

# 203228 Modem Kit for 20330x Turnkey Enclosures

## INTRODUCTION

The purpose of this kit is to be able to effectively integrate a 20330x Series Turnkey enclosure, currently utilizing a Storm3 datalogger with internal 3G modem, to use an external 4G-LTE compatible modem.

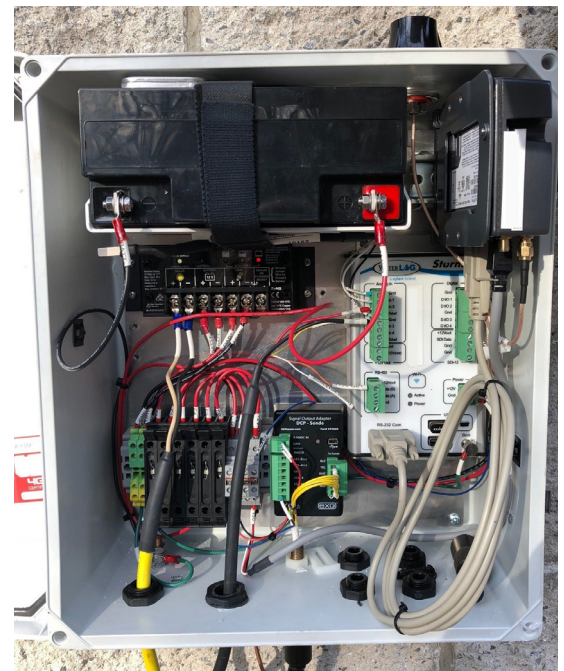


### CAUTION

Before beginning any physical rework, remove the battery from the enclosure and open all fused connections. If the system has AC Mains power, also disconnect the mains power.

## ADDITIONAL MATERIALS REQUIRED

- Paper towels/rags
- Industrial adhesive remover such as Goo Gone
- Putty knife
- Possible additional tools required
- Step-drill bit with 1- inch or 25.4-26mm step
- Lennox 30882VB2 or similar
- Drill driver
- Shop vac
- Masking paper
- Masking tape



**Figure 1:** 20330x Series Turnkey Enclosure with Storm 3 Data Logger and Modem Kit

## INSTALLATION GUIDE CONTENTS:

1. Safety Precautions
2. Additional Materials Required
3. Actual Steps to Integrate Enclosure



## 6 Steps to Perform:

### 1 OBTAIN THE STORM CENTRAL REGISTRATION ID

- a Go to <https://stormcentral.waterlog.com/index.php> and log in with your credentials. Click on 'Administration' at the top of the page, then copy down the Registration Id. **Be careful this is a case sensitive code.** The alphanumeric code will be used to re-register the system to your storm central account.



Figure 2: Log in to Storm Central with your credentials

### 2 ASSESS THE CURRENT ANTENNA

- a The 203228 modem kit includes a replacement antenna. If your Turnkey enclosure has the optional 203292-xx external antenna assembly installed, antenna element replacement is not required. Disconnect the antenna connector from the Storm datalogger and proceed to install the modem in step 4.

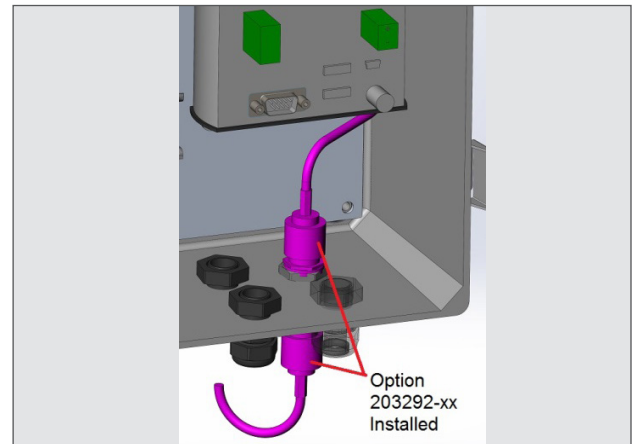


Figure 3: Showing the optional 203292-xx external antenna assembly installed

- b If your enclosure utilizes the 360062 black puck antenna supplied with Storm3-0x datalogger, replace this antenna with the antenna provided in the 203228 kit by following step 3.



Figure 4: Replace the 360062 black puck antenna with the antenna provided in the 203228 kit

### 3

## ANTENNA REMOVAL PROCEDURE *(if required)*

- a Remove the antenna connector from the Storm datalogger and then remove the nut securing the antenna to the enclosure. The cable may be cut as the antenna will be discarded.



**Figure 5:** Remove the antenna connector

- b There is a foam gasket adhered to the enclosure. To remove the antenna from the enclosure, use a putty knife to carefully split the foam between the antenna body and enclosure wall.



**DO NOT ALLOW THE KNIFE TO  
GOUGE THE ENCLOSURE SURFACE.**

Leave the portion of the gasket attached to the enclosure, it is removed in a later step.



**Figure 6:** Showing the foam gasket adhered to the enclosure



**Figure 7:** Showing portion of gasket still attached to the enclosure

- c Locate the red plastic washer supplied with the antenna. Check the size of the mounting hole using this washer. It should pass through the hole in the enclosure. If it does not, the hole must be opened as shown below.

