

Network Base Station

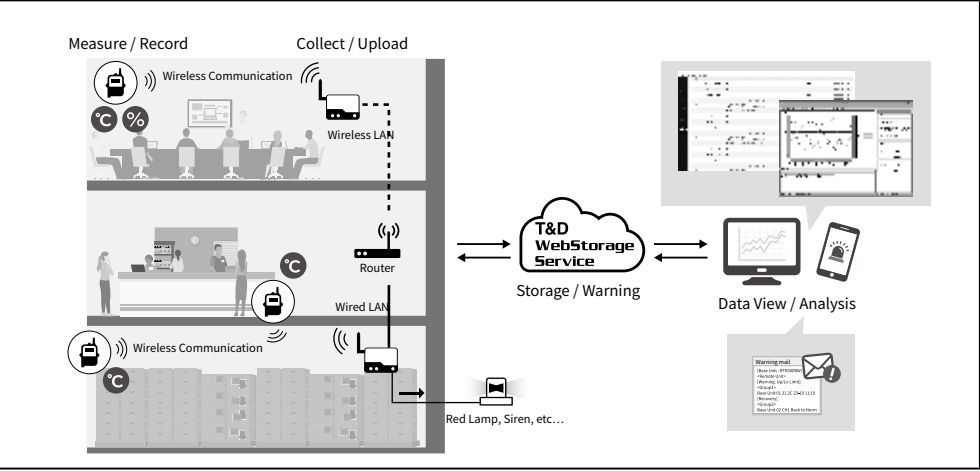
RTR500BW Getting Started Guide

Thank you for purchasing our product. This document describes basic settings and simple operations for using this product with **T&D WebStorage Service**.

What can the RTR500BW do?

The RTR500BW is a Base Unit equipped with wired and wireless LAN functionality. Measurement data gathered via wireless communication from target Remote Units can be automatically uploaded to our cloud storage service “T&D WebStorage Service”. Remote monitoring, warning monitoring and device settings can also be carried out via the cloud service.

Also equipped with Bluetooth® and USB functions, it can be set on either a smartphone or a PC.



For details about using without using the cloud service and for other operational info, please see the **RTR500B Series Help**.

tandd.com/support/webhelp/rtr500b/



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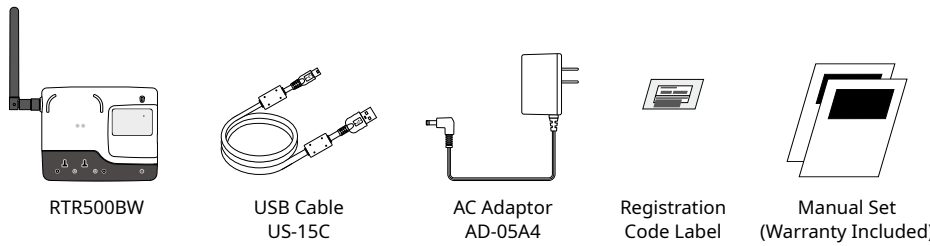
Product Specifications

Compatible Devices	Remote Units: RTR501B / 502B / 503B / 505B / 507B RTR-501 / 502 / 503 / 507S / 574 / 576 / 505-TC / 505-Pt / 505-V / 505-mA / 505-P (*1) (Including L Type and S Type) RTR-601-110 / 130 / E10 / E30 (*1) Repeaters: RTR500BC RTR-500 (*1)
Maximum Number of Registrations	Remote Units: Up to 50 Repeaters: 10 units x 4 groups
Communication Interfaces	Short Range Wireless Communication Frequency Range: 902 to 928MHz RF Power: 7mW Transmission Range: About 150 meters (500 ft) if unobstructed and direct Wired LAN (RJ45 connector 100 Base-TX/10 Base-T) Wireless LAN (IEEE 802.11 a/b/g/n, WEP(64bit/128bit) / WPA-PSK(TKIP) / WPA2-PSK(AES) Bluetooth 4.2 (Bluetooth Low Energy) For settings USB 2.0 (Mini-B connector) For settings Optical Communication:(proprietary protocol)
Communication Time	Data Download Time (for 16,000 readings) Via wireless communication: About 2 min. 20 sec 30 seconds of time should be added for each Repeater. (*2)
External Output Terminal:	PhotoMOS Relay Output OFF-State Voltage: AC/DC 50V or less ON-State Current: 0.1 A or less ON-State Resistance: 35Ω
Communication Protocol (*3)	HTTP, HTTPS, FTP, SNMP, DHCP
Power	AC Adaptor: AD-05A4 PoE IEEE 802.3af
Dimensions	H 83 mm x W 102 mm x D 28 mm (excluding antenna) Antenna Length: 90 mm
Weight	Approx. 125 g
Operating Environment	Temperature: -10 to +60°C Humidity: 90%RH or less (without condensation)
Software	RTR500BW for Windows, T&D Graph, T&D 500B Utility
Compatible OS (*4)	PC Software Microsoft Windows 10 32 / 64bit Microsoft Windows 8 32 / 64bit Microsoft Windows 7 32 / 64 bit (SP1 or later) Mobile Application Android OS, iOS (Check compatibility on the Software page of our website)

