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Technical Note



Setup Guide

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Modem Setup

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Selecting Service Provider and Data Plan

Before the modems can function they must be set up with a data plan from the carrier.

- The RLXIC-EH model is for any GSM network (AT&T, T-Mobile, global service, etc.)
- The RLXIC-EV is specific to the Verizon network

ProSoft has dedicated contacts with the providers, who can facilitate and expedite your account setup. Contact ProSoft Technology® for the name and phone number of a representative to set up your service, or if you need more information regarding the type of plan required.

Carrier Network Setup & IP Address Assignment

The modems should be set up with carrier-assigned static public IP addresses unless:

- 1 All devices you want to communicate with each other are connected to RLXIC-Ex modems on the same network or APN (if applicable)
- 2 All devices using only Internet connections are capable of using client VPN software to connect to the carrier's network
- 3 The devices intended to communicate on the network are capable of addressing to a name (e.g. www.google.com)

Provisioning the Modem

Once a plan has been set up and all necessary settings loaded into the modem, it is ready to be provisioned by the carrier. Power the modem and note the LEDs. When the *Network LED* is ON solid and the *Signal LED* is flashing, the modem is provisioned on the network and ready to use. Note that sometimes this can take up to 30 minutes.

Install SIM card (RLXIC-EH model only)

Once you have been set up with the carrier and have selected a plan they will issue a SIM card (Subscriber Identity Module) which will need to be inserted into each modem. This is done by removing the two (2) screws and the end plate opposite the power connection and sliding in the SIM, taking care that it is aligned with the guidelines shown on the PC board.

Apply Power to the Modem

You can power the modem using either the 120 VAC adapter or the gray DC power cord with an external 12 to 24 VDC power supply. If using a DC supply, connect V+ to the red wire and V- to the black wire.

Connect the Modem to your PC for Configuration

USB Cable (Preferred Method)

- 1 Install the USB driver from the RadioLinx CD. If you do not have access to the CD, you can also download the drivers and manuals from the ProSoft Technology website at www.prosoft-technology.com
- 2 Power the modem and connect a USB type A to mini B cable from a USB port or hub on your PC to the USB port on the modem.
- 3 Launch your web browser
- 4 Enter `http://192.168.14.31:9191` in the Address field
- 5 Enter "user" in the *User Name* field, and "12345" in the *Password* field, and click **LOG IN**

Ethernet RJ45 Cable

If a USB connection is not available, you can connect to the modem using an Ethernet cable.

Note: The modem has an internal DHCP server, which may interfere with other DHCP servers or devices if connected to a LAN. It is highly recommended that you set your PC to automatically obtain an IP address (DHCP) and connect directly to the modem through a USB cable for initial configuration.

- 1 Power the modem and connect a straight-through (standard) Ethernet cable from the Ethernet port on your PC to the Ethernet port on the modem.
- 2 Launch your web browser
- 3 Enter `http://192.168.13.31:9191` in the Address field
- 4 Enter "user" in the *User Name* field, and "12345" in the *Password* field, and click **LOG IN**

GSM Network APN (RLXIC-EH model only)

Each modem must be registered to an *Access Point Name (APN)*. There are several types of APNs offered, which include public, dedicated, and custom. The type required will be determined by the carrier based on the specific needs of each customer.

- 1 Once the APN has been set up, go to the **WAN/CELLULAR** tab and enter the carrier-assigned APN name in the *Set APN* field.
- 2 If you were issued a username and password, enter them in the *Network User ID* and *Network Password* fields respectively.
- 3 Click **APPLY** to write the changes and **REBOOT** to save the changes to the modem.

Loading and Saving Configuration Templates

To simplify configuration, ProSoft has developed templates which can be loaded for your specific application. These templates are available on the RadioLinx CD, which is included with the modem. If you do not have access to the CD, contact ProSoft Technical Support to get the necessary template(s).

Once you have completed the configuration of your modem, it is recommended that you save the settings to a template for future reference.

- 1 Log into the modem web page.
- 2 Click **DOWNLOAD** and then **SAVE**.
- 3 Enter the desired name and location and click **SAVE**.

