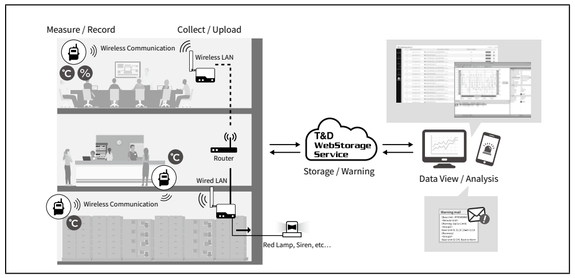
Network Base Station

RTR500BW User's Manual

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.



This document describes basic settings and simple operations for using the RTR500BW with our cloud-based "T&D WebStorage Service". If you choose not to use "T&D WebStorage Service", please consider using "T&D Data Server". For details of functions and operations, please see the **RTR500B Series Help**.

https://tandd.com/support/webhelp/rtr500b/eng/

T&D Corporation

https://tandd.com/

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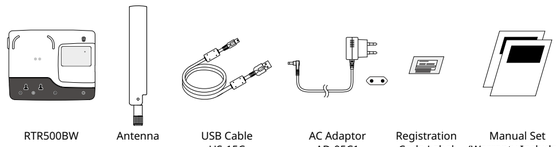
Product Specifications (EU Model)

Compatible Devices	Remote Units: RTR500B Series (RTR501B / 502B / 503B / 505B / 507B) Including L Type RTR-500 Series (RTR-574 / 576) Including S Type (*1) Repeaters: RTR500BC Other devices (*2)
Maximum Number of Registrations	Remote Units: 50 units Repeaters: 10 units x 4 groups
Communication Interfaces	Short Range Wireless Communication Frequency Range: 869.7 to 870MHz RF Power: 5mW Transmission Range: About 150 meters if unobstructed and direct Wired LAN (RJ45 connector 100 Base-TX/10 Base-T) Wireless LAN (IEEE 802.11 a/b/g/n, WEP(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 minutes An additional 30 seconds should be added for each Repeater. (*3)
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 (*4)	HTTP, HTTPS, FTP, SNTP, DHCP, DNS
Power	AC Adaptor: AD-05C1 PoE (IEEE 802.3af)
Dimensions	H 83 mm x W 102 mm x D 28 mm (excluding antenna) Antenna Length: 115 mm
Weight	Approx. 130 g
Operating Environment	Temperature: -10 to 60°C Humidity: 90%RH or less (without condensation)
Software (*5)	PC Software (Windows) RTR500BW for Windows, T&D Graph, T&D Data Server Mobile Application (iOS) T&D 500B Utility

*1: RTR-500 Series does not have Bluetooth capability.
*2: Also compatible with the following discontinued products: RTR-501/502/503/507S/505, RTR-500. Please refer to "Compatibility Info for RTR500B and RTR-500 Series" https://tandd.com/information/compatible-rtr500b-loggers.html
*3: When using RTR500BC as Repeater. Depending upon conditions it may take up to an additional 2 minutes.
*4: Client Function. Communication via proxy is not supported.
*5: Free software download and information on OS compatibility is available on the Software page of our website at https://tandd.com/software/.
The specifications listed above are subject to change without notice.

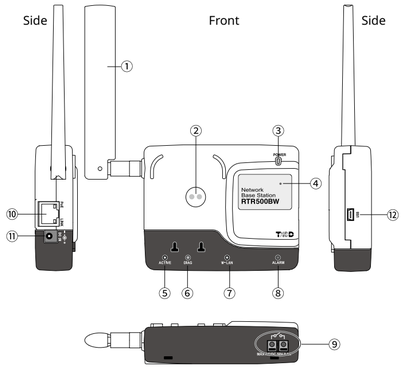
Package Contents

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



RTR500BW | Antenna | USB Cable US-15C | AC Adaptor AD-05C1 | Registration Code Label | Manual Set (Warranty Included)

Part Names



① Antenna
② Optical Communication Area
③ Power LED (green)
④ Bluetooth Communication LED (blue)
ON: Bluetooth Communication is set to ON
BLINKING: Bluetooth Communication in progress...
⑤ ACTIVE LED (green)
⑥ DIAG LED (orange)
⑦ W-LAN LED (green)
⑧ Warning LED (red)
⑨ External Output Terminal
⑩ LAN Connector
PoE (orange) ON: recharging
LINK (green) Blinking: connected to LAN
⑪ AC Adaptor Jack
⑫ USB Connector

About the LED Display

LED Status (● ON / ◐ BLINKING / ○ OFF)	Details
● ACTIVE	• Network communication available • Connected via USB
◐ ACTIVE	• Communication in progress...
● 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
● W-LAN	• Wireless LAN Communication Possible (Wired LAN Communication not available)
◐ 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 Manual

Base Unit	RTR500BW
Remote Unit	RTR501B / 502B / 503B / 505B / 507B, RTR-574 / 576
Repeater	RTR500BC (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

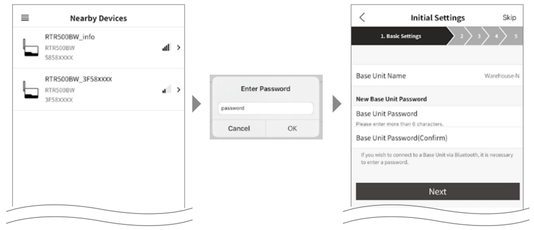
Download and install "T&D 500B Utility" from the App Store on your mobile device.