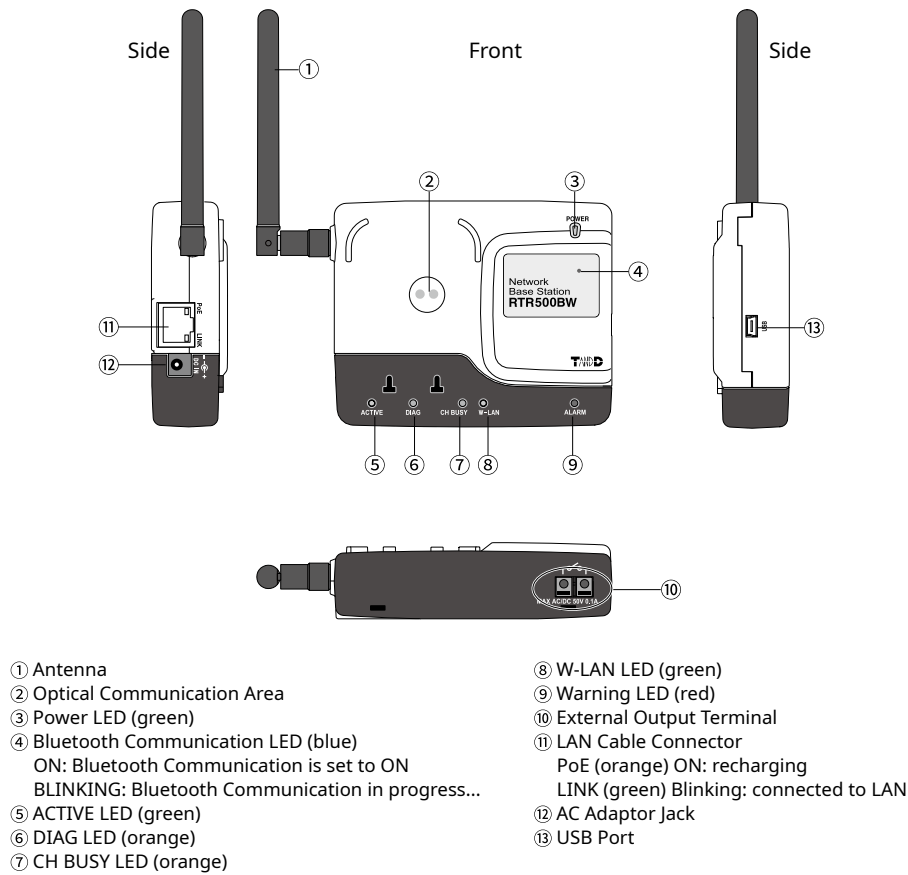
*1: RTR-500 Series loggers and Repeaters, as well as, RTR-601 Series loggers do not have Bluetooth capability.
*2: When using RTR500BC. Depending upon conditions it may take up to an additional 2.5 minutes.
*3: Client Function
*4: For installation, it is necessary to have Administrator (Computer Administrator) rights.
The specifications listed above are subject to change without notice.

Package Contents

Before using this product, please confirm that all of the contents are included.



