Thermo Recorder TR-7wf/nw Series
Introductory Manual

T&D CORPORATION

http://www.tandd.com/

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

wf TR-71wf, 72wf, 75wf   nw TR-71nw, 72nw, 75nw

Via Cloud: Auto Data Upload

By using wireless LAN (wf) 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 TR-7wf or TR-7nw.

When you wish to use Auto Data Upload but are not using WPS/DHCP, it is possible to make the auto-upload setting via USB connection.

Via Smartphone: Setup, Download, and View (wf only)   See reverse side

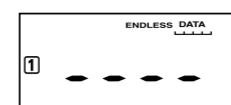Make settings and download data by connecting your TR-7wf to a smartphone or tablet via wireless LAN.

It is also possible to use a smartphone/tablet to set up wireless LAN without using WPS.

Marks on LCD Screen

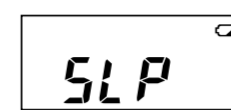|	
📶 Wireless LAN wf	ON : Connected to the wireless network. (Signal strength: 1 to 3 bars) BLINKING : Unable to connect to the wireless network. OFF : Wireless LAN settings not made.
Web	ON : Connected to the Internet. BLINKING : Unable to connect to the Internet. OFF : Auto-upload is set to "OFF."
1 2	Displayed Measurement Channel
AP	ON : Mobile Device Communication Possible (wf only)
WPS	ON : Wireless LAN Setup using WPS Possible (wf only)
COM	ON : Wireless LAN 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
🔋	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

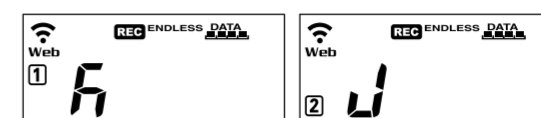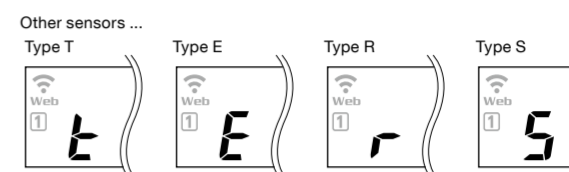|	
----	Sensor Error: No sensor connected, improper connection, damaged, etc.
FULL	Full Data: Upon reaching capacity of 8,000 readings in "ONETIME" mode, this message appears and recording automatically stops.
SLP	Sleep Mode: If you take no action after a battery warning mark appears and auto-upload stops, the logger will enter sleep mode and stop all operations to protect data. All operations are stopped to protect data in sleep mode. *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-75wf/nw 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-7wf/nw for Windows".

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.
wf — Wireless LAN Settings using WPS	Press-and-hold <PWR> and <DISPLAY> together.
wf — Direct Communication with Mobile Devices	Press-and-hold <INTERVAL> and <DISPLAY> together.
75wf / nw — Display Sensor Type	Press-and-hold the <DISPLAY> button.

* "Press-and-hold" means to hold the button down for about two seconds.

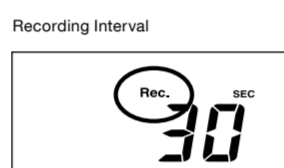# Recording Interval Setting (Common Operation)

Install the batteries and sensor(s) in the logger, and make sure the LCD is displaying measurements.
The factory default setting for the recording interval is 10 minutes. Follow the procedure below to change this setting.

> » 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
Rec.   SEC
30

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 Interval & Estimated Time until [FULL] is Displayed

