RHNetWireless™ & RHNetLink™ USB Quick Start Guide

Information to Users

Radio Specifications

Operating Frequency 902 MHz - 928 MHz
Power Output +8 dBm
Receiver Sensitivity -102 dBm
RF Range 250 - 300 ft. non-line-of-sight
Modulation Frequency Shift Keying (FSK)

United States FCC

FCC ID: MHL-RHNET1

This equipment has been tested and found to comply with the limits for a Class B digital devices, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of more of the following measures:

• Reorient or relocate the receiving antenna
• Increase the separation between the equipment and receiver
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference and
(2) This device must accept any interference received, including interference that may cause undesired operation.

WARNING: *Changes or modifications not expressly approved by Wagner Meters could void the user's authority to operate the equipment.*

Antenna

This device has been designed to operate only with an approved attached non-removable antenna, Wagner Meters Model ANT-WIRE-RHNET that is permanently affixed to the device, and having a maximum gain of 2.1 dBi. Any other antennas are strictly prohibited for use with this device. The required antenna impedance is 50 ohms. To reduce potential radio interference to other users, the antenna type has been chosen so that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication.

RF Exposure

WARNING: *To satisfy FCC RF exposure requirements for mobile transmitting devices, the antenna used for this transmitter must not be co-located in conjunction with any other antenna or transmitter. There must be maintained a minimum exposure distance from the this device and any person of 20 centimeters.*

Canada (IC)

IC: 11161A-RHNET1

English

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication. This radio transmitter (IC: 11161A-RHNET1) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device. This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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French

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante. Le présent émetteur radio (IC: 11161A-RHNET1) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur. Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, méme si le brouillage est susceptible d'en compromettre le fonctionnement.

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Inside the Box

You should find the following items in the box:

- RHNet™ Wireless radio heads
- RHNetLink™ USB Gateway
- Quick Start Guide
- Batteries

System .Requirements

1. An Available USB Port
2. Windows XP with 512 MB Memory (Windows 7 with 1024 MB Rec.)
3. 20 MB Free Disk Space.
4. ASP.NET 3.5

Before You Plug In Your RHNetLink™ USB Gateway

1. Unpack the contents of your kit(s) and become familiar with the types of radio heads that were included and double check that all components are included.
2. Before inserting the USB dongle, you will need to create a RHNetWireless account, assign gateways and wireless radio heads to your account, then install the USB driver and gateway software.

1. Creating an RHNetWireless User Account

- ### New Users / Create an Account

If this is your first time using the RHNetWireless online system site, you will need to create a new account. If you have already created an account you can skip to step #7 in this section. The following instructions will guide you through the account creation process.

- **In a web browser, navigate to http://www.RapidRHNet.com.**

- **Click the "Create New Account" button.**

3. Complete all fields in Account Information section.

Key Fields:

- Time Zone-All data is recorded using Universal Coordinated Time (UTC) also known as Greenwich Mean Time (GMT). Selecting the time Zone will translate the time stamps in the system to display in your chosen time Zone. This can be updated later if needed.

4. Complete all fields for Primary Contact Information.

Key Fields:

- Cell Phone and Cell Carrier are optional unless you would like to receive SMS Notifications.

5. Create a new network to hold your gateway and radio heads.

Key Fields:

- Network Name - Enter a name for your first network.
- Gateway ID - Numerical serial number located on the bottom of your gateway.
- Gateway Code - 6 digit code on back of radio head, below the serial number.

Note: Additional gateways and radio heads can be added to your account in later steps.

6. Once all information has been entered, click the "Create Account" button.

Note: We recommend writing down your username and password to keep in a secure location.

7. Login with your new username and password.

2. Adding Networks, Gateways and Radio heads

These steps will allow you to configure additional networks and gateways and radio heads to your account. If you have additional gateways you can either set them up as their own networks or add them to your existing network.

1. Creating a New Network.

- Choose “My Account/Settings” from the main navigation.
- From the left navigation choose “Create Network”.
- Enter a name for the new network.
- Enter the Gateway ID and Security Code from the gateway you want to add.
- Press the "Create Network" button.

