



ThermoWorks

RTR-500NW/AW Configuration Guide

Before You Start

Ver. 1.01

Take a few moments before you start to make the following simple checks. A few moments spent before you start installing your system can save a lot of time later by avoiding some of the most common problems that users can encounter.

I) Administrator Rights

For installation of TandD software and drivers it is **ABSOLUTELY NECESSARY** that you have complete administrator rights. Go to Control Panel > User Accounts and confirm that this is the case. If it is not, then stop right here and correct it.

II) Firewall Settings

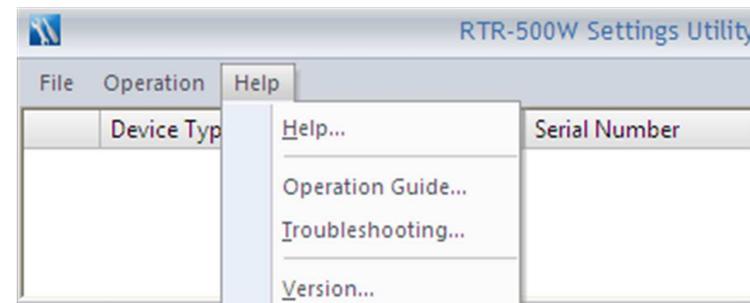
The RTR-500NW/AW resides on your network independently from any PC, with its own IP address. In order for it to perform its functions, however, the unit will have to have an unimpeded communication path to the FTP and Email servers that you specify in the settings. This may also include unimpeded **ACCESS TO THE INTERNET**. Your network may have firewalls which block this access so it will be necessary to attend to this early on in the setup process.

III) SPAM Filter Settings

If you are going to be sending warning monitoring emails be sure to set your SPAM filter not to block them.

IV) Other Help Sources

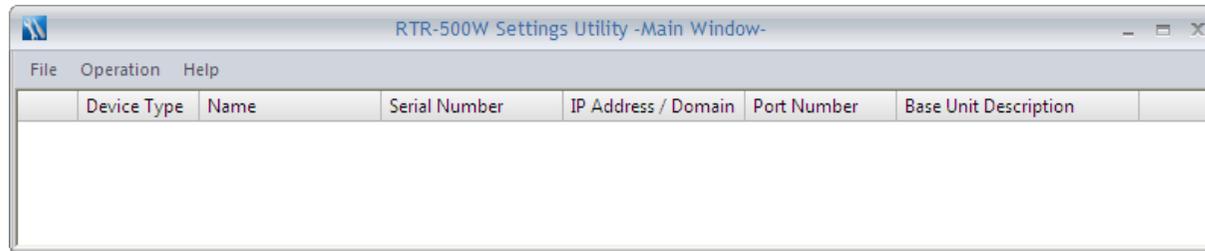
Note that RTR-500W for Windows has both a Help file and an Operational Guide that contain tips for setup and troubleshooting suggestions. As unusual as it may seem, TandD's Help Files actually are helpful. You can find a lot of useful information in them, so try looking there if you are having problems.



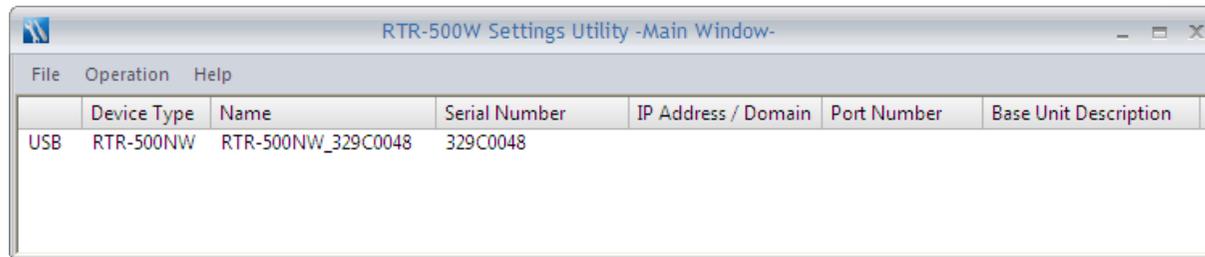
Starting the RTR-500W Settings Utility

I) Getting Started

1. After installing RTR-500W for Windows on your PC go to the Start Menu and launch the RTR-500W Settings Utility Main Window. If you have questions about installing the software or the USB Driver refer to the User's Guide that was packed with the unit. The Guide has very complete instructions for this.



2. Next connect the RTR-500NW/AW to your PC using the USB cable supplied with the unit. If the USB driver installed correctly the software should automatically discover the 500W, and the device will appear in the Utility Main Window. If this doesn't happen automatically you may have to manually associate the USB Driver with the 500W in your PC's Device Manager.



