Installation of the Sierra Wireless RV50 External Cellular Gateway with FMPlus FMU

The Sierra Wireless RV50 (Figure 1 – Figure 2) is an industrial LTE gateway utilized for connecting the FMU to FM*Plus* through a cellular connection. This guide describes how to install the modem and cellular antenna to an existing FMU (Figure 3).

1. Configure the modem.
2. Power down the FMU.
3. Remove the Backplate Assembly.
4. Install SIM Card as shown in RV50 Hardware User Guide.
5. Mount the antenna housing on the back of the FMU.
6. Reinstall the Backplate.
7. Reconnect all cables.
8. Install the RV50 Cellular Gateway.
9. Connect the power cable.
10. Connect the Ethernet cable.
11. Connect the antenna cable.
12. Power up the FMU.
13. Power up modem using a power cable (see RV50 Hardware User Guide for more information).
14. Confirm the RV50 is active on the cellular network
15. Reboot the modem.
16. Connect antennas to Cellular and Diversity SMA connectors and confirm Network LED turns solid green. See RV50 Hardware Configuration Guide.

Figure 1

Figure 2

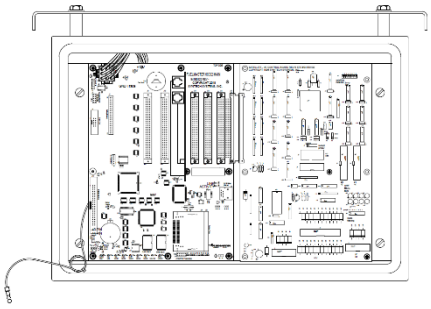

Figure 3

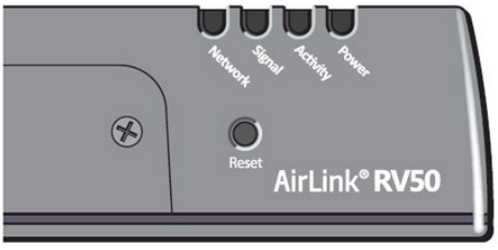

Figure 4

NOTE	The modem will not activate unless the SIM is activated.

Configure the Modem

The modem may be configured using Ace Manager. See the RV50 Software Configuration Guide for more information.

1. Access Ace Manager using the following link: http://192.168.13.31:9191.
2. Login using the default credentials (Username – Admin, Password – 12345).
3. Under the **Admin** tab, change the Password (Figure 5).
    a. Enter **Old Password**.
    b. Enter **New Password.**
    c. Retype **New Password**.
    d. Select **Change Password.**

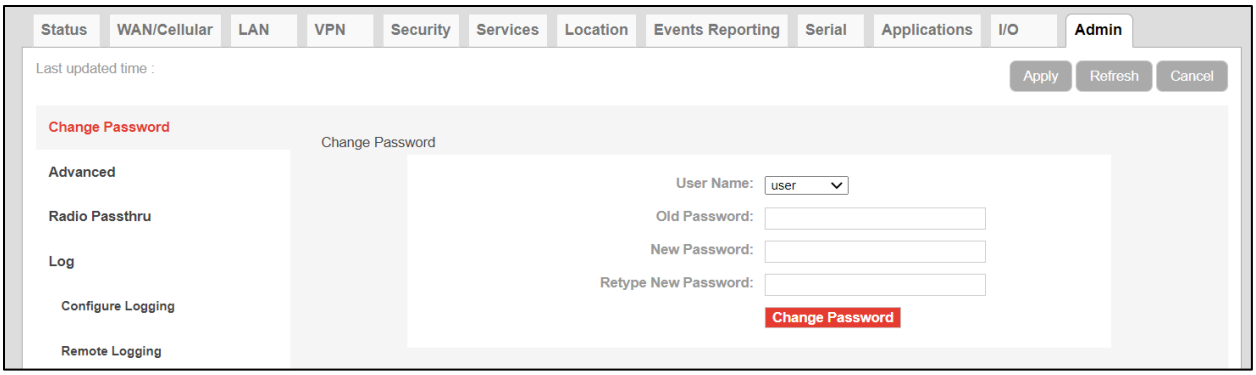

Figure 5

4. Under the **LAN** tab, change the DHCP range from 50 to only 1 by changing the ending IP to 192.168.13.100 (Figure 6). This ensures the FMU will always have the same IP address.