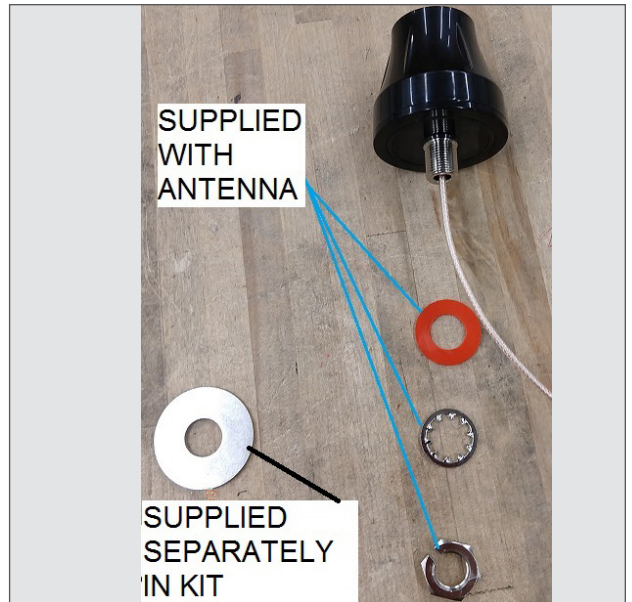


Figure 8: Locate the red plastic washer supplied with the antenna

- d **Hole opening procedure (if required)**
  - i. Apply masking tape and paper to protect the electronics from any drilling debris.
  - ii. Use the step drill to open the hole to 1.0 inches (25.4mm).
  - iii. Vacuum all debris from inside and outside enclosure.

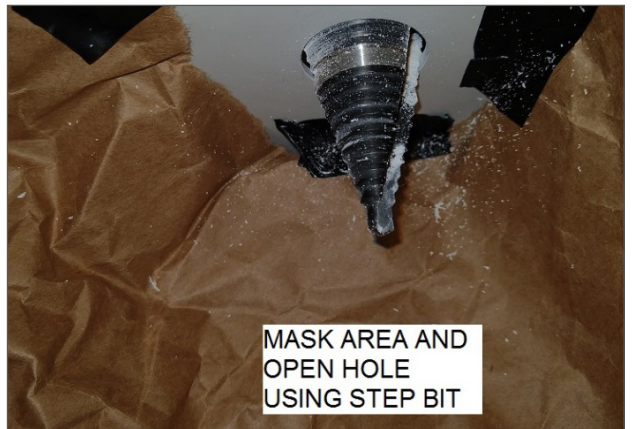


Figure 9: Hole opening procedure (if required)

The old antenna gasket must be removed for proper sealing of the new antenna.



Figure 10: Remove the remains of the old antenna gasket



e

### Install the new antenna

- i. The red washer should sit recessed into the hole to center the antenna.
- ii. The oversize stainless steel washer lies just below the red washer.
- iii. The lock washer and nut secure the antenna to the enclosure.
- iv. Once the modem is installed, connect the antenna to the RV-50X modem "cellular" port.



Figure 11: Install the new antenna



Figure 12: Secure the antenna to the enclosure

## 4

### INSTALL THE MODEM

a

- a. Verify installation of the activated sim card (sold separately with activation service or provided by customer)

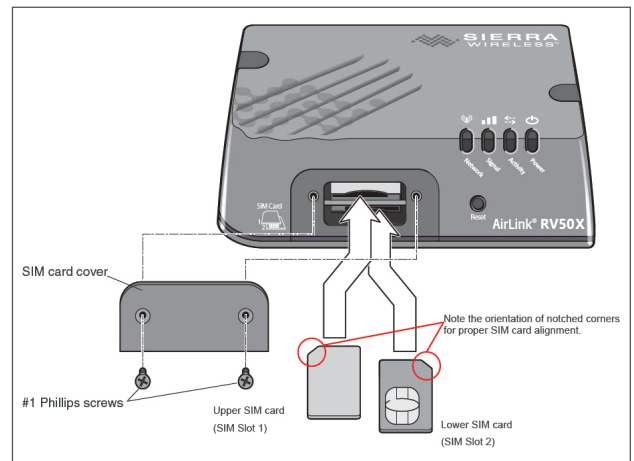
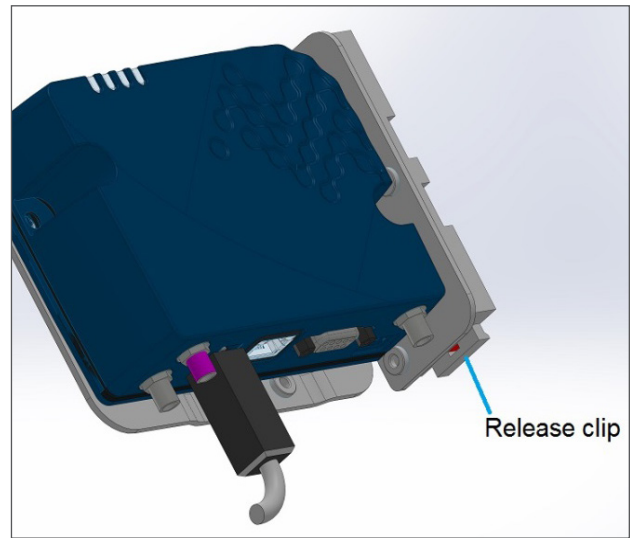