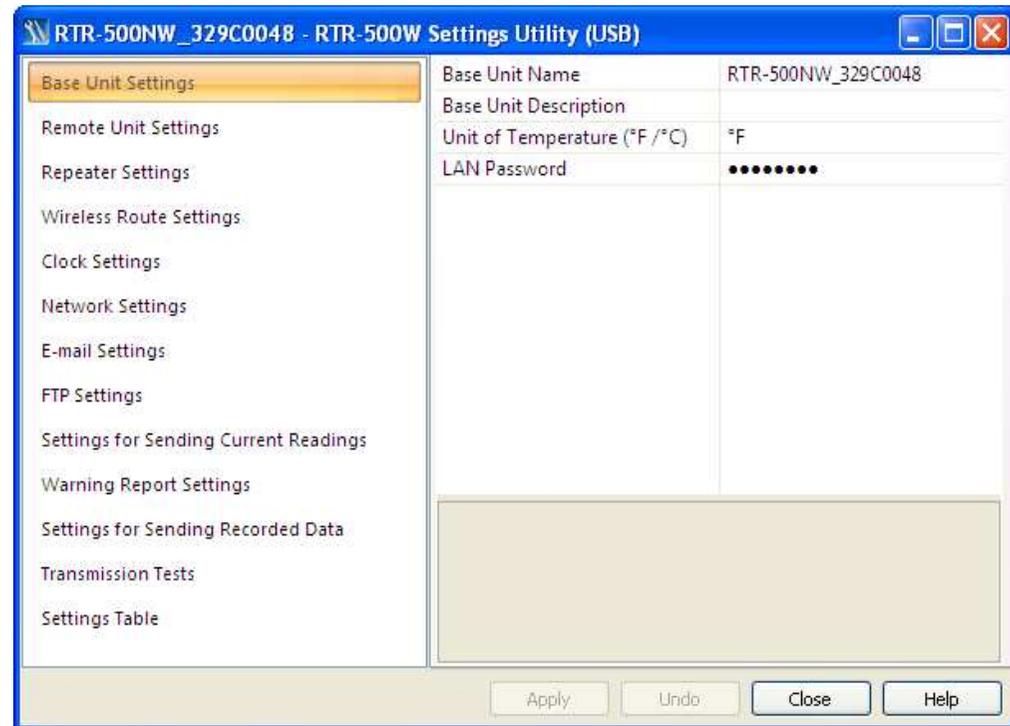
3. With the RTR-500NW/AW located, the software will also automatically open the Settings Window.

The RTR-500W Settings Window

II) The Settings Process

Making settings to control the operation of the RTR-500NW/AW is a remarkably straightforward process that is all accomplished through the Settings Window, shown here. The window is divided vertically in two, with page selections in the left hand pane and page contents on the right. Settings are made by selecting a settings page from the pane on the left and then filling in the entries in the page on the right. The process starts with the top page (Base Unit Settings) and then moving down the page list, making the settings page by page, until the last page (Settings for Sending Recorded Data) has been completed. (We will talk about Transmission Tests later in Section 12.)

AFTER MAKING SETTINGS BE SURE TO CLICK ON “APPLY” BEFORE LEAVING EACH SCREEN



1. Base Unit Settings

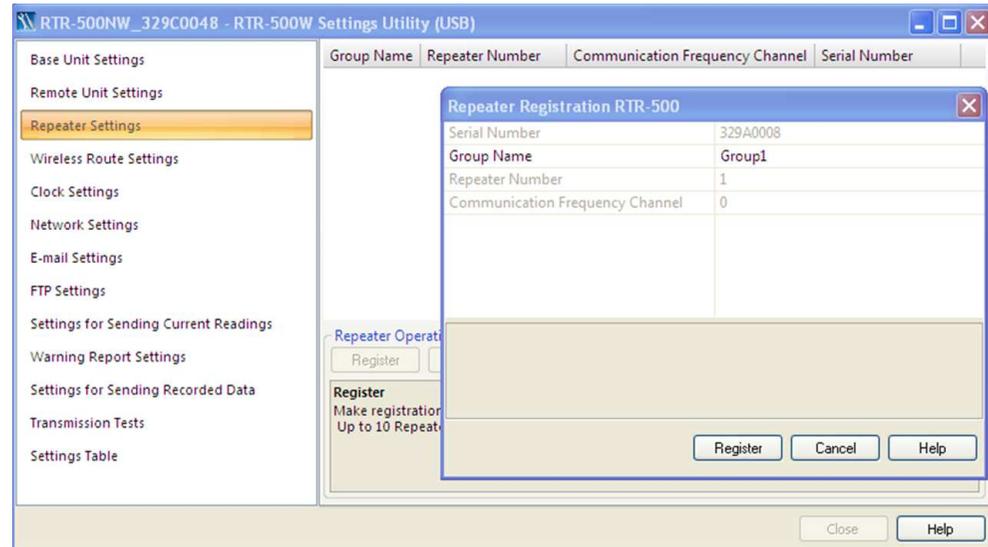
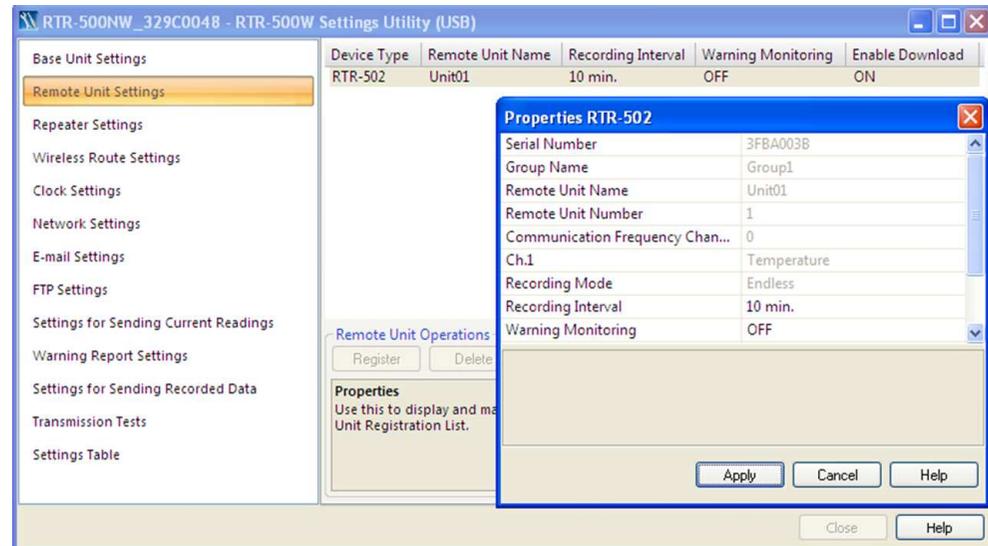
There is not much to discuss here. The Base Unit Description field can be used to enter a logical name for the RTR-500W that may have more meaning to you than the factory assigned serial number. This can be particularly helpful if you have more than one 500W on your network. The LAN Password will be used to access the 500W later when it is connected to your network, rather than via USB.

