

# RTR500BW Software Configuration Guide

## Before You Start

Ver. 1.00

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 and Firewalls

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.

The RTR500BW resides on your network with its own IP address independently from any PC. In order for it to perform its functions, however, the unit will have to have an unimpeded communication path to the 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.

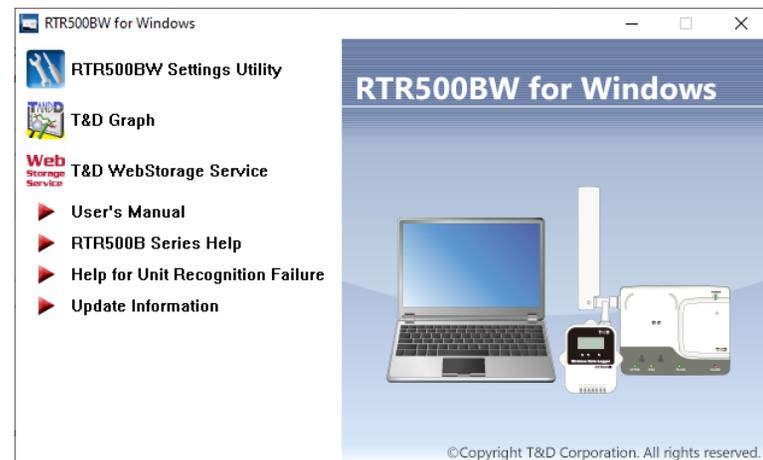
### II) WebStorage Service

If you plan to use TandD's Free WebStorage Service to display and store your data you will need to set up an account here before proceeding with the setup of your RTR500BW system: [T&D WebStorage Service | T&D Corporation \(webstorage-service.com\)](http://www.tandd.com/webstorage-service.com)

### III) Other Help Sources

Note that RTR500BW for Windows has several files that contain tips for setup and troubleshooting suggestions. The User's manual does a good job of walking one through the initial setup. 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. If the USB connection fails during initial setup be sure to check the Help for Unit Recognition Failure.

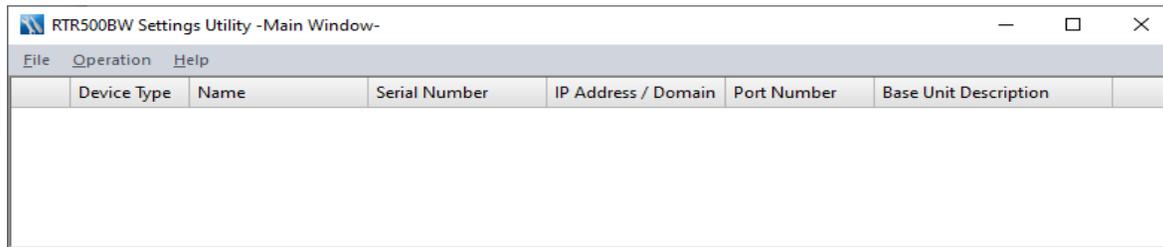
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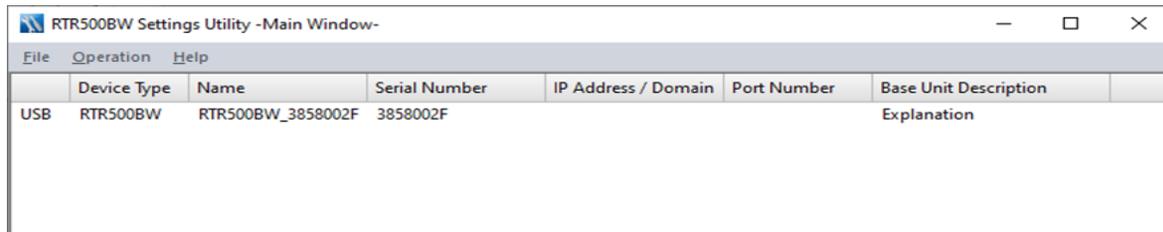
# Starting the RTR500BW Settings Utility

## I) Getting Started

1. After installing RTR500BW for Windows on your PC go to the Start Menu and launch the RTR500BW for Windows Main Window then select the Settings Utility.



2. Next connect the RTR500BW 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 refer to the Help for Unit Recognition Failure guide that is located in the main window.



3. With the RTR500BW located, double click on the unit listing to open the Settings Window

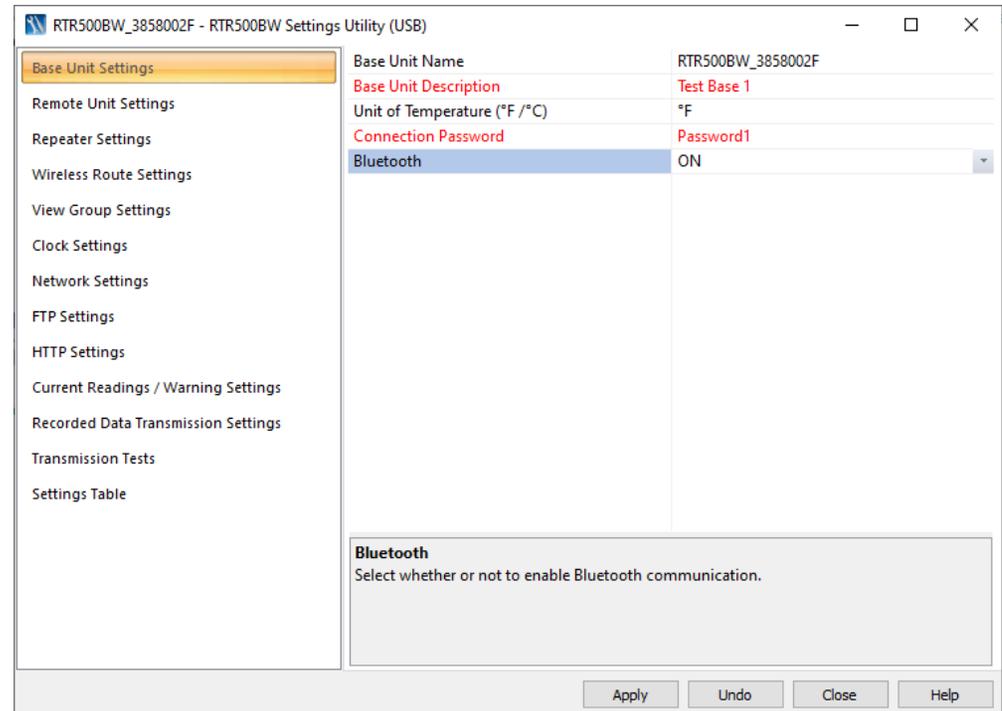
Note: For accessing the 500BW over the network after setup you will want to choose Search Network from the Operation pull-down menu. You will need to enter your Connection Password to access the unit.

