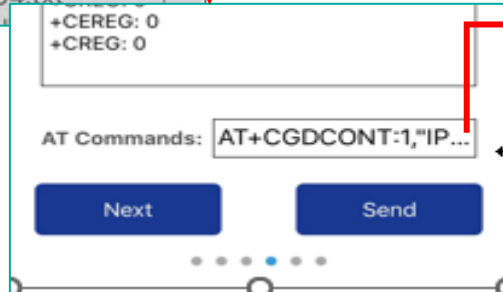
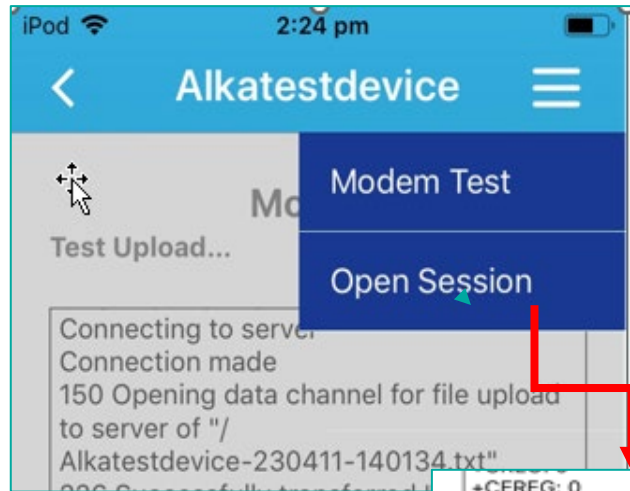
AT Commands:

Next Send

**AT Command for Writing APN**  
Used to query the APN currently set in the modem. The response should be in the form  
**AT+CGDCONT?**  
**+CGDCONT:1, "IP", "<APN>"**



# Setting APN via the Probe Utility App's Open Session



The Probe Utility App allows you to conveniently set an Access Point Name (APN) using the "Open Session" feature. This feature enables you to turn on the modem and send AT commands directly to the modem for configuration.

## Step 1: Accessing Open Session

1. Launch the Probe Utility App on your device.
2. Navigate to Modem Tab.
3. Navigate to the "Open Session"

## Step 2: Sending AT Commands

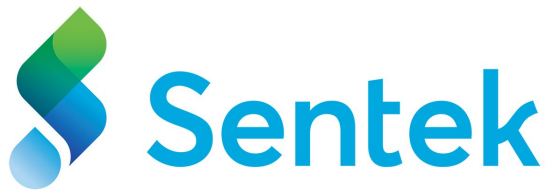
1. In the "Open Session" interface, locate the AT Commands input box.
2. Enter the specific AT command to set the desired APN. In this example, **telstra.m2m** is the APN for the cellular service provider "M2M One."
3. Click the "Send" button to execute the AT command.

**Note:** Suggest mentioning the AT commands can only be sent after +KSUP: X message is received.

## Step 3: Verifying APN Configuration

1. Once you have sent the AT command, verify that the APN has been correctly set.
2. You can check the APN settings on your device to ensure they match the configuration.