2. Remote Unit Settings

The Remote Unit Settings screen is used to register loggers to the system. When a logger is placed on the 500W you can set, via optical communication, the logger recording parameters, assign it to a logical group and give it a logical name, set the RF communication channel, enable warning monitoring and set the upper and lower reading limits which trigger warnings. Every logger that is to be monitored or downloaded by the RTR-500NW/AW must be registered to it using this screen.

3. Repeater Settings

If you intend to use wireless repeaters in your system to address communication range issues you will use this screen to register them. If not, you can skip this section (screen) entirely. The only tricky part here is that in order to register a repeater to your system you will need to plug an RTR-500 into a USB port on your PC with the Repeater Setting screen selected. You can do this by plugging it into a 2nd USB port on your PC, or by unplugging the 500W and using its USB connection for the repeater. Once the RTR-500 is connected click the “Register” button in the Repeater Setting screen. Make the appropriate entries in the pop-up window and click on Register. The repeater will now be listed in the Repeater Settings screen. When finished, disconnect the RTR-500 from the USB port and reconnect the 500W.

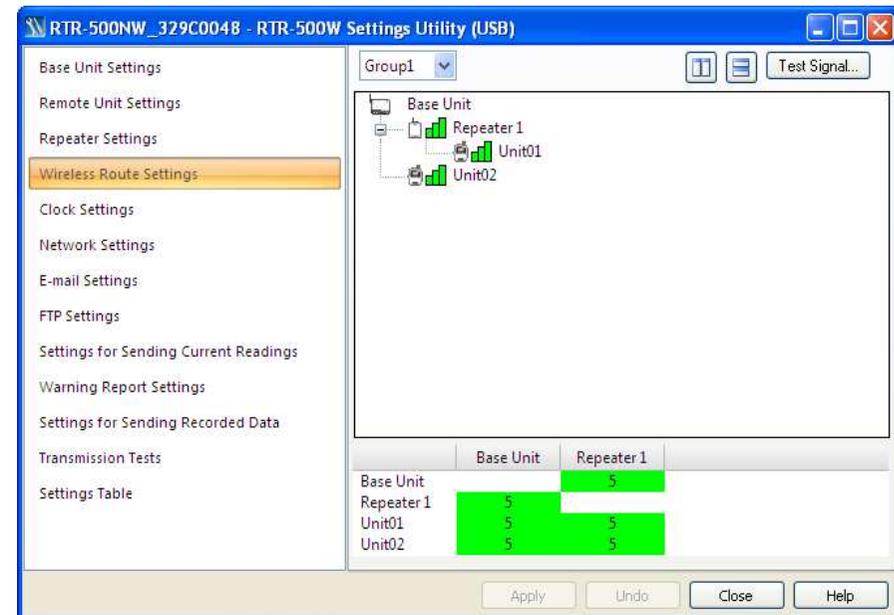
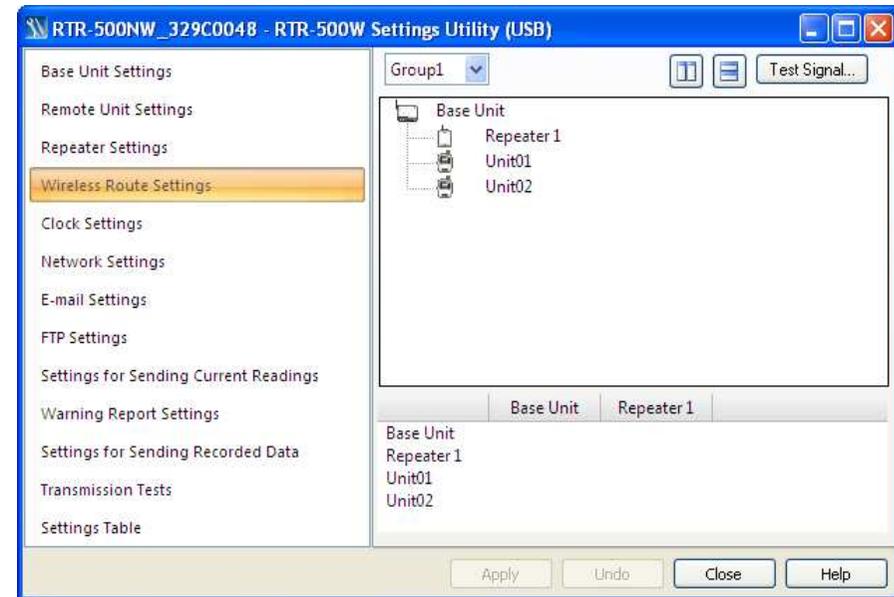


4. Wireless Route Settings

In this screen we can see that this system has two Loggers and one Repeater registered. Initially after registration the software automatically assigns all devices to communicate directly with the RTR-500AW/NW, as shown in the screen to the right. This may be fine in some cases, but if you are using a repeater it is probably not what you want. To change the communication path for a device simply drag and drop it on top of the device you want it to connect through. In the 2nd screen to the right you can see that Unit 01 has been dragged to communicate through the repeater. (Don't forget to click "apply" after changing a device's communication route.) Even if you have no repeaters in your system you will want to do the next step below.