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

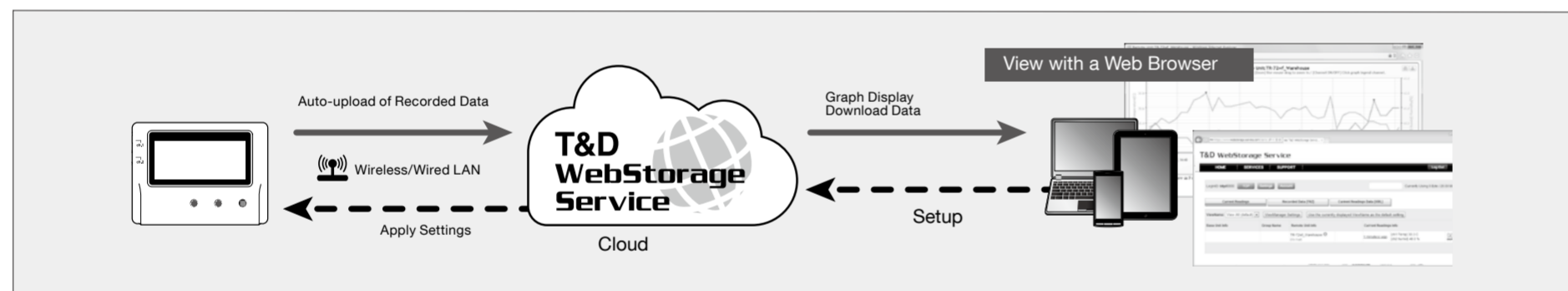**6.** Press-and-hold the <REC/STOP> button until REC turns ON (recording restarts).

1 REC ENDLESS DATA 27.1 ℃

Via Cloud: Automatic Data Upload

The auto-upload function enables TR-7wf/nw series loggers to automatically upload recorded data to the free cloud storage service "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-7wf/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.
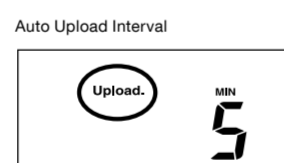
Auto-upload of Recorded Data — Wireless/Wired LAN — T&D WebStorage Service Cloud — Apply Settings — Graph Display / Download Data — View with a Web Browser — Setup

• 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, use the software "TR-7wf/nw for Windows" and make network settings.

STEP 1 Auto-Upload Settings

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

Auto Upload Interval
Upload.   MIN
5

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

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. When you stop pressing the button, 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 auto-upload interval, the shorter the battery life.

	Upload Interval	1 min.	10 min.	1 hr.	12 hrs.
Battery Life	TR-71wf / nw TR-72wf / nw	About 10 days	About 2 months	About 1 year	About 1.5 years
	TR-75wf / nw	About 10 days	About 2 months	About 7 months	About 1 year

*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-71wf or TR-71nw, the measurement of the internal sensor may rise by around 0.3℃.

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, use the software "TR-7wf/nw for Windows" or the "T&D Thermo" App and go to Wireless LAN Settings. 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.

WPS REC ENDLESS DATA 27.1 ℃

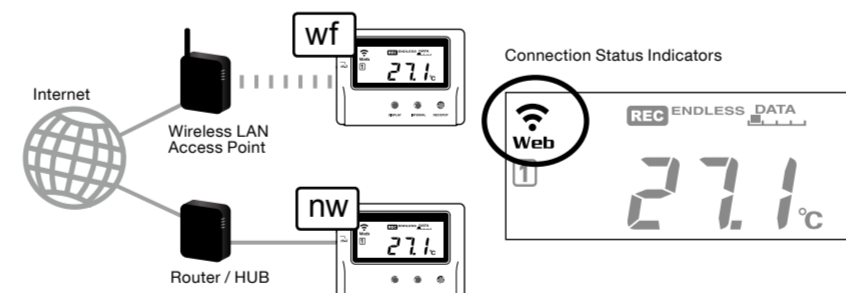**2.** Set your wireless LAN access point to "WPS" mode.

> 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 📶 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
wf   nw
Connection Status Indicators
📶 Web
REC ENDLESS DATA 27.1

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 communication is complete and **COM** turns OFF.

wf 📶 is OFF or blinking:	The logger is 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

Here is how to view the recorded data on a web browser.

1. Access T&D WebStorage Service from the web browser on your PC or mobile device.
http://www.webstorage-service.com/

2. Follow the directions as they appear to get a User ID. If you already have your User ID, go to the next step.

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

4. Clicking the [Account] button will take you to the Account Management page.

5. Select [Add/Remove Devices] to open the registration page, and enter the serial number and registration code* for the logger to be added.