# Connecting all the Equipment



# Connect the Cable to the Probe and the new Sentek IoT



Drill & Drop Probe



iPhone with **Probe Utility** App installed



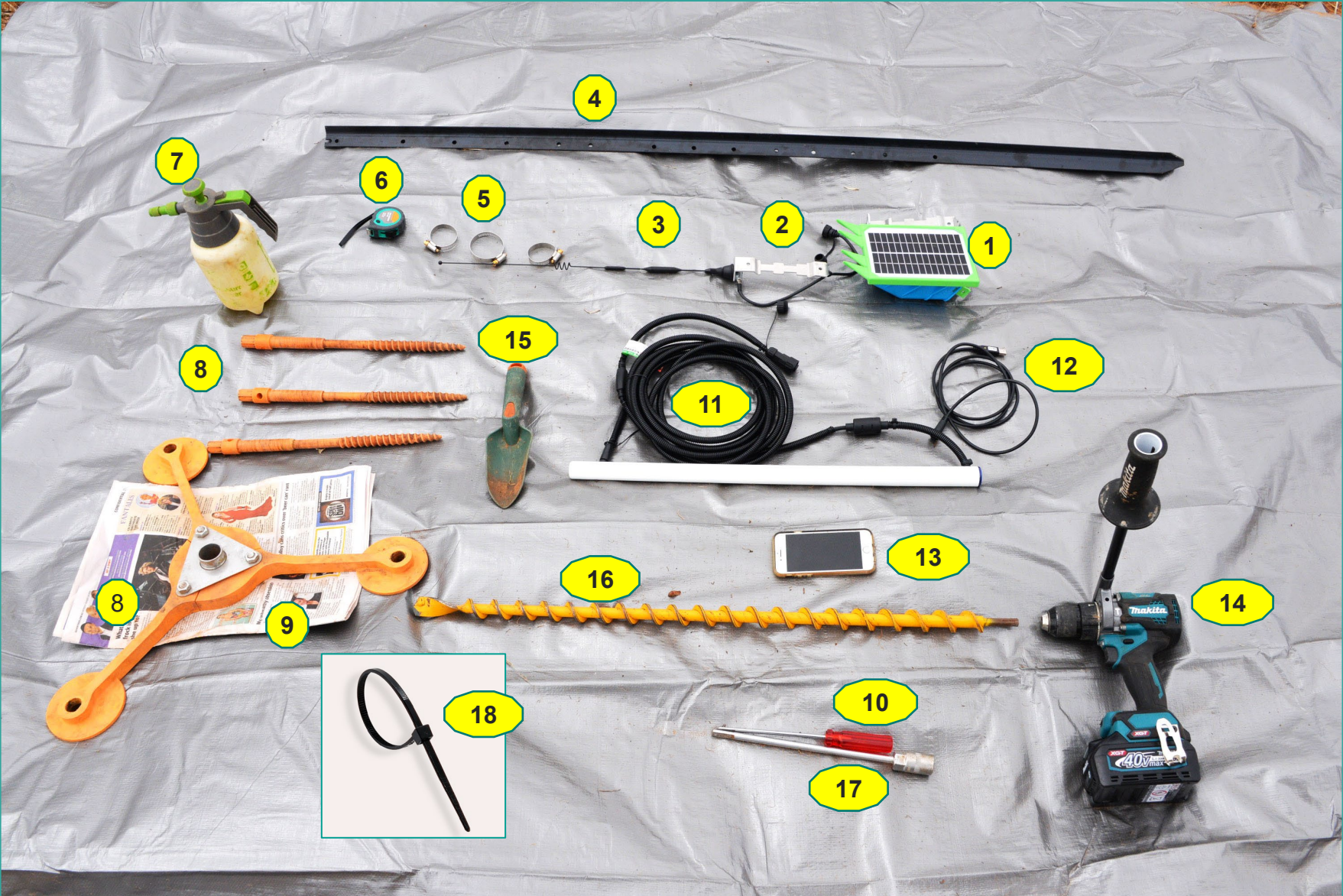
Sentek IoT with External Antenna



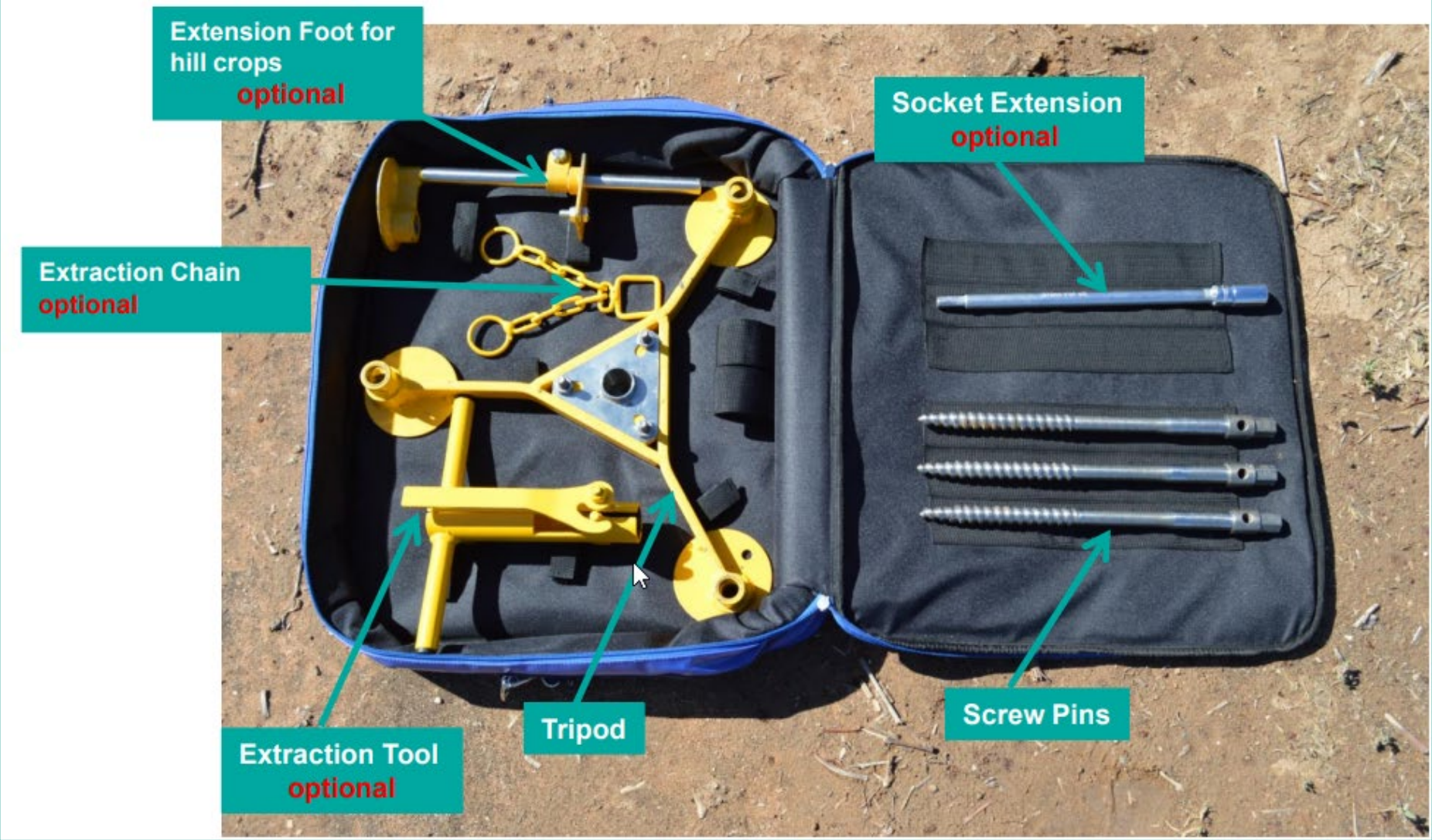
# Installation Tools for Sentek IoT



- 1. Sentek IoT
- 2. Mounting Bracket
- 3. High Gain Antenna
- 4. Star Dropper
- 5. Hose Clamp
- 6. Measuring tape
- 7. Pressurised Water Bottle
- 8. Tripod with Screw Pins
- 9. Newspaper
- 10. Screwdriver
- 11. Drill & Drop Probe
- 12. USB Cable
- 13. iPhone
- 14. Battery Drill
- 15. Trowel
- 16. Tapered Auger
- 17. Socket for Screw Pins
- 18. Cable Ties



# Tool Kit



# High-gain antenna and cable



Antenna cable

A high-gain antenna excels in signal transmission, significantly enhancing crop monitoring capabilities in areas with limited connectivity.

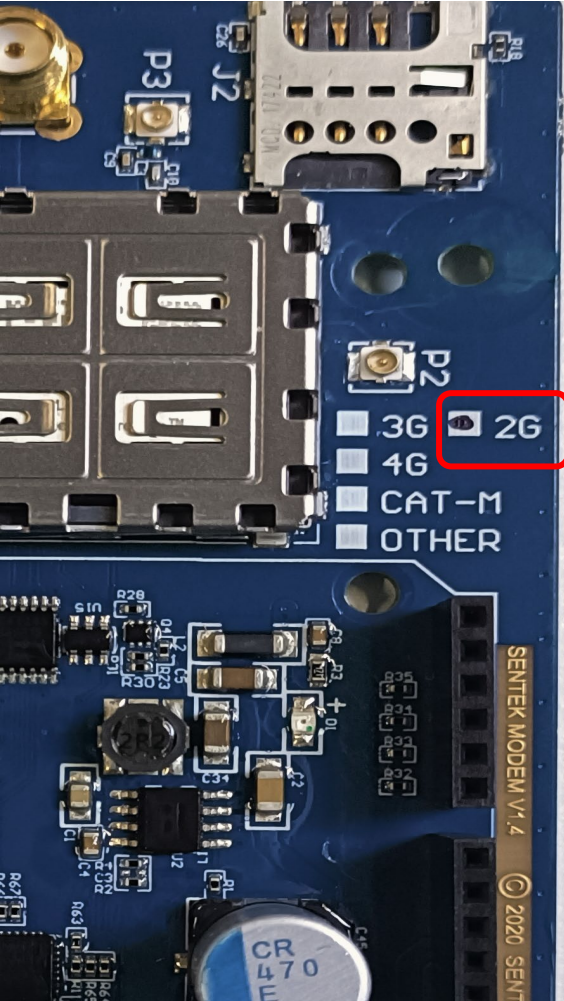
Or

Elevating the entire DTU (including the antenna) can improve connectivity by achieving better signal reception.

# Steps for European regions in case of using different cellular type



Insert SIM card into the SIM card holder

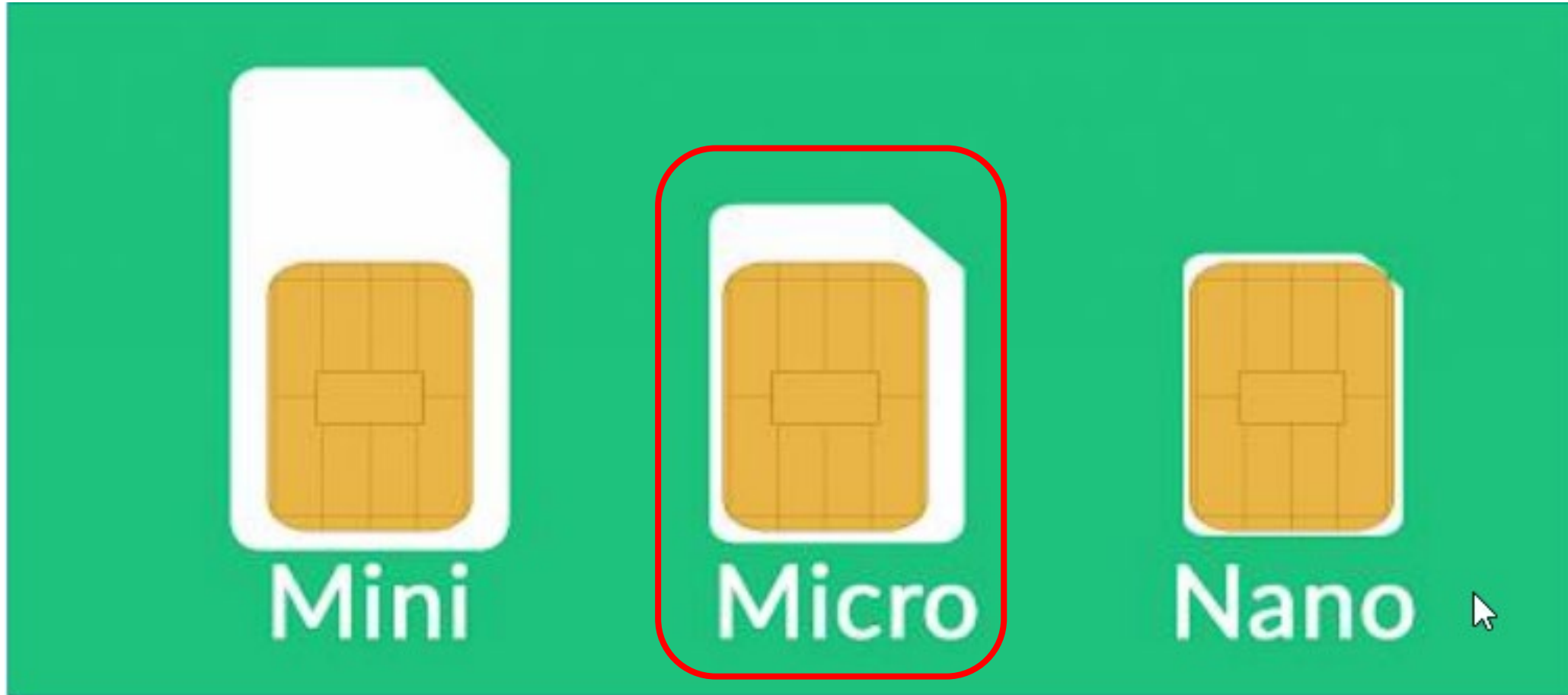


The chosen module is based on the network type as below ;

- i) HL7800 – 4G AU and 4G US
- ii) HL7802 – 2G and CAT-M (Europe)
- iii) HL7650 – 3G and CAT-1 (Optus)

The modem comes with the module option marked.