Part Names



About the LED Display

LED Status	Details
ON	Network communication available
BLINKING	Connected via USB
OFF	
ACTIVE	
ACTIVE	Communication in progress...
DIAG	
DIAG	Initializing after power on
	Network transmission failure
ACTIVE	
DIAG	Autonomic operation stopped
	Time acquisition failure or time has not been set
	No Remote Units have been registered
	No settings for autonomic operations such as warning monitoring and sending current readings have been made.
	If other settings are incomplete
ACTIVE	
DIAG	Unable to connect to the wireless LAN access point.
	IP address cannot be received from DHCP server
CH BUSY	
CH BUSY	Assigned wireless frequency channel is being used by another wireless device
	Wireless communication failed due to noise generated by electronic devices near Base Unit
W-LAN	
W-LAN	Wireless LAN Communication Possible (Wired LAN Communication not available)
ALARM	
ALARM	Warning Issued
	One of the following warnings was issued: Upper or Lower Limit Exceeded, Wireless Communication Error, Sensor Error, Low Battery

Terms used in this Guide

Base Unit	RTR500BW
Remote Unit	RTR501B / 502B / 503B / 505B / 507B, RTR-501 / 502 / 503 / 505 / 507S / 574 / 576
Repeater	RTR500BC/ RTR-500 (when used as a Repeater)
Current Readings	The most recent measurements recorded by a Remote Unit
Recorded Data	Measurements stored in the Remote Unit

Settings: Making via smartphone

STEP 1 Installing the Mobile App

Install the mobile app “T&D 500B Utility”.

Search for "TandD 500B Utility" in Google Play for Android devices and in the App Store for iOS devices. Install the T&D 500B Utility app to your target smart phone or tablet.

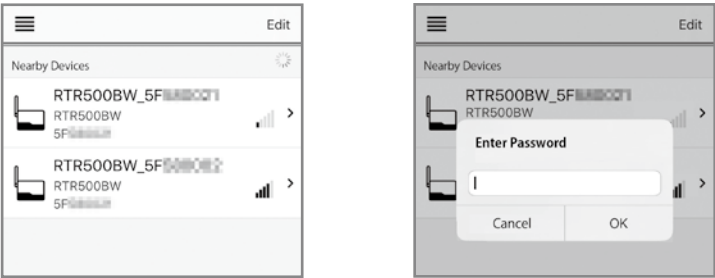
* Compatible with Android OS and iOS. For details use the QR code to visit the web site.



STEP 2 Registering as a Base Unit

- Open T&D 500B Utility.
- Connect the Base Unit with the supplied AC adaptor to a power source.
- From the list of [Nearby Devices] tap the one you wish to use as a Base Unit; the Initial Settings wizard will open.

The factory default password is "password".



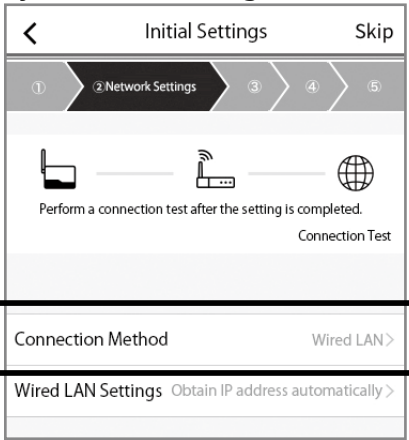
- Enter the following information in the [Base Unit Settings] screen and click the [Next] button.

Base Unit Name	Assign a unique name for each Base Unit.
Base Unit Password	Enter a password here for connecting to the Base Unit via Bluetooth or LAN.

* If you forget the password, reset it by connecting the Base Unit to a PC via USB. See STEP 2 of [Settings: Making via PC] on the back of this manual.

STEP 3 Making Network Settings

- Under [Connection Method], select wired LAN or wireless LAN and make the necessary network settings.



- When using a Wireless LAN
Tap [WLAN Settings] and enter the appropriate settings for SSID, Security Mode and Password. Network settings can be made in the following three methods.

Add by Search	The app will search for available nearby access points and display them in a list Select the desired access point and enter the password if necessary.
Add Manually	Edit settings to make new settings or change some previous settings
Add from History	Previously made settings can be partially edited.

- Connect the Base Unit to the wired or wireless LAN.