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

6. After data is sent to the T&D WebStorage Service either by auto-upload or by pressing the <REC/STOP> button on the logger, the added TR-7wf or TR-7nw and its measurements will appear in the [Current Readings] tab page.

> **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.
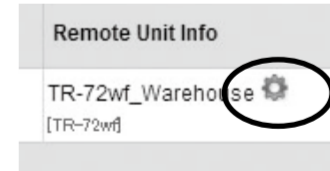>
> **If you lose your registration code label:**
> Open the software "TR-7wf/nw for Windows" and connect your logger via USB to the computer. The connected logger and its information will appear in the left boxes of the main window. The registration code can be found here.
>
> **If you wish to save 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

T&D WebStorage Service also allows you to make or change the device settings on the web browser.

> Note that the setting changes will not be actually applied until communication occurs between the logger and T&D WebStorage Service. If you wish to apply the changes immediately, press the <REC/STOP> button on the logger.
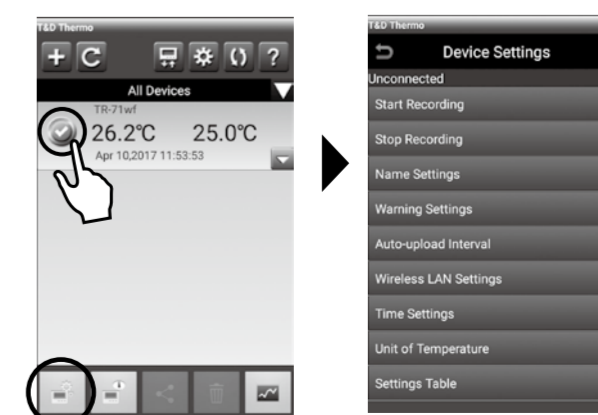
Remote Unit Info
TR-72wf_Warehouse
[TR-72wf]

Setting Items which can be set or changed:

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

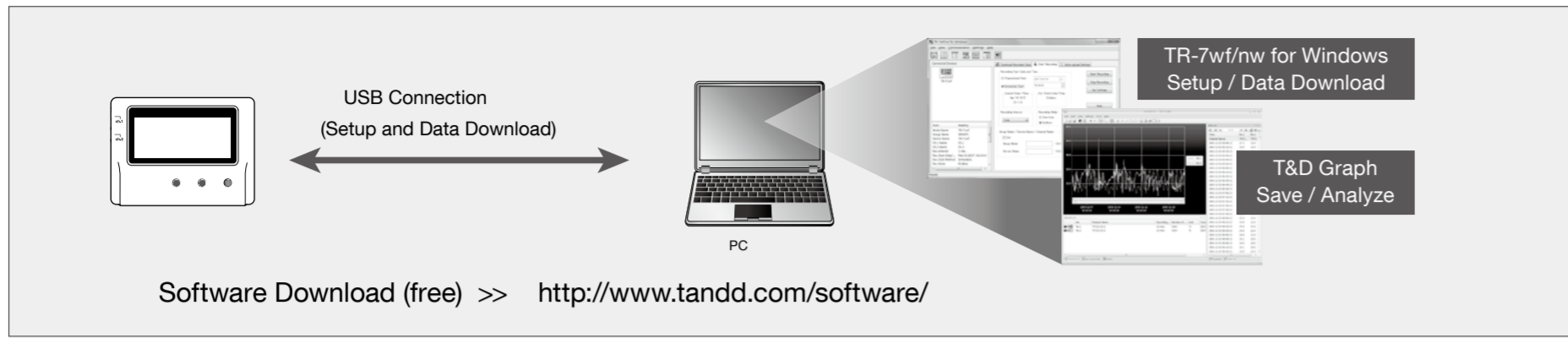### Setting via the cloud using T&D Thermo

For the loggers that have been registered to your WebStorage Service account, the settings can also be changed using the "T&D Thermo" App on your smartphone or tablet. In the home screen of "T&D Thermo", select a logger and tap the icon to open the Device Settings window.