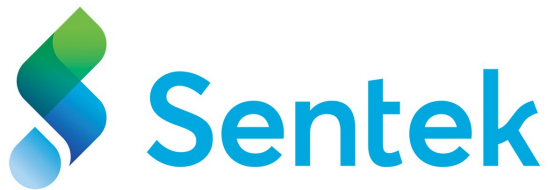
# SIM Card



Buy the right SIM card = 1 MB/month (recommended)  
Use the right size SIM card( **Micro Sim**)



# Field Installation



# Tripod Installation



Place two sheets of newspaper beneath the Stabilisation Tripod. This allows easy removal of the augured soil later.

Ensure the tripod is accurately set up and centred over the designated installation site.

# Quality of the Drilled Hole for Probe Insertion



Sentek Stabilisation Tripod is essential for achieving accurate readings with the tapered auger. Without using the tripod, there may be an air gap between the probe and the soil, leading to incorrect readings and inaccurate measurements of irrigation. Therefore, use the tripod to ensure the drilled hole's quality is good.

# Preparation for Probe Installation.



- Insert the probe carefully into the hole, pushing it all the way down until the top of the probe is level with the soil surface.
- The first sensor will now be located at a 5cm depth.

# Probe Installation Completed

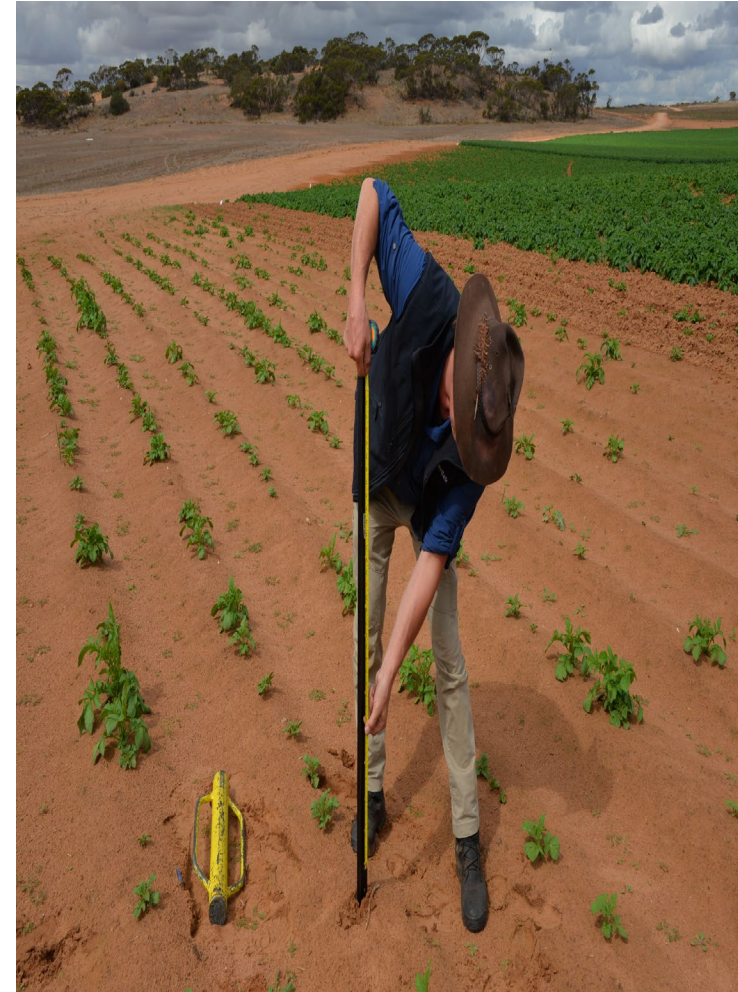
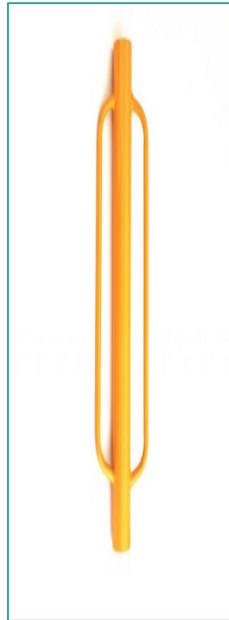


The (almost) completed installation of the probe should appear as follows: The probe must be in firm contact with the soil, and you should not be able to push it further by hand.

**Note:** Please ensure that the channel for the cable is filled with soil.

# Installing the Star Dropper

Place Star Dropper on the ground about 1-2 meters from Probe.



Use the Rammer to install the star dropper in the ground.

**Important** - A minimum height recommended for the star dropper must be **1-2 m** above the ground.

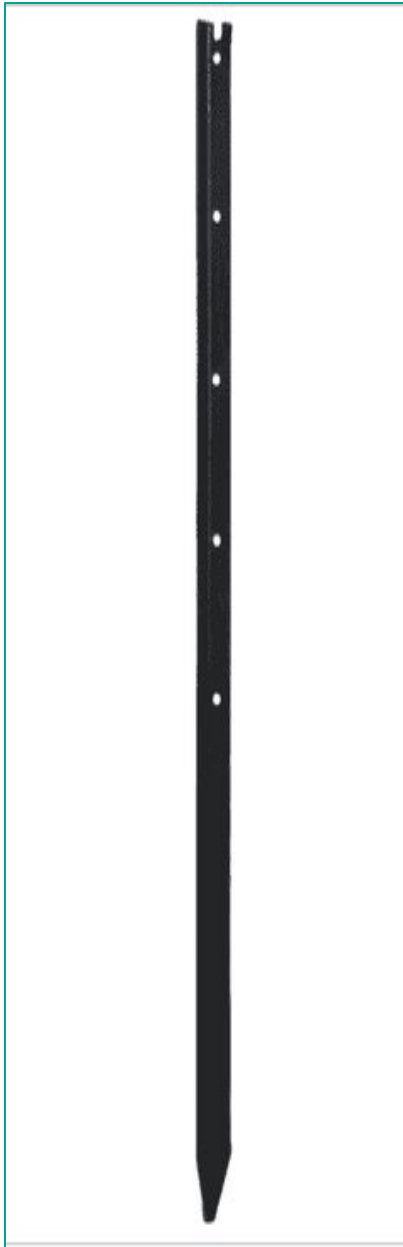
# Measuring the height of the star dropper



Ensure the star dropper is centered and aligned straight.

Use a level to ensure the pole is perfectly vertical and positioned at a recommended height of **1 meter** above the ground.

# Recommended Installation



**Star  
Dropper**



**Aluminium Pole**



# Solar Panel

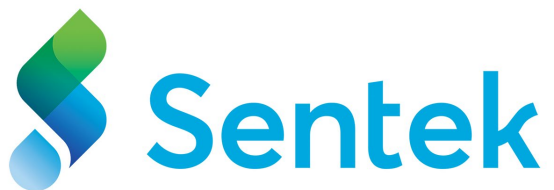


North-facing panels provide the highest energy output in the southern hemisphere due to the abundance of sunlight directed from the north. Conversely, south-facing panels are preferred in the northern hemisphere for the same reason.

The Sentek IoT has a fixed solar panel angle suitable for most mid to low latitudes. High latitudes should consider adjusting the angle for optimal performance.

Regularly inspect and ensure the solar panels are correctly oriented and angled. External factors like winds and birds can cause the panels to shift from their ideal position, decreasing efficiency.

# Steps to Place New Sentek IoT on the Mounting Bracket



# Installing the Mounting bracket and Hose clamp



- Place the mounting bracket on the star dropper base.
- Determine where to tie the Sentek IoTat a minimum height of 1 m off the ground.
- Use a Hose clamp to fit the mounting bracket to the Star Dropper.

# Installing the Mounting bracket and Hose clamp



Tighten the hose clamp via thumbscrews to secure the Sentek IoTposition using a screwdriver.