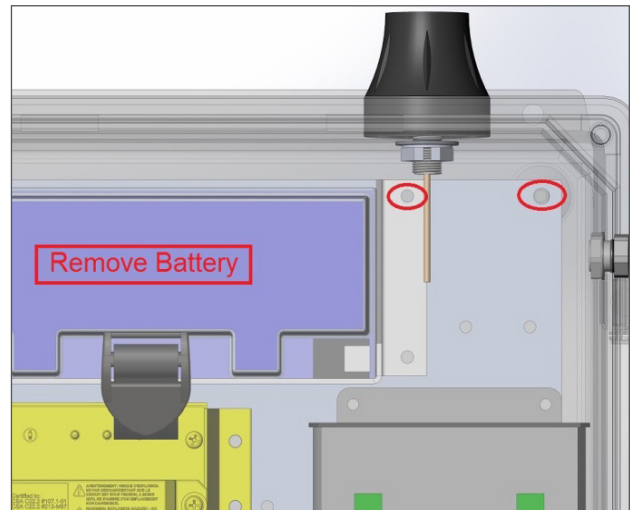
Figure 13: Verify the installation of the activated sim card

- b** Pre mount the RV-50X modem onto the Din Rail Mount as shown. The screws to assemble this are provided with the Din Rail Mount. Ensure the release clip is oriented as shown.



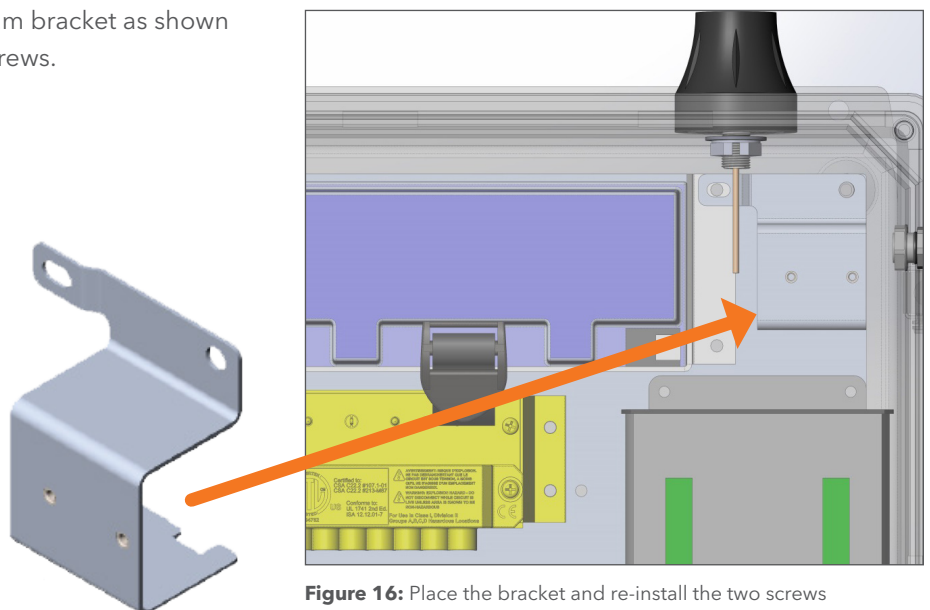
**Figure 14:** Ensure the release clip is oriented as shown

- c** Remove the two screws in the top-right of the enclosure: one (1) on the back panel and one (1) on the battery bracket. Set these aside, they will be reinstalled.



**Figure 15:** Remove the two screws in the top-right of the enclosure

- d** Place the supplied aluminum bracket as shown and re-install the two (2) screws.



**Figure 16:** Place the bracket and re-install the two screws

- e Attach the short section of din rail to the aluminum bracket using the provided #6 screws and #10 washers.

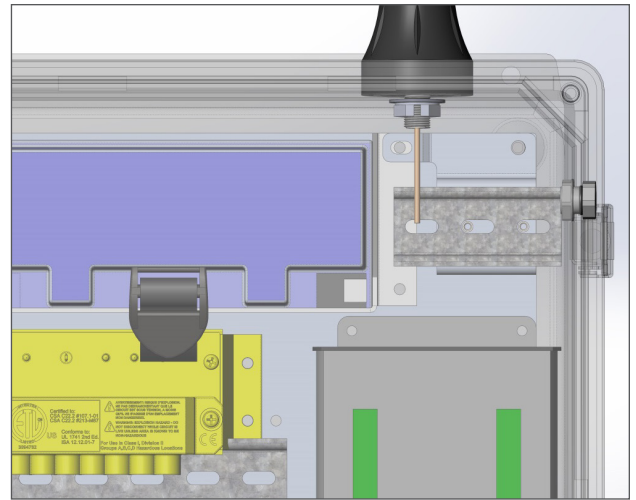


Figure 17: Attach the din rail to the aluminum bracket

- f Clip the pre-assembled modem to the DIN rail as shown (figure 18).

