Thermo Recorder TR-7wb/nw Series
Introductory Manual

T&D CORPORATION

https://www.tandd.com/

The TR-7wb/nw series data loggers can be used in the following ways.

[wb] : TR-71wb, TR-72wb, TR-75wb   [nw] : TR-71nw, TR-72nw, TR-75nw

Via Cloud: Automatic Data Upload

By using wireless LAN ([wb]) and wired LAN ([nw]), the logger automatically uploads the recorded data to the cloud. It enables the viewing of uploaded data and the changing of settings on your PC, smartphone and tablet.

Via PC: Setup and Download *See reverse side.*

Make settings and download data by USB communication between the PC and [wb] or [nw].

Via Smartphone: Setup and Download ([wb] only) *See reverse side.*

Make settings and download data by connecting [wb] to a smartphone or tablet via Bluetooth®.

Button Operations

Power ON/OFF	Press-and-hold the <PWR> button. (Cannot power OFF when a recording is in progress.)
Start/Stop Recording	Press-and-hold the <REC/STOP> button.
Recording Interval [**Rec.**] / Upload Interval [**Upload.**]	Press the <INTERVAL> button (display mode) Press-and-hold the <INTERVAL> button (setting mode)
Transmit Data and Settings to "T&D WebStorage Service"	Press the <REC/STOP> button.
Cancel Communication	Press the <PWR> button.
Channel on Display (Fixed or Alternating Display)	Press the <DISPLAY> button to switch the display: Ch1 (fixed) → Ch2 (fixed) → Ch1&2 (alternate)
[nw] Display Last Used IP Address	Press-and-hold <PWR> and <DISPLAY> together. EX: When the IP address was 11.22. 33.44, each part will appear for two seconds as follows: [11 → 22 → 33 → 44]. When DHCP is ON but failed to obtain an IP address, [--- → --- → --- → ---] will appear.
[wb] Wireless LAN Settings using WPS	Press-and-hold <PWR> and <DISPLAY> together.
TR-75wb TR-75nw Display Sensor Type	Press-and-hold the <DISPLAY> button.

• "Press-and-hold" means to hold the button down for about two seconds.
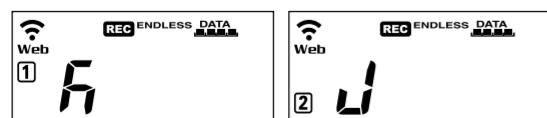
Marks on LCD Screen

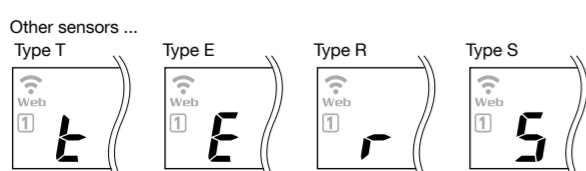|	
(wireless icon)	Wireless LAN ([wb] only) ON : Connected to the wireless network. (Signal strength: 1 to 3 bars) BLINKING : Unable to connect to the wireless network. OFF : Wireless LAN settings not made.
Web	ON : Connected to the Internet. BLINKING : Unable to connect to the Internet. OFF : Auto-upload is set to "OFF".
1 2	Displayed Measurement Channel
WPS	ON : Wireless LAN Setup using WPS Possible ([wb] only)
COM	BLINKING: LAN, Bluetooth or USB communication in Progress
REC	ON : Recording in Progress
ENDLESS ONETIME	ENDLESS : Upon reaching the logging capacity of 8,000 readings, the oldest data is overwritten and recording continues. ONETIME : Upon reaching the logging capacity of 8,000 readings, recording automatically stops. Cannot be set or changed using buttons on the logger. The factory default setting is "ENDLESS".
DATA	Amount of Recorded Data in Device
(battery icon)	ON : Low Battery When the battery power becomes even lower after the battery warning mark appears, the auto-upload will stop. *Please change the batteries as soon as you see this mark.
Upload.	Auto Upload Interval
Rec.	Recording Interval

Messages on LCD Screen

ENDLESS DATA ONETIME (display: ----)	Sensor Error: No sensor connected, improper connection, damaged, etc.
ONETIME DATA (display: FULL)	Full Data: Upon reaching capacity of 8,000 readings in "ONETIME" mode, this message appears and recording automatically stops.
(display: SLP)	Sleep Mode: If you take no action after a battery warning mark appears and auto-upload stops, the logger will enter sleep mode and stop all operations to protect data. *If the logger remains in sleep mode over one week without a change of batteries, all recorded data will be lost.