# Secure the end of the bracket with a cable tie to the star dropper



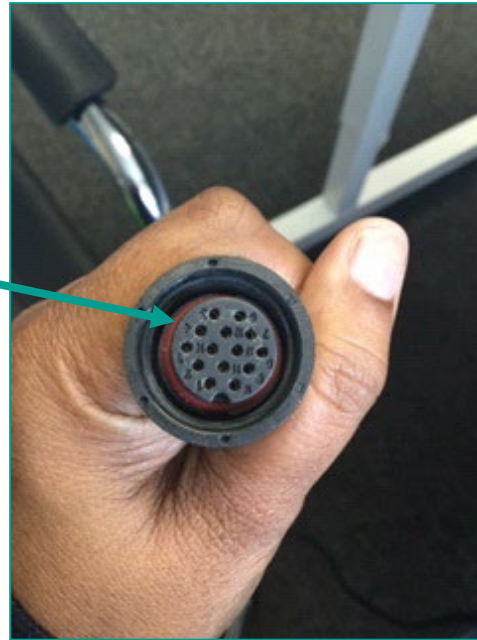
# Plugging cables into the connector



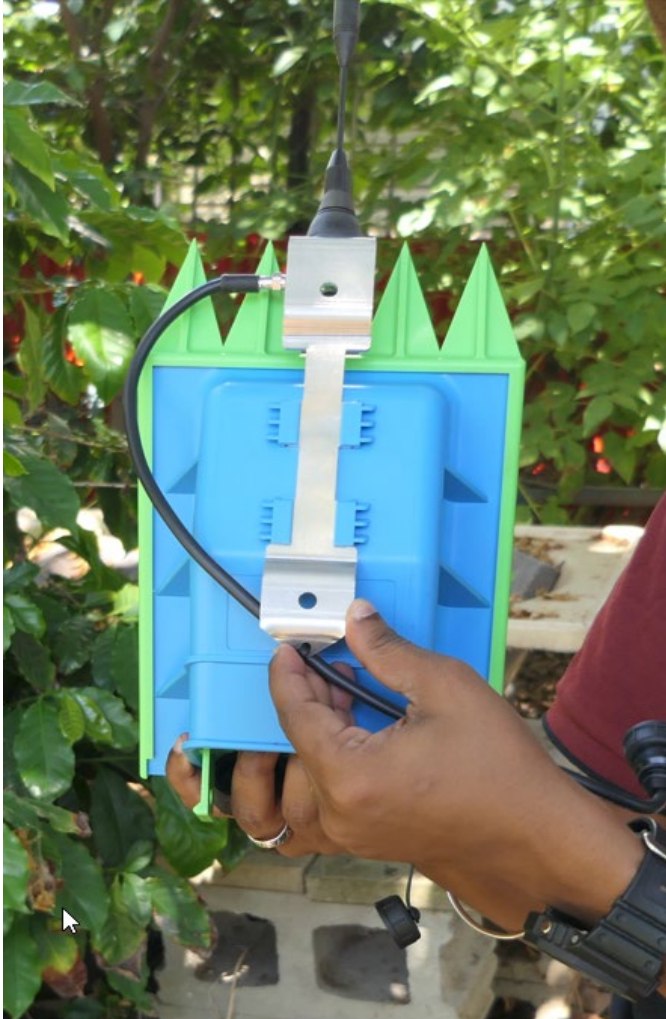
If practical, mount and wire the Sentek IoT housing, solar panel and antenna onto the mounting bracket before field installation.

# Plugging cables into the connector.

Drill & Drop probes with 14Pin connector ('brickless')



# Placing the Sentek IoT on the mounting brackets



Fixing the mounting bracket on the star dropper is essential.

In our example, we used a hose clamp and cable ties to securely attach the mounting bracket to the star dropper. This made placing the Sentek IoT easier during installation.

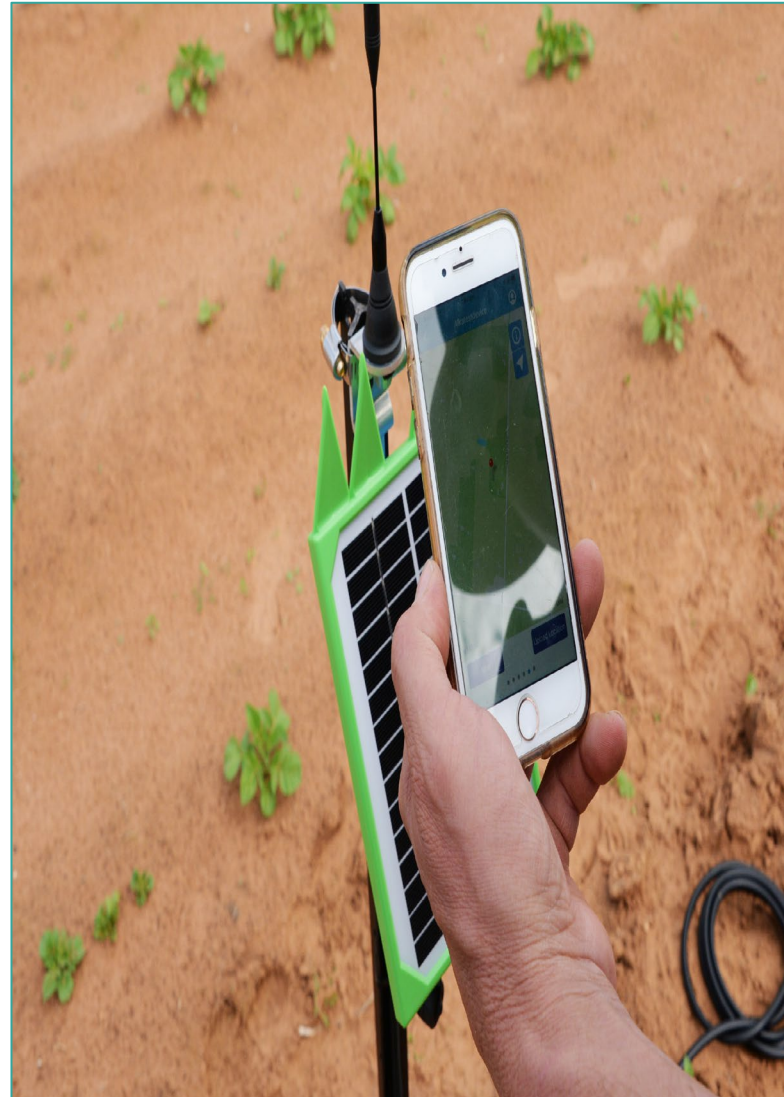


# Final Look

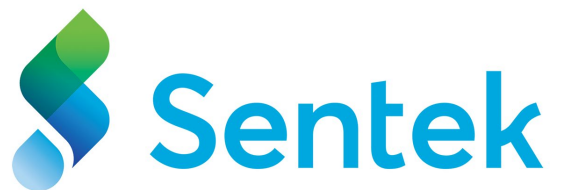


This is the Data Transmission Unit (housing containing modem, battery and solar charger board). A check on the orientation and angle of the solar panel should be performed regularly. Winds, birds etc., can move the panel from its ideal position reducing its efficiency.

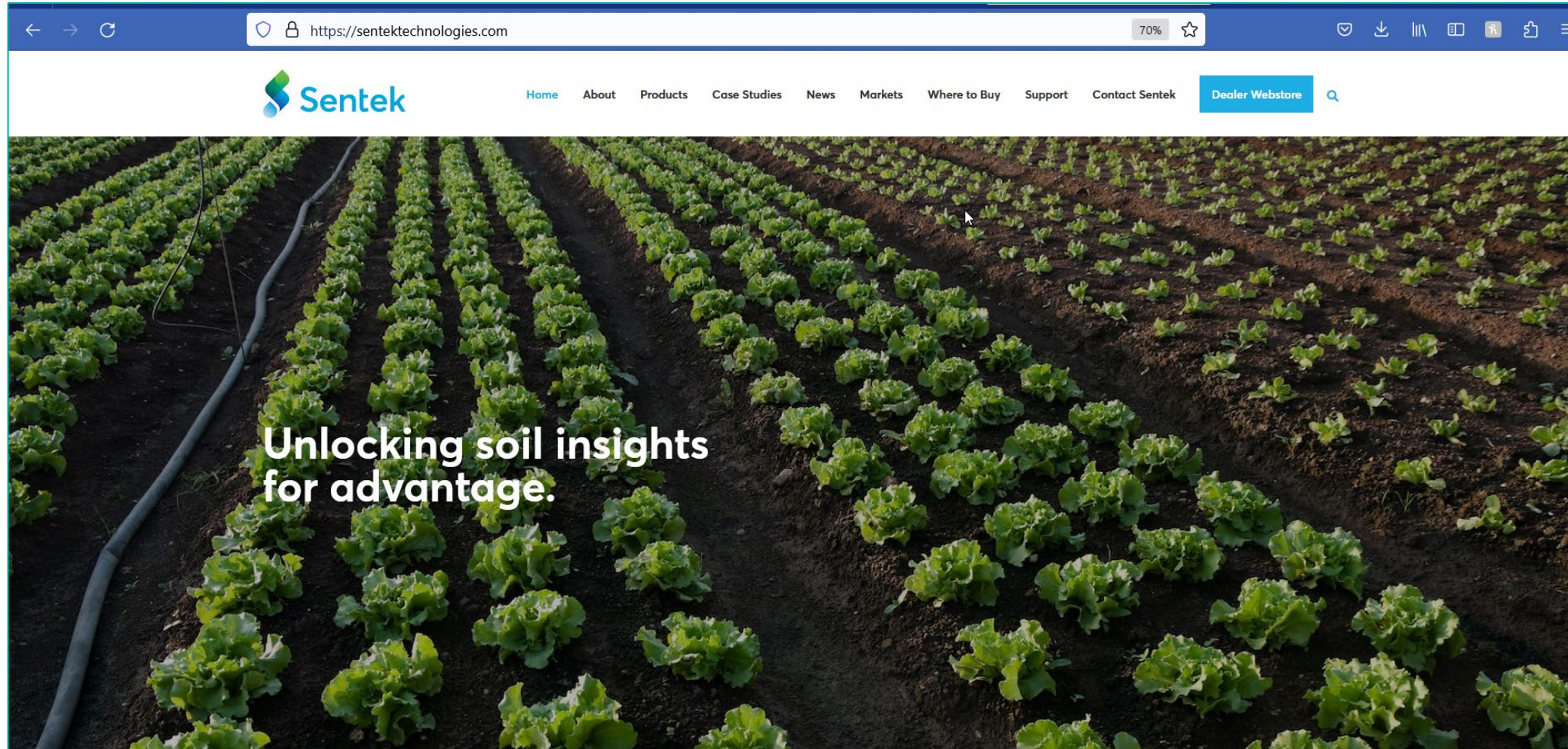
# Getting Connected to the Application (Sentek Probe Utility)