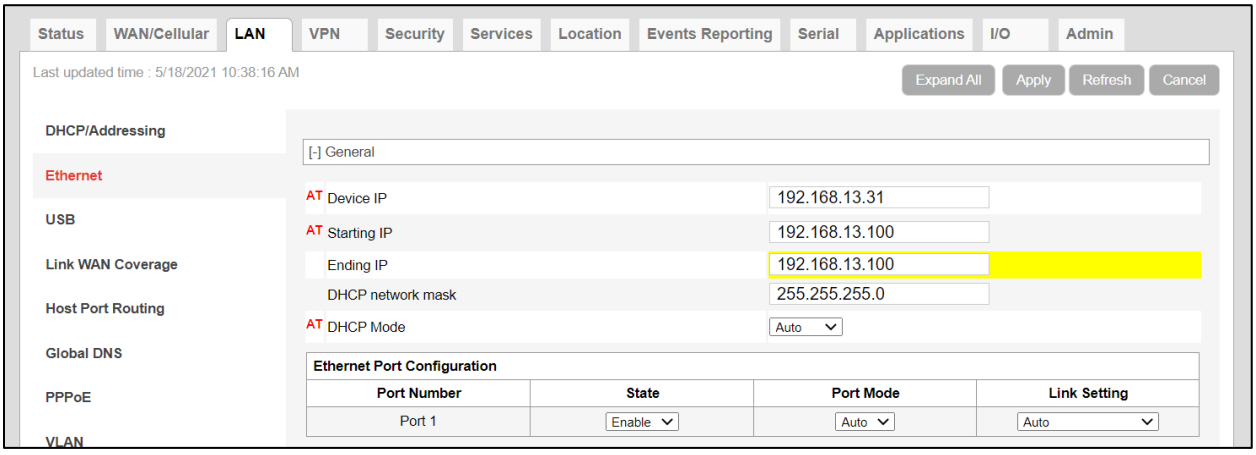

Figure 6

5. Under **Security** tab, enable **Port Forwarding**, and add the following three ports as shown in Figure 7.

Public Start Point	Public End Point	Protocol	Host IP	Private Start Port
20	20	TCP & UDP	192.168.13.100	20
21	21	TCP & UDP	192.168.13.100	21
23	23	TCP & UDP	192.168.13.100	23

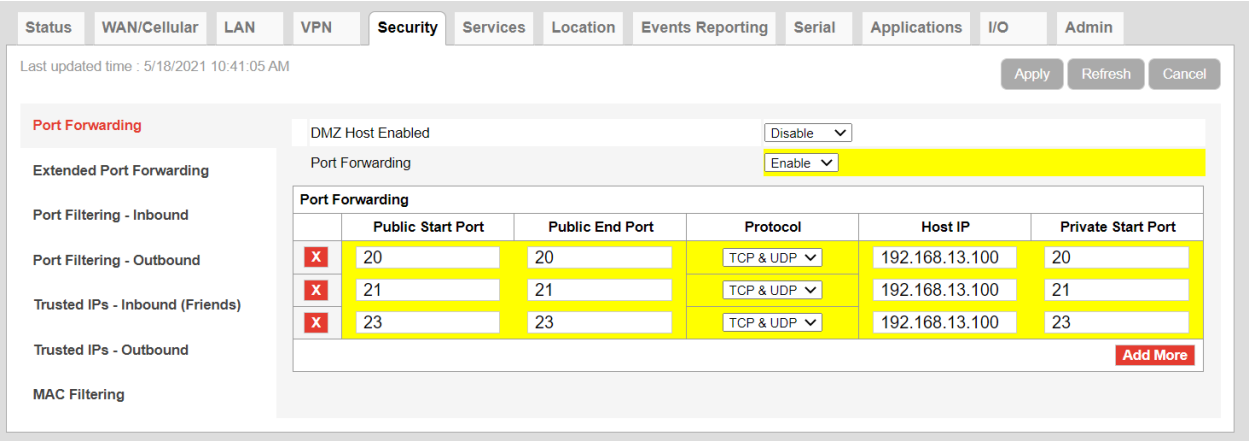

Figure 7

6. **Optional**: Under the **WAN/Cellular** tab, Configure the APN (see Software Configuration Guide for details). This step is required when the device does not automatically download the APN information from Verizon (Figure 8).

   - For a Private Network, type the APN information into the **User Entered APN** field > **Apply**.
   - For Verizon Public Static IP SIMs, type 'SO01.VZWSTATIC' in **User Entered APN** field > **Apply**.
   - For Verizon Public Dynamic IP SIMs, type 'vzwinternet' in **User Entered APN** field > **Apply**.