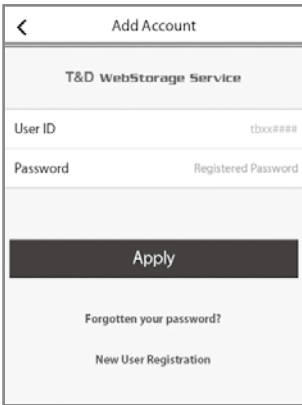
- Test the connection.

If you trouble connecting to a network, or if you do not know the network settings, ask your network administrator.

STEP 4 Registering a Base Unit to T&D WebStorage Service

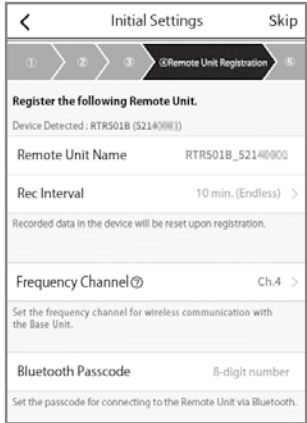
Enter the User ID and Password for T&D WebStorage Service to which you wish to have data sent to, and tap the [Add this Account] button.

* If you do not already have an account, create one using [New User Registration].



STEP 5 Registering a Remote Unit

- From the list of detected nearby Remote Units, tap the Remote Unit(s) you wish to register to this Base Unit.
- Enter the necessary info such as Remote Unit Name, Recording Interval, Frequency Channel* and the Remote Unit Passcode; then tap the [Apply] button.



* When installing multiple Base Units, make sure to select channels that are far apart in order to prevent interference of wireless communication between the Base Units.

The Remote Unit passcode is used when communicating with the Remote Unit via Bluetooth. Enter an arbitrary number of up to 8 digits. When registering subsequent Remote Units and there is only registered passcode, the set passcode will be displayed as already entered and you can skip entering the passcode.

- If you wish to register multiple Remote Units, tap [Continue Registration] and repeat the registration process as necessary. To complete the registration of Remote Units, tap the [Complete Registration] button.

- It is also possible to register Remote Units using optical communication.
- To register RTR-574(-S) and RTR-576(-S) loggers as Remote Units it is necessary to use a PC. See Step 5 of [Settings: By PC] on the back of the printed version of this document.

- Upon completion of the initial settings, log into the T&D WebStorage Service with a browser and confirm that measurements of the registered Remote Unit(s) are displayed in the [Data View] window.

Upon completion of registration the following settings will also be in operation.

- Settings for Sending Current Readings ON, Sending Interval: 10 min.
- Settings for Sending Recorded Data ON, Send at 6:00 am every day.

For information about registering a Repeater, refer to [Using as a Repeater] in the RTR500BC Getting Started Guide.

STEP 6 Installing the Device

- Place the device in the measurement location.

* The wireless communication range, if unobstructed and direct, is about 150 meters (500ft.).

- In the [Base Unit Settings] screen tap on [Remote Unit / Repeater Settings] menu.
- At the bottom of the screen tap on the [Wireless Route] tab. Here it is possible to check the route for wireless communication.
- At the top right of the screen, tap on the [Check Signal] button
- Select the devices for which you wish to check the signal strength and tap on the [Start] button.
- After testing signal strength, return to the wireless route screen and confirm the signal strength.

* If a Repeater is part of your installation, you can also check the signal strength of the registered Repeaters.

Settings: Making via PC



STEP 1 Installing the Software

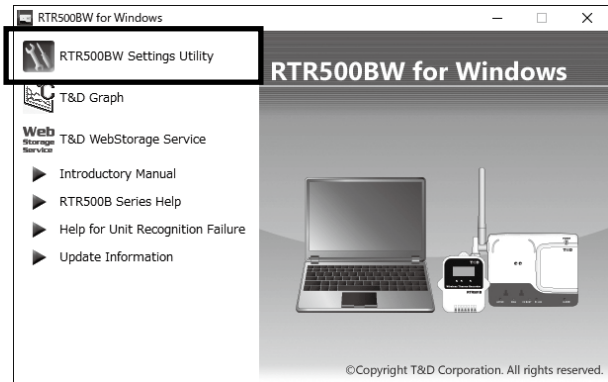
Download RTR500BW for Windows from the T&D Website and install it to your PC.