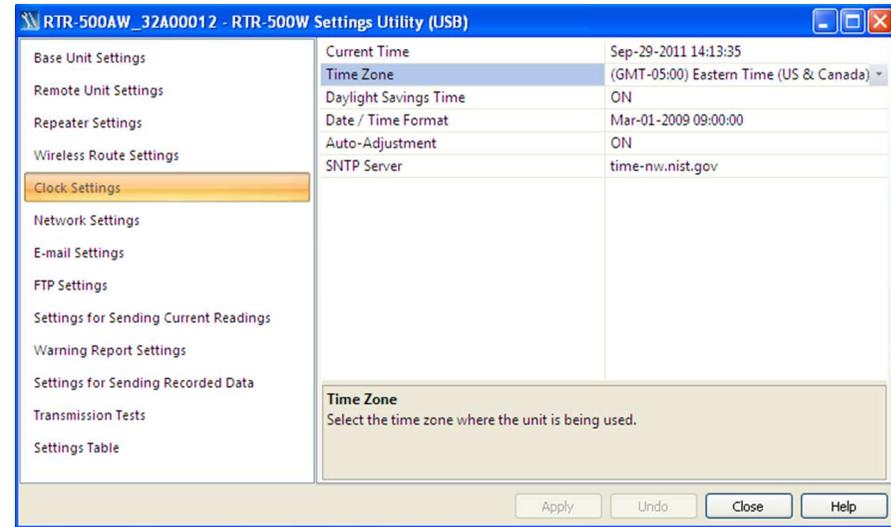
There is something else shown in this 2nd screen that is very interesting and useful. That is the results of the Signal Strength Test. Clicking on the Test Signal button will cause the system to perform an RF signal strength test for all registered communication paths and display the results. In this case we can see that all routs are 5 / Green, which is as good as it can get.

NOTE: This test can be performed over a network after the 500W, Repeaters and loggers have been deployed. This should ALWAYS BE DONE before going live with the installation. Weak signal strengths of 1 or 2 can often result in intermittent communication errors. Move the loggers or add repeaters as necessary to clear weak signal conditions and avoid headaches later.



5. Clock Settings

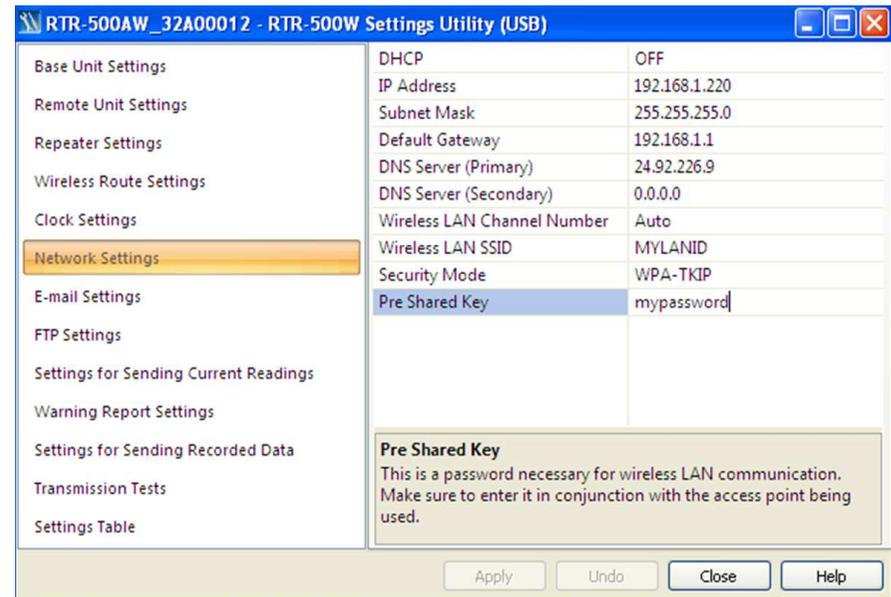
There's not a lot to say about this screen that isn't already self-evident, with the possible exception of a comment about the necessity for an SNTP server connection. In addition to correcting any errors to the RTR-500NW/AW's internal time keeping, a connection to an SNTP server also allows for automatic clock setting after a power failure or surge. While the logger readings would be unaffected, without this all 500W originated messages for warnings and the like will show erroneous times until the unit is manually reset by the user. Again, be sure that any firewalls in your network allow connection to the time server.



6. Network Settings

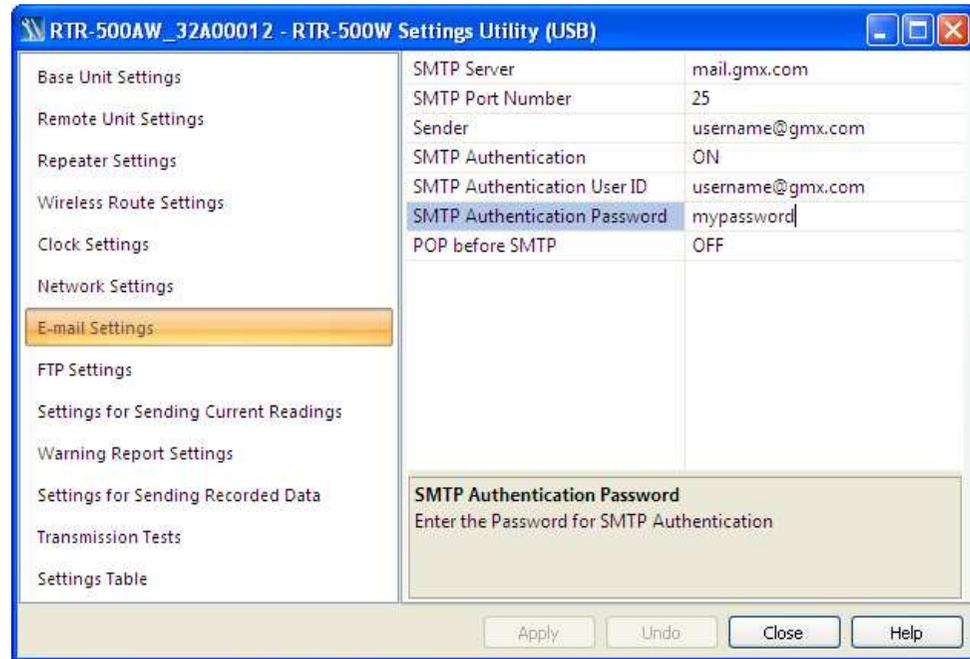
If your router supports DHCP, and almost all of them do, then set this field to ON and the settings boxes for IP address, etc. will disappear and can be ignored. If your network setup requires a fixed IP address, however, set DHCP to off and make the entries for the IP Address you will use along with the Subnet Mask, Default Gateway, and DNS Server(s). If you chose this option it is probably because your IT department told you that you should, so they can also give you the settings you need to use.