2. Adding Gateways.

1. Choose “My Account/Settings” from the main navigation.
2. From left navigation choose “Network Settings”.
3. Select the network you would like to add the gateway to.
4. Find the bottom of the section “Gateway List / Assign Gateway”.
5. Enter the Gateway ID and Security Code from the gateway you want to add.
6. Press the "Assign Gateway" button.

3. Adding Radio heads.

1. Choose “My Account/Settings” from the main navigation.
2. From left navigation choose “Network Settings”.
3. Select the network you would like to add the Radio head to.
4. Find the bottom of the section “Radio head List / Assign Radio head”.
5. Enter the Radio head ID and Security Code from the Radio head you want to add.
6. Press the "Assign Radio head" button.
7. Repeat this process to add more radio heads to this network.

3. Software Installation

- ### RHNetLink USB Driver Installation

The latest USB drivers can be downloaded from http://www.Wagner Meters.com/support/downloads.php. There are two downloads available, the recommended method is a self installing executable. If needed the driver files can also be downloaded in Zip format to be installed manually. The manual installation instructions are included.

From the downloads page, click on ***RHNetLink USB Driver Installer*** to launch the installer download. The driver file should automatically start downloading. If prompted to save the file, select a location that is easily accessible and click "Save".

When the file has completed downloading, browse to the folder where the file was saved. Double click the ***RHNetLink-Driver-Setup.exe"*** file and select "Run". Select "Next" then follow the on-screen guide to install the drivers.

When the setup has finished, the program will automatically determine which drivers to install for your system and another guide will launch to walk you through the

installation of the drivers. Click "Next" to install the drivers. When the drivers are done installing you will see a success screen. Click "Finish" to exit the installation program.

- **RHNet Gateway Application Installation**

  The RHNet Gateway Application allows your wireless radio heads to communicate with the RHNetWireless online radio head monitoring and notification system. (The online system allows you to view all your radio head data, radio head status` and configure all radio head parameters as well as setup notifications or alerts via sms text and email.)

  To install the software, open a web browser and navigate to http://www.Wagner Meters.com/ support/downloads.php. From the downloads page, click on ***RHNet Gateway Application Installer"*** to launch the web installer download. If prompted to save the file, select a location that is easily accessible and click “Save”.

  When the file has completed downloading, browse to the folder where the file was saved. Double click the ***RHNetGatewaySetup.msi"*** file, select "Run" when prompted then follow the on-screen instructions to complete the installation.

  When installation is complete the program will automatically launch. You can now begin using your wireless radio heads online.

  Note: The gateway application needs to be running on your computer in order for the radio head data to be transmitted to the online system. If the gateway is not running your radio head data is not being recorded online and notifications based on radio head data cannot be sent from the system.

4. Using Your RHNet Wireless Radio Heads

- **Start the RHNet Gateway Software:**

  Double click on the RHNet Gateway program icon on your desktop or select the program from the Windows "Start Menu" under All Programs > RHNet.

  Note: Radio head data will only be transmitted to the Online Radio head Monitoring System when the gateway software is running.

2. Insert Your USB Wireless Gateway

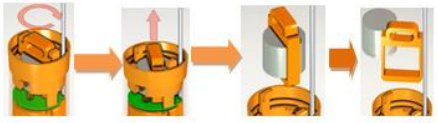
With the RHNet Gateway application running, insert the USB Gateway into your computer. The network status in the software should change to “Network Active" when the USB gateway is plugged in.

Note: If the status does not change, try unplugging and re-inserting the USB gateway.

3. Insert Batteries Into RHNet Radio Heads

Important: *Make sure your radio heads are at least 3ft. away from 7"8 Gateway.*

A. From the antenna end of the radio module, locate the battery tray handle and turn clockwise. Pull the battery tray straight up and out of the radio module.



B. Insert battery and reverse this process for reinstalling the battery tray into the radio module.

Notes:
- If the Radio head status indicator does not change, reset the Radio head by removing the battery.
- Wait 60 seconds then re-insert the battery or push the reset button on top of the radio head.