Via PC: Setup and Download

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

⚠ • "TR-7wf/nw for Windows" 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.
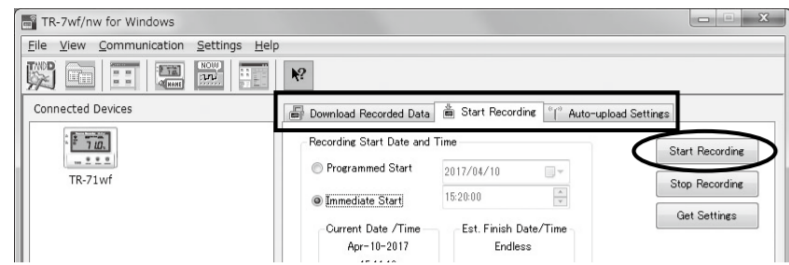
USB Connection
(Setup and Data Download)

TR-7wf/nw for Windows
Setup / Data Download

T&D Graph
Save / Analyze

PC

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

Device Settings

Primary features of TR-7wf/nw for Windows include :

- Start/Stop Recording
- Auto-upload Setting
- Network Settings (static IP address, etc.)
- Group Name, Device Name, Channel Name, Time Settings
- Downloading and Saving Recorded Data
- Warning Settings
- Sensor Type Setting (TR-75wf/nw only)

1. Please download and install TR-7wf/nw for Windows from the URL shown above.

2. Open TR-7wf/nw for Windows and connect a TR-7wf or TR-7nw logger via USB to the computer.

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

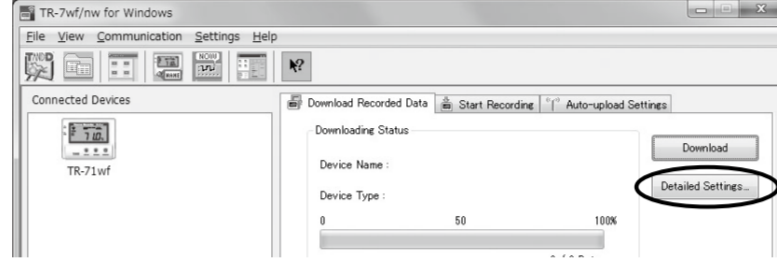**3.** After having completed all the settings, click [Start Recording].

Disconnect the USB cable and place the logger to the desired measurement location.

Downloading Data and Viewing in Graph

By using T&D Graph, it is possible to view the data downloaded from a logger in graph form for analysis. (See Tips) Please download and install from the URL shown above.

1. Connect the logger to your computer.

2. Open TR-7wf/nw for Windows, click on 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].

⚠ **[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.

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

Via Smartphone: Setup, Download, and View wf

By using the T&D Thermo App with a TR-7wf, it is possible to make device settings, download recorded data, and view recorded data directly from your smartphone or tablet.

⚠ • A smartphone or tablet with wireless LAN is necessary.

TR-7wf

Wireless LAN
(Direct communication)

Setup / Data Download
Graph Display / Monitoring

Install

Smartphone Tablet

T&D Thermo

For iOS

For Android

Device Settings

Primary features of "T&D Thermo" include :

- Start/Stop Recording
- Auto-upload Interval Setting
- Wireless LAN Settings
- Graph Display
- Downloading and Saving Recorded Data
- Device Name, Group Name, Channel Name, Time Settings
- Uploading Downloaded Data
- Warning Settings
- Sensor Type Setting (TR-75wf/nw only)

1. Install T&D Thermo to your smartphone or tablet (mobile device).
* "T&D Thermo" is available on the Apple Store for iOS devices and the Google Play Store for Android devices.

2. Open the application, and click the 🖫 icon and go into [Device Settings].

3. In order to activate the Access Point Mode on the TR-7wf, press and hold the <DISPLAY> and <INTERVAL> buttons until AP turns on solid (without blinking). The logger is now in AP mode and ready for direct log on from a mobile device.

BLINKING
AP
↓
ON
AP

Press and Hold

⚠ When making network connection between the mobile device and the TR-7wf, the logger will be displayed as [Model name_Serial number] on your mobile device.

For iOS Users
Go to Settings > Wi-Fi on your mobile device. Select the TR-7wf from the list of available networks to log directly onto the unit.