Accessing the Modem Remotely

You can connect to the modem remotely over the Internet, using the carrier-assigned IP address, or the modem name with DNS.

Static IP Address

- 1 Connect using the USB port and go to the **STATUS** tab, **HOME** page, and note the IP address in the *IP ADDRESS* field.
- 2 Go to the **SERVICES** tab, **ACEMANAGER** page. In the *Enable ACEmanager* field, select **TETHERED HOST AND OTA**.
- 3 Click **APPLY** to write the changes and **REBOOT** to save the changes to the modem.
- 4 Close the browser window and disconnect the USB cable from the modem.
- 5 Launch the web browser and enter `http://<IP ADDRESS>:9191` in the address field.
- 6 Enter "user" in the *User Name* field and "12345" in the *Password* field and click **LOG IN**.

DHCP IP Address

- 1 Connect using the USB port.
- 2 Go to the **SERVICES** tab, **DYNAMIC DNS** page and enter a unique name for the modem in the *Device Name* field.
- 3 Go to the **SERVICES** tab, **ACEMANAGER** page. In the *Enable ACEmanager* field, select **TETHERED HOST AND OTA**.
- 4 Click **APPLY** to write the changes and **REBOOT** to save the changes to the modem.
- 5 Close the browser window and disconnect the USB cable from the modem...
- 6 Launch the web browser and enter `http://devicename.eairlink.com:9191` in the address field.
- 7 Enter "user" in the *User Name* field and "12345" in the *Password* field and click **LOG IN**.

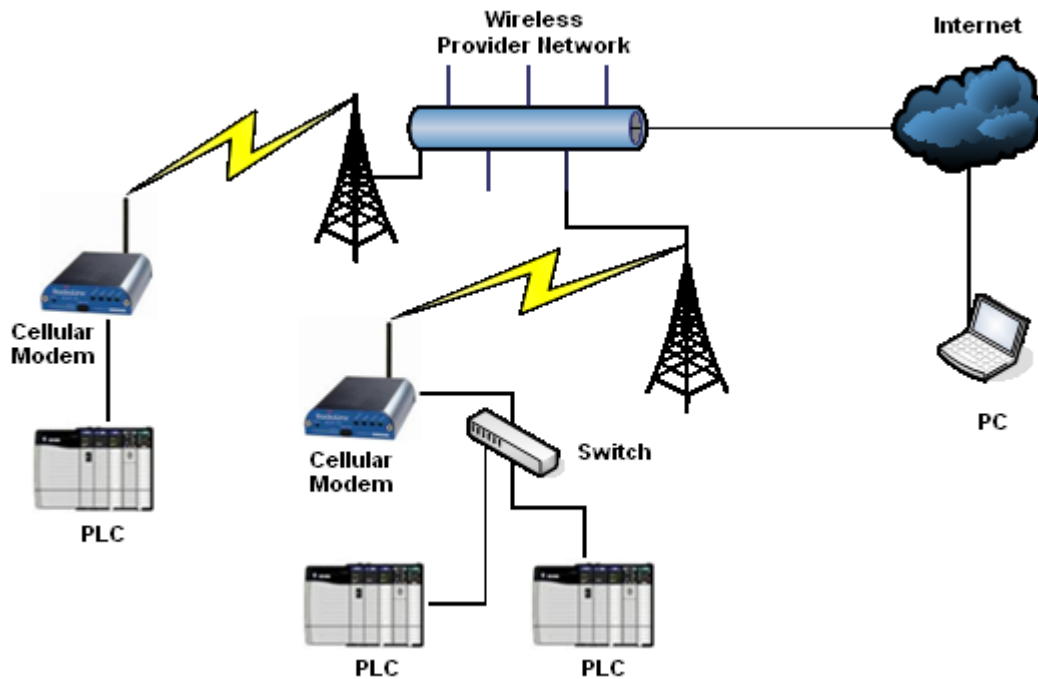
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Internet / LAN to Cellular (LAN to Mobile Terminated)

Network Diagram



Description

PC with an Internet connection originates communication to industrial device(s) connected to cellular modem(s).