* Do not connect the Base Unit to your computer until the software has been installed.

tandd.com/software/rtr500bcforwin.html

STEP 2 Making Initial Settings for the Base Unit

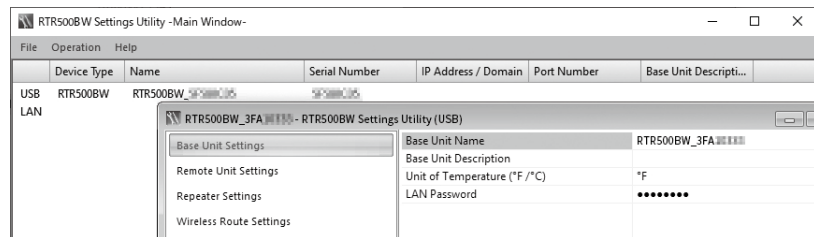
1. Open RTR500BW for Windows, and then open RTR500BW Settings Utility.



2. Connect the Base Unit with the supplied AC adaptor to a power source.

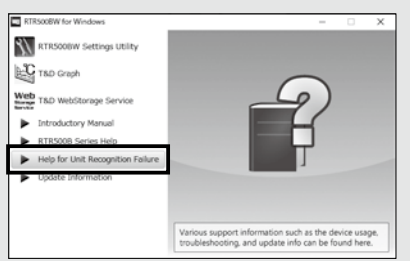
3. Connect the Base Unit with the supplied USB cable to your computer.

- The USB driver installation will start automatically.
- When the USB driver installation is completed, the RTR500BW setting window will automatically open.



If the above settings window does not appear automatically:

The USB driver may not have been installed correctly. Please see [Help for Unit Recognition Failure] and check the USB driver.



4. Enter the following information in the [Base Unit Settings] window.

Base Unit Name	Assign a unique name for each Base Unit.
Connection Password	Enter a password here for connecting to the Base Unit via Bluetooth or LAN.

The factory default password is "password".

5. Check the contents of your selections and click the [Apply] button.

6. In the Settings Window under [Clock Settings], click the Current Time column to make settings in the Base Unit.

7. Check the contents of your selections and click the [Apply] button.

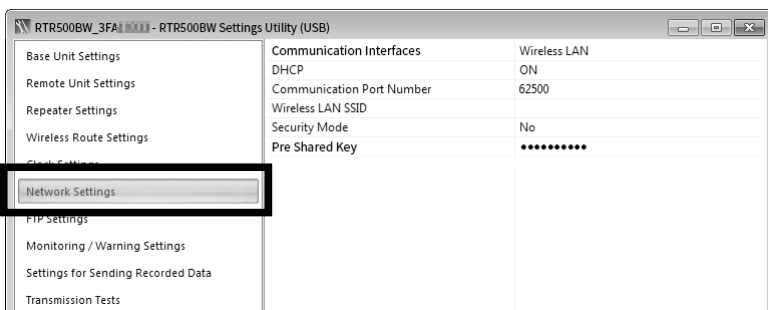
STEP 3 Making Network Settings

1. In the Settings Window, from [Network Settings] – [Communication Interface], select [Wired LAN] or [Wireless LAN].

* Normally, there is no need to change the DHCP settings. Settings can be made according to the network environment being used.

2. When using a Wireless LAN: Make settings for [Wireless LAN SSID], [Security Mode], and [Pre-Shared Key(password)].

* Normally, there is no need to change the Security Mode.



3. Check the contents of your selections and click the [Apply] button.

Upon completion of initial settings the following settings will be in operation.

- Settings for Sending Current Readings ON, Sending Interval: 10 min.
- Settings for Sending Recorded Data ON, Send at 6:00 am every day.

STEP 4 Registering Devices to T&D WebStorage Service

1. Open your web browser and log in to T&D WebStorage Service.

<https://webstorage-service.com>

* If you have not already registered as a User, use the above URL and carry out a New User Registration.

2. From the screen's left-side menu, click [Device Settings].

3. In the upper right of the screen, click on [+ Add]

4. Enter the serial number and registration code for the target logger, then click [Add].

The serial number and registration code can be found on the Registration Code Label provided with the product.