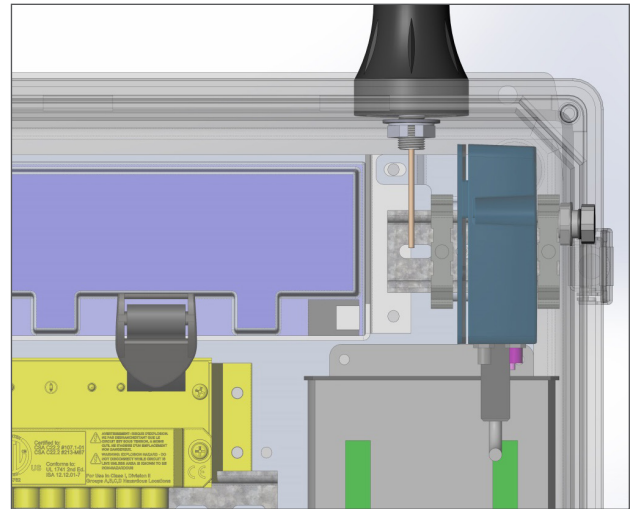


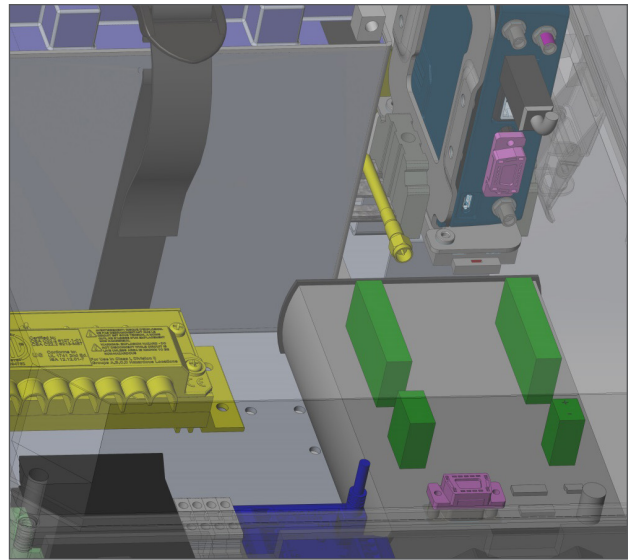
Figure 18: Clip the pre-assembled modem to the DIN rail

- h Attach the antenna cable to point 1 the “Cellular” port on the RV-50X modem. Point 2 will accept the power cable.



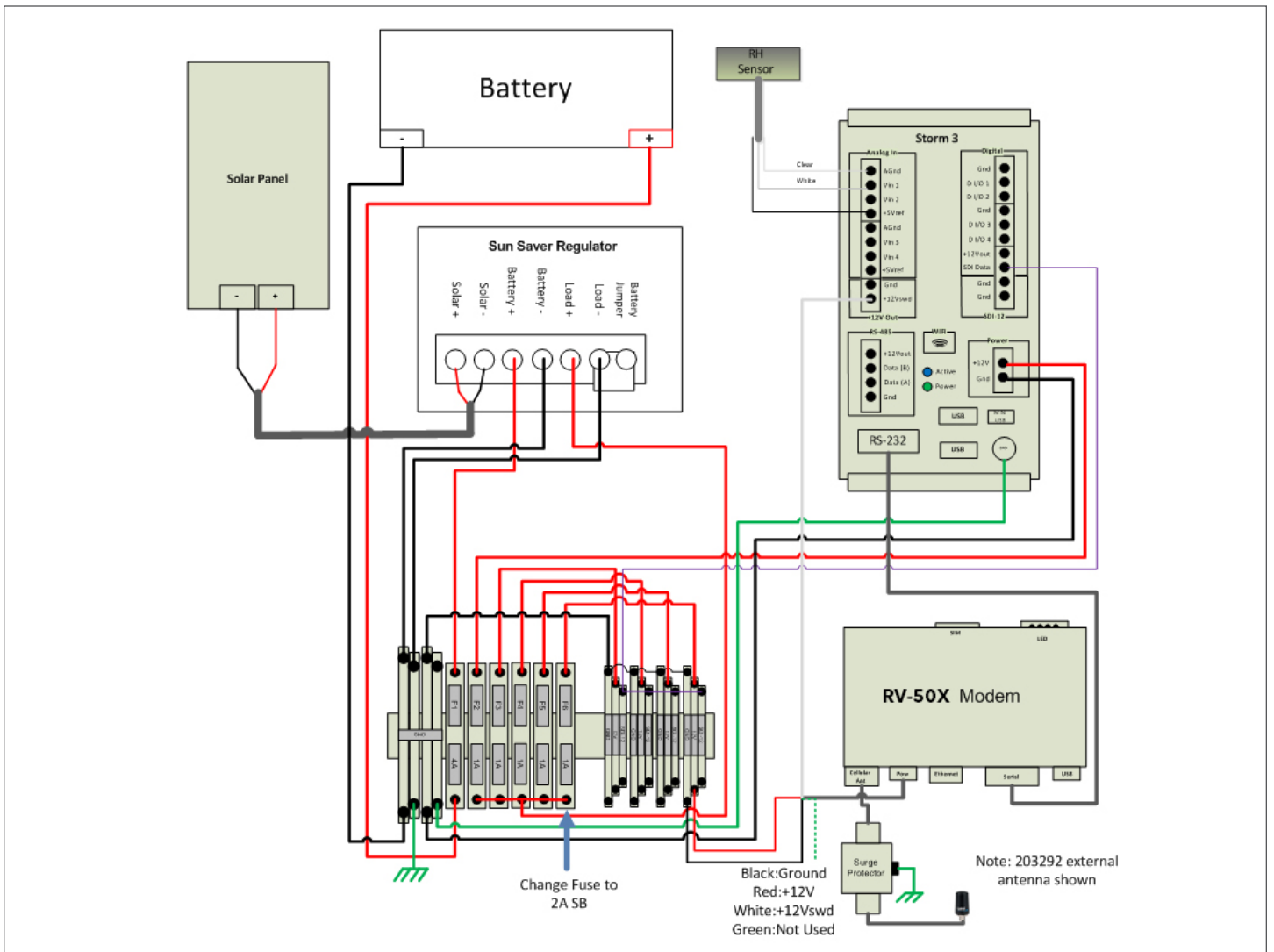
Figure 19: Attach the antenna cable to point 1 on the modem