NOTE: If you are using a PC or other device that uses DNS lookup, go to the Status Tab, WAN/Cellular page in the modem, note the IP address(es) of the DNS server(s), and enter those settings into the Network Properties of your PC's network adapter.

Single Device Connected to Modem

Device with Static IP Address

- 1 Log in to the modem web page, click **UPLOAD**, and then click **BROWSE** and select the template named *RLXIC-Ex_Static_IP*, taking care to match the model number of your modem. Click **UPLOAD FILE TO MODEM** and then click **LOAD TEMPLATE**.
- 2 Go to the **LAN** tab, **ADDRESSING** page, enter the IP address of the device you are connecting to in the *Starting IP* and *Ending IP* fields, and then enter the default gateway of the device in the *Device IP* field.
- 3 Go to the **STATUS** tab, **HOME** page, and note the IP address in the *IP ADDRESS* field. This is the IP address that you will use to communicate with the attached device. If you have DHCP address assigned by the carrier then you can use the DNS Device Name in place of the IP address.
- 4 Click **APPLY** to write the changes and **REBOOT** to save the changes to the modem.

Device with DHCP Assigned IP Address

- 1 Verify that the connected device is set to DHCP, and does not have a static IP address assigned.
- 2 Log in to the modem web page, click **UPLOAD**, and then click **BROWSE** and select the template named *RLXIC-Ex_DHCP*, taking care to match the model number of your modem. Click **UPLOAD FILE TO MODEM** and then click **LOAD TEMPLATE**.
- 3 Go to the **STATUS** tab, **HOME** page, and note the IP address in the *IP ADDRESS* field. This is the IP address that you will use to communicate with the attached device. If you have DHCP address assigned by the carrier then you can use the DNS Device Name in place of the IP address.
- 4 Click **APPLY** to write the changes and **REBOOT** to save the changes to the modem.

Multiple Destination Devices Connected to Modem

Connect Multiple Destination Devices to the Modem using Port Forwarding

- 1 Log in to the modem web page, click **UPLOAD**, and then click **BROWSE** and select the template named *RLXIC-Ex_Port_Forwarding*, taking care to match the model number of your modem. Click **UPLOAD FILE TO MODEM** and then click **LOAD TEMPLATE**. The modem can route packets to a maximum of 19 devices connected to it assuming the PC (or other device) initiating communication with the modem is able to send messages to both an IP address and a unique service port.
- 2 Go to the **SECURITY** tab, **PORT FORWARDING** page, and enter the number of devices connected to the modem in the *Number of PF Entries* field.
- 3 Next, click the **ADD MORE** button and enter the IP address of the first connected device in the *HOST IP* field, the public service port range that is used to send the message to that device in the *PUBLIC START PORT* and *PUBLIC END PORT* fields, and the service port of the specific device if applicable (e.g. Modbus/TCP uses port 502 and Ethernet/IP uses port 44818 for TCP and port 2222 for UDP).
- 4 Repeat this for all connected devices.
- 5 Go to the **STATUS** tab, **HOME** page, and note the IP address in the *IP Address* field. This is the IP address that you will use to communicate with the attached devices. If you have a DHCP address assigned by the carrier then you can use the DNS Device Name in place of the IP address. Use different service ports to direct messages to each of the connected devices per the entries above.
- 6 Click **APPLY** to write the changes and **REBOOT** to save the changes to the modem.