If you have an RTR-500AW you will also need to make the settings for your wireless LAN. If you are in doubt about what settings to use here check the documentation that came with your router, or with your IT department. Remember that the SSID and password are case sensitive. As a note, the RTR-500AW supports WPA2 encryption for use in 802.11n networks.



7. Email Settings

This screen is where you make the settings for the server you will be using to send Emails for Warnings, Data Downloads or Current Readings, should you choose to do so. You will need to determine the type of authentication, if any, required by your Email server. The RTR-500W supports either SMTP Authentication or POP Before SMTP. For SMTP Authentication the RTR-500W uses the LOGIN protocol. If you are unsure about this you should check with your Service Provider, your IT Specialist, or you can try using the “ehlo” command as described in the appendix at the end of this guide. If you are using an in-house server, or have a direct connection to your Email server, it is possible that it may not require any authentication at all.

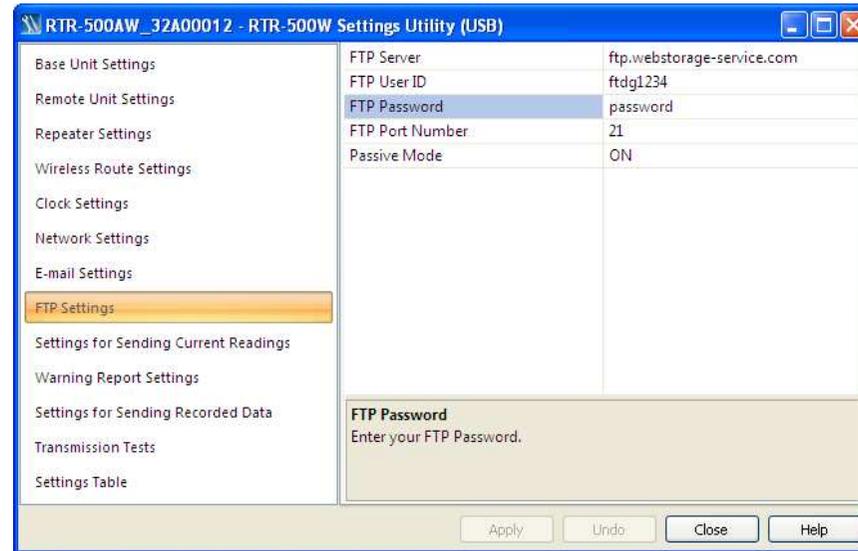


A Note About Free E-Mail Service: Some of the most popular free e-mail services, such as **Gmail** and **Hotmail**, use SSL encryption, which the RTR-500W does not support. Because of this, these services cannot be used to send warning or data Emails. There is, however, an excellent free POP3 Email service provided by GMX which has been tested to work with the RTR-500W. An account for free POP3 Email service can be quickly established at www.gmx.com. When setting up the RTR-500W for a GMX account use the settings shown above:

A Note about Microsoft Exchange Server: The RTR-500NW/AW will work with MS Exchange Servers. In order to do so, however, it will be necessary to have the IT Specialist who maintains your server set up an unencrypted Client to Server Connector for the RTR-500W on port 587.

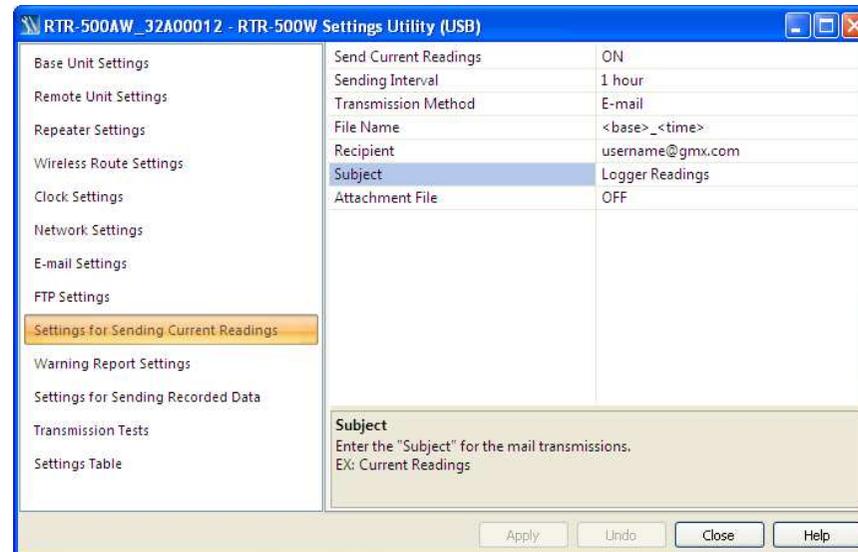
8. FTP Settings

This screen is where you make the settings for transferring data from your loggers to an FTP server, should you choose to do so. The FTP server may be internal to your network or reside on the Internet. If you do not have access to a local FTP server, as a TandD customer you are welcome to set up a free WebStorage Service account on TandD's server. Use this link: <http://www.webstorage-service.com/services/> to learn more about TandD's free WebStorage Service and to set up your account. Typical settings for a WebStorage Service account are show in the screen capture on the right. As a reminder, if you are going to use an Internet based FTP server, such as WebStorage Service, you should check to make sure that any intervening firewalls are set to allow the RTR-500W to communicate through them.