- i** Connect the ribbon cable from the 9-pin port on the RV-50X (point 3) to the RS-232-COM port on the STORM3 Datalogger. If the RS-232 port is not available, the instrument on the port must be reallocated to the RS-485 port either through settings or with a signal adapter. [Contact ISS for an adapter kit.](#)
- j** Secure the connections with the provided #4 screws
- k** Wire the modem power cable and install the supplied 2A slow-blow fuse.



**Figure 20:** Connect the ribbon cable

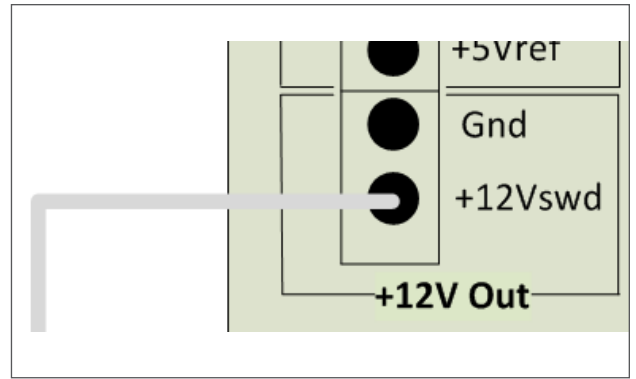
**i.** Wiring diagram overview



**Figure 21:** Wiring diagram overview

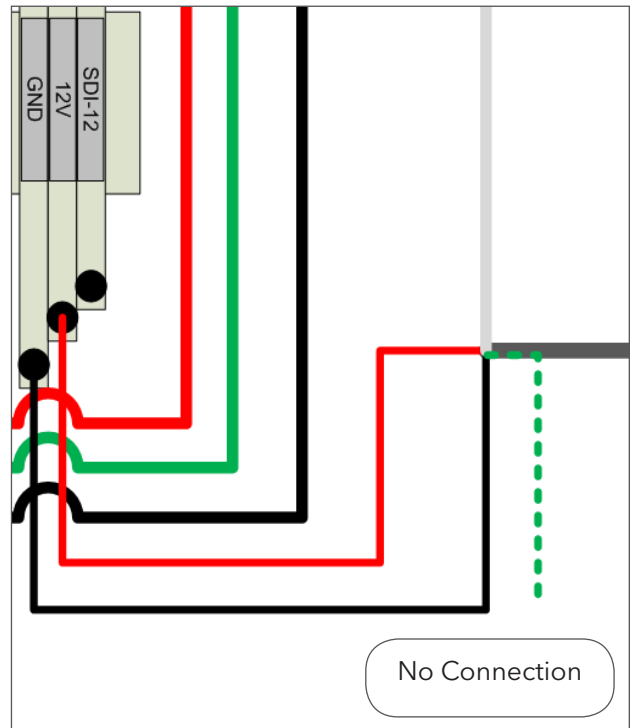


ii. Wiring diagram detail, modem power connection at datalogger.



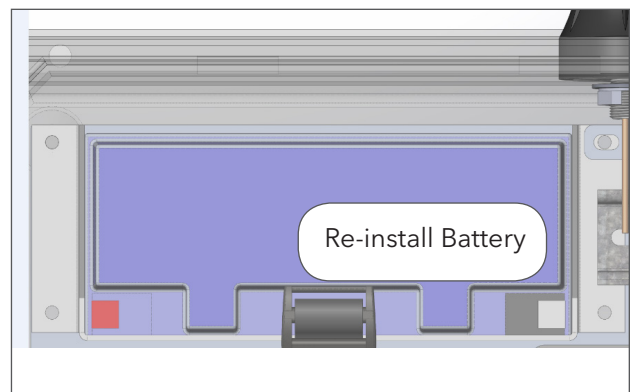
**Figure 22:** Wiring diagram detail - modem power connection at datalogger

iii. Wiring diagram detail, modem power connection at terminal block.



**Figure 23:** Wiring diagram detail - modem power connection at terminal block

**I** Re-install system battery and startup system by closing the fuse.



**Figure 24:** Re-install the system battery

# 5

## SET UP THE STORM

- a Log into the Storm 3 Datalogger via Wi-Fi or direct connect through the USB mini B port (for details on connecting to the Storm, see the Storm 3 Getting Started Guide).

Go to the Outputs tab on the left and click the Communications Port Setup. Make sure the RS-232 Com mode is set to "Modem" and that all the settings match these values:

### RS-232 Com settings

- i. Baud Rate: 115200
- ii. Data Bits: 8
- iii. Parity: None
- iv. Stop Bits: 1

- b Go to 'Modem Setup'. For COM port select RS-232. Under 'Model' choose: "LS300(CDMA)" (the LS-300 is a Sierra wireless predecessor to the RV-50X). Set the 'Power Control' to "+12Vswd", the 'Power Mode' to "Automatic", and change the 'Timeout Length' to 40. Then press 'Begin Test'.