Thermocouple Sensor Type (TR-75wb/75nw only)

By pressing and holding the <DISPLAY> button, you can see which sensor type is currently set for each channel as below.

In the example shown left, Channel 1 is set to Type K, Channel 2 is set to Type J.

Other sensors ...
Type T   Type E   Type R   Type S

The factory default setting is "K" for both 1 2. Depending on the thermocouple type you're going to use, make settings or changes using "T&D WebStorage Service" or the software "TR-7wb/nw for Windows".

Recording Interval Setting (Common Operation)

Install the batteries and sensor(s) in the logger, and make sure the LCD is displaying measurements.
The logger records measurements at 10-minute intervals by default, which can be changed by following the steps below.

⚠ • Skip this setting if you don't need to change the recording interval.
• Upon the start of recording, all previously recorded data in the logger will be deleted.
• Note: When **REC** is ON (recording in progress), the logger cannot be turned off, nor can the recording interval be changed.

1. When **REC** is ON, press-and-hold the <REC/STOP> button until **REC** turns OFF (recording stops).

2. Press the <INTERVAL> button.

3. While **Rec.** is displayed, press-and-hold the <INTERVAL> button until the interval time flashes.

Recording Interval

4. Press <INTERVAL> again to select the interval time. Each press changes the interval as follows: Recording Intervals (**Rec.**) 1, 2, 5, 10, 15, 20, 30 SEC / 1, 2, 5, 10, 15, 20, 30, 60 MIN

5. When you stop pressing the button, the display will return to the normal measurement mode, confirming that it is set.

Ref: Recording Intervals & Estimated Time until Logging Capacity is Reached

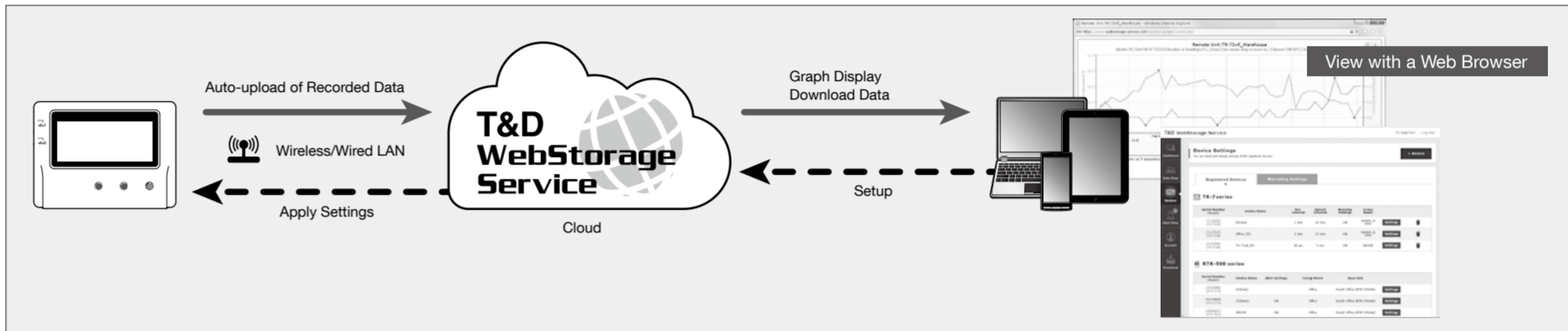| Recording Interval	1 sec	30 sec	5 min	15 min	60 min
Estimated Time	About 2 hours	About 2 days	About 27 days	About 83 days	About 333 days

6. Press-and-hold the <REC/STOP> button until **REC** turns ON (recording restarts).

Automatic Data Upload to the Cloud

This function enables TR-7wb/nw series loggers to automatically upload recorded data to "T&D WebStorage Service" where uploaded data is available for viewing and settings can also be changed.