9. Settings For Sending Current Readings

Now that the RTR-500W knows where to send data you will want to tell it what data to send and how to do it. The first data type is Current Readings from the loggers. If you want Current Readings to be sent make sure to set the first line item to ON. Then select an interval and a method of sending, for which there are 3 choices. The first is to send via Email. If you select this you will have the option of having an XML file with the readings included as an attachment. The next choice is to send via FTP. This will result in an XML file with the Current Readings being uploaded to the specified FTP server and the selected sending interval.



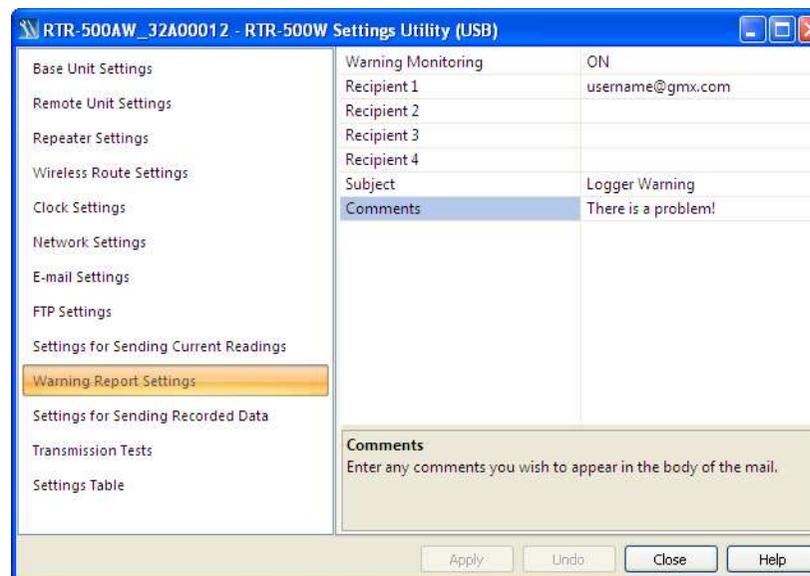
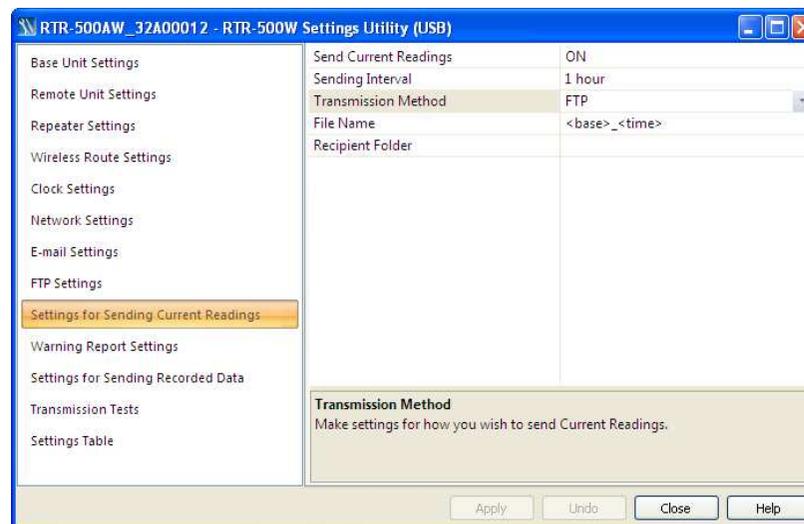
If you select FTP you should be aware that if you choose <base> for the File Name each upload will overwrite the previous one, so that there will be only one file created on the server. If you want to create a sequential series of files you will need to select a File Name that includes <time>. If you are uploading to a WebStorage account be sure to leave the Recipient Folder entry blank.

Starting with Firmware Ver. 1.40 there is a third choice called Do Not Send. (This will most likely be changed in a subsequent version to a name that better describes its meaning.) This is the setting that should be selected if you plan to run TandD's Current Readings Monitor software on a PC but not send readings to a remote location.

10. Warning Report Settings

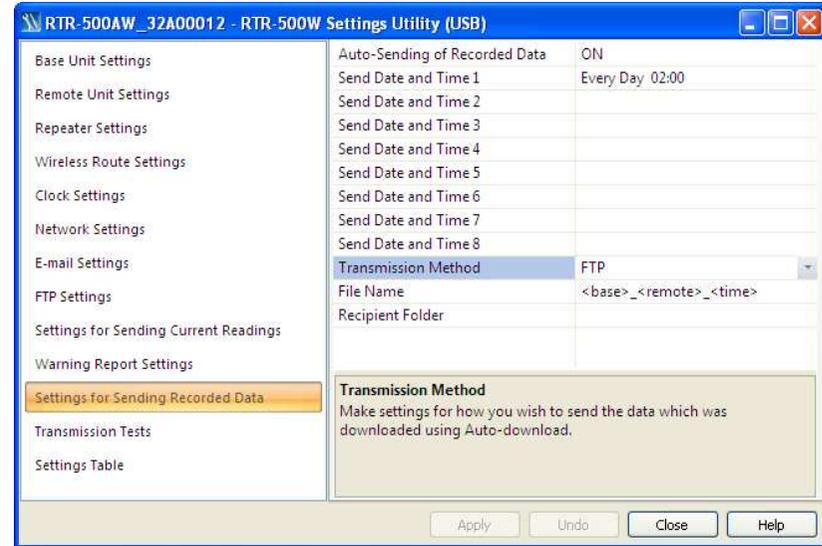
To enable warning reports to be sent when loggers go into an alarm condition set Warning Monitoring to On. Warnings can be sent to up to four recipients. If a recipient wishes to receive warnings on a cell phone it can be done using the carrier's Email to SMS Gateway. For example, to an AT&T cell phone you would enter <phone_number>@txt.att.net as the recipient. Note that warnings will only be sent for loggers that have had Warning Monitoring set to On during remote unit registration.