SN:5F580001
Registration Code:
00000000



If you have lost or misplaced the Registration Code Label, you can check it by connecting the Base Unit to your computer via USB and selecting [Settings List] – [Base Unit Settings].

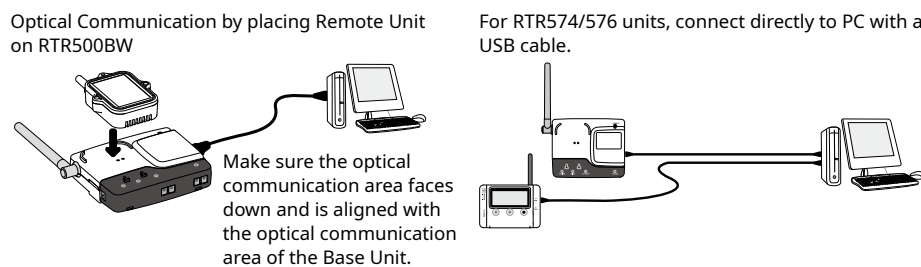
* When registration is complete, the registered device will be displayed in a list on the [Device Settings] screen, and it will be shown to be in waiting for its first communication.

STEP 5 Registering a Remote Unit

1. Connect the RTR500BW with the supplied USB cable to your computer.

2. Have the target data logger on hand and in the [Remote Unit Settings] window click on the [Register] button.

3. Follow the on-screen instructions and connect the Remote Unit to the RTR500BW. Upon recognition of the logger the [Remote Unit Registration] window will appear.



If the screen does not change after connecting RTR-574 / 576:

The USB driver installation may not have been installed correctly. Please see [Help for Unit Recognition Failure] and check the USB driver.

4. Enter the following information, and click [Register].

⚠ Upon Remote Unit Registration, changes in Recording Interval, and the starting of a new recording, all recorded data stored in the Remote Unit will be deleted.

Wireless Group	Enter a name for each Group to make it identifiable depending on which frequency channel it is using. If you wish to register a logger to an already registered Group, select the name of the target Group.
Remote Unit Name	Assign a unique name for each Remote Unit.
Communication Frequency Channel*	Select a frequency channel for wireless communication between the Base Unit and Remote Units. When installing multiple Base Units, make sure to select channels that are far apart in order to prevent interference of wireless communication between the Base Units.
Recording Mode	Upon reaching logging capacity, the oldest data will be overwritten and recording will continue.
Endless mode	Select the desired interval.
Recording Interval	To carry out Warning Monitoring, select "ON". Settings can be made in each Remote Unit for "Upper Limit" or "Lower Limit" and for "Judgment Time".
Warning Monitoring	To carry out Auto-downloading of Recorded Data, select "ON"
Download to PC	Here you can select the measurement items you wish displayed in the RTR-574 LCD when the unit is using "Alternating Display" as the display mode.
Channels for Alternating Display	To lock the operation buttons on RTR-574/576 units, select "ON". Only the <DISPLAY> button will be functional for Remote Units when the button lock has been set to ON.
Button Lock	When making settings from the smartphone app make sure that Bluetooth is set to ON
Bluetooth	Assign an arbitrary number with up to 8 digits to be used for Bluetooth communication.
Bluetooth Communication Password	

* This setting can only be made when creating a New Group. Once a Registration has been made, changes cannot be made. If you wish to make changes to the communication frequency channel, you must re-register the Repeater as a New Group.

Below are some examples of recording intervals and maximum recording times.

RTR501 / 502B / 505B (Logging Capacity: 16,000 readings)

EX: Recording Interval of 10 seconds x data readings of 16,000 = 160,000 seconds or about 111 days.

RTR503 / 507B / RTR574 / 576 (Logging Capacity: 8,000 readings)

EX: Recording Interval of 10 seconds x data readings of 8,000 = 80,000 seconds or about 55.5 days.

5. Upon completion of Remote Unit Registration, the logger will automatically start recording. If you wish to register other Remote Units, repeat procedures 1 to 4.