⚠ The following procedure has been written assuming the use of "T&D WebStorage Service" with TR-7wb/nw series loggers. Please read the "T&D WebStorage Service" License Agreement carefully before making settings. Making Auto-upload Settings indicates your acceptance of this Agreement.

• This procedure requires Internet access via wireless or wired LAN.
• The maximum number of readings which can be stored in "T&D WebStorage Service" is 80,000. When this limit is exceeded, the oldest data will be overwritten.
• If you wish to select a server other than "T&D WebStorage Service" for auto upload of data, please use "T&D Data Server". (See **Tips** on the reverse side.)

⚠ If you wish to use a static IP address instead of DHCP, make network settings using software. *See reverse side.*

STEP 1 Auto-Upload Settings

1. Press the <INTERVAL> button twice to display the auto-upload interval.

2. While **Upload.** is displayed, press-and-hold the <INTERVAL> button until the interval time flashes.

Auto Upload Interval

3. Press <INTERVAL> again to select the interval time. Each press changes the interval as follows: Auto-upload Intervals (**Upload.**): OFF / 1, 2, 5, 10, 15, 20, 30 MIN / 1, 2, 3, 4, 6, 12, 24 HOUR The factory default setting is OFF (no auto-upload).

4. The interval time will stop flashing and the display will return to the normal measurement mode, confirming that it is set.

Ref: Auto-Upload Intervals & Corresponding Estimated Battery Life
In general, the shorter the upload interval, the shorter the battery life.

model \ Interval	1 min	10 min	1 hr	12hrs or more
TR-71wb/TR-72wb	About 10 days	About 2 months	About 1 year	About 15 months
TR-71nw/TR-72nw				About 1.5 years
TR-75wb			About 10 months	About 1 year
TR-75nw			About 7 months	

• All estimates are based on operations carried out with a new battery and are in no way a guarantee of actual battery life.
• When Auto-upload is used frequently on TR-71wb/71nw, the measurement of the internal sensor may rise by around 0.3°C.

STEP 2 Wireless LAN Settings

This step is not necessary for [nw]. Plug a LAN cable into a network hub or router, and go to STEP **3**.

⚠ Wireless LAN settings using WPS may not be possible depending on the supported features or settings of your wireless LAN access point. In this case, make wireless network settings on PC or smartphone. *See reverse side.* The following information is required: • Network Name (SSID) • Security (WEP 64bit/128bit, WPA-PSK (TKIP), WPA2-PSK (AES)) • Password (Network Key)

1. Press the <POWER> and <DISPLAY> buttons together until **WPS** appears on the LCD screen.
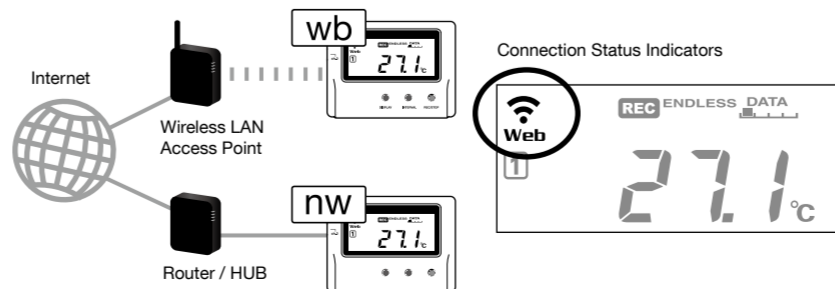

2. Set your wireless LAN access point to "WPS" mode.

For details about Wireless LAN Access Point settings, refer to the user manual for that access point.

3. When the setup is successfully completed, the (wireless) mark on the LCD display will turn ON.

STEP 3 Checking Connection Status

Place the logger in the desired measurement location.
Make sure Internet access is available.