# The RTR500BW Settings Window

## II) The Settings Process

Making settings to control the operation of the RTR500BW 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 and making the settings 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

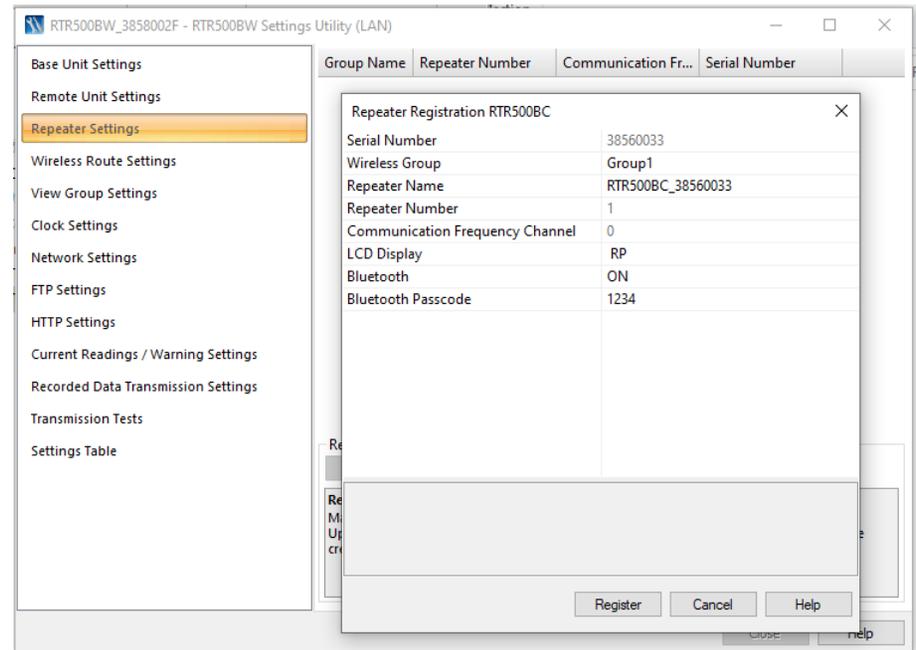
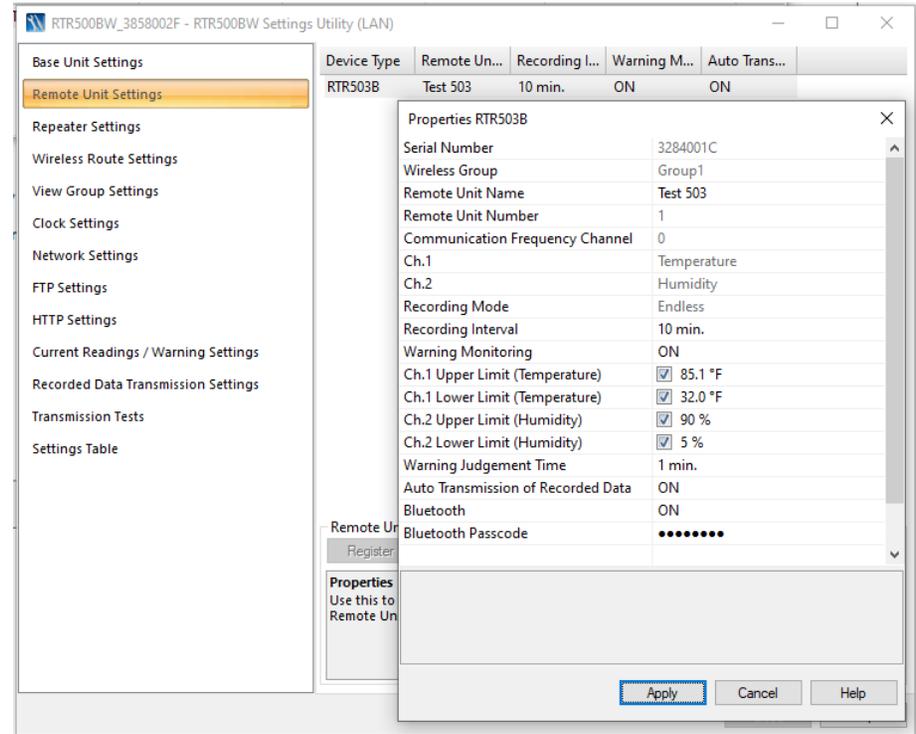
There is not much to discuss here. The Base Unit Description field can be used to enter a logical name for the RTR500BW that may have more meaning to you than the factory assigned serial number. This can be particularly helpful if you have more than one 500BW on your network. The LAN Password and Bluetooth Access Code will be used to access the 500BW later when it is connected to your network, rather than via USB, or when being accessed via the T&D 500B Utility App on a Smart Device.

