User's Manual

Application Software
WTViewerFreePlus

YOKOGAWA
Yokogawa Meters & Instruments Corporation

IM 760121-02E
1st Edition

This user's manual explains the handling precautions, features, and operating procedures of WTViewerFreePlus. To ensure correct use, please read this manual thoroughly before beginning operation.

After reading this manual, keep it in a safe place.
For the handling precautions, features, and operating procedures of the WT310/WT310HC/WT330, see the WT310/WT310HC/WT330 User's Manual or Getting Started Guide.

For information on how to use Windows, see the relevant manuals.

Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functionality. The figures given in this manual may differ from those that actually appear on your screen.
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Revisions

- January 2013 1st Edition

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Notes about Using This Software

Storing the CD-R

Keep the original CD-R (software) supplied with the WT310/WT310HC/WT330 in a safe place.
To use this software, install it on a PC hard disk, and run it from the PC.

Notes on Using the Software

- To allow a WT to communicate with a PC through the WT's USB interface, a USB driver must be installed in the PC. When you install the software in the PC, the USB driver is also installed automatically.
  If a National Instrument's (NI's) USB driver is already installed in a Windows XP or Windows Vista system, you must switch the USB driver using the OS device manager (see page 3-6).

- You can use the software to control a single WT that is connected to the PC. Do not connect multiple WTs to the PC.
- When you connect a WT to the PC and use the software to control the WT, you cannot use multiple types of communication interface at the same time.
- Do not perform the following operations while using the software. Doing so may cause errors.
  - Use another software application to operate the WT
  - Operate the WT directly
- The software may not be able to continue if the PC enters standby or hibernation mode. Disable standby and hibernation modes when you use the software.
- If a connection error occurs, turn off the WT and then turn it back on.

How to Use This Manual

Structure of the Manual

This manual contains 10 chapters and an index.

Chapter	Title	Description
1	**Product Overview**	Describes the features of the product and the system requirements for using the product.
2	**Configuring WT's Communication Control Settings**	Describes how to connect the WT to a PC.
3	**Installation and Starting and Exiting the Software**	Describes how to install and start the software.
4	**WT-PC Communication**	Describes how to configure the settings for WT-PC communication.
5	**WT Configuration**	Describes how to configure the WT measurement conditions and other settings.
6	**Displaying Measured Data**	Describes how to display measured data.
7	**Saving and Loading Setup Parameters**	Describes how to save and load setup parameters.
8	**Other Features**	Describes the help feature and how to view the software version information.
9	**Troubleshooting**	Describes error messages.
10	**Specifications**	Provides the software specifications.
	Index	

Software Version That This Manual Covers

This manual describes WTViewerFreePlus software version 1.01.
For instructions on how to view the software version, see section 8.2.

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Contents

1.1 Product Overview

You can use the software to connect the WT310/WT310HC/WT330 (hereafter referred to as the WT) to a PC and use the following features.

- Retrieve, display, and save data that the WT has measured and setup parameters.
- Remotely control the WT.

You can use the software to control a single WT that is connected to the PC. Do not connect multiple WTs to the PC.

Compatible Measuring Instruments

You can use the software with the following YOKOGAWA measuring instruments.

Product Name	Model
WT310	WT310
WT310HC	WT310HC
WT330	WT332, WT333

Menus

The software has the following menus.


Connection: Used to configure the communication between the WT and PC.


Setting: Used to set WT's measurement conditions.


Measure: Used to display measured results in bar graphs, trend graphs, etc.


File: Used to save and load setup parameters.


Exit: Used to close the software.

You can use the following menus of the software to process data.
The details of each feature are provided below.

Connection

You can connect a WT to the PC in which the software is installed through a communication interface. You can select any of the four available interfaces and search for devices to view the WTs that you can connect to.

Setting

You can configure the WT settings, such as the voltage range, current range, and wiring system.

Measure

Use this menu to display data that the WT has measured in the following manner.

Types of Display Screens

The following types of display screens are available.

Numeric

Displays WT's measurement data numerically. For models with the harmonic measurement option (/G5), harmonic measurement data is also displayed.

Numeric List

Lists harmonic measurement data for each harmonic order.
Numeric lists can be displayed when the WT is equipped with the harmonic measurement option (/G5).

Numeric Matrix

Displays WT's measurement data for each element.

Waveform

Displays waveform display data that has been collected from the WT.
Waveforms can be displayed when the WT is equipped with the harmonic measurement option (/G5).

Trend

Displays changes in measured data over time on a trend graph.

Bar Graph

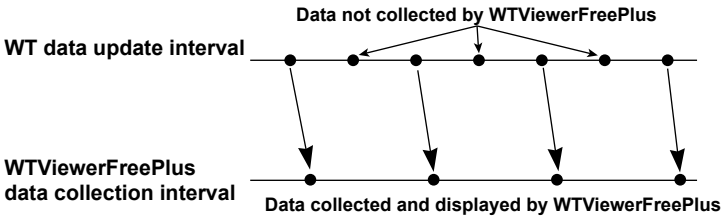
Displays measured harmonic components for each harmonic order.
Bar graphs can be displayed when the WT is equipped with the harmonic measurement option (/G5).

WT Data Update Interval and the Software's Data Collection Interval

The operation window of the software has a start button for starting measured data collection, a stop button, and a update button for updating measured data.
When you click the start button, the software starts collecting measured data. When it finishes collecting the data, it waits for data to be updated on the WT. When the WT finishes updating the data, the software starts collecting data from the WT again. The software repeats this operation until you click the stop button.

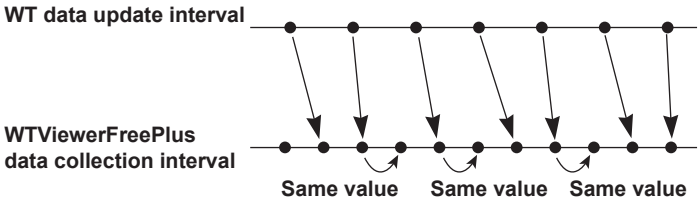
WT Data Update Interval < Software's Data Collection Interval

When the WT data update interval is shorter than the time it takes for the software to collect one set of measured data, there will be pieces of data that the software will not collect.



WT Data Update Interval > Software's Data Collection Interval

When the WT data update interval is longer than the time it takes for the software to collect one set of measured data, the software collects data after the data on the WT is updated, so the data displayed on the software will appear to be in sync with the WT data update interval.



If you click the stop button while data is being collected, the software will collect the entire data before it stops. Therefore, there will be a time lag until the display on the software stops after you click the stop button.

If you click the update button, the software will update the measured data once. The measured data is collected when the displayed data on the PC is updated. It is not when the data on the WT is updated. The display update interval on the PC depends on the CPU, memory, and the number of data values you want to display.

Saving Measured Data

You can save numeric data and waveform display data to a CSV file.
To save WT setup parameters and the software setup parameters, use the Save menu, which is described later.