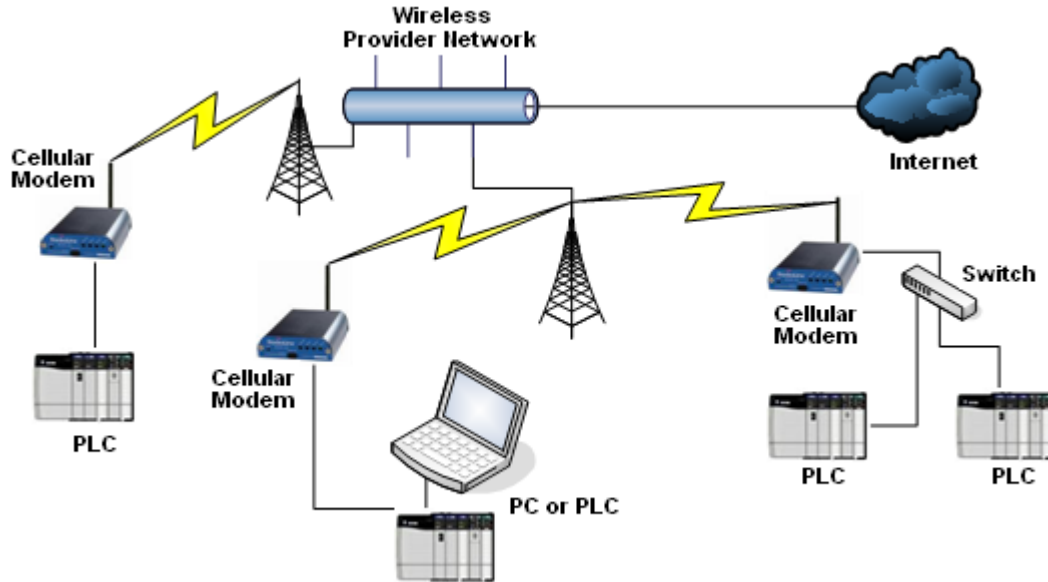
Connect Multiple Destination Devices to the Modem using VPN Connection

Note: This procedure requires additional information from the VPN service provider. Please make sure you have this information before attempting this setup.

- 1 Log in to the modem web page, click **UPLOAD**, and then click **BROWSE** and select the template named *RLXIC-Ex_Client_VPN*, taking care to match the model number of your modem. Click **UPLOAD FILE TO MODEM** and then click **LOAD TEMPLATE**.
- 2 Go to the **VPN/CELLULAR** page and enter the supplied *Username* in the *Network ID* field and the *Password* in the *Network Password* field.
- 3 Go to the **LAN** tab, **ADDRESSING** page. Enter the first address of the supplied Usable Hosts range in the *Device IP* field. Enter the next address in the *Starting IP* field and the last address in the *Ending IP* field.
- 4 Go to the **VPN** tab, **VPN1** page and verify the supplied VPN Gateway IP address matches what is shown in the *VPN Gateway Address* field.

Cellular to Cellular (Mobile Originated to Mobile Terminated)

Network Diagram



Description

PC or industrial device(s) connected to cellular modem originates communication to industrial device(s) connected to cellular modem(s).

NOTE: If you are using a PC or other device that uses DNS lookup, go to the Status Tab, WAN/Cellular page in the modem, note the IP address(es) of the DNS server(s), and enter those settings into the Network Properties of your PC's network adapter.

Single Device Connected to the Modem

Device with Static IP Address

- 1 Log in to the modem web page, click **UPLOAD**, and then click **BROWSE** and select the template named *RLXIC-Ex_Static_IP*, taking care to match the model number of your modem. Click **UPLOAD FILE TO MODEM** and then click **LOAD TEMPLATE**.
- 2 Go to the **LAN** tab, **ADDRESSING** page, enter the IP address of the device you are connecting to in the *Starting IP* and *Ending IP* fields, and then enter the default gateway of the device in the *Device IP* field. Click **APPLY**.
- 3 Go to the **STATUS** tab, **HOME** page, and note the IP address in the *IP ADDRESS* field. This is the IP address that you will use to communicate with the attached device. If you have DHCP address assigned by the carrier then you can use the DNS Device Name in place of the IP address.
- 4 Click **APPLY** to write the changes and **REBOOT** to save the changes to the modem.

Device with DHCP Assigned IP Address

- 1 Verify that the connected device is set to DHCP, and does not have a static IP address assigned.
- 2 Log in to the modem web page, click **UPLOAD**, and then click **BROWSE** and select the template named *RLXIC-Ex_DHCP*, taking care to match the model number of your modem. Click **UPLOAD FILE TO MODEM** and then click **LOAD TEMPLATE**.
- 3 Go to the **STATUS** tab, **HOME** page, and note the IP address in the *IP ADDRESS* field. This is the IP address that you will use to communicate with the attached device. If you have DHCP address assigned by the carrier then you can use the DNS Device Name in place of the IP address.
- 4 Click **APPLY** to write the changes and **REBOOT** to save the changes to the modem.

