WATER-INSIGHT

Application Notes

Rev 01

AN25 - Teltonika RUT240 Modem Router Configuration

Introduction

The RUT240 is used for cellular internet connections especially in rural areas for Water-Insight IMS installations. The IMS consists of an INC and a small form factor PC (Intel NUC) running windows 10. It is generally left to run unattended and clients can use Teamviewer to remotely connect to the IMS to view the IMS operations dashboard.

Occasionally TeamViewer access can drop out and remote users will not be able to determine if the connection issue is due to the modem or due to the windows operating system on the NUC.

Recovery mechanisms include:

- Remotely rebooting the modem
- Remotely repowering the NUC

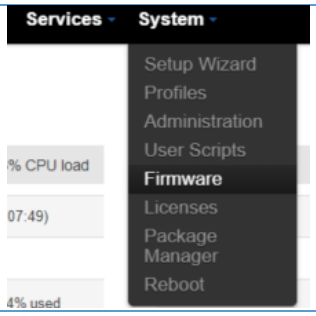
This application note deals with the built in facility of the modem to perform device configuration and control functions by using SMS (Txt) messages sent to the device.

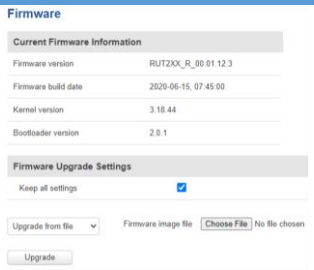
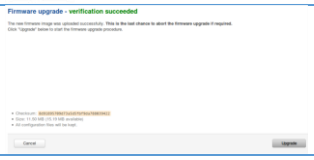
Configure Admin Password

1. Login to RUT240 web UI
   - Username: admin
   - Password: admin01
2. Go to **System** > **Administration** > **General**
3. Change administrator password to **Qdsl2019**

Upgrading Firmware

It is a good idea to upgrade to the latest firmware

Step	Process	Note
1.	- Download the latest firmware version https://wiki.teltonika-networks.com/view/RUT240_Firmware_Downloads	
2.	Login to RUT240 web UI - Open a browser and connect to http://192.168.1.1	
3.	- Select **System** > **Firmware**	

Step	Process	Note
4.	- Check **Keep all settings** - Select **Upgrade from File** - Choose file - **Upgrade**	
5.	- Expect a firmware verification success message - Select **Upgrade**	

Enabling SMS Control

By default, SMS control of modem function is enabled but password protected (see Authorisation below). Water-Insight assigns a password to the administrator account. Typically, the process Water-Insight will go through to configure a device includes (The menu path is shown in brackets):

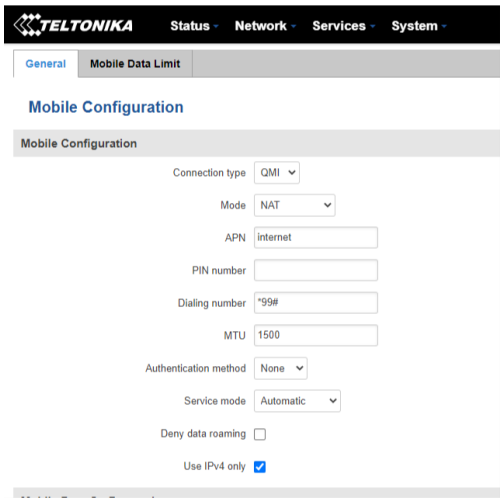
1. Restore factory defaults (press reset button on rear of device for more than 5 seconds)
2. Connect via lan to the device
3. Open a browser and connect to http://192.168.1.1 (the default IP address of the device
4. Login with the default password then assign a new password (system>administration)
5. Set the region (pacific/Auckland , UTC+12) (services>NTP)
6. Change authorisation of the utilities listed below to “no authorisation required” (services>sms utilities)
7. Disable “save messages on sim” (services>sms utilities>sms management>storage)
8. Send a sample txt message to verify its working (services>sms utilities>sms management>send sms)
9. Send a status request via sms to the device using the modems phone number
10. Add an sms rule to switch the digital output on and off (services>sms utilities>(add new sms rule)

Configuring 3G Data Connection

To enable 3G data connections the mobile network settings need to be configured.

While still logged in as above:

1. Navigate to mobile network configuration (Network > Mobile > General)
2. Set the **APN** to ***internet*** (Spark), ***vodafone*** (Vodafone), ***internet*** (2degrees)
3. Set **Authentication method** to ***none*** (Spark), ***none*** (Vodafone), ***none*** (2degrees)
4. Leave all other entries unchanged/blank
5. **Save** settings



SMS Utilities

Water-Insight enables the following functions in IMS systems wherein no authorisation is required to execute the function and the modem will respond to a txt message from any phone. If necessary, these settings can be changed so that a password authorisation is required and the phones numbers restricted to permitted devices.

The text values in messages are case sensitive

Other functions are available (refer to the modem user guide) but not recommended for use by agents or end users without appropriate training.