File

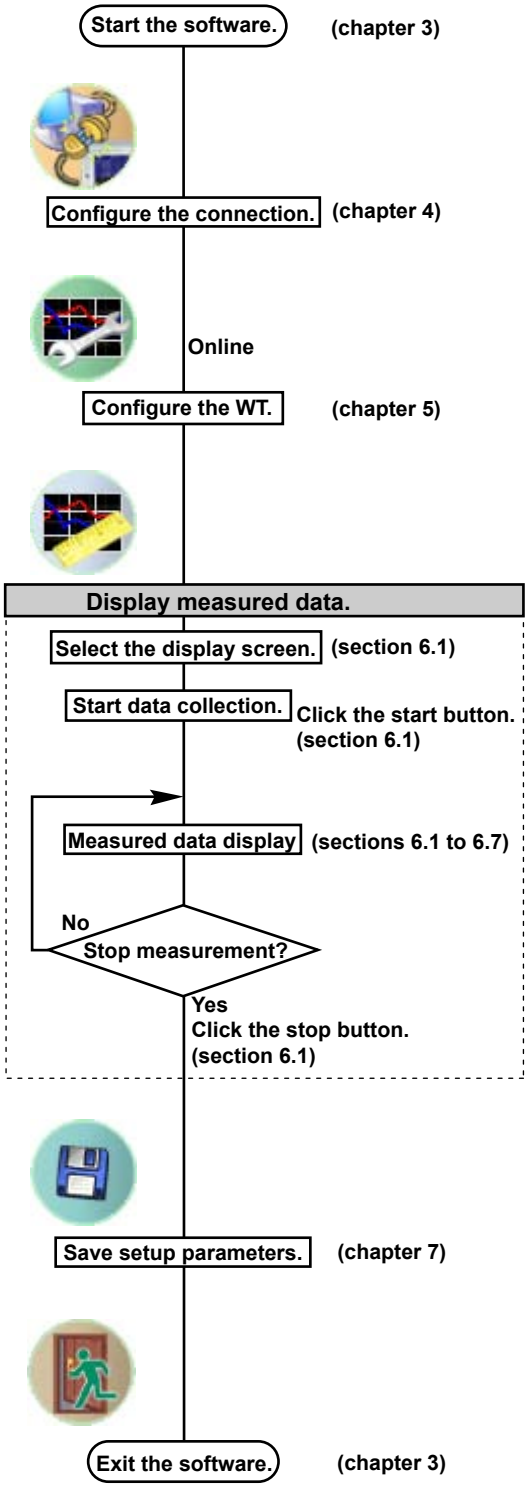
You can save and load WT setup parameters and the software setup parameters.

Exit

Use this menu to close the software.

1.2 Workflow

The following figure shows the software workflow.



1.3 System Requirements

PC

- **CPU**
  Pentium 4 1.5 GHz or faster recommended
- **Memory**
  2 GB or more recommended
- **HDD**
  1 GB free space or more

Operating System

English version of Microsoft Windows XP (SP3 or later)[1], Windows Vista,[1] or Windows 7[2]

1 32-bit versions are supported.
2 32-bit versions and 64-bit versions are supported.

Communication Board

- **GP-IB**
  NI (National Instruments)
  - PCI-GPIB or PCI-GPIB+[1]
  - PCIe-GPIB or PCIe-GPIB+[1]
  - PCMCIA-GPIB or PCMCIA-GPIB+[1, 2]
  - GPIB-USB-HS[3]

  1 NI-488.2 driver Ver. 1.60 or later (except Ver. 2.3)
  2 Not supported on Windows Vista or Windows 7
  3 Use driver NI-488.2M Ver. 2.8.1 or later.
- **RS-232**
  An available PC COM port
- **Ethernet**
  An Ethernet port that supports 10BASE-T or 100BASE-TX
- **USB**
  A USB port that supports USB Revision 1.1 or higher

Display, Printer, and Mouse

- **Screen Resolution**
  1024×768 dots or higher
- **Operating System**
  Operating system mentioned above

WT Main Unit

Product Name	Model
WT310	WT310
WT310HC	WT310HC
WT330	WT332, WT333

2.1 Connecting the WT to a PC

CAUTION

Be sure to turn off the PC and the WT before you connect or remove communication cables. Otherwise, erroneous operation may result, or the internal circuitry may break.

When Using the USB Interface

Connect the USB port for PCs (type B connector) on the rear panel of the WT to the PC.

When Using the GP-IB Interface

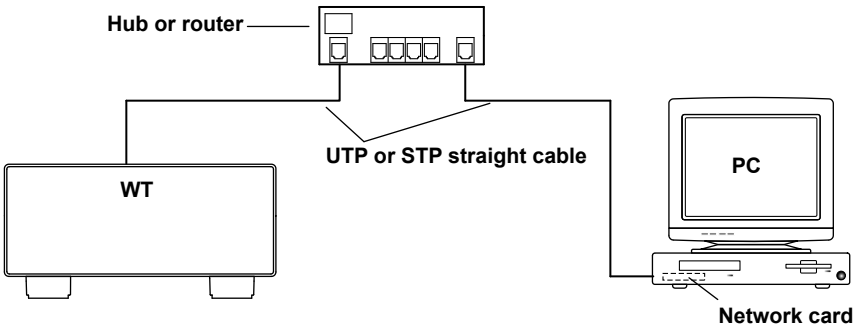
The WT is equipped with an IEEE St'd 488-1978 24-pin GP-IB connector. Use a GP-IB cable that conforms to this standard.
Connect the cable to the GP-IB connector on the rear panel of the WT.
Use an appropriate connector to connect the other end of the cable to the PC.

When Using the Serial (RS-232) Interface

Before connecting the WT to the PC using a cable, open Device Manager on your PC to check the communication port that you can use. Connect the interface cable to the COM port that you can use. Use an appropriate connector to connect the cable to the PC.

When Using the Ethernet Interface

To connect the WT to the PC, use a straight UTP (Unshielded Twisted-Pair) or STP (Shielded Twisted-Pair) cable through a hub or similar device. Connect the cable to the ETHERNET port on the rear panel of the WT. The data rate varies depending on the product. Use a hub, cables, and network card that are appropriate for the data rate.



Note

- When you connect to a 100BASE-TX network, use a category 5 or better cable.
- Do not connect the WT to the PC directly. Direct communication is not guaranteed to work.

2.2 Setting USB Control Parameters

Procedure

There are no USB control parameters.
To view the serial number that is used in USB TMC communication, see section 1.4 in the WT310/WT310HC/WT330 Communication Interface User's Manual (IMWT310-17EN).

Explanation

Each device that is connected through USB has its own unique ID in the USB system. This ID is used to distinguish between different devices. The WT310/WT310HC/WT330 ID is its instrument number. When you connect the WT to the PC, make sure that the WT ID does not overlap with those of other devices.

Note

- When you connect a WT to the PC and use the software to control the WT, you cannot use multiple types of communication interface at the same time.
- You can use the software to control a single WT that is connected to the PC. Do not connect multiple WTs to the PC.
- The WT may not operate properly if the WT is connected to the PC through converters (such as a GP-IB to USB converter or RS-232 to USB converter). For more details, contact your nearest YOKOGAWA dealer.

2.3 Setting GP-IB Control Parameters

Procedure

Follow the procedure in section 2.4 in the WT310/WT310HC/WT330 Communication Interface User's Manual (IMWT310-17EN) to set the GP-IB control parameters.

Explanation

Setting the Address

Set the WT address within the following range.
1 to 30

Each device that is connected in a GP-IB system has its own unique address. This address is used to distinguish between different devices. Therefore, you must assign a unique address to the WT310/WT310HC/WT330 when you connect it to a PC or other device.

Note

- When the controller (PC) is using the GP-IB bus, do not change the address of any connected devices.
- When you connect a WT to the PC and use the software to control the WT, you cannot use multiple types of communication interface at the same time.
- You can use the software to control a single WT that is connected to the PC. Do not connect multiple WTs to the PC.
- On the PC end, use a GP-IB board (or card) made by NI (National Instruments). For details, see page xiv.
- The WT may not operate properly if the WT is connected to the PC through converters (such as a GP-IB to USB converter or RS-232 to USB converter). For more details, contact your nearest YOKOGAWA dealer.