* The app is currently available for iOS only.
For details visit our website.

STEP 2 Registering as a Base Unit

1. Open T&D 500B Utility.
2. Connect the Base Unit with the supplied AC adaptor to a power source.
3. 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".



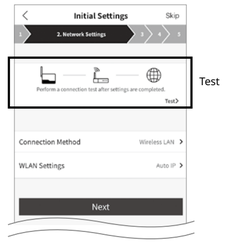
4. Enter the following information in the [Basic Settings] screen and click the [Next] button.

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 3 of [Settings: Making via PC] on the back of this page.

STEP 3 Making Network Settings

1. Under [Connection Method], select wired LAN or wireless LAN and make the necessary network settings.
2. When using a Wireless LAN:
Tap [WLAN Settings] and enter the appropriate settings for SSID, Security Mode and Password.



Test

Network settings can be made in the following three methods.

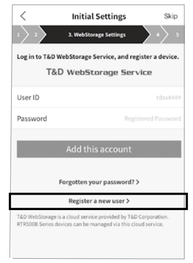
Add by Search	The app will search for available nearby access points and display them in a list. Select the desired access point and enter the password if necessary.
Add Manually	Enter the access point information manually.
Add from History	Select the desired access point from the archived list of previously used access points.

3. Connect the Base Unit to the wired or wireless LAN.
4. 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

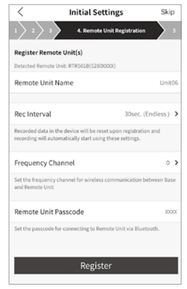
Enter the User ID and Password for T&D WebStorage Service to which you wish to have data sent to, and tap the [Add this Account] button.



If you do not already have an account, create one from [Register a new user].

STEP 5 Registering a Remote Unit

1. From the list of detected nearby Remote Units, tap the Remote Unit you wish to register to this Base Unit in STEP 2.
2. Enter the necessary info such as Remote Unit Name, Recording Interval, Frequency Channel* and the Remote Unit Passcode; then tap the [Register] button.



* When more than one Base Unit is registered, 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 one registered passcode, the set passcode will be displayed as already entered and you can skip entering the passcode.

3. If you wish to register multiple Remote Units, tap [Register the next Remote Unit] and repeat the registration process as necessary. To complete the registration of Remote Units, tap [Finish registration].

- 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: Making via PC] on the back of this page.

4. Upon completion of the Initial Settings wizard, 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.

The Base Unit will start operating at the default settings.
Current Readings Transmission: ON, Sending Interval: 10 min.
Recorded Data Transmission: ON, Once daily (triggered by and depending on the time of first communication between the Base Unit and the mobile or Windows app)

For information about registering a Repeater, refer to RTR500B Series Help - [T&D 500B Utility Mobile App] - [Settings Menu] - [Registered Device]

STEP 6 Installing the Device

1. Place the device in the measurement location.
* The wireless communication range, if unobstructed and direct, is about 150 meters (500ft.).
2. In the Settings Menu, tap on the [Registered Devices] menu.
3. At the bottom of the screen tap on the [Wireless Routes] tab. Here it is possible to check the route for wireless communication.
4. At the top right of the screen, tap on the [Check] button.
5. Select the devices for which you wish to check the signal strength and tap on the [Start] button.
6. After testing signal strength, return to the wireless route screen and confirm the signal strength.

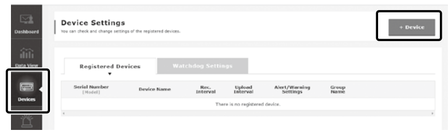
* If a Repeater is part of your installation, you can also check the signal strength of the registered Repeaters.

Settings: Making via PC

STEP 1 Registering a Base Unit to T&D WebStorage Service

1. Open your web browser and log in to T&D WebStorage Service.
If you have not already registered as a User, use the above URL and carry out a New User Registration.
https://webstorage-service.com/

2. Go to the [Devices] menu and click the [+ Device] button.



3. Enter the serial number and registration code for the Base Unit, then click [Add].
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.

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 Table] - [Base Unit Settings] in the RTR500BW Settings Utility.