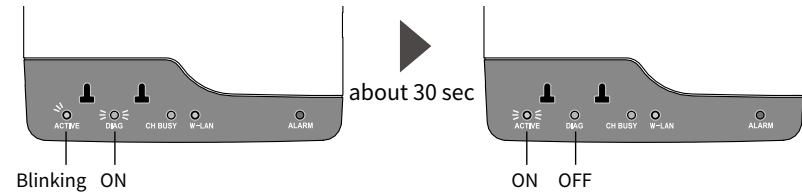
If you want to start recording at a desired time, open the [Remote Unit Settings] window, and click the [Start Recording] button to start a new recording session.

STEP 6 Installing the Device

1. Connect the Base Unit to the wired or wireless LAN.

* If the target Base Unit is connected to a PC, disconnect the USB cable.

2. Connect the Base Unit with the supplied AC adaptor to a power source.



* You will know network communication was established when <ACTIVE> on the LED changes from blinking to lit.

* If <ACTIVE> and <DIAG> are both blinking, wireless LAN communication has failed; so please recheck the settings.

3. Place the device in the measurement location.

Operations

View Current Readings via Browser

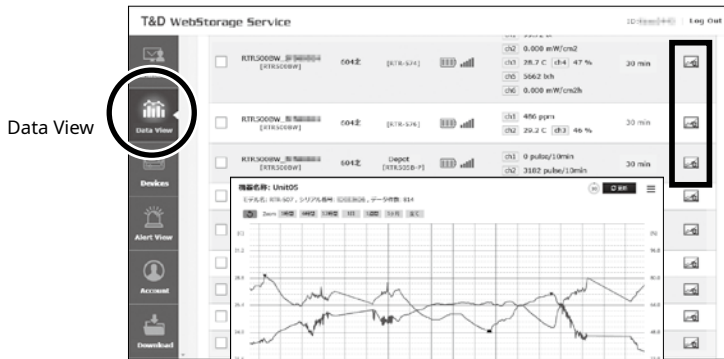
* To monitor Current Readings, make sure the "Sending Current Readings" in the Base Unit is set to "ON".

1. Open your web browser and log in to T&D WebStorage Service.

webstorage-service.com

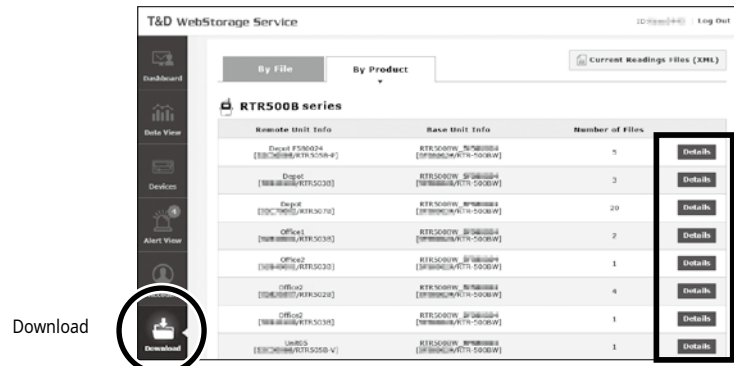
* A User ID is necessary to login. If you have not already registered as a User, please carry out a New User Registration.

2. From the screen's left-side menu, click [Data View]. In this screen you can check items such as Current Readings, Battery Level and Signal Strength.
3. By clicking [Details] (Graph Icon) on the right side of the screen, you can view measurement details in graph form.



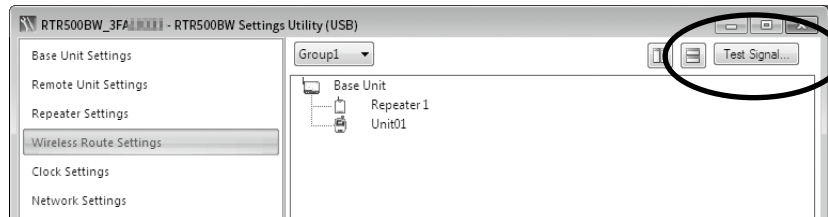
Downloading Recorded Data

1. From the screen's left-side menu, click [Download].
2. Click the [By Product] tab and for the target devices click the [Details] button.