One note about Warning Monitoring: When you set Warning Monitoring to On for a logger you will be asked to enter a Warning Judgment Time. This is not the Warning Sampling Interval, which is fixed at 5 minutes for the RTR-500W. This time is the duration that the set limit must be exceeded before a warning notification will be sent.



11. Send Recorded Data Settings

This is the screen where downloads of the data recorded by the loggers are enabled, the frequency of downloads is specified and the transmission method is set. Recorded Data can be sent as frequently as eight times per day. Note that the selected transmission method applies to all times specified. Again, if transmission via FTP is selected and <time> is not included in the File Name, each transmission will overwrite the previous one, resulting in a single data file residing on the server no matter how many uploads are made. Also, as with sending Current Readings, it is important to note that if Recorded Data is being sent to a WebStorage Service account the Recipient Folder entry must be left blank.



12. Transmission Tests

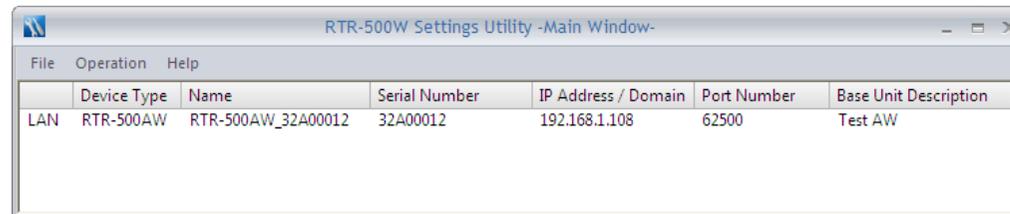
Important Note: The Transmission Tests determine if communication can be established via the specified method without errors being returned (no actual data is sent). Because of this, the RTR-500NW/AW must be connected to the network. This may seem obvious after thinking about it, but it is surprising how often people just proceed to this step while still connected via USB.

At this point the USB cable should be unplugged, the Settings Utility should be closed and connection to the network established. The success or failure of connecting can be quickly determined by the DIAG and ACTIVE LEDs on the unit. The table to the right is an excerpt from the Documents section of the Operation Guide. If the RTR-500W does not appear to be connected by examining the LEDs, you will have to stop here and troubleshoot the problem.

DIAG (Diagnosis)	ON	Initializing/ Error	Initializing after power has been turned ON. FTP or E-mail transmission failure.
	OFF	Normal	
	BLINKING	Error	Clock settings were not carried out or after a power outage the clock settings have been cleared. The Remote Unit has not been registered. Auto-download of recorded data cannot be carried out due to other improperly made settings or unmade settings.
	"DIAG" and "ACTIVE" both BLINKING	Error	A network failure has occurred. (An IP address cannot be retrieved from the DHCP Server or other such error.)
ACTIVE	ON	Normal	
	OFF	Error	The LAN cable is disconnected. The RTR-500AW cannot communicate with its access point.
	BLINKING	Communication in progress	Wireless Communication or LAN Communication is in progress.

Important Note: The RTR-500W will show an error condition (DIAG LED blinking) unless it is set to perform at least one action (Send Current Readings, Send Recorded Data or Send Warning Reports.)

RTR-500NW devices will always connect unless there is a problem with the cable or the router is not configured for DHCP. For RTR-500AW devices, the most common problems affecting connection to the network are the encryption method and key. If the device appears to connect to the network it is then time to once again open the RTR-500W Settings Utility. When open, pull down the Operation Menu and click on Search Network. The RTR-500W should appear in the window after a few seconds.



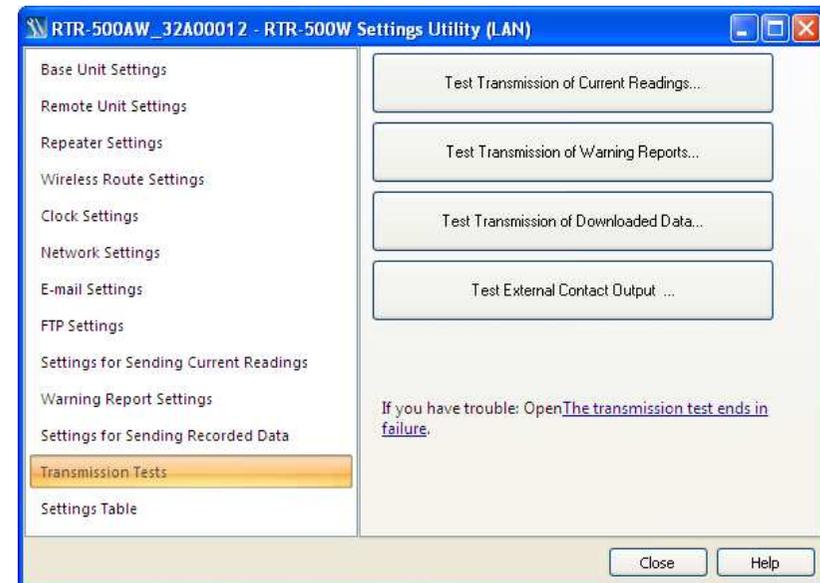
	Device Type	Name	Serial Number	IP Address / Domain	Port Number	Base Unit Description
LAN	RTR-500AW	RTR-500AW_32A00012	32A00012	192.168.1.108	62500	Test AW

If it does not appear it means that the PC from which you are running the software does not have a connection path to the RTR-500W. This is almost always caused by a firewall. This can be either a software firewall internal to the PC or a firewall in the network.

When the device appears in the window select the Operation pull down menu and click on Base Unit Settings. The software will ask for the LAN Password that was set in step 1) 'Base Unit Settings' to be entered. The Settings window will now open. Navigate to the Transmission Tests page and perform a test for each function that will be used in the normal operation of the unit. Any test that does not show a Successful result must be troubleshoot prior to putting the RTR-500NW/AW into service. (Remember that these tests do not send actual data.)