2.4 Setting RS-232 Control Parameters

Procedure

Follow the procedure in section 3.4 in the WT310/WT310HC/WT330 Communication Interface User's Manual (IMWT310-17EN) to set the RS-232 control parameters.

Explanation

Setting RS-232 Control Parameters

To use the software through the RS-232 interface, set the handshaking method, data format, baud rate, and terminator.

Note

- When the controller (PC) is using the RS-232 interface, do not change the above settings of any connected devices.
- When you connect a WT to the PC and use the software to control the WT, you cannot use multiple types of communication interface at the same time.
- You can use the software to control a single WT that is connected to the PC. Do not connect multiple WTs to the PC.
- The WT may not operate properly if the WT is connected to the PC through converters (such as a GP-IB to USB converter or RS-232 to USB converter). For more details, contact your nearest YOKOGAWA dealer.

2.5 Setting Ethernet Control Parameters

Procedure

Follow the procedure in section 4.4 in the WT310/WT310HC/WT330 Communication Interface User's Manual (IMWT310-17EN) to set the Ethernet control parameters.

Explanation

Setting Ethernet Control Parameters

To use the software over a network, set the TCP/IP parameters.

Note

- When the controller (PC) is using the Ethernet interface, do not change the TCP/IP settings of any connected devices.
- When you connect a WT to the PC and use the software to control the WT, you cannot use multiple types of communication interface at the same time.
- You can use the software to control a single WT that is connected to the PC. Do not connect multiple WTs to the PC.
- The WT may not operate properly if the WT is connected to the PC through converters (such as a GP-IB to USB converter or RS-232 to USB converter). For more details, contact your nearest YOKOGAWA dealer.

3.1 Installation and Uninstallation

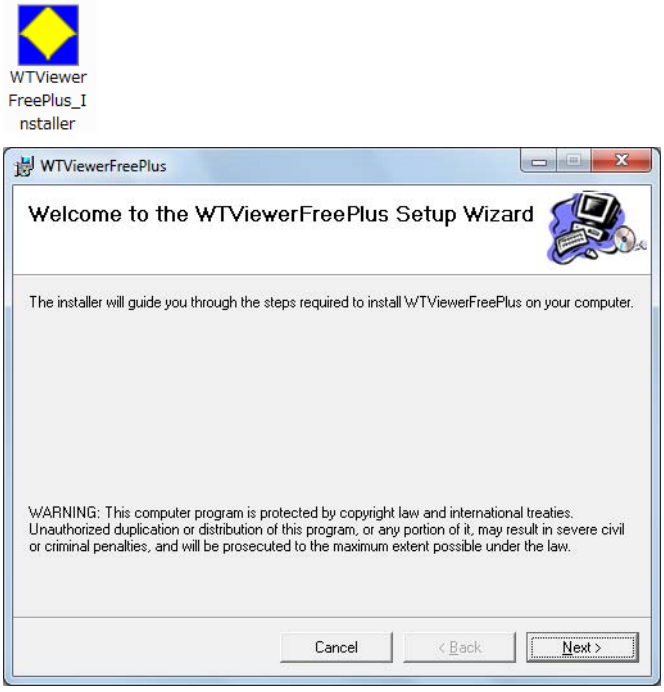
Installation

Prepare the CD-R that contains the software. Before installing the software, close all programs that are currently running.
If an older version of WTViewerFreePlus is installed, uninstall it from Control Panel (see page 3-9).
The following procedure explains how to install the software on Windows 7. The windows that appear will vary depending on the operating system.

1. Turn on the PC and start Windows. Log on as an administrator.
2. Insert the installation disk that contains this software into the CD drive.
3. On the PC, select the CD drive.

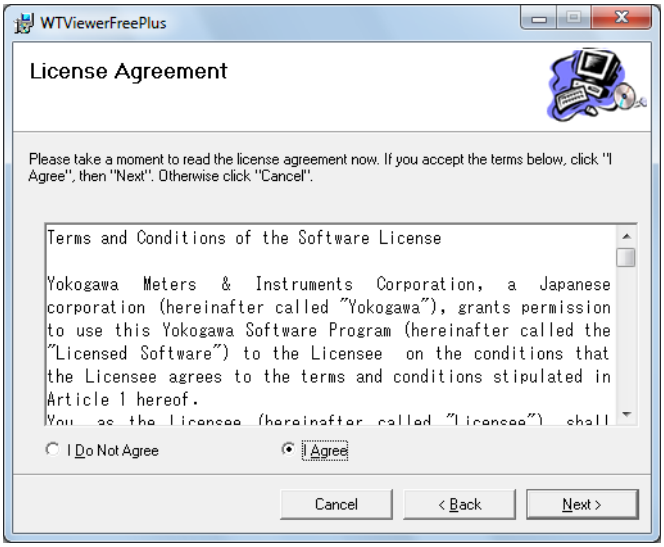
Installing WTViewerFreePlus

4. Double-click WTViewerFreePlus_Installer.exe. The installer starts. Follow the instructions on the screen, and then click **Next**.



5. If you agree with the license agreement, select **I Agree**, and click **Next**.

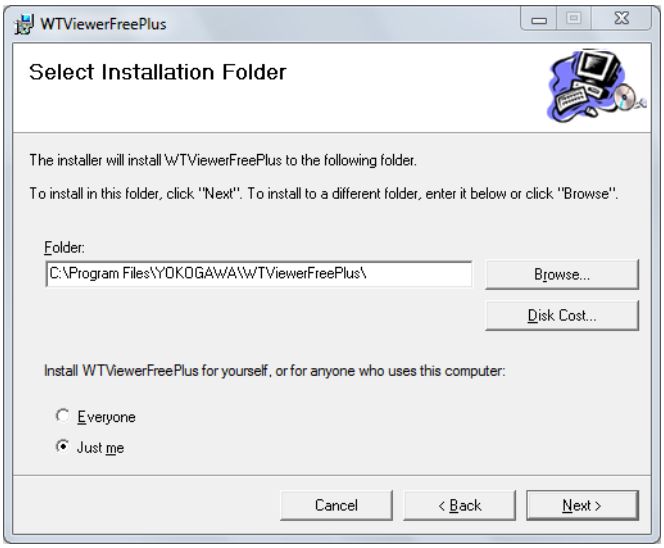
   Otherwise, select **I Do Not Agree**. The installation will be canceled.



5. Select the installation destination, and click **Next**.

   Click **Browse** to specify the destination. The default installation destination is as follows:

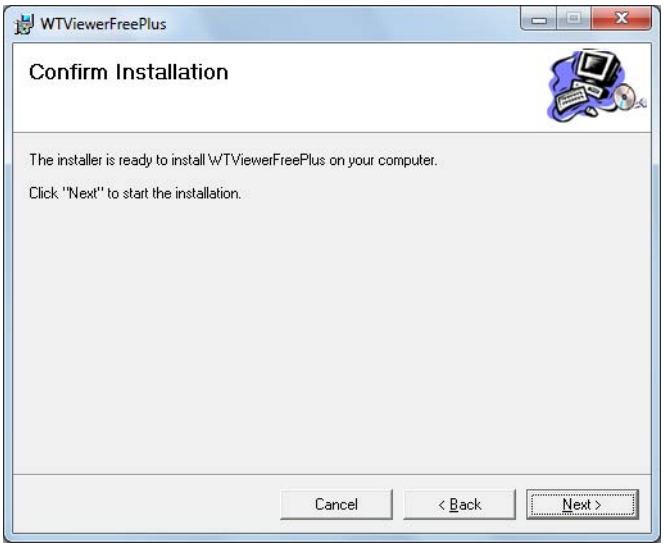
   - Windows 32-bit version
     C:\ProgramFiles\YOKOGAWA\WTViewerFreePlus
   - Windows 64-bit version
     C:\ProgramFiles(x86)\YOKOGAWA\WTViewerFreePlus



6. A screen prompting you to start the installation appears. If the installation settings are okay, click **Next**. The software is installed.