Multiple Destination Devices Connected to Modem

Connect Multiple Destination Devices to the Modem using Port Forwarding

- 1 Log in to the modem web page, click **UPLOAD**, and then click **BROWSE** and select the template named *RLXIC-Ex_Port_Forwarding*, taking care to match the model number of your modem. Click **UPLOAD FILE TO MODEM** and then click **LOAD TEMPLATE**. The modem can route packets to a maximum of 19 devices connected to it assuming the PC (or other device) initiating communication with the modem is able to send messages to both an IP address and a unique service port.
- 2 Go to the **SECURITY** tab, **PORT FORWARDING** page, and enter the number of devices connected to the modem in the *Number of PF Entries* field.
- 3 Next, click the **ADD MORE** button and enter the IP address of the first connected device in the *HOST IP* field, the public service port range that is used to send the message to that device in the *PUBLIC START PORT* and *PUBLIC END PORT* fields, and the service port of the specific device if applicable (e.g. Modbus/TCP uses port 502 and Ethernet/IP uses port 44818 for TCP and port 2222 for UDP).
- 4 Repeat this for all connected devices.
- 5 Go to the **STATUS** tab, **HOME** page, and note the IP address in the *IP Address* field. This is the IP address that you will use to communicate with the attached devices. If you have a DHCP address assigned by the carrier then you can use the DNS Device Name in place of the IP address. Use different service ports to direct messages to each of the connected devices per the entries above.
- 6 Click **APPLY** to write the changes and **REBOOT** to save the changes to the modem.

Connect Multiple Destination Devices using a Modem to Modem VPN Connection

- 1 Log in to the web page of modem 1 and click **UPLOAD**, and then click **BROWSE** and select the template named *RLXIC-Ex_Gateway_VPN_1*, taking care to match the model number of your modem. Click **UPLOAD FILE TO MODEM** and then click **LOAD TEMPLATE**.
- 2 Go to the **VPN** tab, **VPN1** page and enter the carrier-assigned IP address of the modem to which you want to create the tunnel in the *VPN Gateway Address* field.
- 3 Click **APPLY** to write the changes and **REBOOT** to save the changes to the modem.
- 4 Log in to the web page of modem 2 and click **UPLOAD**, and then click **BROWSE** and select the template named *RLXIC-Ex_Gateway_VPN_2*, taking care to match the model number of your modem. Click **UPLOAD FILE TO MODEM** and then click **LOAD TEMPLATE**.
- 5 Go to the **VPN** tab, **VPN1** page and enter the carrier-assigned IP address of the modem to which you want to create the tunnel in the *VPN Gateway Address* field.
- 6 Click **APPLY** to write the changes and **REBOOT** to save the changes to the modem.

This configuration uses the modem's DHCP server to assign IP addresses to the attached devices. If your application requires the devices to use static IP addresses then they must be within the range specified by the *Starting IP* and *Ending IP* fields listed on the **LAN** tab, **ADDRESSING** page.

Each modem can have a maximum of five (5) VPN connections to other modems or servers. Each modem must have a unique local subnet. This subnet is specified in the *Device IP*, *Starting IP* and *Ending IP* fields on the **LAN** tab, **ADDRESSING** page. The destination modem's subnet is specified in the *Remote Address* field on the **VPN** tab, **VPNx** page.

Multiple Originating Devices Connected to Modem

- 1 Log in to the modem web page, click **UPLOAD**, and then click **BROWSE** and select the template named *RLXIC-Ex_DHCP_Multi*, taking care to match the model number of your modem. Click **UPLOAD FILE TO MODEM** and then click **LOAD TEMPLATE**.
- 2 Go to the **LAN** tab, **ADDRESSING** page. Enter the starting and ending IP addresses you wish to use in the *Starting IP* and *Ending IP* fields.
- 3 Click **APPLY** to write the changes and **REBOOT** to save the changes to the modem.