## 2. Remote Unit Settings

The Remote Unit Settings screen is used to register Loggers to the system. When a Logger is physically placed on the 500BW 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. The Warning Judgement Time setting allows transients to be ignored that might otherwise trigger an alarm. Every Logger that is to be monitored or downloaded by the RTR500BW must be registered to it either by using this screen or the T&D 500B Utility App.

## 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-500BC into a USB port on your PC with the Repeater Setting screen selected. You can do this by plugging it into a 2<sup>nd</sup> USB port on your PC, or by unplugging the 500BW and using its USB connection for the repeater. Once the RTR-500BC 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-500BC from the USB port and reconnect the 500BW, if it was disconnected.



## 4. Wireless Route Settings

In this screen we can see that this system has one Logger and one Repeater registered. Initially after registration the software automatically assigns all devices to communicate directly with the Base Unit, 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. If you have Auto selected in the Wireless Route Pull-Down menu the system will take care of choosing the best communication configuration for you when you physically place the loggers and repeaters where you want them.

The RTR500BW performs a signal strength test each time data is read from the loggers. It then uses the results of this test to determine the optimum communication path for every device in the system and arranges them accordingly. For the system shown here the logger was moved away from the base unit. We can see that the signal from the logger to the base became a “1” and was therefore reconfigured to communicate through the repeater which had a strength of “3”.

To manually change the communication path for a logger set the menu to Manual and simply drag and drop it on top of the repeater you want it to connect through. (Don’t forget to click “apply” after changing a device’s communication route.)

NOTE: This should be checked after the 500BW, 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 and should be eliminated. If signals in the green cannot be obtained it may be necessary to add repeaters to the system.

The screenshot shows the RTR500BW Settings Utility (LAN) window. The 'Wireless Route' is set to 'Auto'. The 'Wireless Group' is 'Group1'. The 'Latest' timestamp is '2021-02-02'. The 'Settings Table' is as follows:

	Base Unit	Repeater 1
Base Unit	5	5
Repeater 1	5	5
Test 503	5	5

The screenshot shows the RTR500BW Settings Utility (LAN) window after a signal strength test. The 'Wireless Route' is still 'Auto'. The 'Latest' timestamp is '2021-02-04'. The 'Settings Table' is updated as follows:

	Base Unit	Repeater 1
Base Unit	4	4
Repeater 1	1	3
Test 503	1	3

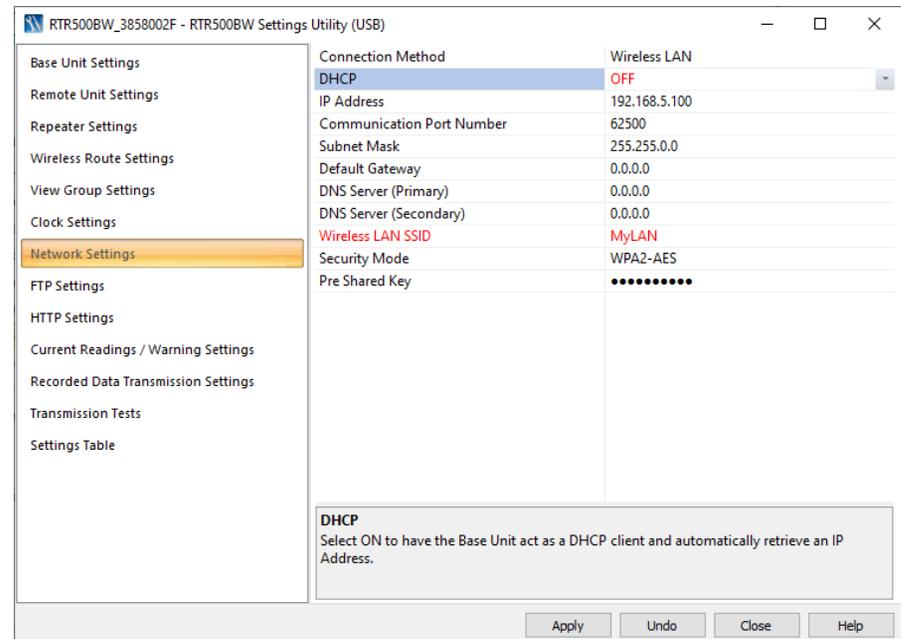
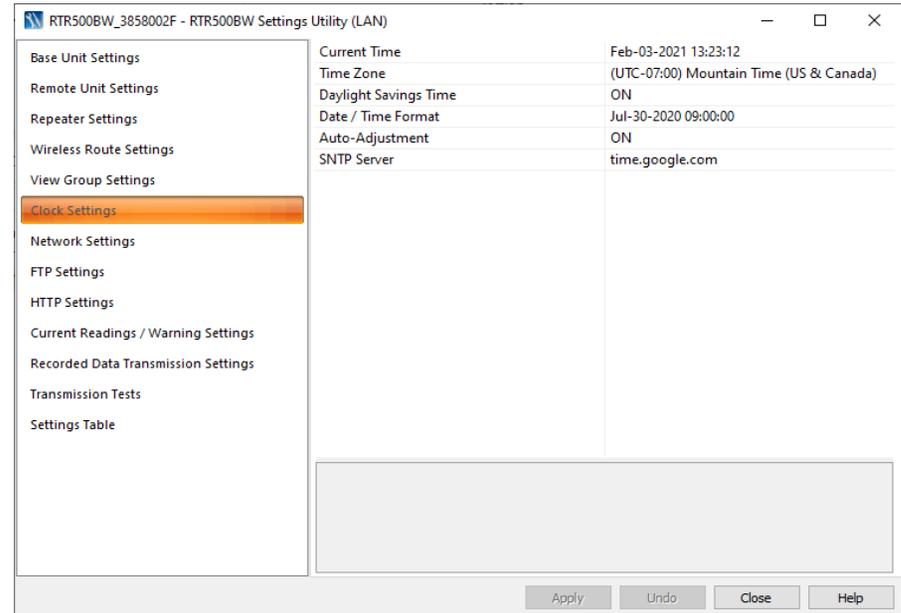
## 5. Clock Settings