# Connecting with Pconfig



# Go to the Sentek Webpage



<https://sentektechnologies.com/>

# Download & Install the Probe Utility Software



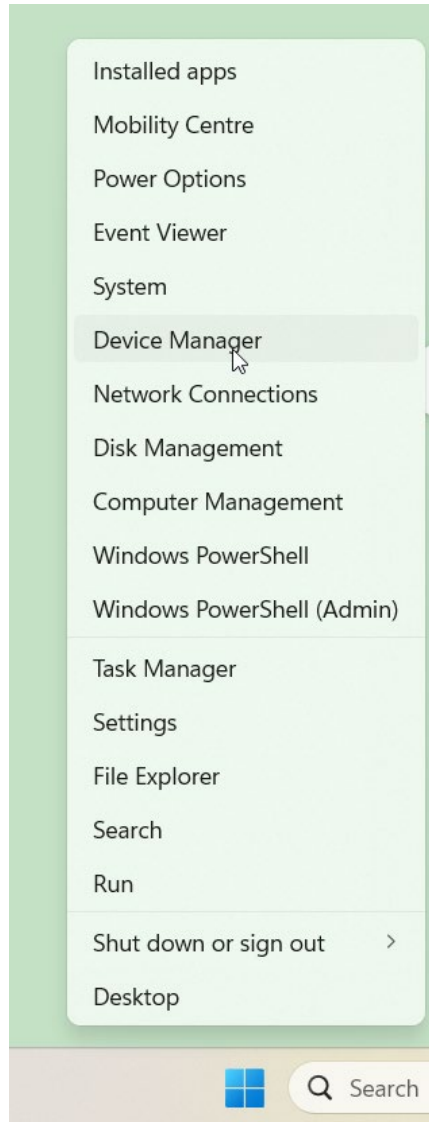
The screenshot shows the 'Software & Apps' section of the Sentek website. It lists several downloadable items:

- Sentek Connect - iPhone (2.84 MB, 140 downloads)
- Drill & Drop Connect Android (4.28 MB, 572 downloads)
- Sentek Modem (SM200) User Guide (1.63 MB, 379 downloads)
- Quick Guide, getting started with Irrimax Live (2.66 MB, 717 downloads)
- Sentek Field Guides App (1.41 MB, 534 downloads)
- Probe Configuration Utility Manual (1.18 MB, 1799 downloads)
- Probe Configuration Utility (Ver. 1.9.7) (3MB, 4121 downloads)** - This item is highlighted with a red box.
- Probe Utility App for Android (240.63 KB, 851 downloads)

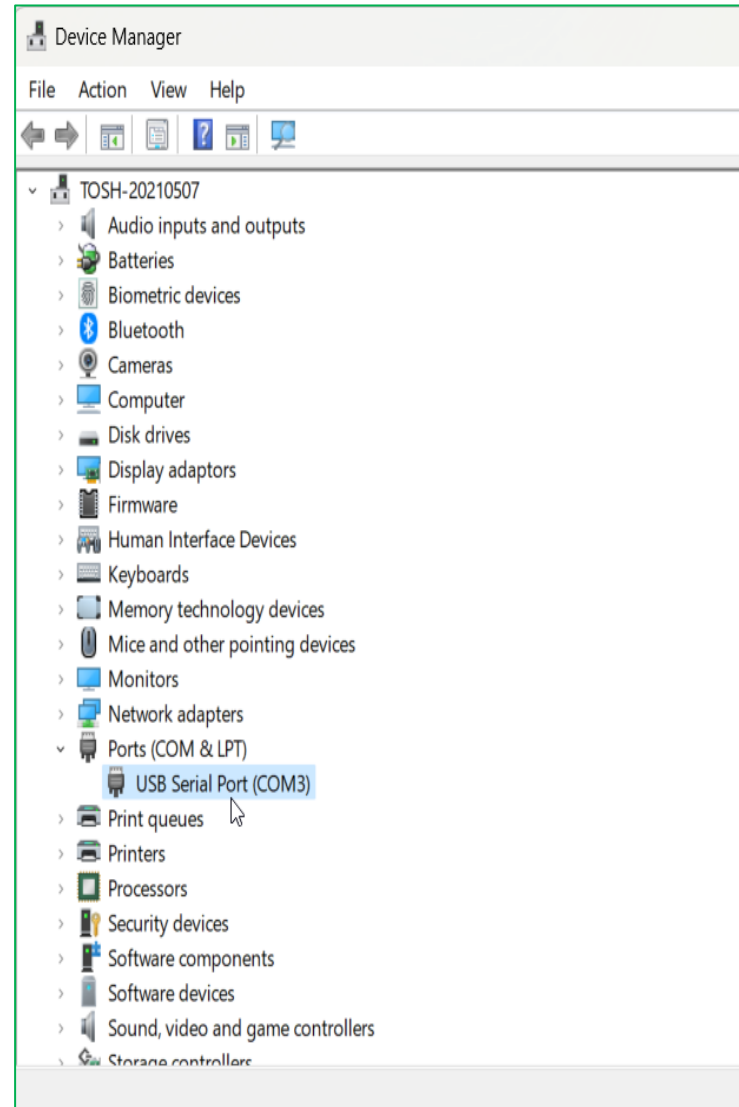
Once downloaded and installed, the configuration software will appear on the desktop with the following icon.



# To identify the COM port on your Computer



Right – Click on the **Windows logo** and select **Device Manager**.



To ensure the cable is connected to the computer and probe, Navigate to the **Device Manager** and locate it Under **Ports ( COM&LPT)**.

# Main Probe Config



The screenshot shows the 'Probe Configuration Utility' window with the 'Configuration' tab selected. The 'Communication' section on the right has 'Serial Port' set to 'COM3' and 'Baud Rate' set to 'Auto'. The 'ID' field is empty. A red box highlights the 'Connect' button. The 'Probe Info' section is empty. The status bar at the bottom left shows 'Not Connected'.

Address	Depth	High/Air	Low/Water	Equation A;B;C;D	Total

The screenshot shows the 'Probe Configuration Utility' window with the 'Configuration' tab selected. The 'Communication' section on the right has 'Serial Port' set to 'COM3' and 'Baud Rate' set to '9600'. The 'ID' field is set to 'Alkatetestdevice'. A red box highlights the 'Disconnect' button. The 'Probe Info' section shows 'Type / Serial Number' as 'Plus-232-D12-Internet' and 'DD080927'. The 'Address' field is set to '1072' and the 'Version' field is set to '2.2.2'. The status bar at the bottom left shows 'Connected'.

Address	Depth	High/Air	Low/Water	Equation A;B;C;D	Total
1	5	23105	9493	0.1957; 0.404; 0.02852; -48.75	
2	15	28674	11466	0.1957; 0.404; 0.02852; -48.75	
3	25	33494	13467	0.1957; 0.404; 0.02852; -48.75	
4	35	30152	11983	0.1957; 0.404; 0.02852; -48.75	
5	45	27595	10663	0.1957; 0.404; 0.02852; -48.75	
6	55	30066	12202	0.1957; 0.404; 0.02852; -48.75	
129	5			0.01; 1; -273.149994	
130	15			0.01; 1; -273.149994	
131	25			0.01; 1; -273.149994	
132	35			0.01; 1; -273.149994	
133	45			0.01; 1; -273.149994	
134	55			0.01; 1; -273.149994	

Once connected, this button will change to "Disconnect," enabling disconnection upon clicking.

This window comprises tabbed pages, the serial port communication controls group, the probe information group, buttons common to all areas, and the status line.