Internet
Wireless LAN Access Point
Router / HUB

Connection Status Indicators

Press the <REC/STOP> button to immediately send the recorded data to "T&D WebStorage Service" without waiting for the next transmission. If the transmission is successful, **Web** will remain ON after **COM** turns OFF.

[wb] (wireless) is OFF or blinking:	Unable to connect to the wireless network. Try changing the measurement location or adjusting the distance between the logger and the access point, and make the wireless LAN settings in STEP **2** again.
Web is blinking:	Internet connection failed. Please check the network settings.

STEP 4 Viewing Recorded Data

In order to view the recorded data on a web browser, it is necessary to register devices to "T&D WebStorage Service" in advance.

1. Access "T&D WebStorage Service" from the web browser on your PC or mobile device.

http://www.webstorage-service.com/

2. Click [Create Account] to go to the registration page, and follow the directions to complete the registration. If you already have your User ID, go to the next step.

3. Login by entering the registered User ID and Password.

4. In the [Device Settings] window click [+Device].

5. In the Add a Device page, enter necessary information* and click [Add].

*The registration code can be found on the supplied Registration Code Label.

6. After data is sent to "T&D WebStorage Service" either by auto-upload or by pressing the <REC/STOP> button on the logger, the added device and its measurements will appear in the [Data View] window.

Troubleshooting Tips

If measurements are not displayed:
Check the screen of the logger and make sure **REC** is ON; If not, press <REC/STOP> to start recording. See "Recording Interval Setting (Common Operation)" above.

If the display of measurements is not refreshed:
Try making the recording interval shorter. If the recording interval is set to longer than the upload interval, the same measurement is displayed until the next recording occurs and the new data is uploaded.

If you lose your registration code label:
Open the software "TR-7wb/nw for Windows" and connect your logger via USB to the computer. The connected logger and its information will appear in the left boxes of the main window. The registration code can be found here.
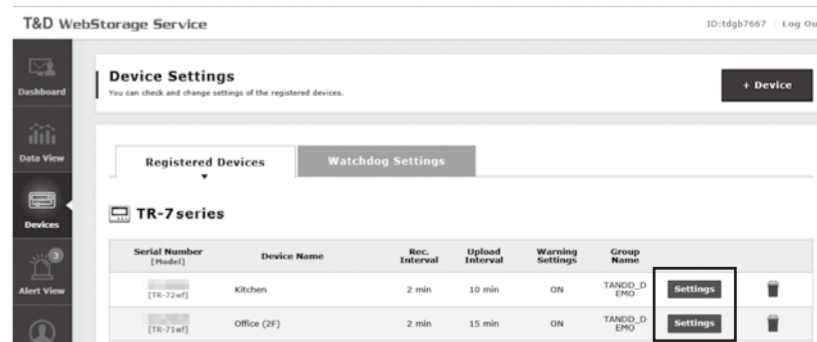
If you wish to save recorded data to PC:
Use "T&D Graph" that is available for download from the T&D Website. See **Tips** on the reverse side.

STEP 5 Changing Device Settings

It is possible to change device settings by using "T&D WebStorage Service".

⚠ Note that the setting changes will not be actually applied until communication occurs between the logger and "T&D WebStorage Service". By pressing the <REC/STOP> button on the logger, however, settings can be applied immediately.

Setting Items which can be set or changed:

Device Info	Device Name, Group Name, Recording Interval, Recording Mode, Auto-upload Interval, Channel Name, Time Difference, Unit of Temperature, Sensor Type (TR-75wb/75nw only)
Warning Settings	Lower Limit, Upper Limit, Sensor Warning, Judgement Time

Setting via the cloud using the Mobile App
For the loggers that have been registered to "T&D WebStorage Service", the settings can also be changed using the "T&D Thermo" App on your smartphone or tablet. *See reverse side.*

For iOS   For Android

PC over USB: Setup and Download

Using a USB connection between the logger and PC, make device settings and download recorded data via "TR-7wb/nw for Windows".