This screen is where you tell the system in which time zone it is operating. It is also where an adjustment for DST can be enabled. This is necessary because DST may or may not be observed within any given time zone. It is also important to set the Auto-Adjustment to On and enter the URL of a SNTP server. In addition to correcting any errors to the RTR500BW's internal time keeping, a connection to a SNTP server also allows for automatic clock setting after a power failure or surge. While the logger readings would be unaffected, without this all 500BW originated messages will show erroneous times until the unit is manually reset by the user.

## 6. Network Settings

By far the simplest way to deal with this page is to set DHCP to ON, if your network supports it. By doing this 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.

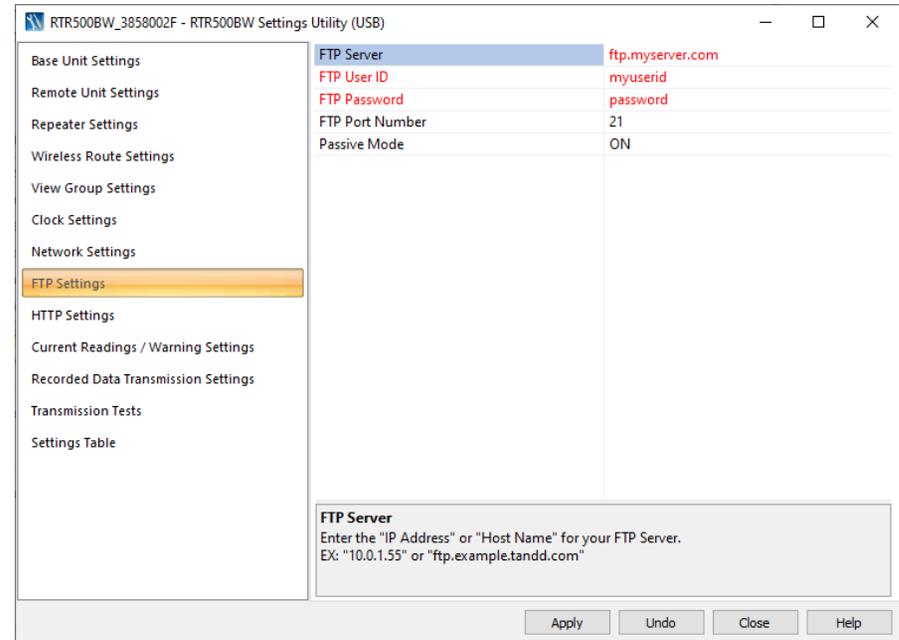
If you will be using a wired connection to your LAN simply plug it in when you have completed the settings. For a WiFi connection you will want to set the SSID, Security Type and Password. Remember that the SSID and password are case sensitive. As a note, the RTR500BW supports WPA2 encryption for use in 802.11a/b/g/n networks on both the 2.4GHz & 5.8GHz bands.



## 7. FTP Settings

The RTR500BW comes from the factory preconfigured to send Current Readings and Recorded Data directly to T&D's Free WebStorage Service via HTTP. This can be seen in the next section below (Section 8). If you wish to continue with this mode you can ignore this page and leave the settings blank.

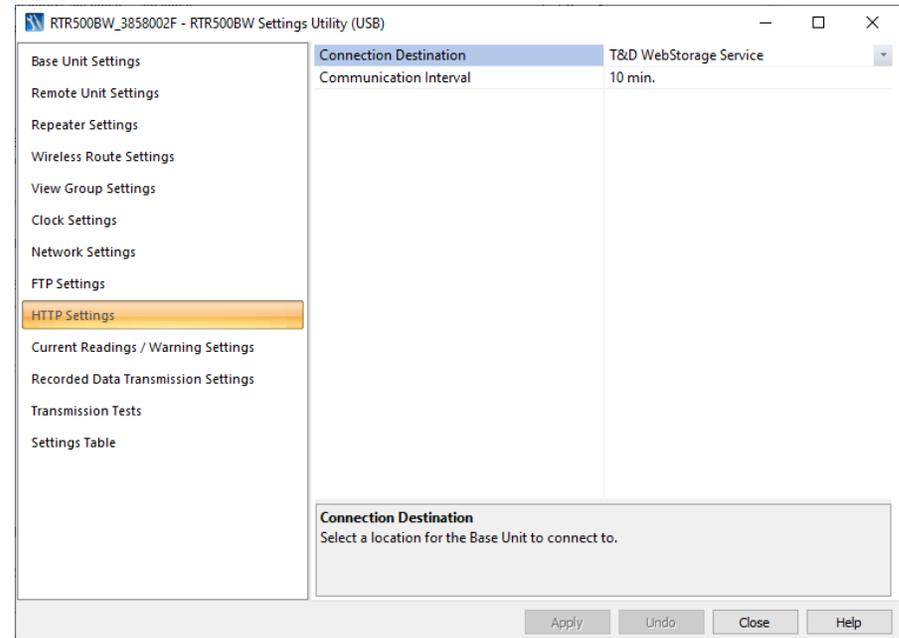
If your application requires the use of a FTP server, however, this screen is where you make the settings for transferring data from your loggers to the server. The FTP server may be internal to your network or reside on the Internet. As a reminder, if you are going to use an Internet based FTP server you should check to make sure that any intervening firewalls are set to allow the RTR500BW to communicate through them.