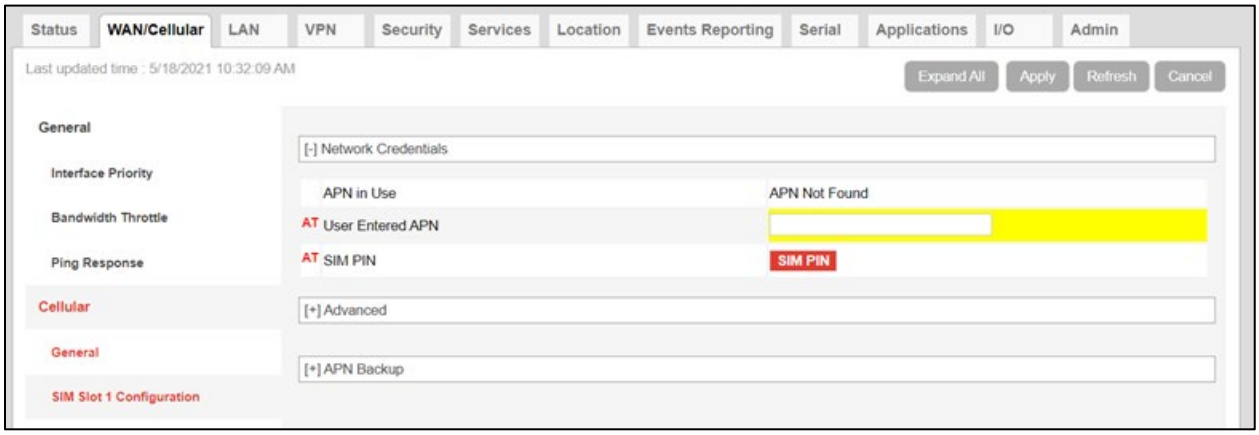

Figure 8

LED	Color/Pattern	Description	LED Power Saving Mode
Network	Solid Green	Connected to an LTE network	Off
	Solid Amber	Connected to a 3G or 2G network	Off
	Flashing Green	Connecting to the network	
	Flashing Red	No network available	
	Flashing Red/Amber	Network Operator Switching is enabled, but the gateway is unable to locate the required firmware.	
Activity	Flashing Green	Traffic is being transmitted or received over the WAN interface.	
	Flashing Red	Traffic is being transmitted or received over the serial port. This only displays if the RV50 Series gateway is configured to display it.	
	Flashing Amber	Traffic is being transmitted or received over both the WAN interface and serial port. This only displays if the RV50 Series gateway is configured to display it.	
All	Green LED Chase	Radio module reconfiguration/firmware update or Network Operator Switching is in progress.	
	Amber LED Chase	ALEOS software update is in progress.	

LED	Color/Pattern	Description	LED Power Saving Mode
Power	Off	No power or input voltage ≥ 36 VDC or ≤ 7VDC	
	Solid Green	Power is present.	
	Green with Amber Flash	Power is present, and the gateway has a GPS fix.	
	Solid Red	Standby mode.	
	Flashing Green	When you press the reset button, flashing green indicates when to release the reset button to reboot the gateway.	
	Flashing Red	When you press the reset button, flashing red indicates when to release the reset button to reset the gateway to factory default settings.	
	Flashing Amber	When you press the rest button for more than 20 seconds, flashing amber indicates when to release the reset button to enter Recover mode.	
Signal	Solid Green	Good signal (= 4-5 bars)	Off
	Solid Amber	Fair signal (= 2-3 bars)	Off
	Flashing Amber	Poor signal (= 1 bar) If possible, Sierra Wireless recommends moving the gateway to a location with a better signal.	
	Flashing Red	Inadequate (= 0 bars) Sierra Wireless recommends moving the gateway to a location with a better signal.	

Remove the Backplate Assembly

1. Remove the four large screws holding the Backplate to the cabinet.
2. Remove the Assembly, and set aside. For more detailed instructions on removing the Backplate, please refer to Product Bulletin 52.

Mount Antenna Housings on the Back of the FMU

The RV50 requires two external antennas for optimal performance. You will need to drill five holes in the back of the cabinet if an antenna box has not previously been mounted. The antenna needs to be mounted on the backside of the FMU with the center approximately 4 inches from the left edge when looking at the back of the FMU. The second antenna should be mounted approximately 4 inches from the right edge. See below for drill pattern details 9 - 10).