13. Settings Table

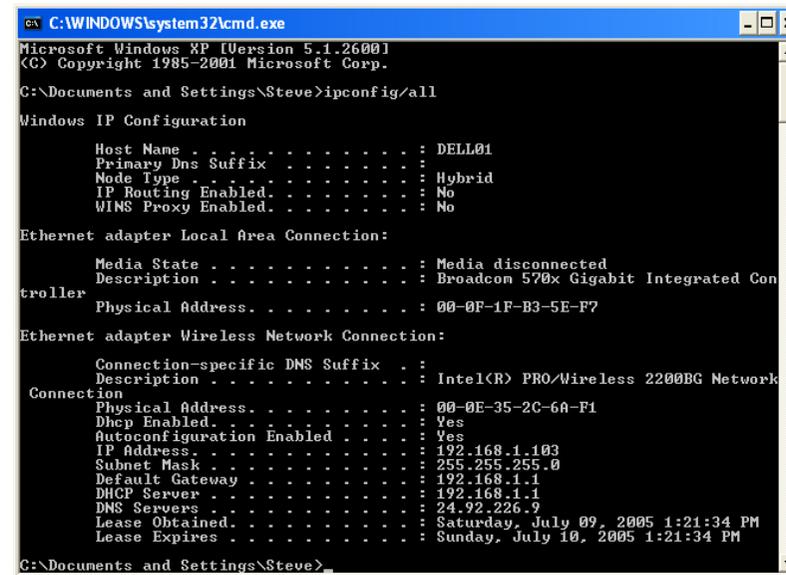
This is a convenient summary of all settings that have been made during the setup process. It is recommended to take a screen capture of this table for future reference.



*Determining Router & Server IP Addresses

Key addresses for your router and ISP server can be obtained from your computer. In order to display this information use the following procedure:

1. Connect your PC to the LAN that the RTR-5W will reside on.
2. Go to the Start menu and click on Run.
3. Enter "Cmd".
4. In the DOS prompt window enter "ipconfig/all".
5. In the "Connection" Section find:
 - The IP address of the PC
(as assigned by the router)
 - The assigned subnet mask
 - The router's default gateway address
 - The IP address of your ISP's DNS server



```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Steve>ipconfig/all

Windows IP Configuration

    Host Name . . . . . : DELL01
    Primary Dns Suffix . . . . . :
    Node Type . . . . . : Hybrid
    IP Routing Enabled. . . . . : No
    WINS Proxy Enabled. . . . . : No

Ethernet adapter Local Area Connection:

    Media State . . . . . : Media disconnected
    Description . . . . . : Broadcom 570x Gigabit Integrated Controller
    Physical Address. . . . . : 00-0F-1F-B3-5E-F7

Ethernet adapter Wireless Network Connection:

    Connection-specific DNS Suffix . :
    Description . . . . . : Intel(R) PRO/Wireless 2200BG Network Connection
    Physical Address. . . . . : 00-0E-35-2C-6A-F1
    Dhcp Enabled. . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes
    IP Address . . . . . : 192.168.1.103
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1
    DHCP Server . . . . . : 192.168.1.1
    DNS Servers . . . . . : 24.92.226.9
    Lease Obtained. . . . . : Saturday, July 09, 2005 1:21:34 PM
    Lease Expires . . . . . : Sunday, July 10, 2005 1:21:34 PM

C:\Documents and Settings\Steve>
```

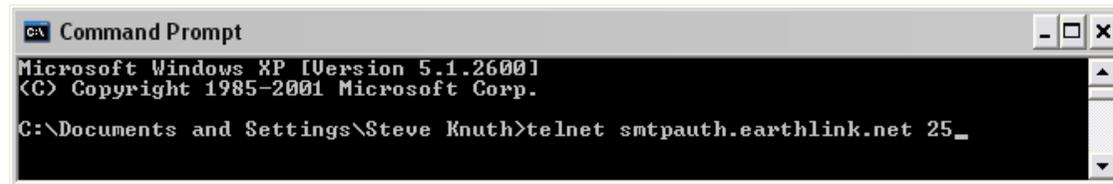
DOS Prompt Window

*Determining E-Mail Authentication Type

This procedure can be used with many E-Mail servers to determine what authentication will be accepted.

1) Open the Cmd prompt. Then type:

```
telnet <server_name>  
<smtp_port_no> (return)
```



```
Command Prompt  
Microsoft Windows XP [Version 5.1.2600]  
(C) Copyright 1985-2001 Microsoft Corp.  
C:\Documents and Settings\Steve Knuth>telnet smtpauth.earthlink.net 25_
```

2) After server response, Type:

```
ehlo <your_domain_name> (return)
```



```
Telnet smtpauth.earthlink.net  
220-elasmtg-galgo.atl.sa.earthlink.net ESMTP Exim 4.67 #1 Sat, 05 Dec 2009 13:02:52 -0500  
220-NO UCE. EarthLink does not authorize the use of its computers or network  
220 equipment to accept, transmit, or distribute unsolicited e-mail.  
ehlo earthlink.net_
```

3) The server will respond something like the following:

In this case you can see that Earthlink accepts PLAIN, LOGIN and CRAM-MD5 smtp authentication. Since LOGIN is accepted the RTR-500W will work fine with this server.



```
Telnet smtpauth.earthlink.net  
220-elasmtg-galgo.atl.sa.earthlink.net ESMTP Exim 4.67 #1 Sat, 05 Dec 2009 13:02:52 -0500  
220-NO UCE. EarthLink does not authorize the use of its computers or network  
220 equipment to accept, transmit, or distribute unsolicited e-mail.  
ehlo earthlink.net  
250-elasmtg-galgo.atl.sa.earthlink.net Hello earthlink.net [69.204.176.177]  
250-SIZE 14680064  
250-PIPELINING  
250-AUTH PLAIN LOGIN CRAM-MD5  
250-STARTTLS  
250 HELP
```



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