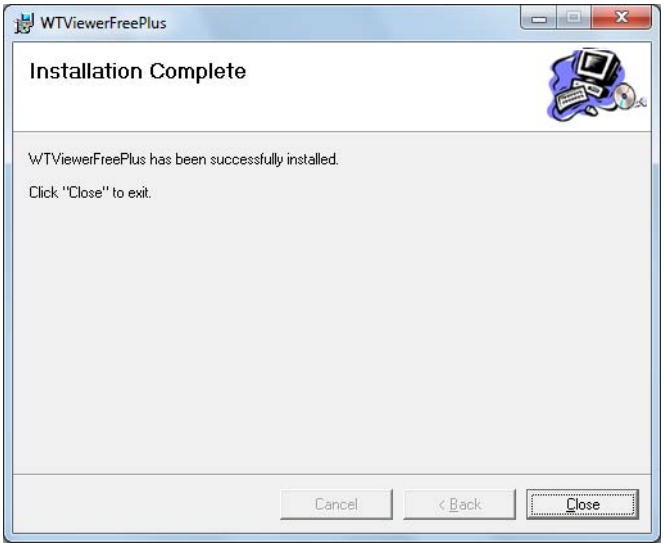
Click **Back** if you want to change the installation settings.

Click **Cancel** to cancel the installation.



7. On Windows Vista or Windows 7, the “User Account Control” window will appear during the installation. Click **Allow** or **Yes** to continue the installation. The installation will continue.

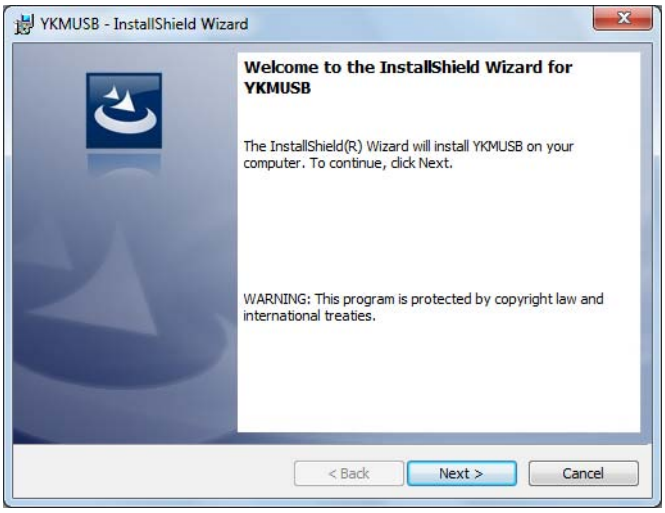
8. When the software installation finishes normally, the following screen appears. Click Finish to complete the installation. YOKOGAWA > WTViewerFreePlus > WTViewerFreePlus will be added to All Programs in the Windows Start menu.



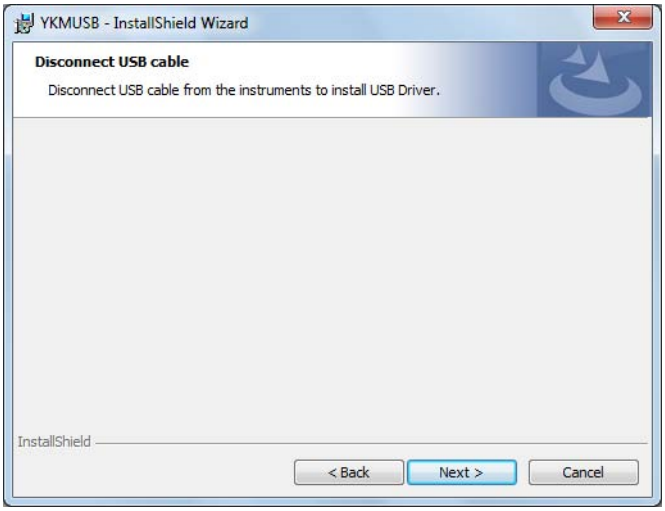
Next, the YKMUSB driver installation wizard starts automatically.

Installing YKMUSB (USB Driver)

1. Follow the instructions on the screen, and then click **Next**.



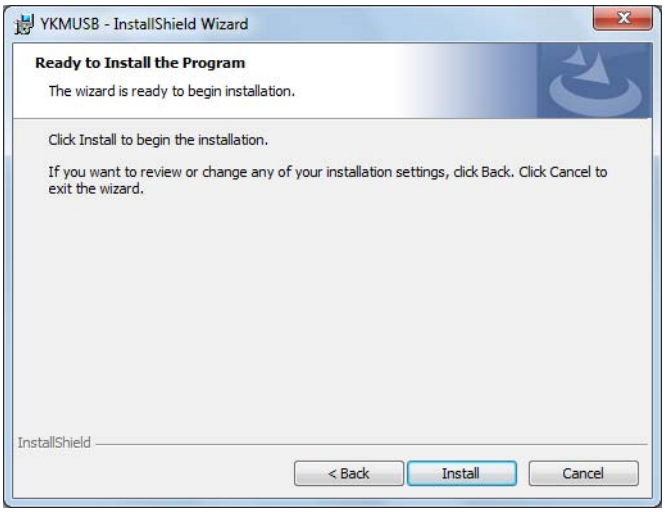
2. If the USB cable is connected to the PC, remove the cable, and click **Next**.



3. A screen prompting you to start the installation appears. If the installation settings are okay, click **Install**. The software is installed.

   Click **Back** if you want to change the installation settings.

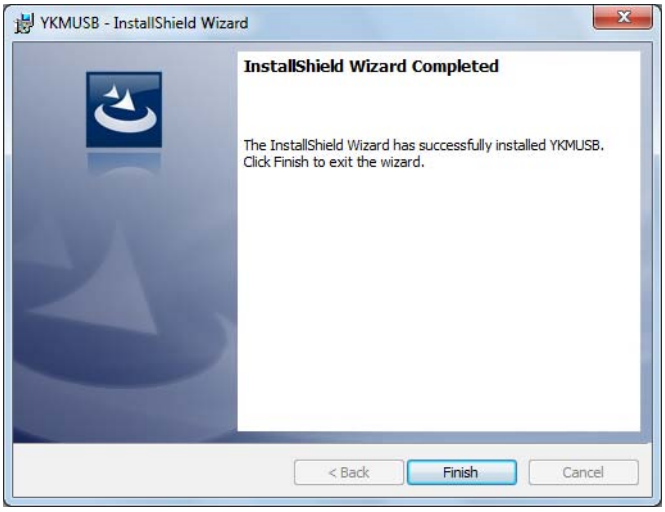
   Click **Cancel** to cancel the installation.



4. On Windows Vista or Windows 7, the “User Account Control” window will appear during the installation. Click **Allow** or **Yes** to continue the installation. The installation will continue.

5. On Windows Vista or Windows 7, a “Window Security” window will appear during the installation. Click **Install**. The installation will continue.

6. When the software installation finishes normally, the following screen appears. Click Finish to complete the installation.