Warning: *Your radio heads ship with a 10 minute heartbeat.*
It is recommended that you should the heartbeat to no faster than one hour to preserve battery life. When changing a Radio head's heartbeat, the new configuration information will be sent to the radio head on it's next heartbeat. If you want to update the radio heads immediately you can reset them manually.

Manual Radio head Reset Process:
1 – Push the reset button on top of the radio head.
or
2- Remover the battery from the radio head
3 – Change the radio head heartbeat through the online system
4 - Re-insert the batteries into the radio heads

4. Check That Radio heads Are Communicating With The System

As the radio heads power up, they will begin communicating with the wireless gateway application. Your gateway window should start displaying radio head data similar to this:

```
06/24/2011 09:44:57.939: RX: Radio head Data: Device: 10721 Radio headType:
Temperature[2],
                    RSSI: -21 / -31, Volts: 2.96V, STS: 16, Data: 72.3° 7
06/24/2011 09:44:57.375: RX: Status Indication: Device: 10721 has joined network
06/24/2011 09:44:42.274: RX: Network Status: APN: 2116, NetCNT 4, Channel: 4,
                    NetID: 248, MODE: "ACTIVE/RESUME"
Network Active
```

5. Using The RHNet Online Wireless Radio head System

1. The Online Interface

- **Menu System**

  Network Overview - Click to return to "Home" view.
  My Account - Click to display and edit account information.

- **Radio Head Network "At a Glance"**

  Displays the most current readings for every radio head in the selected network, all on one easy-to-read page.

- **Radio Head List**

  Displays all radio heads that are currently assigned to your radio head network. Clicking on the radio head names allows you to view information for that specific radio head. Clicking the edit button by a radio head`s name allows you to change the radio head specific settings such as radio head name and heartbeat (report interval).

  Note: *All information stored on the radio head will be downloaded to the radio head on the next radio head heartbeat(Check-in). If you make a change to any setting, you will need to wait until the radio head has downloaded the new information before you can edit the configuration settings again.*

- **Radio Head Status Indicators and Icons**

  Displays the status for each individual radio head.

  Radio head is checking in and within user defined safe parameters.

  Radio head has met or exceeded a user defined threshold or triggered event.

  Radio head has not checked in (inactivity alert sent).

  No radio head readings since shipping

  No radio head readings will be recorded (Inactive)

  Edit your radio head

  Edit your radio head, however some fields are unavailable until pending transactions have been downloaded to the radio head

When you click on a radio head name in the “Radio Head List” the right panel will change to this view.

- **Current Radio Head Information**

  Displays the most current information of the selected radio head, including: last check-in, signal strength, battery power and last radio head reading.

- **Radio Head Data Window**

  Select a tab to change between:

  History - Displays a history of the selected radio head`s data.
  Notifications - Allows you to view, add, edit or delete notifications for the radio head.
  Chart - Displays a graphical view of the selected radio head`s data.
  Export - Allows you to archive data by exporting as a .csv file
  Edit - Allows you to change settings such as radio head name and heartbeat.

  The tab highlighted in blue is your current selection.

- **Radio Head Charts**

  Displays visual charts / graphs for the selected radio head(s) during a specific time period. Charts and graphs can be printed from this view.

- **Date Range Selector**

  Allows you to choose the date range for viewable information such as radio head history, notifications sent, charts and radio head data export.

2. Configuring Radio heads

From the radio head list, click the "Edit" icon next to the name of the radio head that you would like to configure. Alternately you can click on the "Edit" tab in the Radio Head Data Window to access this same area.

The radio head configuration window allows you to set the primary configurations for each radio head. Within this window you can change the name of the radio head, set the heartbeat (how often the radio head checks-in with the software - default is every 10 minutes), and change the unit of measurement. When you have finished making changes, press the “Save” button at the bottom of this section.

Note: Be sure to click the "Save" button anytime you make a change to any of the radio head parameters. *All changes made to the radio head settings will be downloaded to the radio head on the next radio head heartbeat (check-in). Once a change has been made and "Saved," you will not be able to edit that radio head's configurations again until the radio head has downloaded the new setting.*

3. Setting Up Notifications

Automated notifications can be set up to alert you via SMS text or email if a wireless radio head meets a set threshold or condition. To create a new notification or edit/delete an existing notification, click on the "Notifications" link in the main menu area of the site.