Function	Text	Action
Reboot	reboot	Restarts the mode. If the setting to send the status after reboot is configured then the device status will be sent via return sms.
Get status	status	Requesting the device status returns information including: - Router name - WAN IP address (if mobile data is switched on, it may not be after factory defaults are restored) - Data connection state (connected if mobile data is on - Connection type (e.g. LTE) - Signal strength (in dBm) - Firmware available (if new firmware is available from the manufacturer)
Switch mobile data on	mobileon	Enable mobile data (internet connection).
Switch mobile data off	mobileoff	Disable mobile data. If there is a risk that prepaid data plans will be exceeded (e.g. due to excess internet activity relating to windows updates etc) then this function can be used to turn off mobile data. It will need to be turned on again before access via Teamviewer can be initiated.
Restore defaults	restore	This command should be used with care because all setting will revert to factory defaults potentially making the device uncontactable
Switch Digital output ON	outputon	Asserts the digital output of the modem (used for NUC power control to cut power to the NUC). The output should automatically negate after 20s. This rule is lost if factory defaults are restored
Switch Digital output ON	outputoff	Negates the digital output of the modem (used for NUC power control to restore power to the NUC). This rule is lost if factory defaults are restored

Authorisation

If the device is restored to its factory defaults, SMS functions are enabled but by default router password authorisation is required to execute a function. The table below shows the format of text messages under the allowable authorisation processes.

Example Command	Authorization method	SMS Text
Status	By router admin password	ROUTER_PASSWORD status
Reboot	By serial	SERIAL_NUMBER reboot
Switch mobile data off	No authorization	mobileoff

Usernames and passwords are case sensitive. The default username and password after factory defaults are restored is:

- username: admin
- password: admin01

Therefore to reboot a modem after factory defaults have been restore the txt to send is “admin01 reboot” (without the quotes).

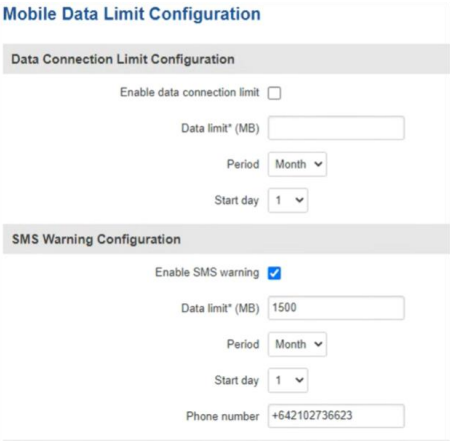
Mobile data Limits

The modem has a feature that allows a daily, weekly or monthly data limit to be applied and can send a txt message when the limit is exceeded. However, this feature is not cumulative, i.e monthly data consumption is reset every month, whereas

prepay systems limit the overall data to a maximum amount irrespective of the period. Therefore, this feature is good for SIMs on a monthly plan but not prepay. This feature could be used to provide a notification if the average monthly use is exceeded. The average monthly use would first need to be estimated based on review of actual use.

Configuration

Network > **Mobile** > **Mobile data limit**



The current balance for prepay sims can be discovered by using the send/receive SMS facility in sms utilities

- Spark : txt bal to 333
- Vodafone: txt bal to 777

You need to be logged into the web interface of the modem from IMS which means using Teamviewer to connect to IMS first

Alternatively Spark and Vodafone offer apps and web interfaces for account holders to obtain balance information of sims.

Verify modem

Do this if you don't know the sim phone number

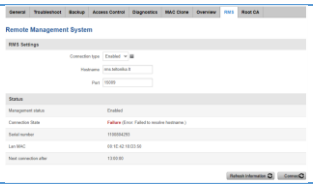
1. Connect via LAN to the device
2. Open a browser and connect to http://192.168.1.1 (the default IP address of the device
3. Login with the password Qdsl2019
4. Send a sample txt message to your phone to verify its working (services>sms utilities>sms management>send sms)
5. Send a status request via sms to the device using the modems phone number (txt status to phone number

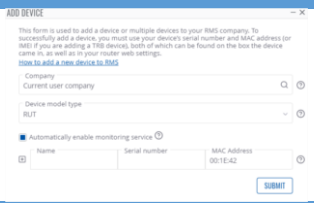
Otherwise if you know the sim phone number just do step 5, txt the word "status" (without the quotes) to the modems phone number. You will receive a status report in reply.

Remote Monitoring

Teltonika offers a web based Remote Management System (RMS), adding each device to this provides an option for access if remote access is not possible via the NUC.

RUT240 must have internet access

Step	Process	Note
1.	Login to RUT240 web UI - Open a browser and connect to http://192.168.1.1	
2.	- Select **System** > **Administration** > **RMS** - Set connection type to Enabled Make note of - Serial number - Lan MAC	
3.	- Sign into Teltonika RMS https://rms.teltonika-networks.com/account/	e-mail: workshop@qtech.co.nz Password: Qtech@2019.!
4.	- Select **Devices** (under Management) - Open **Device** drop down menu, select **Add device**	

Step	Process	Note
5.	Enter modem details - Name - Serial number (noted earlier) - MAC (noted earlier) - Select **Submit**	
6.	Expect confirmation of successful connection	May need to select **Connect** in RUT240 web UI

For more information contact Water-Insight [*support@Water-Insight .co.nz*](mailto:support@Water-Insight .co.nz)