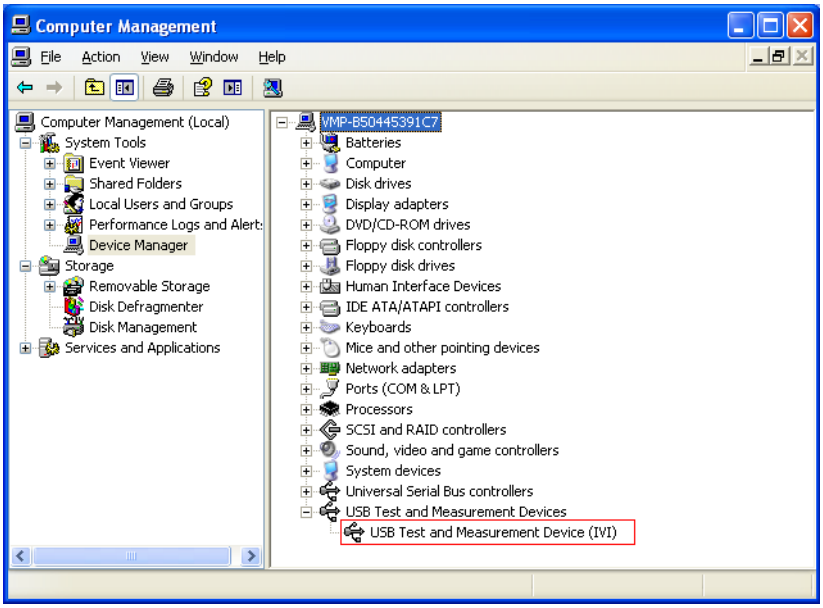
If a National Instrument’s (NI’s) USB driver is already installed in a Windows XP or Windows Vista system, you must switch the USB driver using the OS device manager according to the procedure on the next page.

Changing the USB Driver

If a National Instrument's (NI's) USB driver is already installed in a Windows XP or Windows Vista system, you must switch the USB driver using the OS device manager according to the procedure on the next page.
This procedure is not necessary on Windows 7.

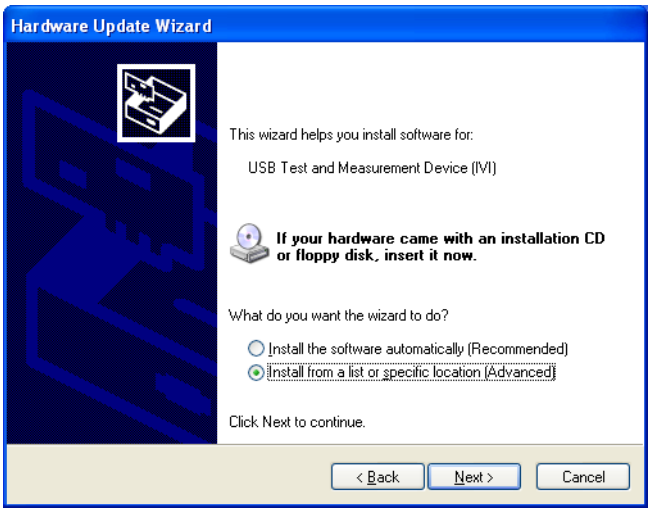
1. Turn on the WT, and connect the WT to the PC using a USB cable.
2. On the task bar, click **Start**, right-click **My Computer**, and click **Manage**.
3. Click **Device Manager**.
4. Right-click **USB Test and Measurement Device (IVI)*** under **USB Test and Measurement Devices**.* The Hardware Update Wizard starts.

* The folder name varies depending on the type of USB driver, which is made by NI (National Instruments).

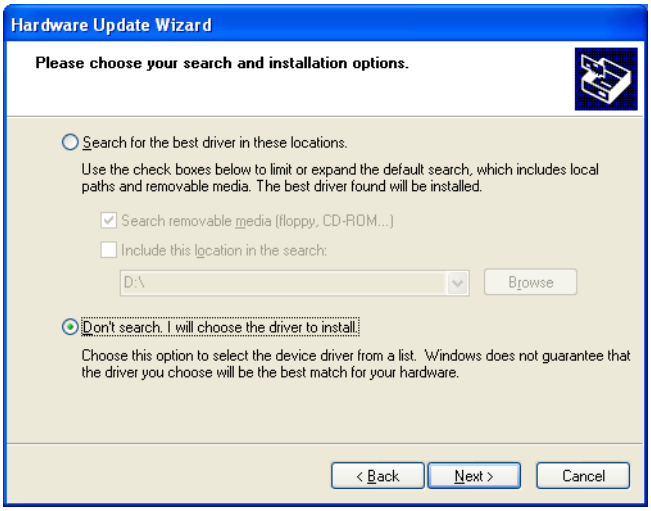


5. Select **No, not this time**, and then click **Next**.

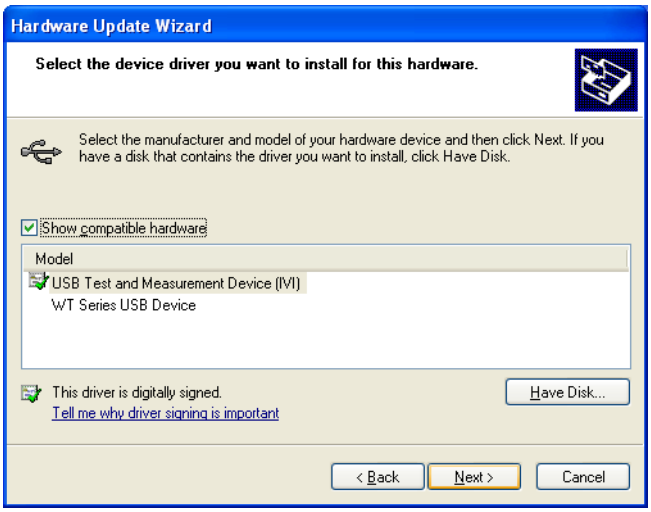
6. Select **Install from a list or specific location**, and then click **Next**.



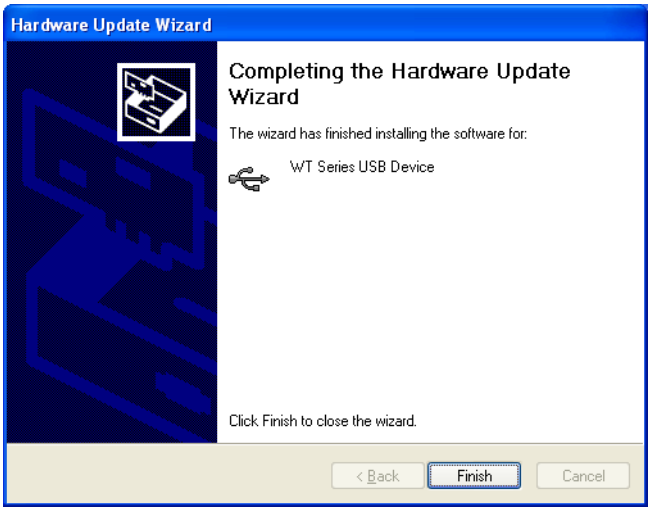
7. Select **Don't search. I will choose the driver to install**, and then click **Next**.



8. Select **WT Series USB Devices**, and click **Next**. The software is installed.

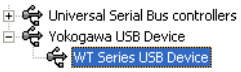


9. When the software installation finishes normally, the following screen appears. Click **Finish** to complete the installation.



10. Keep the USB cable connected between the WT and PC, turn off the WT, and then turn it back on.

The USB driver folder will be changed as follows.



Uninstallation

This section explains how to uninstall the software on Windows 7.

1. On the taskbar, click **Start** and then **Control Panel**.
2. Double-click **Uninstall a program** in the Control Panel.

Uninstalling WTViewerFreePlus

3. Right-click **WTViewerFreePlus**, and then click **Uninstall**.
4. A uninstallation confirmation screen appears.

   Click **Yes** to uninstall WTViewerFreePlus.