⚠ • **The software can be downloaded from the T&D website, but for those who prefer, a CD and USB cable set (SO-15C1) is available for purchase.**

USB Connection
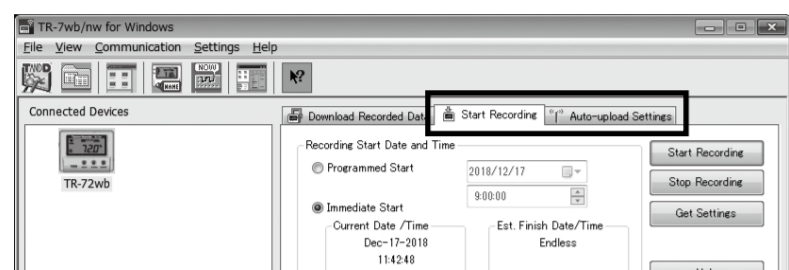(Setup and Data Download)

PC

**"T&D Graph"
Save / Analyze**

Primary features of
"TR-7wb/nw for Windows" include :
• Start/Stop Recording
• Auto-upload Setting
• Network Settings (static IP address, etc.)
• Name Settings (device/group/channel)
• Downloading and Saving Recorded Data
• Warning Settings
• Time Settings
• Sensor Type Setting (TR-75wb/75nw only)

Software Download (free) >> https://www.tandd.com/software/

STEP 1 · Device Settings

1. Download and install "TR-7wb/nw for Windows" from the URL shown above.

2. Connect the logger via USB to your computer.

   * "TR-7wb/nw for Windows" will open automatically. (If not, please open it manually from the Windows Start Menu or Start Screen.)

3. Make the necessary settings from the tabs in the main window.

Setting Items which can be set or changed:

[Start Recording] Tab	Programmed Start, Immediate Start, Recording Interval, Recording Mode, Sensor Type (TR-75wb/75nw only), Group Name, Device Name, Channel Name
[Auto-upload Settings] Tab	Network Settings, Warning Settings, Time Settings, Data Destination, Upload Interval

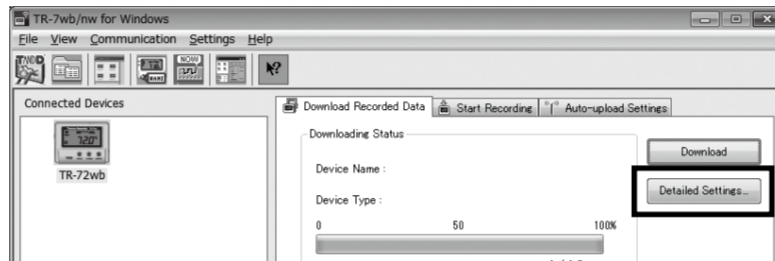⚠ **[Auto-upload Settings] Tab**
The settings in this tab can be used when you wish to use the auto-upload feature without WPS or DHCP.

4. After having completed all the settings, click [Start Recording] or [Send Settings] to send the setting contents to the logger.
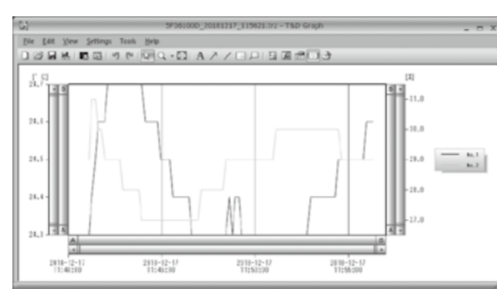
STEP 2 · Downloading Data and Viewing in Graph

By using "T&D Graph", it is possible to view data downloaded from the logger in graph form.

1. Download and install "T&D Graph" from the URL shown above.

2. Connect the logger via USB to your computer.

3. Open "TR-7wb/nw for Windows", click the [Download Recorded Data] tab and proceed with the download.

   * Before downloading, settings for "Graph Display" and "File Name" can be viewed and changed under [Detailed Settings].

4. Upon completion of the download, "T&D Graph" will open and display the graph.

* For details about software operations, please see the "Help" menu in each software.

Smartphone over Bluetooth®: Setup and Download TR-7wb Series

By using the "T&D Thermo" App with [wb], it is possible to make device settings, download recorded data, and view recorded data directly from your smartphone or tablet via Bluetooth.