STEP 2 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.

https://tandd.com/software/rtr500bwwin-eu.html

STEP 3 Making Initial Settings for the Base Unit

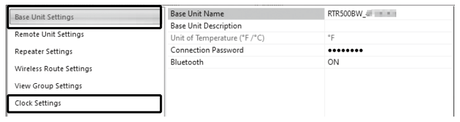
1. Open RTR500BW for Windows.

2. Click "RTR500BW Settings Utility" to open the main window.

Launcher Window

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

4. Upon connecting the Base Unit with the supplied USB cable to your PC, the [Base Unit Settings] window will open. Check the information and make any necessary changes.



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. Click the [Apply] button.

6. Open [Clock Settings] and make any necessary changes.

7. Click the [Apply] button.

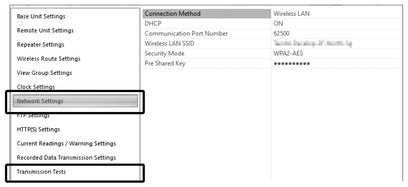
STEP 4 Making Network Settings

1. Under [Network Settings] - [Connection Method], select [Wired LAN] or [Wireless LAN].

2. When using a Wireless LAN:
Make settings for [DHCP]*1, [Wireless LAN SSID]*2, [Security Mode]*3, and [Pre-Shared Key(password)].

* 1: Normally, there is no need to change the DHCP settings. Settings can be made according to the network environment being used.
* 2: You can select the access point from the drop down list of detected wireless access points.
* 3: Normally, there is no need to change the Security Mode.

3. Click the [Apply] button.



4. Connect the Base Unit via wired or wireless LAN. Under [Transmission Tests], carry out [Test Transmission of Current Readings].
If the test fails, refer to the explanation and error code shown on the screen, and check the Network Settings again.

STEP 5 Registering a Remote Unit

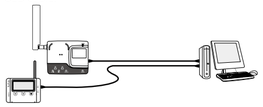
1. Open [Remote Unit Settings] and click on the [Register] button.

2. By connecting the Remote Unit, the registration window will open.

Optical Communication by placing Remote Unit on RTR500BW:

Make sure the optical communication area faces down and is aligned with the optical communication area of the Base Unit.

For RTR-574/576 units, connect directly to PC with a USB cable.



If the registration window does not appear after connecting RTR-574/576, the USB driver may not have been installed correctly. Please see [Help for Unit Recognition Failure] from the launcher window of RTR500BW for Windows, and check the USB driver.

3. 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 more than one Base Unit is registered, make sure to select channels that are far apart in order to prevent interference of wireless communication between the Base Units. * This setting can only be made when creating a new wireless group. Once a Registration has been made, changes cannot be made. If you wish to make changes to the communication frequency channel, you need to delete and re-register the Remote Unit to a new wireless group.
Recording Interval	Select the desired interval.
Warning Monitoring	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".
Bluetooth	When making settings from the smartphone app, make sure that Bluetooth is set to ON.
Bluetooth Passcode	Assign an arbitrary number with up to 8 digits to be used for Bluetooth communication.

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

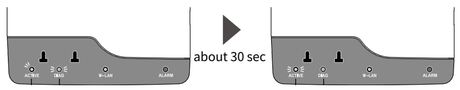
RTR501B / 502B / 505B (Logging Capacity: 16,000 readings)
EX: Recording Interval of 10 minutes x data readings of 16,000 = 160,000 minutes or about 111 days.
RTR503B / 507B / RTR-574 / 576 (Logging Capacity: 8,000 readings)
EX: Recording Interval of 10 minutes x data readings of 8,000 = 80,000 minutes or about 55.5 days.

- For details on each setting item and device-specific items, see RTR500B Series Help - [RTR500BW for Windows] - [Base Unit Settings] - [Remote Unit Settings].
- If you wish to register other Remote Units, repeat procedures 1 to 3.
- Upon completion of registration, the Remote Unit will automatically start recording. If you want to start recording at a desired time, click the [Start Recording] button in [Remote Unit Settings] and set the recording start date and time.

STEP 6 Installing the Device

1. Disconnect the Base Unit from the PC, place it in the actual installation location, and connect it to a wired or wireless LAN.

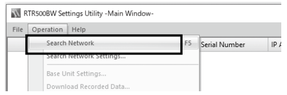
2. When power is supplied via the supplied AC adaptor or PoE, the Base Unit will start operating at the default settings.



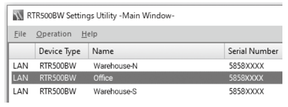
You will know network connection was established when <ACTIVE> on the LED changes from blinking to lit. If <ACTIVE> and <DIAG> are both blinking, wireless LAN communication has failed; so please recheck the settings.