## 8. HTTP Settings

The purpose for these settings is to keep the server you are using updated with the base unit settings between data uploads. As mentioned above, and as shown on the right, the RTR500BW comes factory preset to transfer logger data to T&D's Free WebStorage Service. You can also use the pull-down menu to make Custom settings for this if you plan to transfer your data to a different server via HTTP. 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. You may select any Interval up to once a day.

If you intend to transfer the data from your loggers to a FTP server you should set the Communication Interval to OFF



## 9. Current Readings / Warning Settings

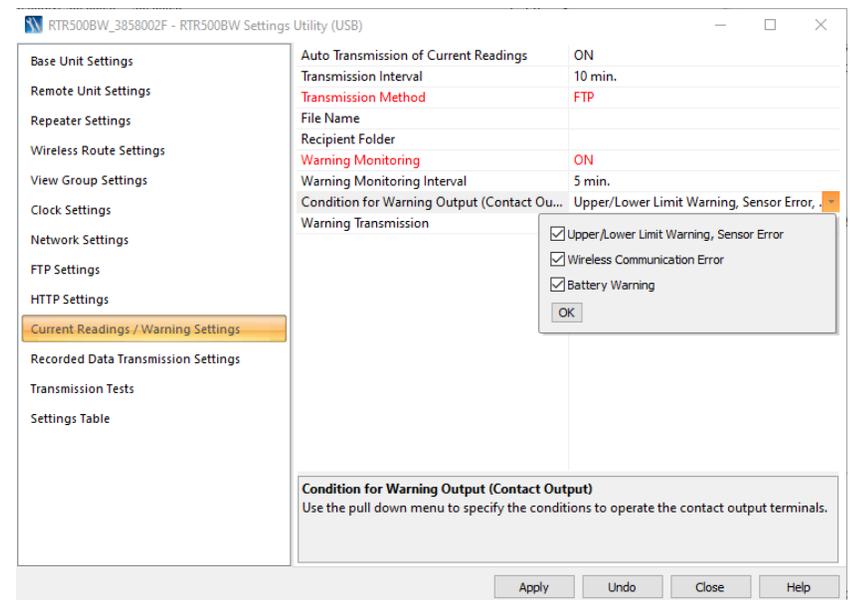
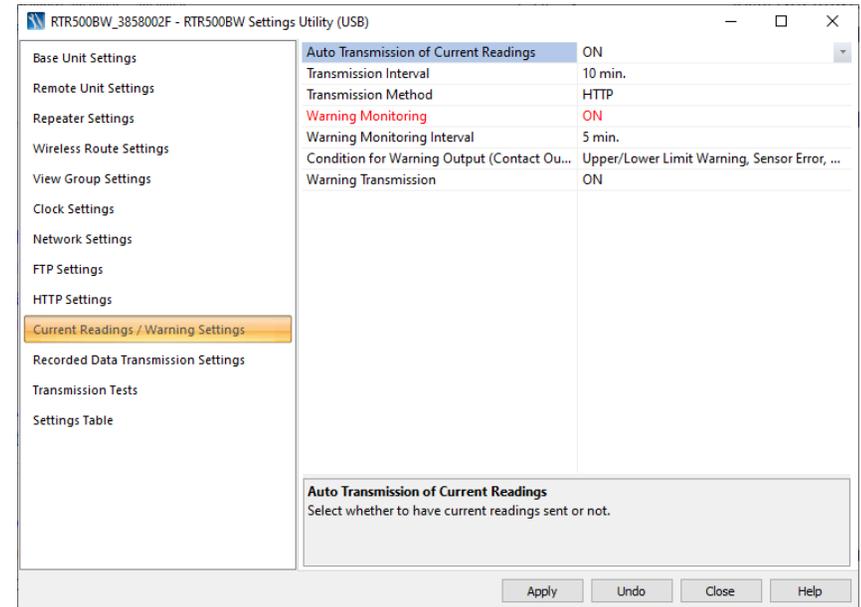
Now that the RTR500BW knows where to send data you will want to tell it what data to send and how to do it. The first data type is Current Readings from the loggers. These are values taken from the loggers at the time of polling irrespective of the Sample Interval set into the Logger itself. If you want these to be sent make sure to set the first line item to ON. Then select an interval and a method of sending. The first is to send via HTTP, which is the factory default, and is the method used to upload to T&D's Free WebStorage Service. The next choice is to send via FTP. This will result in a .TRZ file with the Current Readings being uploaded to the specified FTP server.

Note: TRZ files can be read with the Free T&D Graph software.

Next, turn on Warning Monitoring if you want the system to perform this function, and select the interval at which you want the RTR500BW to poll the loggers for alarm conditions. This interval represents the maximum delay in reporting alarms to the WebStorage Service. When deciding this keep in mind that the shorter interval will reduce logger battery life. (Remember that the individual loggers must also be configured for this when making Remote Unit Settings.)

Lastly, select the alarm conditions for which you want the system to monitor and if you want warning emails to be sent. When Warning Transmission is set to ON the WebStorage Service or T&D Data Server software will send the emails to the recipients that have been registered there.