⚠ **The app supports Android OS 4.4 or later and iOS 10.0 or later.**

[wb]

Bluetooth
(Bluetooth low energy)

Install

Smartphone
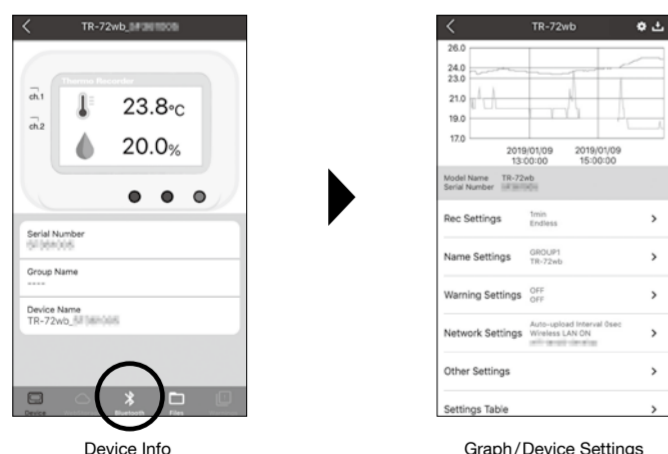Tablet

T&D Thermo

Primary features of "T&D Thermo" include :
• Start/Stop Recording
• Auto-upload Interval Setting
• Name Settings (device/group/channel)
• Warning Settings
• Graph Display
• Downloading, Saving and Uploading Recorded Data
• Network Settings
• Time Settings

STEP 1 · Start-up

1. Install "T&D Thermo" to your smartphone or tablet.

   * "T&D Thermo" is available on the Apple Store for iOS devices and the Google Play Store for Android devices.

2. Open the app.

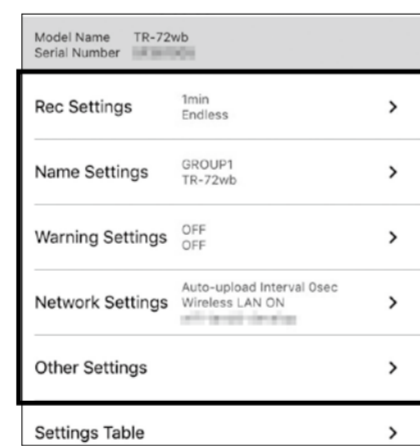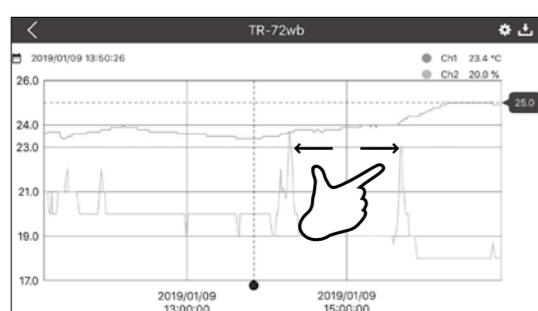   Upon startup, the app scans for available TR-7wb in range and displays them in a list.