Tabbed pages are specific to each probe and display relevant information, such as the probe type, after the probe is connected.

# Main Probe Config (Communication Group)



Communication

Serial Port:

Baud Rate:

ID:

Value	Description
Serial Port	It displays a drop-down list of available serial ports. Type or select the one to which the probe is connected.
Baud Rate	It displays a drop-down list of available baud rates when connecting to the probe. The baud rate is the rate at which information is transferred in a communication channel.  <b>Note:</b> We suggest using <b>Auto Baud</b> unless the baud rate is known to you. The typical baud rate should be 9600 to give the fastest connection and change to Auto if not working.
Connect /Disconnect	Clicking this button when not connected will attempt to establish communication with the probe at the specified Serial Port and Baud Rate. Once connected this button will change to "Disconnect" and allows disconnection when clicked.



# Probe Configuration Utility - Configuration Tab



Probe Configuration Utility

Configuration | Sensor Test | Clock | Logger | Network | Modem | Power

Address	Depth	High/Air	Low/Water	Equation A;B;C;D	Total
1	5	23105	9493	0.1957; 0.404; 0.02852; -48.75	
2	15	28674	11466	0.1957; 0.404; 0.02852; -48.75	
3	25	33494	13467	0.1957; 0.404; 0.02852; -48.75	
4	35	30152	11983	0.1957; 0.404; 0.02852; -48.75	
5	45	27595	10663	0.1957; 0.404; 0.02852; -48.75	
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130	15			0.01; 1; -273.149994	
131	25			0.01; 1; -273.149994	
132	35			0.01; 1; -273.149994	
133	45			0.01; 1; -273.149994	
134	55			0.01; 1; -273.149994	

Communication

Serial Port: COM3

Baud Rate: 9600

ID: Alkatestdevice

Disconnect

Probe Info

Type / Serial Number: Plus-232-D12-Internet

DD080927

Address: 1072

Version: 2.2.2

Auto-detect Sensors | Backup Configuration | Restore Configuration | Read From Probe | Write To Probe | Help | Exit

Connected | V1.9.6.7234 © 2001-2020 Sentek Pty Ltd

**Address:** Displays the sensor address for each sensor.

**Depth :** It provides the Depth of each sensor. This value is provided by the user at the time of configuration.

**High/Air :** Displays the high/air counts of the sensor

**Low/Water :** Displays the low counts of the sensors.

**Equation A;B;C& D :** It is the calibration equation. (It displays the coefficients for each sensor. )

The configuration page is for displaying and editing the sensor configuration.

# Sensor Test



The two buttons, 'Query Selected Sensors' / 'Query All Sensors' and the button 'Stop Sensor Querying', start and stop sensor querying, respectively. During sensor querying, the raw count and moisture values are continuously retrieved from the probe and displayed in the list.

Probe Configuration Utility

Configuration | Sensor Test | Clock | Logger | Network | Modem | Power

Address	Depth	Raw Count	Calibrated Value	Total
1	5	23133	0	
2	15	28886	0	
3	25	33801	0	
4	35	30319	0	
5	45	27802	0	
6	55	30186	0	
129	5	29614	22.98999	
130	15	29602	22.86999	
131	25	29526	22.10998	
132	35	29627	23.11999	
133	45	29560	22.45001	
134	55	29569	22.54	

Query Selected Sensors

**Query All Sensors**

Stop Sensor Querying

12 sensors

Auto-detect Sensors | Backup Configuration | Restore Configuration | Read From Probe | Write To Probe | Help | Exit

Connected | Querying sensors (Probe Busy) | V1.9.6.7234 © 2001-2020 Sentek Pty Ltd

Probe Configuration Utility

Configuration | Sensor Test | Clock | Logger | Network | Modem | Power

Address	Depth	Raw Count	Calibrated Value	Total
1	5	23146	0	
2	15	28893	0	
3	25	33801	0	
4	35	30320	0	
5	45	27800	0	
6	55	30186	0	
129	5	29616	23.01001	
130	15	29616	23.01001	
131	25	29526	22.10998	
132	35	29627	23.11999	
133	45	29558	22.42999	
134	55	29569	22.54	

Query Selected Sensors

Query All Sensors

**Stop Sensor Querying**

12 sensors

Auto-detect Sensors | Backup Configuration | Restore Configuration | Read From Probe | Write To Probe | Help | Exit

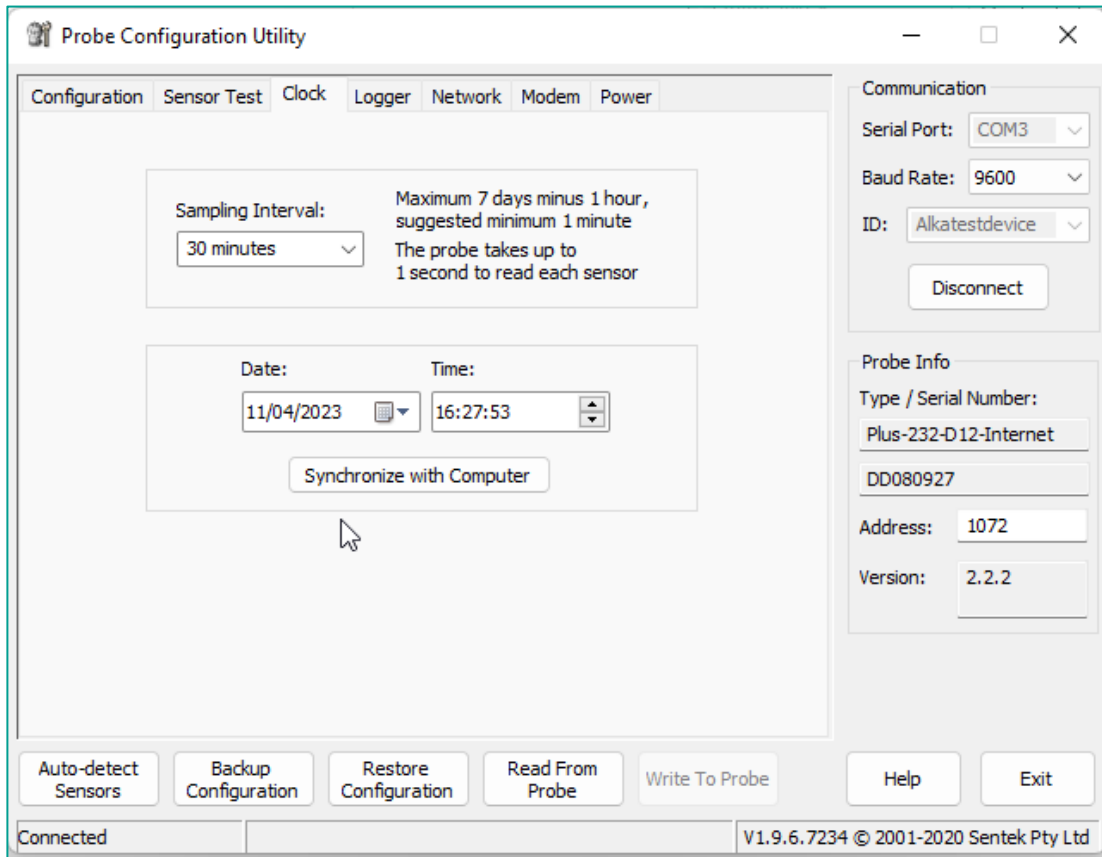
Connected | | V1.9.6.7234 © 2001-2020 Sentek Pty Ltd

When calibrated value is "0" it indicates it is not installed in the water or soil. If it has not been placed in soil and water or just being in the air, there will be a difference in Calibrated Value. E.g., left on a tabletop or floor.

# Clock Tab



The Clock page is for displaying and changing the probe's sampling interval and clock time.



- A Sample Interval can be set and then the probe will be scheduled to take readings at these regular intervals.
- Date/Time - Select the desired date and time or click "Synchronize with Computer" to use the current time from the computer's clock.

# Logger Tab



The screenshot shows the 'Probe Configuration Utility' window with the 'Logger \*' tab selected. The 'Logger ID' is 'Alkatestdevice'. The 'Sample Origin' is '01-Jan -2001 00:00:00'. The 'Sample Count' is set to 5, with a note: 'Probe will upload 5 readings every 2 hours 30 minutes'. The 'Dial-in Uptime' is '0:00:00'. The 'Destination URL' is 'ftp://skrithika-SharonTest:FELaWw6Tj0@ftp.irrimaxli'. The 'Connection Timeout' is 60, 'Response Timeout' is 30, 'Modem Baud Rate' is 9600, and 'Modem Parity' is None. The 'Last Response' is '040 Success'. The 'Communication' section shows 'Serial Port: COM3', 'Baud Rate: 9600', and 'ID: Alkatestdevice'. The 'Probe Info' section shows 'Type / Serial Number: Plus-232-D12-Internet', 'DD080927', 'Address: 1072', and 'Version: 2.2.2'. The 'Write To Probe' button is highlighted with a red box. The status bar at the bottom shows 'Connected' and 'V1.9.6.7234 © 2001-2020 Sentek Pty Ltd'.