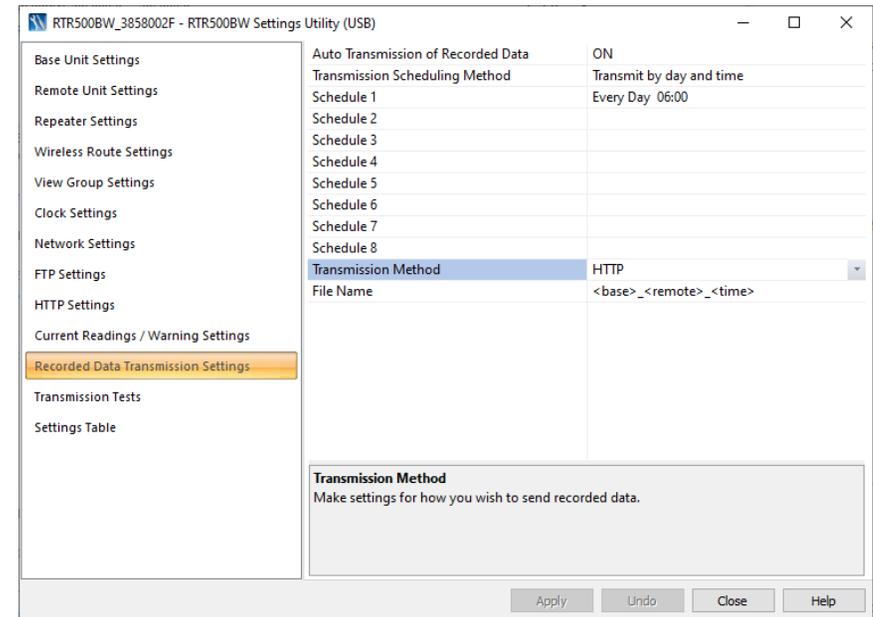
Note: If you select FTP you should be aware that if you choose <base> for the File Name each upload will overwrite the previous one, so that there will be only one file created on the server. If you want to create a sequential series of files you will need to select a File Name that includes <time>.



## 10. Recorded Data Transmission Settings

This is the screen where data recorded by the loggers can be set to be uploaded to the WebStorage Service, or specified server. The frequency of uploads and the method of transmission are also set here. Recorded Data can be sent up to eight times per day or eight times per week. This comes preset with the factory default of once per day at 6:00 am via HTTP. Note that the selected transmission method applies to all specified times.

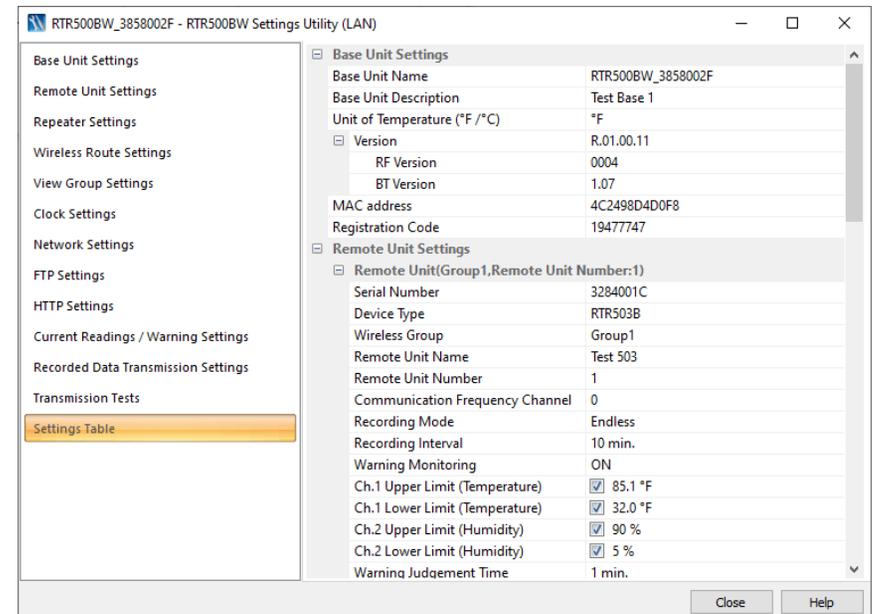
Again, if transmission via FTP is selected and <time> is not included in the File Name, each transmission will overwrite the previous one, resulting in a single data file residing on the server no matter how many uploads are made.



## 11. Register the RTR500BW to Your Webstorage Service Account

If you are planning to use T&D's Free WebStorage Account to display and store your data you will need to register your RTR500BW. To do this you will need the unit Serial Number and Registration code. These are both listed on a small label that was packed with the unit. If that label has been lost or discarded, which is frequently the case, these can be obtained from the utility Settings Table. The Serial Number is encoded as the last half of the Base Unit Name. In this example it is 3858002F. The Registration Code is plainly listed.

In your WebStorage Account, go to the Devices page and click on the + Device button. From here you will be prompted to enter the Serial Number and Registration Code of your unit. After doing this your RTR500BW will appear on the Devices page with the notation Waiting for First Data. Your loggers will not appear until after their first data upload has been sent to the WSS.