   Click **No** to cancel.
5. On Windows Vista or Windows 7, the “User Account Control” window will appear during the uninstallation. Click **Allow** or **Yes** to continue the installation. The uninstallation will continue.

Uninstalling YKMUSB (USB Driver)

6. On the uninstallation window, right-click **YKMUSB**, and then click **Uninstall**. The uninstallation will proceed in a similar manner as described above.

3.2 Starting and Exiting the Software

Preparation before Starting the Software

Do the following before you start the software.

- Turn on the WT310/WT310HC/WT330.
- Connect communication cables, and set communication interface parameters. (See chapter 2.)

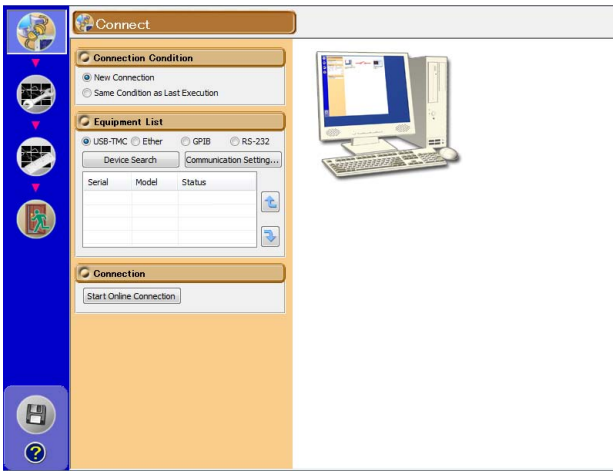
Starting the Software

1. To start the software, click the **Start** button, **All Programs**, **YOKOGAWA**, **WTViewerFreePlus**, and then **WTViewerFreePlus**.

2. On Windows Vista or Windows 7, the “User Account Control” window will when you start the software. Click **Allow** or **Yes** to continue the installation. Click **Yes**.

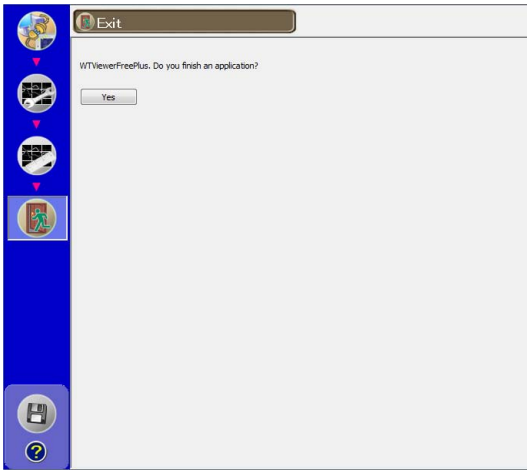
When the software starts, the Connection menu will appear.

Proceed to chapter 4, “WT-PC Communication.”

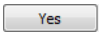


Exiting the Software

1. Click  in the menu area. The exit screen appears.



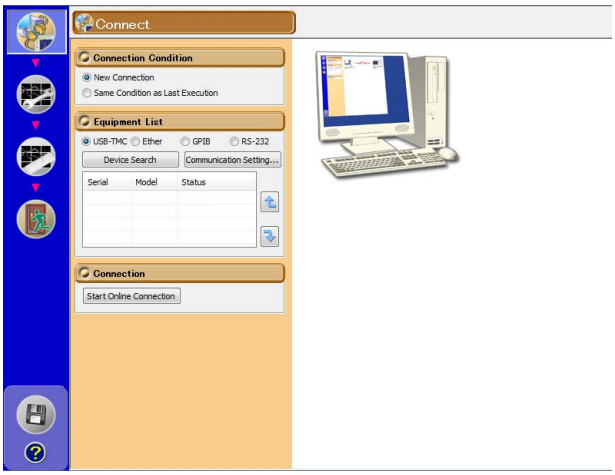
2. Click **Yes**. The software will close.



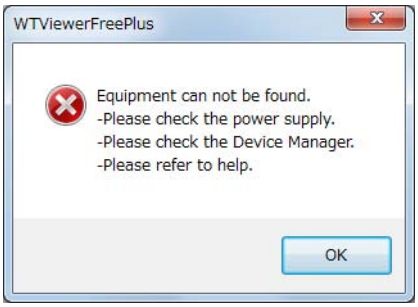
4.1 Configuring a New Set of WT-PC Communication Parameters (New connection)

1. Click  in the menu area. The Connection screen appears.

When you start the software, this screen appears automatically.



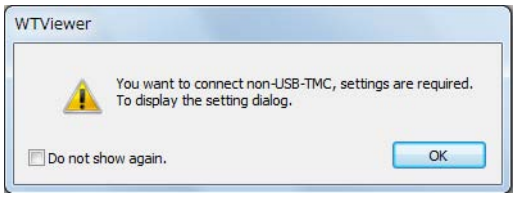
If you have connected the WT through the GP-IB, RS-232, or Ethernet interface, the following message appears. Follow the procedure on the next page to set the communication parameters.

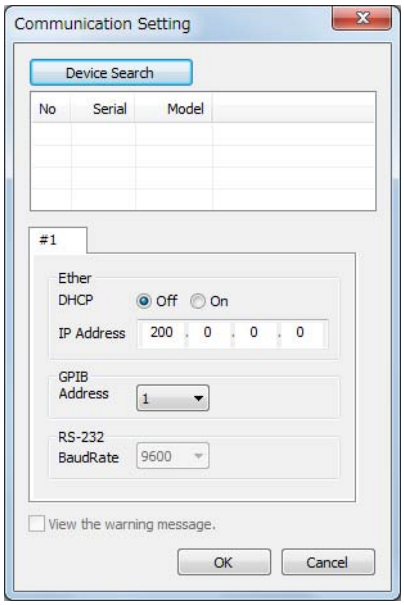


If the above message appears even after you set the communication parameters, check the following items.

- Is the WT turned on?
- Is the communication interface cable connected?
- If a National Instrument's (NI's) USB driver is already installed in a Windows XP or Windows Vista system, you must switch the USB driver using the OS device manager (see page 3-6).

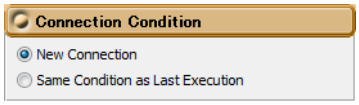
If you are using a communication interface other than the USB interface, the following message appears.
(When you start the software for the first time, this screen will always appear.)
Click **OK**, and configure the communication interface by following the Communication Setting dialog box.





Connection Condition

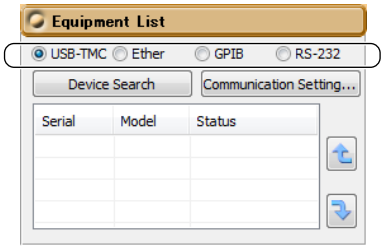
2. To create a new connection, click **New Connection**.