For Android Users
The network connection can be made on the application. By selecting the desired setting item in Device Settings, the wireless network connection screen will open; proceed with the connection.

4. Once the connection is established, go back to [Device Settings] on the application and make necessary settings.

5. After having completed all the settings, click [Start Recording] and place the logger at the desired measurement location.

Downloading Data

⚠ To carry out operations via direct communication, you need to activate the AP mode on the logger and make the network connection each time.

1. Repeat the aforementioned wireless network connection procedure.

2. Click the [ ] icon, then [Download Recorded Data] and [Start Downloading].

Viewing Data in Graph

Select Data

Top Screen
Select a file to view from the pull down list.

Display Graph

Sharing Data

⚠ Make sure you are logged in to T&D WebStorage Service.

Top Screen

Top Screen
Select a file to share from the pull down list.

Share Data

Screen Example in Android

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-71wf/nw will report a higher temperature than actual; we recommend using an external temperature sensor.
Also, when an external sensor is used near the TR-7wf/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-7wf/nw for Windows", or "T&D Thermo". The default time difference is as follows:

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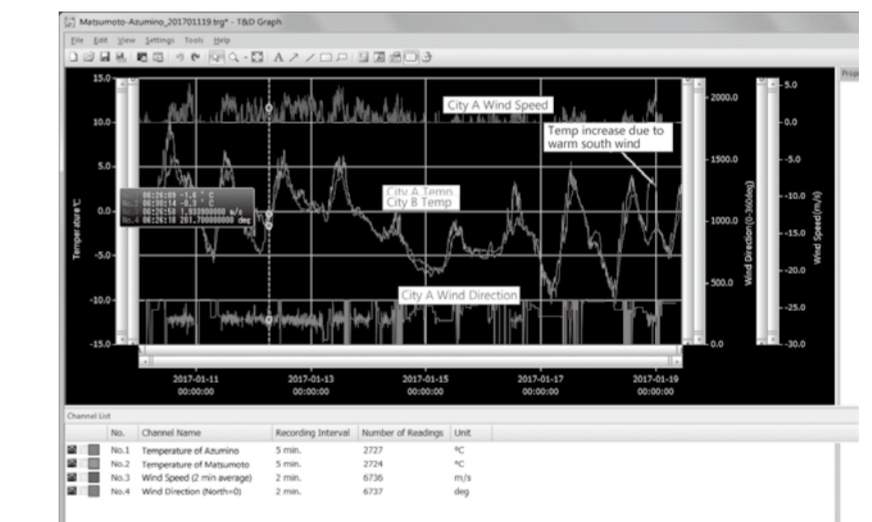nw GMT +0:00 (for all serial numbers)

Software for TR-7wf/nw Series

TR-7wf/nw for Windows

"TR-7wf/nw for Windows" is a software program designed for setup, start/stop recording, data download, and other communication for the TR-7wf/nw series data loggers.

T&D Graph

"T&D Graph" is a software program which enables the viewing of recorded data in graph form, no matter 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. It is also possible to save the graph and data info as displayed in "T&D Graph".
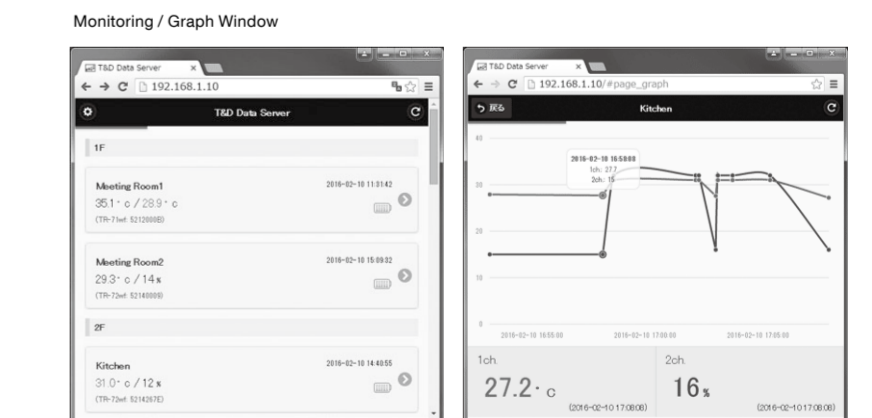
T&D Thermo