STEP 2 · Graph Display and Device Settings

1. Tap the device in the list to open the device info screen.

2. By tapping the Bluetooth icon in the tab bar, the device settings screen will open and display downloaded data in graph.
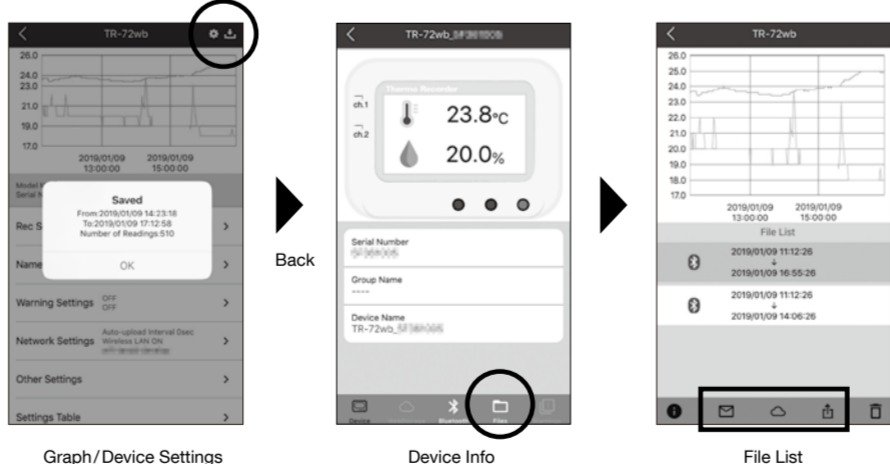
| Model Name | TR-72wb |
Serial Number	
Rec Settings	1min / Endless
Name Settings	GROUP1 / TR-72wb
Warning Settings	OFF / OFF
Network Settings	Auto-upload Interval 0sec / Wireless LAN ON
Other Settings	
Settings Table	

Beneath the graph is the device settings area where you can change recording settings, name settings, warning settings, network settings, security settings, etc...

Device Info   Graph/Device Settings

Graph Operations

Zooming in and out	Pinch in/out to change the scale of the horizontal axis.
Full screen display	Hold the smartphone horizontally.
Checking time and temperature at the specified point	Tap and hold on the graph (in full-screen mode).

STEP 3 · Saving and Sharing Recorded Data

Data downloaded can be saved to a file and shared by using "T&D WebStorage Service" whenever needed.

Back

Graph/Device Settings   Device Info   File List

1. Tap the [Save] button at the upper right of the graph to save graph data.

2. Tap [Files] in the tab bar at the bottom of the device info screen to open the file list.

3. Select a file and tap the desired icon in the toolbar.

   * The icons in the toolbar allow you to take actions on the selected data file such as sending to T&D WebStorage Service, sending via email, sharing in SNS and saving directly to your smartphone.

For details about "T&D Thermo", refer to the online help.
https://www.tandd.com/support/webhelp/tdthermo/

Tips

Sensors

Optional Sensors

We offer a wide range of Temperature and Temperature-Humidity sensors, sensor extension cables, AC adaptors, etc. For details see the Optional Products information on the Product Page.

https://www.tandd.com/product/tr7wbnw_series.html

Thermocouple Sensors (for TR-75wb/75nw)

We do not handle the sale of Thermocouple sensors. Please purchase separately.

External Power Supply

It is possible to use USB bus power, AC adaptor (AD-05A2 or AD-05C2: sold separately), or PoE ([nw] only) as a power source. When using an external power supply, installing batteries will make it possible to continue recording in the event of a power outage.

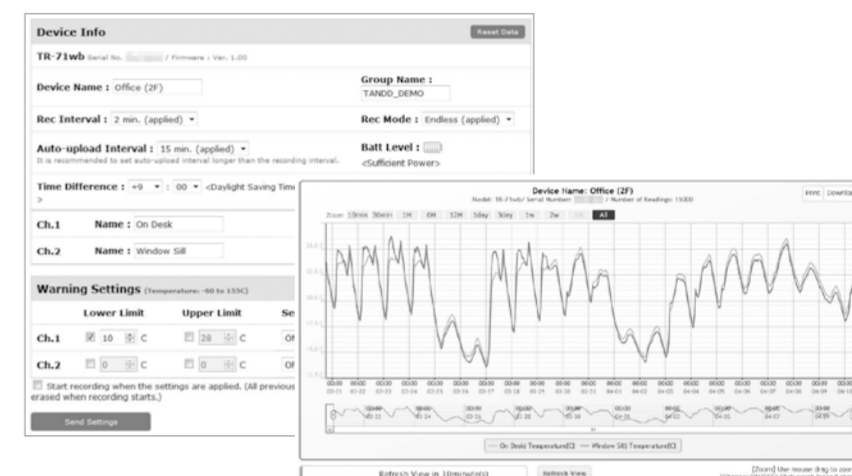ⓘ **Important Notice for Using an External Power Supply**
When using external power, the data logger itself generates heat and the internal sensor of the TR-71nw/71nw will report a higher temperature than actual; we recommend using an external temperature sensor.
Also, when an external sensor is used near the TR-7wb/nw Series, it may be affected by the heat from the logger.