Equipment List

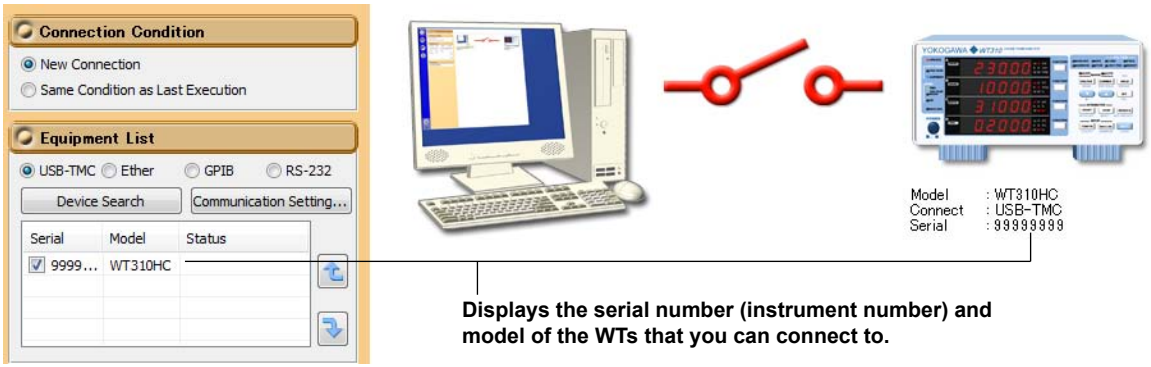
Connection Procedure

3. Select how to connect the WT to the PC from USB-TMC, Ether, GPIB, and RS-232.



4. Click **Device Search**.

The serial number (instrument number) and model of the WTs that you can connect to appear.
Proceed to step 6.

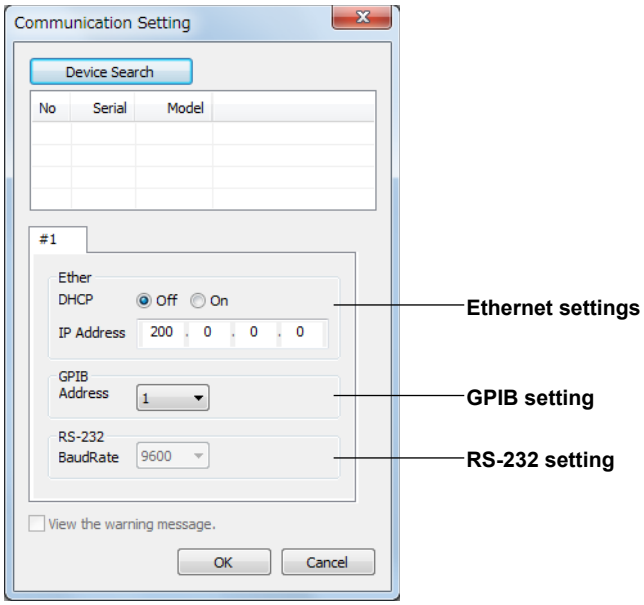


Note

If you connect the WT to the PC through the USB interface, turn on the WT, and then start the software, a list of connectable WTs will appear.

Connecting the WT to the PC through the USB Interface Temporarily to Configure the WT's GP-IB, RS-232, or Ethernet Settings

4. Click **Communication Setting**, and then configure the communication settings.

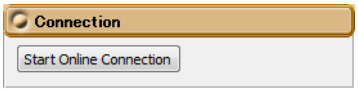


5. Click **Device Search**.

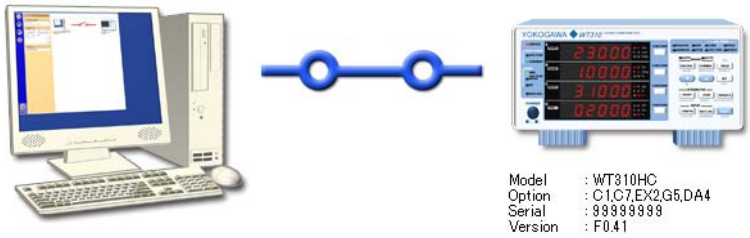
The serial number (instrument number) and model of the WTs that you can connect to appear.

Starting the Connection

6. Click **Start Online Connection**. The communication with the peer WT begins.



When the connection is established and the WT and PC are online, an illustration indicating this state appears.



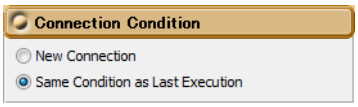
Note

- You cannot proceed to Setting, Measure, or File until an online connection is established.
- If any of the following circumstances apply when you click Start Online Connection, a communication error will occur.
  - The peer WT is not ready to measure.
  - The GP-IB address, IP address, user name, or password is incorrect.
  - There is no response from the peer WT.

4.2 Using the Same Communication Settings as the Last Time

1. Click  in the menu area. The Connection screen appears.

2. In the Connection Condition dialog box, click **Same Condition as Last Execution**.

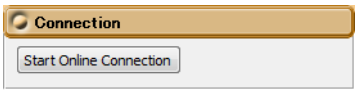


Note

You cannot select “Same Condition as Last Execution” the first time you start the software.

Starting the Connection

3. Click **Start Online Connection**. The communication with the peer WT begins.



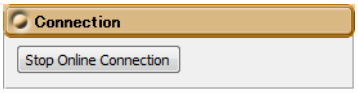
Note

- You cannot proceed to Setting, Measure, or File until an online connection is established.
- If any of the following circumstances apply when you click Start Online Connection, a communication error will occur.
  - The peer WT is not ready to measure.
  - The GP-IB address, IP address, user name, or password is incorrect.
  - There is no response from the peer WT.
  - You are trying to connect to a different WT from the last time.

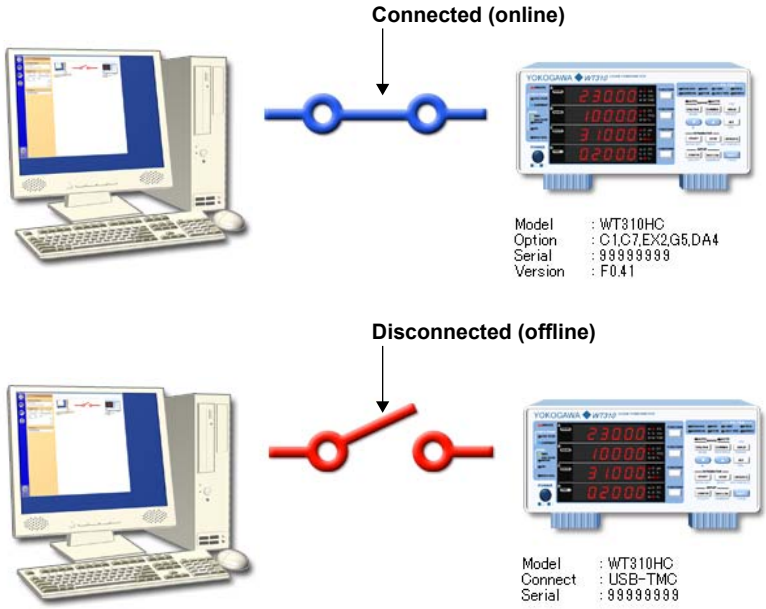
4.3 Switching to Offline

1. Click  in the menu area. The Connection screen appears.

2. While online, click **Stop Online Connection**. The connection between the WT and PC is disconnected.

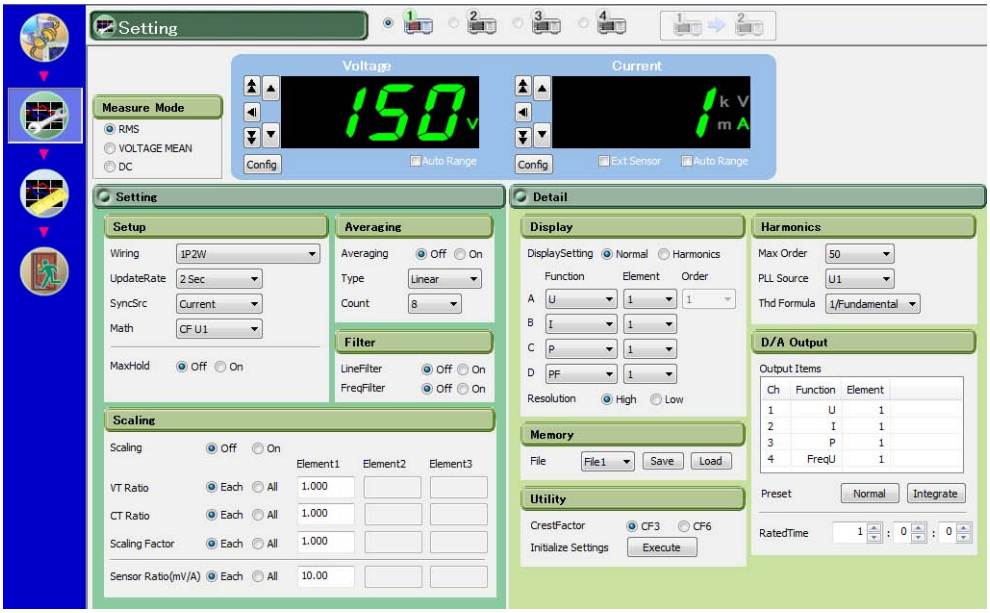


When the connection is cut and the WT and PC are offline, an illustration indicating this state appears.