This page displays when PConfig is connected to a probe with logging capabilities.

Logger ID - This name is used to supply the IrriMAX database Logger ID. The default is the probe's serial number. The logger ID can be up to 16 alpha-numeric characters and underscore. It cannot be blank.

Note: Taking a Backup Configuration of the previous crop is always recommended before making the changes.

Once the changes are made in any of the sections, ensure to save the changes. The new settings will not take effect until the **“Write to Probe”** button is pressed.

Also, the \* asterisk indicates there is a change in the section.

# Network Tab



Probe Configuration Utility

Configuration | Sensor Test | Clock | Logger | **Network** | Modem | Power

Network Access

Username:

Password:

Command Strings

Dial-in Enable:	<input type="text" value="ATS0=1"/>	Response:	<input type="text" value="OK !ERROR"/>
Dial-in Disable:	<input type="text" value="VD500;ATH \T5s;AT+CESQ"/>	Response:	<input type="text" value="NO CARRIER OK !ERR"/>
Initialization:	<input type="text" value="T15s ATI AT+CGSN AT+C"/>	Response:	<input type="text" value="+KSUP* OK +CEREG:"/>
Connect:	<input type="text" value="AT+COPS? AT+CESQ AT+"/>	Response:	<input type="text" value="OK CONNECT* !ERRC"/>
Disconnect:	<input type="text" value="VD500;ATH \T5s;AT+CESQ"/>	Response:	<input type="text" value="NO CARRIER OK !ERR"/>

Communication

Serial Port:

Baud Rate:

ID:

Probe Info

Type / Serial Number:

Address:

Version:

Connected | V1.9.6.7234 © 2001-2020 Sentek Pty Ltd

This section contains the Network information for the Sentek IoT automatically set by the Probe Utility App.

The Network Access doesn't need to be modified or provided network access. (E.g., The Username and Password) until suggested by the network provider/ carrier.

**Note:** Please only make changes in the 'Networks' tab once you receive guidance from the carrier or **Sentek tech staff** to ensure proper configuration.

# Modem Tab



The screenshot shows the 'Modem' tab of the 'Probe Configuration Utility'. The interface includes a 'Send' button for AT commands, a 'Modem Response' area displaying the following text: `*Port ready  
SM200 SM001429 V1.1.1 Nov 21 2022 16:28:06 -Baud 9600, Supply 11.5V  
+KSUP: 0  
SEND: AT  
AT  
OK  
+CEREG: 2  
+CEREG: 0  
+CEREG: 0  
+CEREG: 0  
+CEREG: 2`. Below this is a 'Close Session' button. The 'Communication' section on the right shows 'Serial Port: COM3', 'Baud Rate: 9600', and 'ID: Alkatestdevice', with a 'Disconnect' button. The 'Probe Info' section shows 'Type / Serial Number: Plus-232-D12-Internet', 'DD: DD080927', 'Address: 1072', and 'Version: 2.2.2'. At the bottom, there are buttons for 'Auto-detect Sensors', 'Backup Configuration', 'Restore Configuration', 'Read From Probe', 'Write To Probe', 'Help', and 'Exit'. The status bar at the bottom indicates 'Connected' and 'Getting external port data', with the version 'V1.9.6.7234 © 2001-2020 Sentek Pty Ltd'.

The open session turns on the modem and allows it to send **AT commands** to the modem to communicate with the probe.

**Note:** It is advisable to “**open session**” when filing an incident report using \show details.

## Server commands:

**Upload:** It Uploads the reading of the probe to the server.

**Test:** This button initiates a connection to the Internet but does not upload any readings.

**Note:** Only after a successful test the probe and modem should be deployed in the field.

# Modem Tab



A screenshot of the 'Probe Configuration Utility' software interface, specifically the 'Modem' tab. The window title is 'Probe Configuration Utility'. The interface is divided into several sections: 'Configuration' (with sub-tabs for Configuration, Sensor Test, Clock, Logger, Network, Modem, and Power), 'Communication' (Serial Port: COM3, Baud Rate: 9600, ID: Alkatestdevice, Disconnect button), 'Probe Info' (Type / Serial Number: Plus-232-D12-Internet, DD080927, Address: 1072, Version: 2.2.2), and 'Server Commands' (Upload and Test buttons). The 'Upload' button is highlighted with a red box, and the 'Test' button is highlighted with a blue box. At the bottom, there are buttons for 'Auto-detect Sensors', 'Backup Configuration', 'Restore Configuration', 'Read From Probe', 'Write To Probe', 'Help', and 'Exit'. The status bar at the bottom left shows 'Connected' and the bottom right shows 'V1.9.7.7804 © 2001-2022 Sentek Pty Ltd'.

**Upload** - Readings in the probe's memory are uploaded. Upload is only used to upload field data immediately.

**Test** - This button initiates a connection to the Internet but does not upload any readings.

# AT Commands



Probe Configuration Utility

Configuration Sensor Test Clock Logger Network Modem Power

AT Commands: [Dropdown] Send

Modem Response: [Text Area]

AT [Dropdown]

- \showdetails** - Request probe to send last upload log
- \voltage** - Measure probe supply voltage
- \test url** - Request a test upload
- AT+CGDCONT?** - Query current APN (PDP Context)
- AT+COPS?** - Query current cellular provider
- AT+COPS=?** - Scan network for all cellular providers
- AT+CPIN?** - Query status of SIM card PIN Security
- ATI** - Query modem model
- AT+CGSN** - Query modem IMEI
- AT+CCID** - Query SIM ICCID (serial number)

Open Session

APN Session [Dropdown] Change

Server Commands

Upload [Progress Bar]

Test 040 Success

Auto-detect Sensors Backup Configuration Restore Configuration Read From Probe Write To Probe Help Exit

Connected V1.9.6.7234 © 2001-2020 Sentek Pty Ltd

List of Commands pinned in the AT commands drop-down.

**AT+CREG:** It displays the network registration status.

**\show details:** This command helps you to view the complete log report.

**AT+COPS:** It Identifies the available mobile networks.

**AT+CGDCONT:** This command helps you to identify your APN network.

**AT+CPIN:** This is used to query and enter a PIN code.

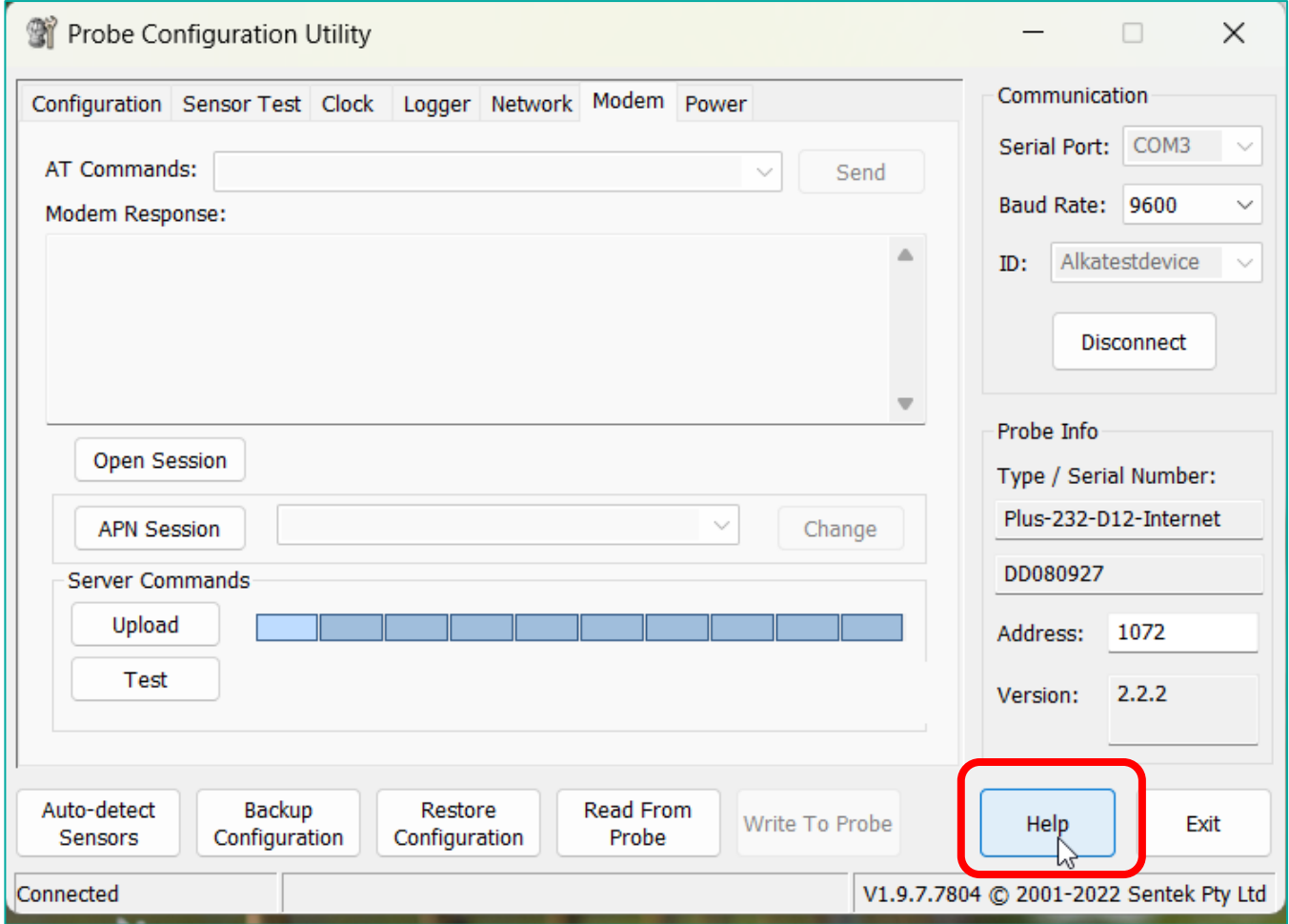
**ATI :** It is used for Data Card control identification.