**Note:** If the test fails, refresh the page, check settings, and try again.

- c **Once the test passes you should see:**

- i. Connection Status: Active
- ii. Signal Strength
- iii. Network Status: Network Ready
- iv. An IP address should be displayed

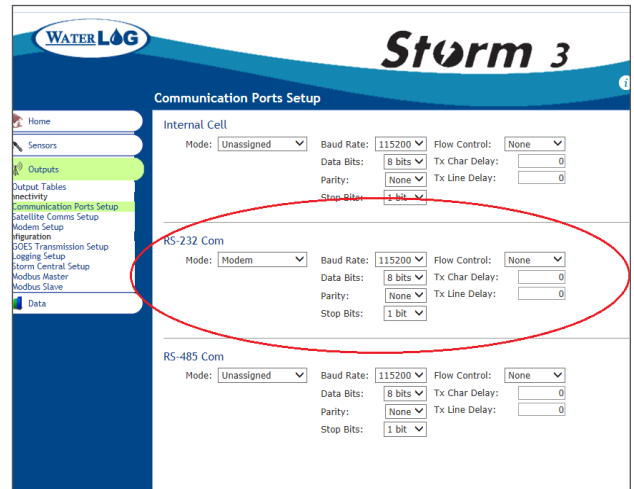


Figure 25: Make sure the RS-232 Com mode is set to 'Modem', and that all the settings match the listed values

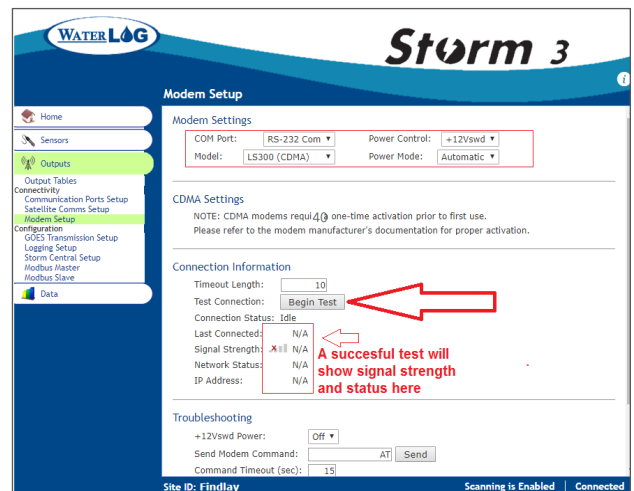


Figure 26: Modem setup in the Storm 3

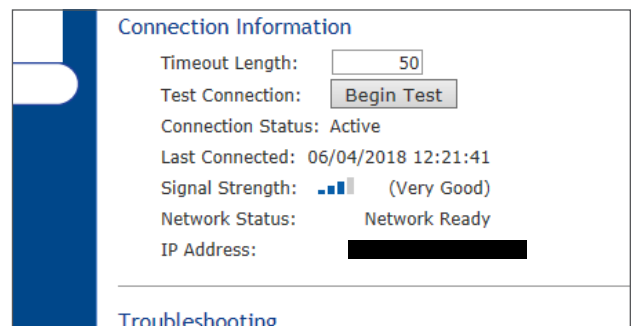


Figure 27: Values shown when the test passes

d To monitor system power consumption, verify that the “System Battery” is setup in the Defined Sensors list, system temperature is also recommended

e Go to ‘Storm Central Setup’ under configuration.

i. Set Transmit Rate according to your data management plan (usually set to 15 mins)

ii. Transmitting: Enabled

iii. Connect using: Modem.

iv. Enter in the Storm Central Registration ID obtained in step 1 then click “Verify Registration”.

f You are now registered to Storm Central. Ensure two Transmit Rate periods have passed and verify data on Storm Central.

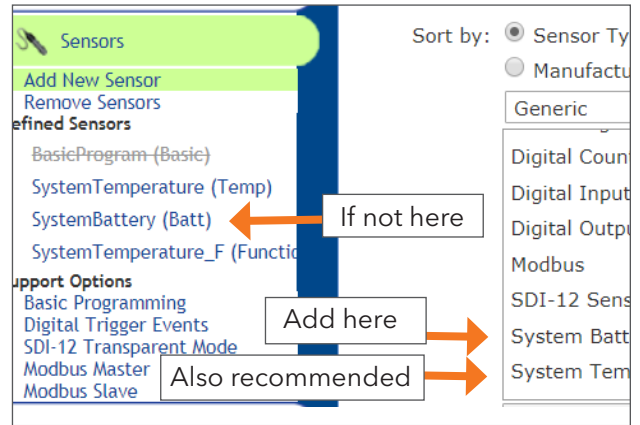


Figure 28: Verify that the system battery is setup in the defined sensors list

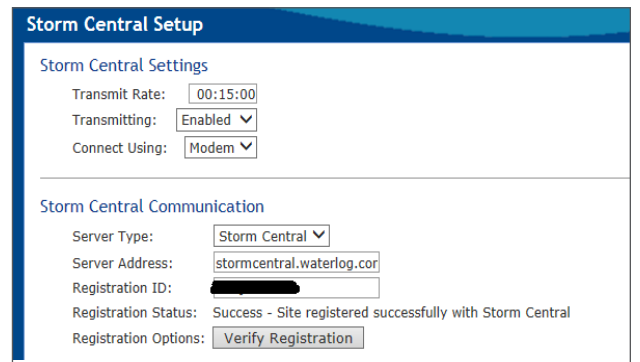


Figure 29: Storm Central Setup located under Configuration



**NOTE: Modem purchased from YSI Integrated Systems come preconfigured. If section 5 fails or the modem has to be factory reset for any reason, follow the procedure below to establish connection.**