1. Locate the four stud holes by measuring 0.69” (11/16) left & right of the center of the large hole and 0.56” (9/16) above & below the center of the large hole.
2. Drill the holes.

NOTE	The large, center hold must be large enough for the SMA connector on the antenna to pass.

3. Use a file to remove any sharp edges from the large center hole.
4. Align the antenna support box so the antenna is pointing up.
5. Run the antenna cable through the large hole, and insert the four mounting studs into the four 0.188” (3/16) holes in the back of the FMU cabinet.
6. Secure the antenna support box to the FMU with four flat washers and four hex nuts.

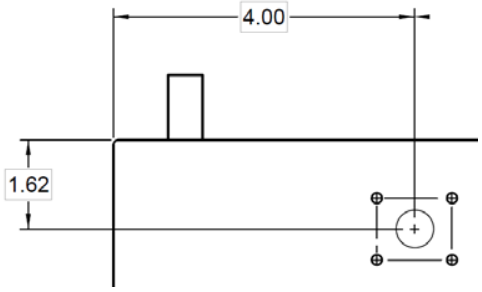

Figure 9

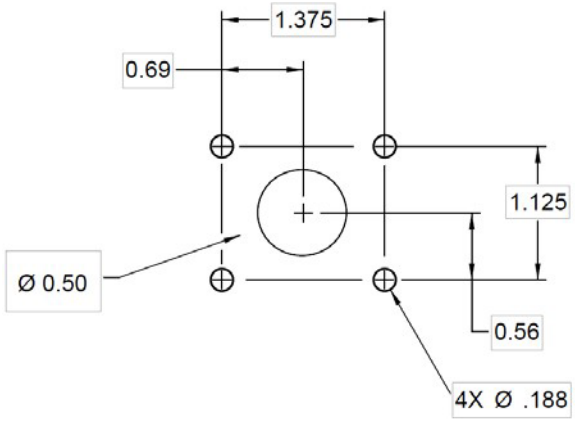

Figure 10

Reinstall the Backplate

1. Hold the Backplate in place.
2. Make sure Antenna cable, PMB power cable, and ground wire are accessible. Wires trapped behind the plate are inaccessible.
3. Attach all four screws to ensure that all holes line up.
4. Remove the bottom right screw.

Install the RV50 Cellular Gateway

1. Place the RV50 (Figure 11) inside the cabinet.

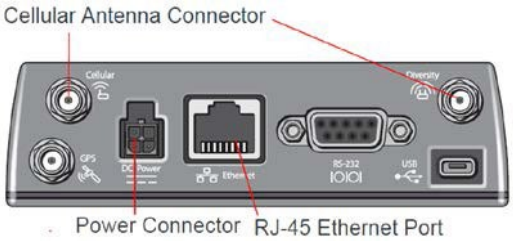

Figure 11

2. Attach the first antenna cable to the top left SMA connector on the back of the gateway, labeled Cellular.
3. Attach the second antenna cable to the top right SMA connector on the back of the gateway, labeled Diversity.
4. Connect the power cable to the back of the RV50.
5. Power up the FMU.
6. Confirm that the Gateway is connected to a cellular network (Figure 12).
    a. Power LED: Green
    b. Activity LED: Nothing or Green Flashing.
    c. Signal LED: Solid Green or Amber.
    d. Network LED: Solid Green.

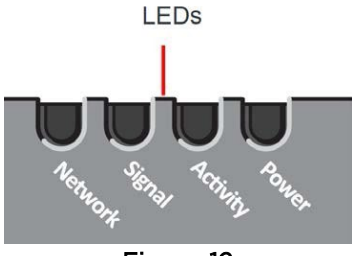

Figure 12

Part Numbers

STS #	Description
144F0241-50	Cell Modem Kit, Sierra Wireless, RV50, Verizon, Gray
265874(A)	Cell Modem, EXT, Sierra Wireless, RV50x, Verizon/ATT (NA/EMEA)
248177	Cable, Ethernet, Patch, CAT5e, 2 FT, Gray
266418	Trans, 120/240VAC, 12VDC, RV50, 6FT
144F0225A	Antenna Assembly, Wifi/Cell, EAPro 2.0, Gray

TIP	If any questions arise, contact Syntech Systems, Inc.'s Customer Satisfaction Center (CSC) at 1-800-888-9136, ext. 2, or email support@myfuelmaster.com.

Document Version History

Version	Date	Description
1.0	06/02/2021	Initial release of document
2.0	06/11/2021	Added part numbers