"T&D Thermo" enables the use of mobile devices for viewing data recorded by TR-7wf/nw Series data loggers, as well as directly communicating with the TR-7wf.
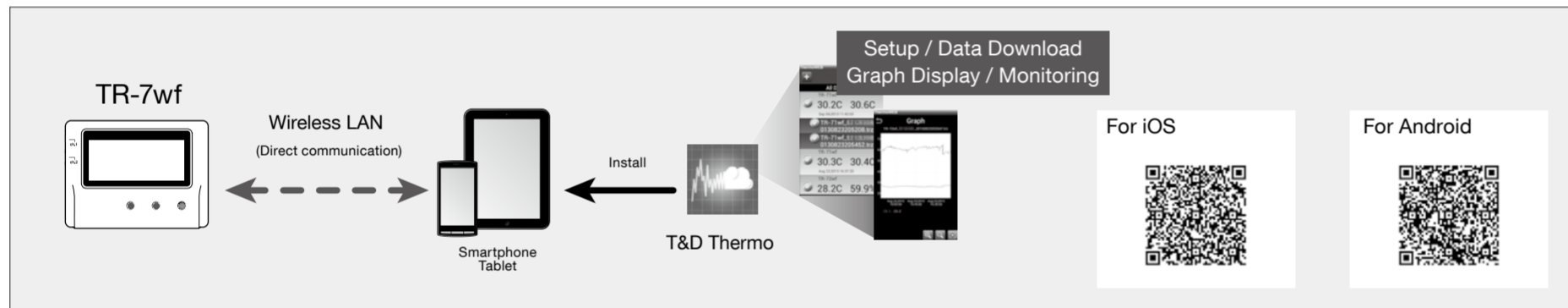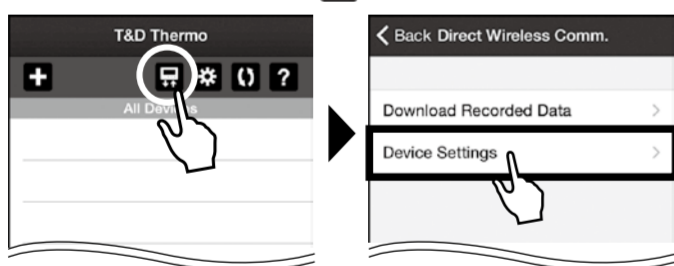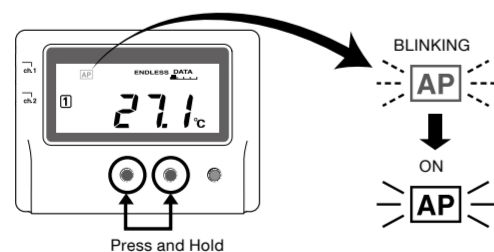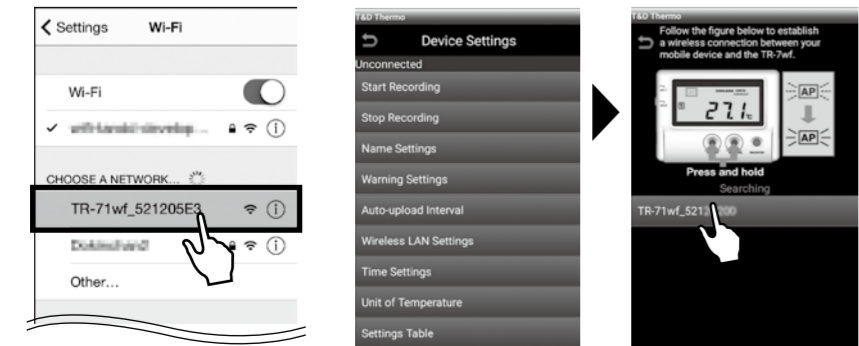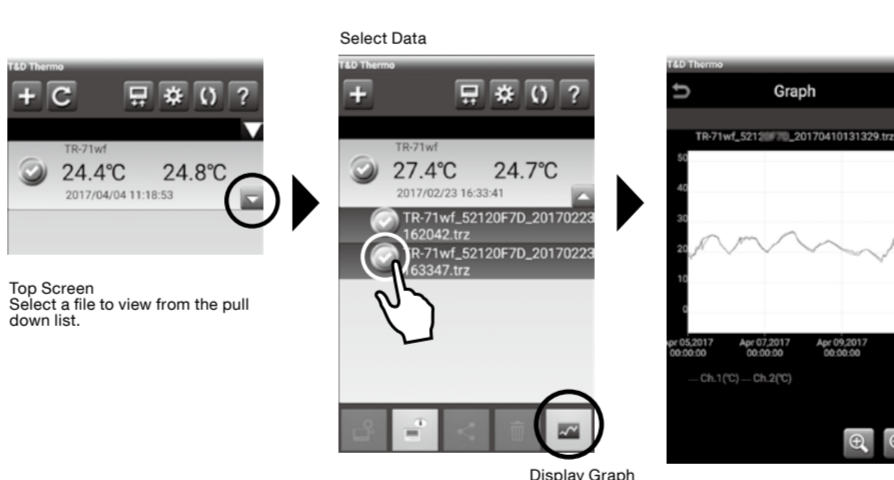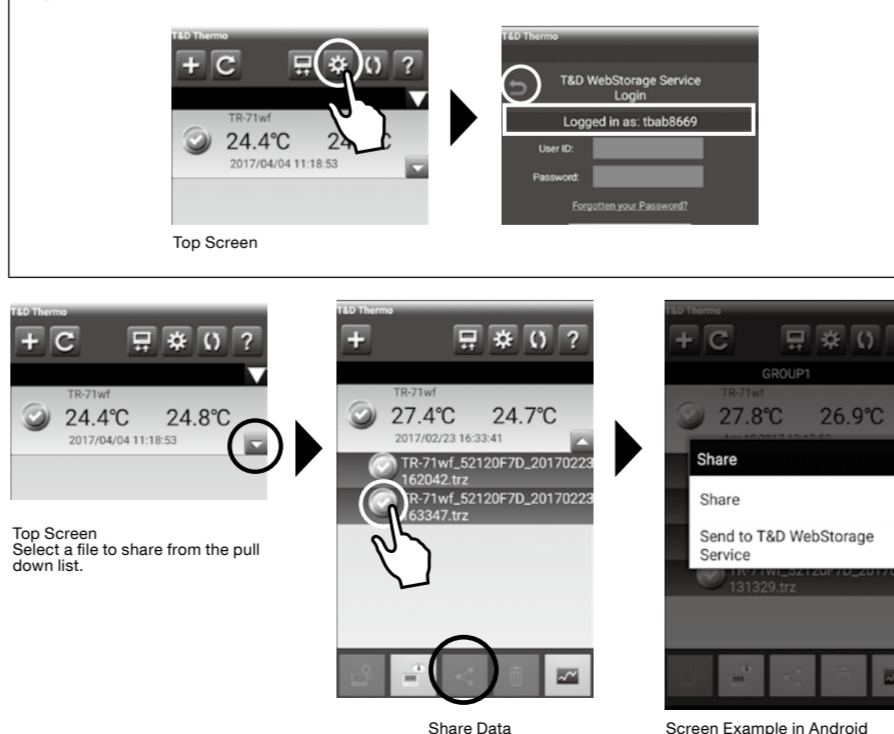
T&D Data Server

The PC on which "T&D Data Server" has been installed can act as a server which receives and stores data recorded by TR-7wf/nw series data loggers to the user-specified folders. When you wish to have recorded data automatically uploaded to your server rather than T&D WebStorage Service, please use "T&D Data Server". It is also possible to monitor current readings using a web browser.

Monitoring / Graph Window

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

Troubleshooting and Detailed Info

TR-7wf/nw Series FAQs
http://cdn.tandd.co.jp/glb/html_help/tr7wf-nw_help_all_eng/faq/7wf/