## 6 VERIFY THE PROGRAMMING OF THE MODEM

a Activate power for the modem: Access the Storm3 datalogger and go the Outputs tab and Modem Setup section. Under troubleshooting change +12Vswd power to “ON”



**THIS STEP MUST BE REVERSED AS SHOWN AT THE END OF THIS PROCEDURE TO PREVENT EXCESSIVE POWER DRAIN**

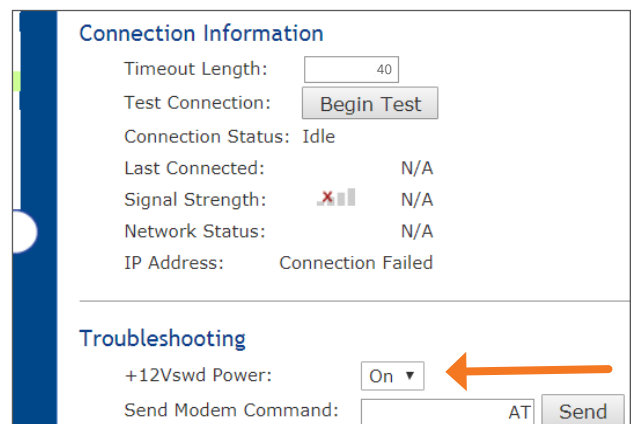


Figure 30: Change +12Vswd power to 'ON'

**b** Connect the RV-50X to your PC via USB, Ethernet or wireless

i. Direct connection method (USB Cable):  
Type `http://192.168.14.31:9191` into your web browser. Internet Explorer is preferred.

ii. Ethernet Port: Type `http://192.168.13.31:9191` into your web browser.

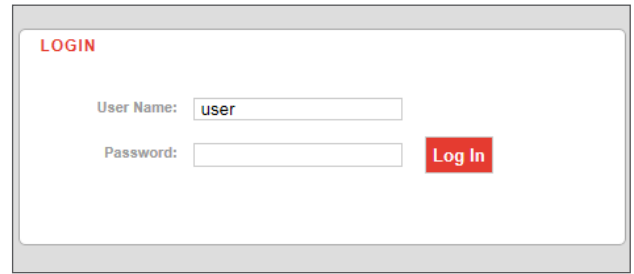
iii. Wireless connection method: Type `http://XXX.XXX.XXX.XXX:9191` into your web browser. (where the X is the IP Address of the modem assigned by the wireless provider)

- username(default): user
- password(default): 12345

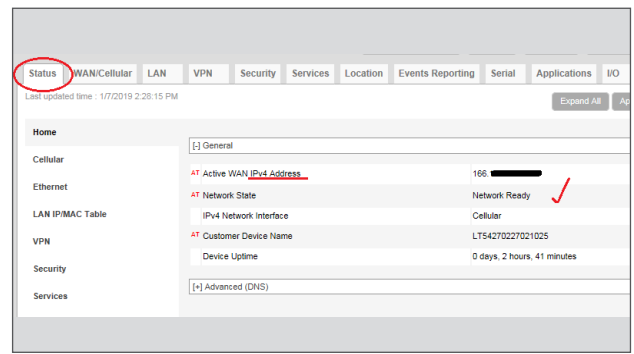
**c** Do not leave the default password active. Immediately change your password!

**d** On the status tab make sure you have an active WAN IP Address and the Network State says "Network Ready". If it is not then establishing coms to Storm Central will not work.

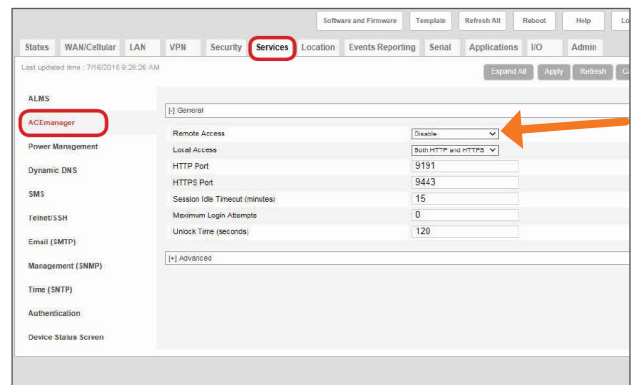
**e** Go to the Services tab and select 'Disable' from the 'Remote Access' drop down list.