T&D WebStorage Service

"T&D WebStorage Service" is a free web-based cloud storage service provided by T&D Corporation. By uploading recorded data to "T&D WebStorage Service", it is possible to access your important data from anyplace in the world at any time you wish.

http://www.webstorage-service.com/

Useful features include automatic transmission of current readings & recorded data, graph display, settings, etc.
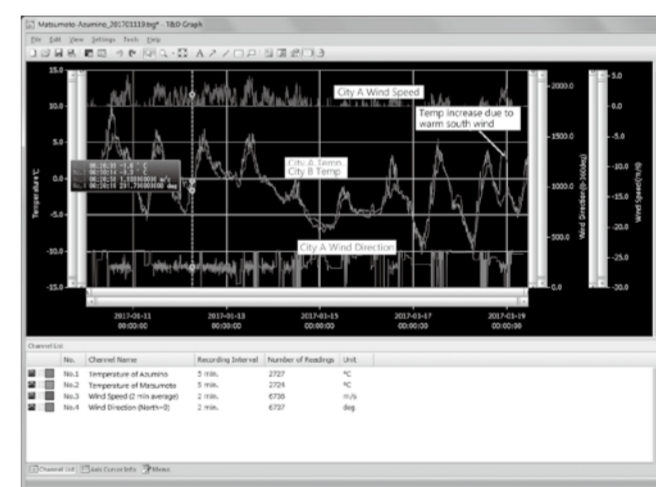
Time Settings

The time difference setting can be changed via "T&D WebStorage Service", "TR-7wb/nw for Windows", or "T&D Thermo". The default time difference is as follows:

[wb] GMT +1:00 (for serial number "No.4XXXXXXX")
GMT -8:00 (for serial number "No.3XXXXXXX")
[nw] GMT +0:00 (for all serial numbers)

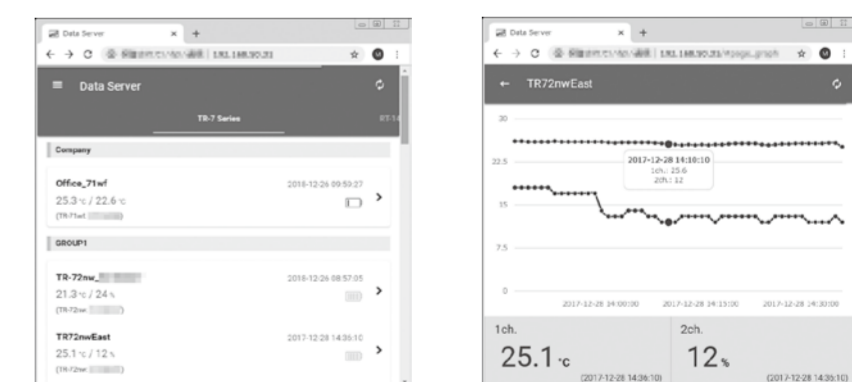## Software for TR-7wb/nw Series

T&D Graph

"T&D Graph" is a software program which enables the viewing of recorded data in graph form, whether the data is stored on a local computer or at "T&D WebStorage Service". Even if the data you wish to view is divided into multiple files, it is possible to merge them into one graph by specifying the device name and/or time period. The graph data can be saved as a graph file (.trg) or a text file (csv).

T&D Data Server

The PC on which "T&D Data Server" has been installed can act as a server which receives and stores data recorded by TR-7wb/nw Series data loggers to the user-specified folders. The stored data can be viewed in graph from using "T&D Graph" or monitored using a web browser. When you wish to have recorded data automatically uploaded to your server rather than "T&D WebStorage Service", please use this software.

Monitoring / Graph Window

T&D Software and Applications Available for Free Download:
https://www.tandd.com/software/

Product Support

Please contact your local distributor.
https://www.tandd.com/purchasing/