**AT+CGSN-** This returns the product (modem) IMEI serial number.



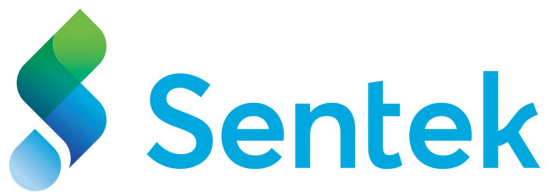


# PConfig Help



For more detailed information on PConfig, please Click the **Help** Button.

# IrriMAX Live - Battery Status



# Installation Details



**Battery:** Standard

**Logger description:**

**Configuration:** SWC: 5-55; VIC: 5-55; Temp: 5-55;

Database: BT002806 Zone name: <No selection> New

Database type: Bluetooth Probe Zone description:

Probe account: BT002806

Logger description:

Configuration:

Notes:

Distance to plant:

Distance to emitter:

Installer:

Install method:

Install date: 2021-07-19 ...

Extract date: YYYY-MM-DD ...

Last service date: YYYY-MM-DD ...

Next service date: YYYY-MM-DD ...

Service contact: None

Fault status: No current faults Update

2023-07-05 16:29 No current faults

Spacing across row:

Spacing down row:

Irrigation type:

Application rate:

Emitter spacing:

Drip lines/row:

Emitters/plant:

Subsurf line depth:

Soil description 1:

Soil description 2:

Soil description 3:

Soil description 4:

Soil description 5:

Save changes Cancel

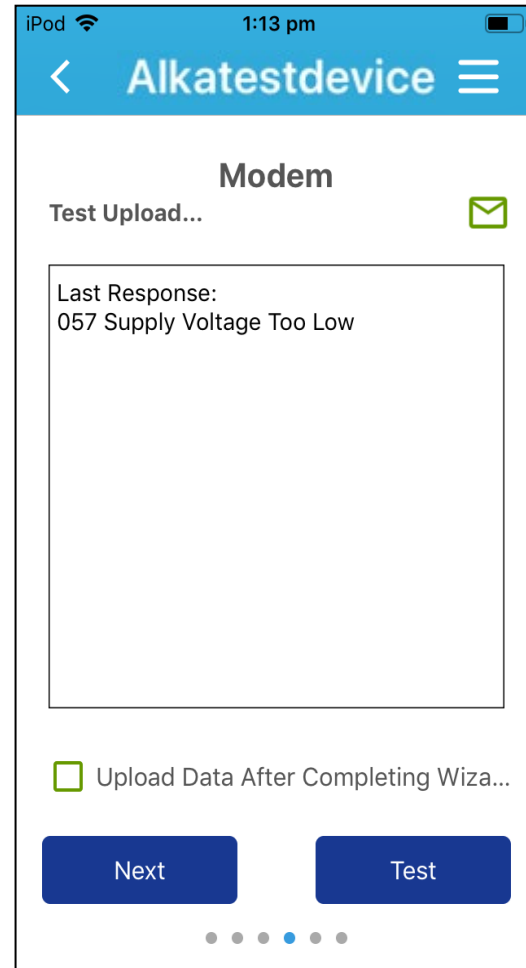
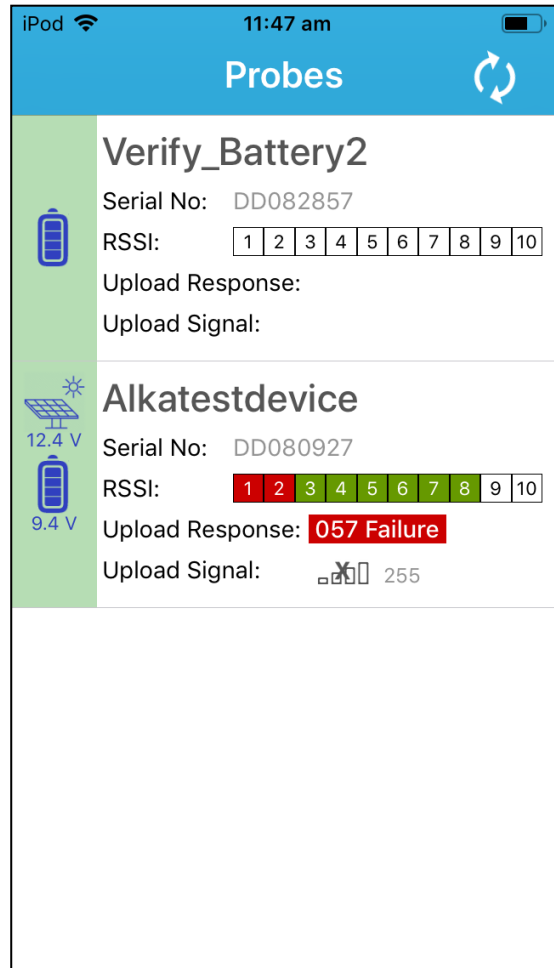
To update the battery status to **"Rechargeable"** using the Installation details section, follow these steps:

1. Access the Installation details section of **IrriMax Live**. This involves logging into the **IrriMAX Live** and navigating the **Installation details** section.
2. Locate the **Battery** dropdown menu within the installation details. This is where you can change the battery status to **Rechargeable**.
3. Confirm the selection by **Save changes**.

Following these steps, you can update the battery status to "rechargeable" using the installation details section in the IrriMax Live.

**Note:** This functionality will be available once the probe has successfully uploaded the data and IrriMAX LIVE has completed the database creation process.

# Low Battery App Alert



The steps to follow if you receive a low battery alert.

- Verify that the solar panel is receiving good sunlight.
- Ensure that there are no obstructions casting shadows on the solar panel.
- Optimise the positioning and angle of the solar panel for maximum sunlight exposure.
- Monitor the solar panel performance and sunlight exposure over time.

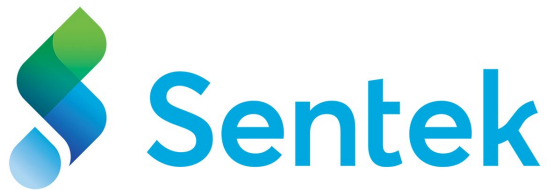
# Low Battery Voltage Alert



On the Installation Details page, choose the Rechargeable option for the Battery.

By selecting this option, Irrimax Live will provide a "low voltage" alert whenever the battery voltage falls below 9.5 Volts.

# Dimension and Requirement



# Product Details



Mounting Bracket holder



Clip Holders





# Specification



- **Mechanical Requirements:** Size of the Solar panel (80mm x 40mm)  
Size of the DTU box (80mm x 40mm x 60mm)
- **Power Requirements:** Battery life of 4 years under standard conditions (30-minute sampling, 3-hour uploads in a good signal strength area)
- **Power Supply:** 11.1V Rechargeable Supply  
15.3V Solar Panel  
Battery Peak Current = 2A

# Glossary

# This glossary defines terms and abbreviations relevant to Sentek IoT.



Terms	Description
Rechargeable battery	
DTU	Data Transmission Unit (housing containing modem, battery and solar charger board)
IoT	The Internet of Things (IoT) is a network of interconnected devices and other objects embedded with sensors, software, and network connectivity.