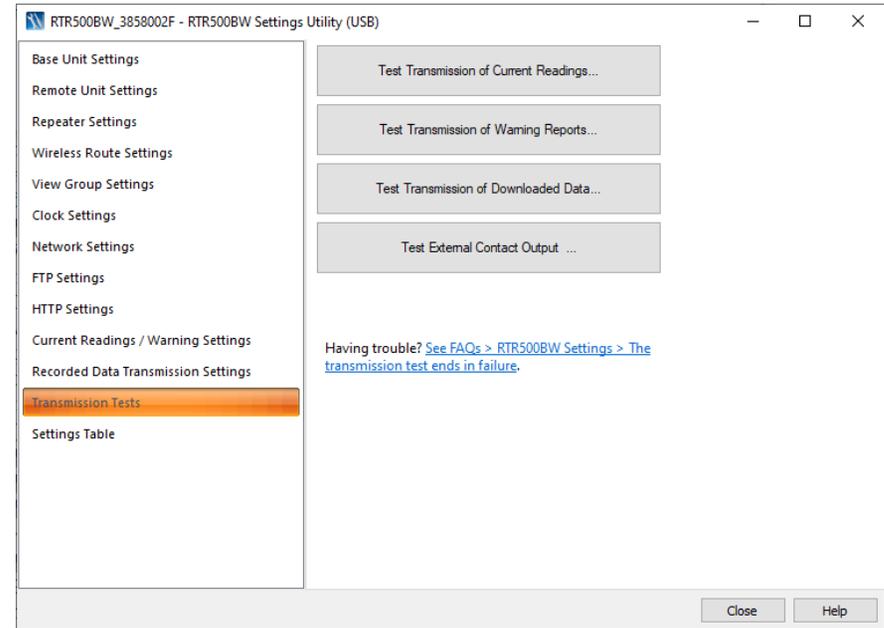


## 12. Transmission Tests

**Important Note:** The Transmission Tests determine if communication can be established via the specified method without errors being returned (no actual data is sent during these tests). Because of this the RTR500BW 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 and connection with the Settings Utility be established through the Network. The success or failure of connecting can be quickly determined by the DIAG and ACTIVE LEDs on the unit. The table to the below (Sec. 13) is from the RTR500BW Web Help on T&D’s Website. If the RTR-500W LEDs do not indicate that it is connected with the LAN you will have to stop here and troubleshoot the problem.

**Important Note:** The 500BW 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.)



RTR500BW devices will always connect via Ethernet unless there is a problem with the cable, or the router is not configured for DHCP. For WiFi connections, 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 RTR500BW Settings Utility. When open, pull down the Operation Menu and click on Search Network. The RTR500BW should appear in the window after a few seconds.

Device Type	Name	Serial Number	IP Address / Domain	Port Number	Base Unit Description
USB	RTR500BW_385800...	3858002D			Explanation

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 RTR500BW. 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) 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 RTR500BW into service. (Remember that these tests do not send actual data.)

### 13. Understanding the LEDs

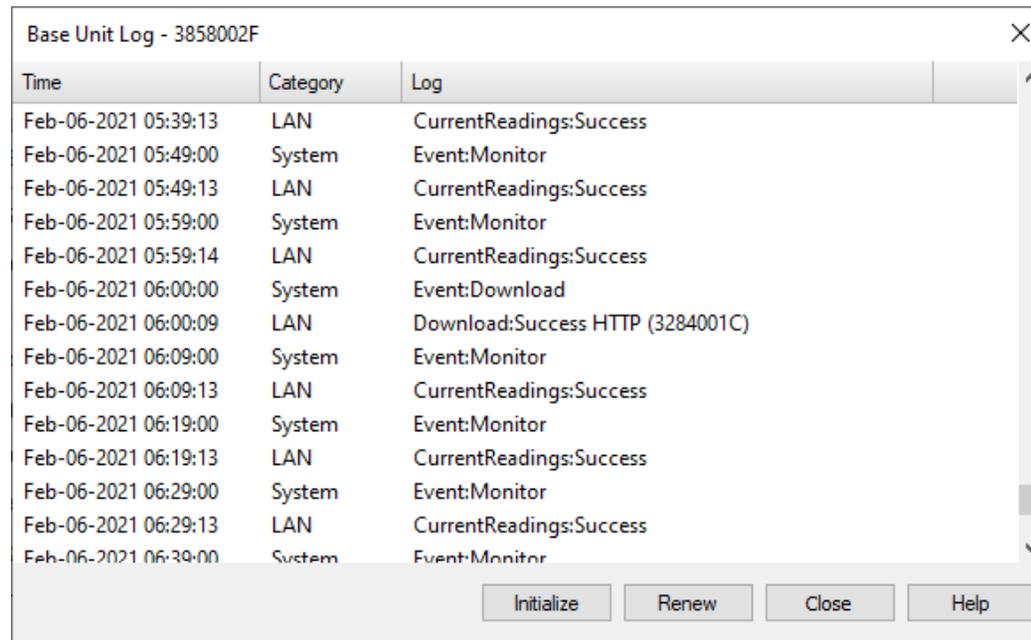
LED(color) / Status		Device Status
Power (green)	ON	Power is "ON"
Bluetooth Communication (blue)	ON	Bluetooth Communication is set to ON
	BLINKING	Bluetooth Communication in progress...
ACTIVE (green)	ON	Network communication available / Connected via USB
	BLINKING	Network or USB Communication in progress...
DIAG (orange)	ON	<ul style="list-style-type: none"> <li>• Initializing after power on</li> <li>• Network transmission failure</li> </ul>
W-LAN (green)	ON	Wireless LAN Communication Possible (Wired LAN Communication not available* )
	BLINKING	Wireless LAN Communication in progress...
ALARM (red)	BLINKING	Warning Issued (One of the following warnings was issued: Upper or Lower Limit Exceeded, Wireless Communication Error, Sensor Error, Low Battery)
Ethernet Port POE (orange)	ON	Power being supplied
Ethernet Port LINK (green)	BLINKING	LAN Communication in progress...
* Use by selecting either wired or wireless LAN. If wireless LAN is active, wired LAN cannot be used.		