Default Settings
Current Readings Transmission: ON, Sending Interval: 10 min.
Recorded Data Transmission: ON, Once daily (triggered by and depending on the time of first communication between the Base Unit and the mobile or Windows app)

3. Place the registered Remote Unit(s) in the measurement location, and check signal strength via LAN.
From the RTR500BW Settings Utility Main Window - [Operation] menu, select [Search Network].



4. When your Base Unit appears in the list, double-click on it.

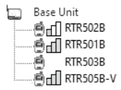


If your Base Unit does not appear:
- Check to make sure your Base Unit is on the same network as the PC. If not, under the [Operation] menu select [Search Network Settings], and add the IP/domain name to the address list.
- Refer to RTR500B Series Help - [FAQs] - [RTR500BW Operations] - [Q. I can't seem to connect the RTR500BW to my network, what should I do?] and check the settings and network environment.

5. When the password entry screen appears, enter the Connection Password (as set in STEP3) and click [OK] to open the settings window.

6. Under [Wireless Route Settings], click the [Test Signal] button.

7. Click [Start] to check the signal strength between the devices, and when completed, click [Close] to view the results.
Adjust the location of the device(s) as necessary to obtain stable communication.



How to Read Signal Strength Results

	Communication is stable.
	Communication is unstable.
	Communication Error (No antenna mark)

- Please refer to the attached document [RTR500B Series Safety Instruction] - [Notes and Precautions for Installing Wireless Communication Devices] section.
- By using a Repeater (RTR500BC), it is possible to bypass obstacles and extend the communication range. For details, refer to RTR500B Series Help - [RTR500BW for Windows] - [Base Unit Settings] - [Repeater Settings].

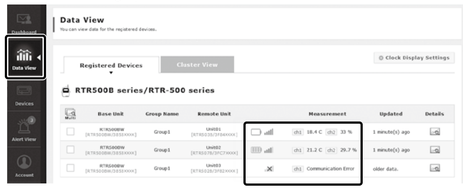
Note: Autonomous operations such as data transmission will stop when the Base Unit is connected to a PC via USB or during the configuration via LAN.

Operations

Viewing Current Readings via Browser

1. Open your web browser and log in to T&D WebStorage Service.
https://webstorage-service.com/

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.
Click [Details] (Graph Icon) on the right side of the [Data View] window to view the measurement data in graph form.

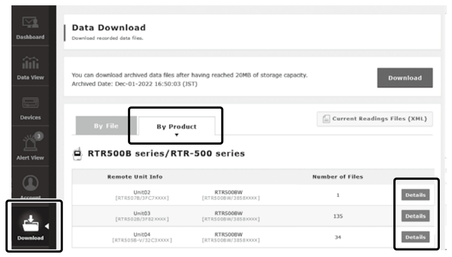


- To monitor Current Readings, make sure the "Auto Transmission of Current Readings" in the Base Unit is set to "ON".
- The signal strength between Base Unit and Remote Unit can be checked by color and number of antennas. When using Repeaters, the signal strength displayed here is only that for between the Remote Unit and the nearest Repeater. To check the signal strength between the Base Unit and Repeater or between Repeaters, please use the RTR500BW Settings Utility or T&D 500B Utility.

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.



- You can select the recorded data to download or delete by file or by product.
- You may see a message about downloading archived data files. For information about storage capacity and archiving, see the T&D WebStorage Service Details.
https://webstorage-service.com/info/

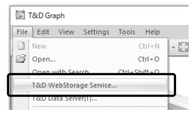
3. Click the [Download] button for the data you wish to download.
If you wish to download multiple recorded data, place a check next to the data, and click the [Download] button.
Click the magnifying glass icon to open the Graph screen and see details for that data.

Analyzing Recorded Data using T&D Graph

By using 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.

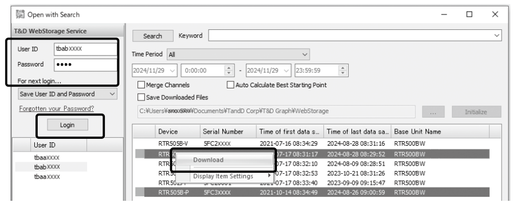
1. Download T&D Graph from the T&D Website and install it to your PC.
https://tandd.com/software/td-graph.html

2. Open T&D Graph and go to the [File] Menu - [T&D WebStorage Service].



3. Enter the user ID and password registered with T&D WebStorage Service, and click [Login] button.

4. All data stored in your WebStorage account will be displayed in a list. Right click on the selected recorded data and click [Download] to download for analysis.



What can you do with T&D Graph ?
- Display and print graphs.
- Insert shapes and post comments and/or memos directly on the displayed graph.
- Search and open only data that matches the criteria.
- Save the data in CSV format for use in a spreadsheet program.

For details about operations, see T&D Graph Help.
https://cdn.tandd.co.jp/glb/html_help/tdgraph-help-eng/