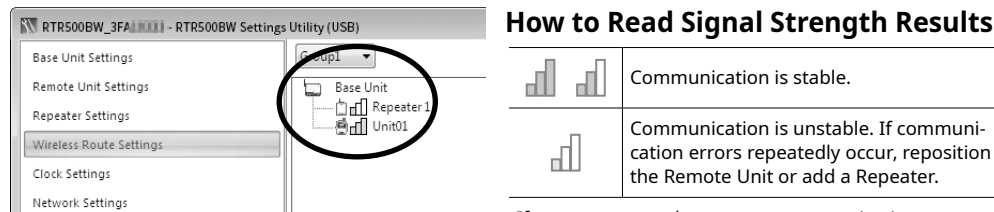


The wireless communication range, if unobstructed and direct, is about 150 meters (500ft.).

4. In the Settings window, open [Wireless Route Settings]-[Test Signal Strength].



5. Click [Start] to begin the signal check. When completed, click [Close]. The result will appear.



How to Read Signal Strength Results

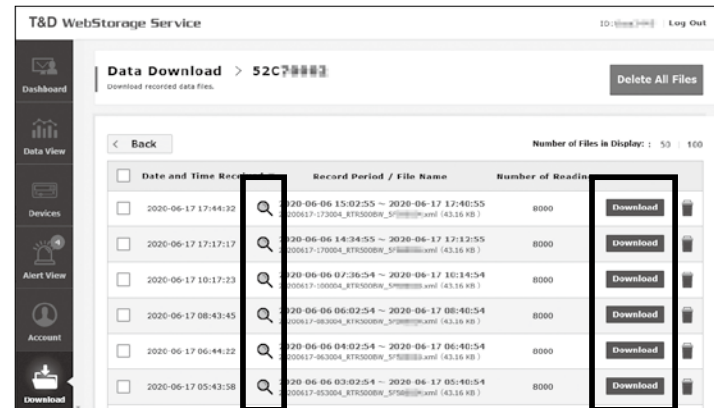
Communication is stable.

Communication is unstable. If communication errors repeatedly occur, reposition the Remote Unit or add a Repeater.

If no antenna mark appears a communication error has occurred. Try to reposition the Remote Unit or add a Repeater.

- Please refer to section [Notes and Precautions for Installing Wireless Communication Devices] under [Safety Instructions for RTR500B Series]
- By using a Repeater, it is possible to bypass obstacles and extend the wireless communication range. For details, refer to [Using as a Repeater] in the RTR500BC Getting Started Guide.

3. Click the [Download] button for the data you wish to download. If you wish to download multiple recorded data, place a check next to the data, and click the [Download] button.



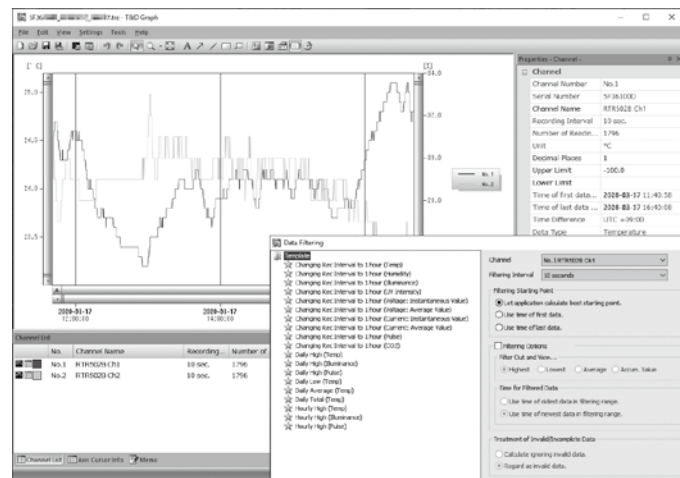
* Click the magnifying glass icon to open the Graph screen and see details for that data.

Using T&D Graph



T&D Graph is software that allows you to open recorded data saved on your computer. In addition to displaying and printing graphs, T&D Graph can open data by specifying conditions, extract data, and perform various data analysis.

With T&D Graph, it is possible to directly access and open recorded data stored in the T&D WebStorage Service and save it to your PC.



1. Download T&D Graph from the T&D Website and install it to your PC.

tandd.com/software/td_graph.html

2. Open and analyze recorded data.

* For details about operations, see T&D Graph Help.