1. The Notification List Window

2. Creating a New Notification

Title
Allows you to name your notification.

Class of Notification
There are four notification options available when creating a new notification.

- **Application -** Application notifications are radio head specific (i.e. RH% is under 80% threshold) If creating an application specific notification, you will need to choose what radio head type you are creating the alert for. The system will automatically populate a list of radio heads. The notificatiion you create will be based on the selected radio head.

- **Inactivity -** Set-up "Inactivity" notifications to alert you when your radio heads have stopped communicating with the servers. Failure to set up an "Inactivity" notification will result in no email/SMS txt being sent should your radio heads stop communicating with the servers.

- **Low battery -**Allows users to define a battery power percentage level that will trigger an alert from the system, warning them to replace batteries.

- **Advanced Notifications -** Allows the user to set notifications based on more advanced rules, such as comparing past data points with the current one to determine if the notification should be sent.

3. Setting and Editing Notification Settings

People to Notify
Start typing a name into the box and the system will automatically populate the name of a user within your radio head network. If there are already multiple users on the network, a drop down list of names will appear. Select the name of the user for the notification. If the person to be notified does not have an account on the network, you may quick add them by selecting the "Add Recipient" link and entering in their contact information.

Notification Parameters
This area allows the user to set notification parameters such as the name, the notification message and radio head data conditions that will trigger the notification.

Assigned Devices
Allows you to tell the system which radio heads will trigger the notification being created. When a notifications is sent from the system, it will automatically include the radio head name and data that caused the notification to be sent.

4. History and Chart Views

Clicking on the "History" or "Chart" tabs within the radio head data window allows you to view the radio head data history as text or in a graphical chart.

Note: To change the date range of the viewable information, click on the date range box at the top right of the radio head data window.

5. Exporting Data

Clicking on the "Export" tab within the radio head data window allows you to export radio head data to a comma separated value (.csv) file or send the radio head data to an external web source.

To export radio head data you must first select the date range for the data you want to export. Once the date range is selected, determine whether you want radio head data from the selected radio head only, from all radio heads in the network or all radio heads assigned to the account. When you are finished, click on "Export Data" at the bottom of this window. The data will be exported to a comma separated value (.csv) file for use in spreadsheet software such as Microsoft Excel®. Depending on your browser settings you may be prompted for a save location. If not, the file will be downloaded to your browser`s default download directory.

Note: Only the first 5,000 records within the selected date range will be exported.

You can alternately send your radio heads` incoming data to a 3rd party by clicking on the "Configure data push" link at the bottom of the window. From this area you can pass data from your wireless radio head network devices to another service in real time. This is done by coding the data into a url query then sending the data via http get request at the time data is recieved. There is an extensive list of parameters that can be passed, as listed in the viewed window, that allow you to send detailed information about both the data and the radio head.

6. My Account / Settings

Clicking on “My Account / Settings” on the menu will open the Account Master Settings panel where you have access to a variety of account parameters.

1. Account Settings

- Edit Account Information
- Add, Delete and Edit Account Users

2. Network Settings

- Edit Radio Head Network Settings
  - Name radio head networks
  - Turn on/off notifications for an entire radio head network
- Add, Delete and Edit RHNet Gateways
- Add, Delete and Edit Wireless Radio Heads

3. Bulk Radio head Settings

- Configure Multiple Radio Heads
  - Set Radio head parameters simultaneously for radio heads of the same type
- Set Radio head Icons

4. Bulk Notifications Settings

- Configure All Notification Recipient
- Set a single contact to recieve all notifications set up under the account

5. Create Network

- Add New Radio Head Networks to Your Account

For additional information or more detailed instructions on how to use your Wagner Meters RHNet Wireless Radio Heads or the RHNetWireless Online System, please visit us on the web at http://www.Wagner Meters.com/support/.

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www.Wagner Meters.com