ACTIVE and DIAG Status	Device Status
"ACTIVE" OFF, "DIAG" blinking	<ul style="list-style-type: none"> <li>• Time acquisition failure or time has not been set</li> <li>• No Remote Units have been registered</li> <li>• No settings for autonomic operations such as warning monitoring and sending current readings have been made</li> <li>• Other settings may be incomplete</li> </ul>
"ACTIVE" and "DIAG" simultaneously blinking	<ul style="list-style-type: none"> <li>• Unable to connect to the wireless LAN access point</li> <li>• IP address cannot be received from DHCP server</li> </ul>

## Appendix I Troubleshooting Help

RTR500BW for Windows has a few items that can be a big help with troubleshooting system problems. The first is the Settings Table which has been mentioned previously. This provides a quick reference to all the system settings. Next is the Base Unit Log File. This is obtained from the Operation pull-down menu in the Settings Utility Main Window. This file shows all of the RTR500BW activities and gives a good perspective of events as seen by the unit. An adjunct for this is the Error Code List which is shown in Appendix II and can be found at the end of the Help file. This list provides insight as to the nature of the error that is being encountered as well as giving suggestions as to its resolution. Lastly, if all else fails, the distributor from whom you purchased your units has a Tech Support department that will be able to help you work through any issues you may be experiencing.

**Note:** With the 500BW both the Log File and the Settings can be obtained from the Devices Tab of the WebStorage Service.



Time	Category	Log
Feb-06-2021 05:39:13	LAN	CurrentReadings:Success
Feb-06-2021 05:49:00	System	Event:Monitor
Feb-06-2021 05:49:13	LAN	CurrentReadings:Success
Feb-06-2021 05:59:00	System	Event:Monitor
Feb-06-2021 05:59:14	LAN	CurrentReadings:Success
Feb-06-2021 06:00:00	System	Event:Download
Feb-06-2021 06:00:09	LAN	Download:Success HTTP (3284001C)
Feb-06-2021 06:09:00	System	Event:Monitor
Feb-06-2021 06:09:13	LAN	CurrentReadings:Success
Feb-06-2021 06:19:00	System	Event:Monitor
Feb-06-2021 06:19:13	LAN	CurrentReadings:Success
Feb-06-2021 06:29:00	System	Event:Monitor
Feb-06-2021 06:29:13	LAN	CurrentReadings:Success
Feb-06-2021 06:39:00	System	Event:Monitor

## Appendix II Error Codes

### RTR500BW Error Codes

Error Code	Problem	Probable Cause and Solution
1020	LAN Connection Error	LAN communication failure. Please check the network settings for your PC and <a href="#">RTR500BW</a> , such as the IP address.
1022	Failure to open USB	Disconnect the USB cable from the PC and try reconnecting it again. If the error is displayed after reconnecting, try supplying power using the AC adaptor.
20008	Password Error, Passcode Error	
40001	Wireless Communication Busy	Another wireless communication session is being processed. Please wait and try again.
40002	Wireless Communication Failure (Remote Unit)	Change the position(s) of the Base Unit, Repeater(s), and /or the Remote Unit(s) and try again.
40004	Wireless Communication Failure (Repeater)	
40005	Wireless Communication Failure (Remote Unit)	
40006	Wireless Communication Failure (Repeater)	
40007	Recording can not begin because there are not enough seconds remaining before the scheduled Recording Start.	
40021	Wireless communication channel is unavailable (channel busy).	Make changes to the wireless channel being used or move the device as far away as possible from noise emitting devices such as PCs.
50001	No Response from the Remote Unit (during Optical Communication)	Make sure that the Remote Unit is face down and that the optical communication areas are aligned properly.
70001	LAN Communication Busy	Please wait and try again.
70005	Preparing for LAN Communication	

### Connection Test Error Codes (HTTP(S))

Display Error	Probable Cause and Solution
No Base Units have been registered	Connection with the cloud service will be possible, but data cannot be viewed on the web browser. Please register a Base Unit to the cloud service.
DHCP Error	No Response from DHCP Server (Timeout)
DNS Error	Name resolution by DNS server failed
SNTP Error	Failed to set time with specified SNTP server
HTTP(S) Communication Errors (Status Code: xxx)	The HTTP(S) server returned a response code other than 200 (request successful). If you specified a cloud service and an error occurs, please contact your local <a href="#">Distributor</a> .
HTTP Timeout	Timeout during communication with HTTP(S) server.
TCP Session Error	Failed to connect to HTTP(S) server.
TLS Session Error	
Root Certificate Read Error	Failed to connect to HTTP(S) server. When connecting to a server other than a cloud service, make sure that the appropriate root certificate has been set in the Base Unit.
Server Certificate Authentication Error	Failed to connect to HTTP(S) server. When connecting to a server other than a cloud service, make sure that the appropriate root certificate has been set in the Base Unit and/or check the server settings at the destination address.
Cannot find Access Point	When connecting via wireless LAN, the specified network name (SSID) was not found. Make sure the correct network name is used in the settings.
Connection to access point failed	When connecting via wireless LAN, the specified access point could not be connected to Check the Wireless LAN Settings (Network Name, Password, Security Mode)
A LAN cable is not connected	A LAN cable is not connected to the Base Unit for which wired LAN settings were made.
FTP Transmission Error	Failed to send data to FTP server
FTP Login Error	Failed to log in to the FTP server (Authentication Error)
Please contact your local distributor. Error Code: xxxx	An error that is not applicable to the above has occurred. If an errors repeats and after checking and trying all the suggested remedies without recovery, please contact your local <a href="#">Distributor</a> .