**Figure 31:** Wireless connection method of RV-50X to PC



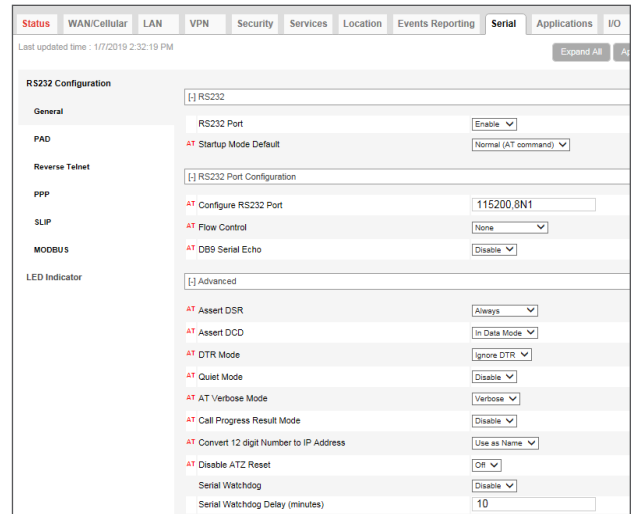
**Figure 32:** Active WAN IP Address and that the Network State says 'Network Ready'



**Figure 33:** Select 'Disable' from the 'Remote Access' drop down list



**f** Go to the 'Serial' tab and check the serial port settings on RV-50X modem. Most if not all settings are default and should match to the screen shot to the left.

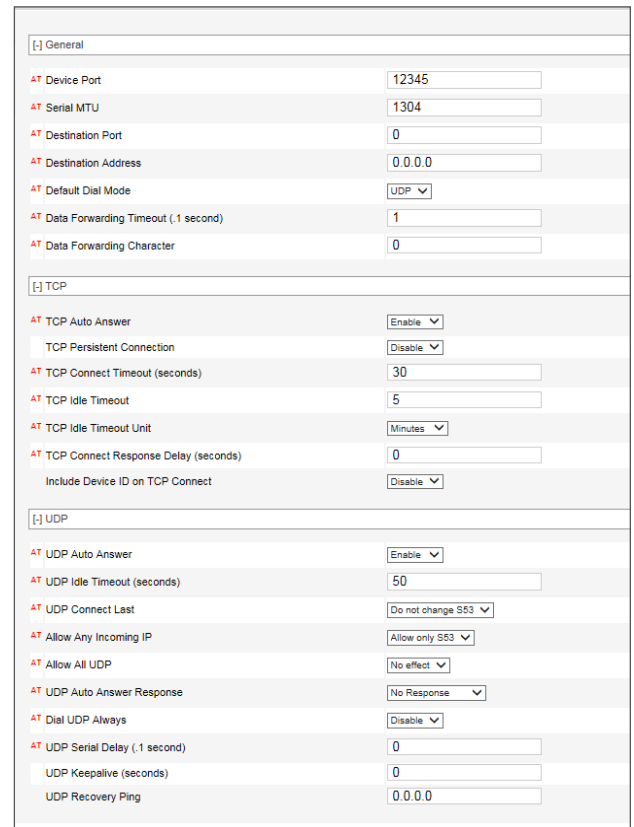


**Figure 34:** Check the serial port settings on the RV-50X modem

**g** "Configure Serial Port" row should match (115200,8N1) and breaks out as follows.

- iv. Baud Rate: 115200
- v. Data Bits: 8
- vi. Parity: None
- vii. Stop Bits: 1

**h** Verify the additional settings under Advanced, TCP, and UDP. If these setting are not visible, Scroll through selection on left side panel to view.

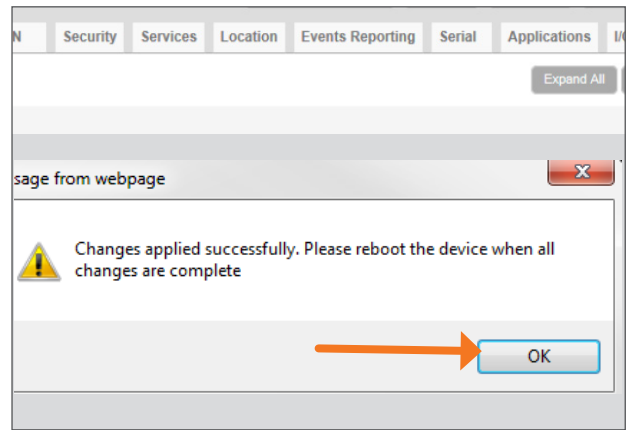


**Figure 35:** Verify the additional settings under Advanced, TCP, and UDP

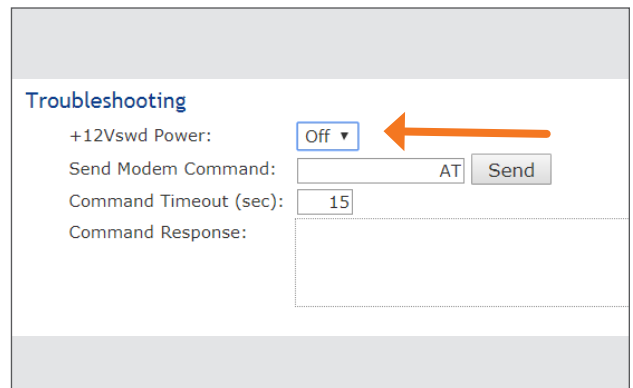
**i** If any changes are made the field, they will highlight in yellow, click Apply in the right upper corner then Reboot

**j** Access the Storm3 datalogger and go to the 'Outputs' tab and 'Modem Setup' section. Under troubleshooting change +12Vswd power to "Off"

**k** Return to step 5 to test the modem connection and power controls through the Storm3 logger. The Modem should now activate, transmit, and shutdown with each transmit cycle.



**Figure 36:** Click reboot after applying changes



**Figure 37:** Under the 'Modem Setup' section of the 'Outputs' tab, change +12Vswd power to 'Off'

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