5.1 WT Configuration

1. Click  in the menu area. The Setting screen appears.



Notes on Operation

Note the following points when you use the software to configure the WT.

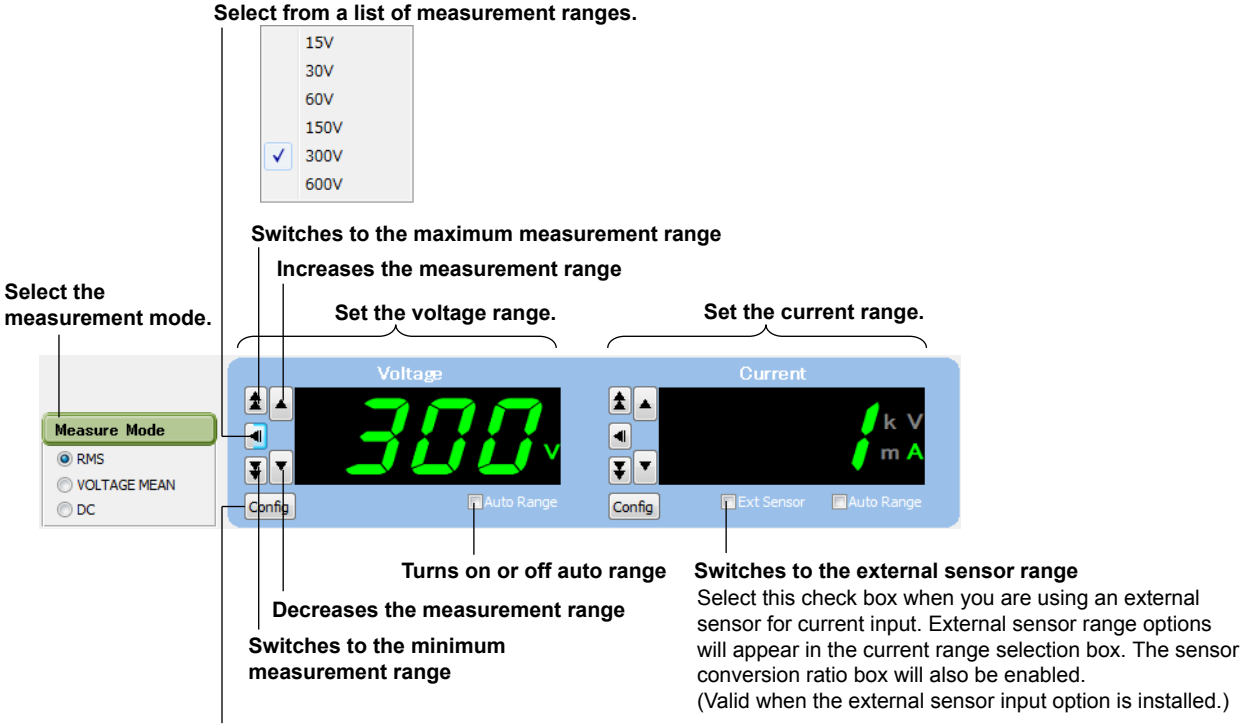
- For details on settings, see the WT User's Manual IM WT310-01EN.
  There are two ways to view the WT User's Manual.
  - Use the help feature. For details, see page 8-2.
  - View the PDF file in the Manuals folder on the CD-R.
- To display the waveform, bar graph, or trend display, set the measurement function and element on the numeric or harmonic list screen beforehand.

Examples of Setting screens are provided in the remainder of this section.

Target Bar

Displays the target WT. Only 1 is enabled at all times. Multiple WT connections are not supported.

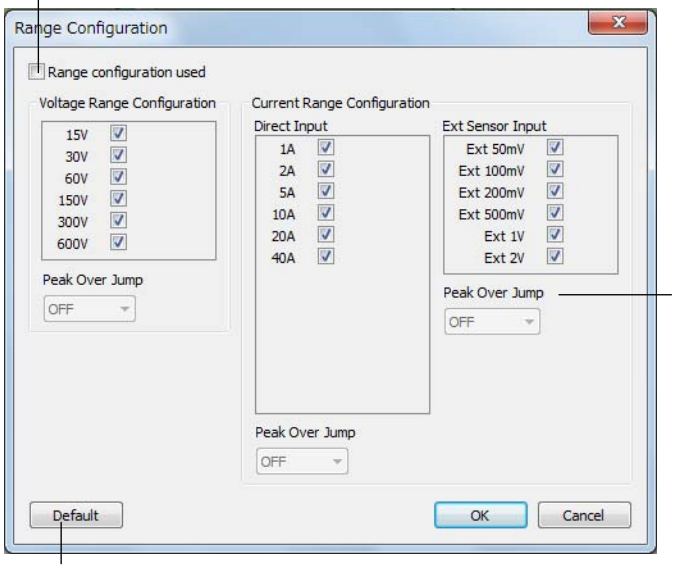
Measurement Mode and Range Settings



Select this check box when you are using an external sensor for current input. External sensor range options will appear in the current range selection box. The sensor conversion ratio box will also be enabled.
(Valid when the external sensor input option is installed.)

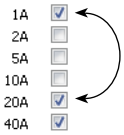
Set measurement range skip (range configuration).

Turns on or off range configuration



If you set measurement range skip as shown below, the measurement range will jump from 1 A range to 20 A range.

Measurement range

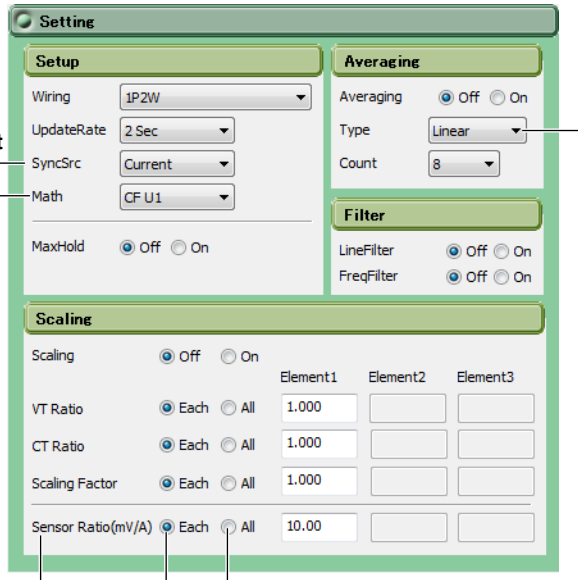


Set peak over jump.
Specify the measurement range to switch to when a peak over-range occurs in auto range mode. For example, in auto range mode, if you want the range to change to 20 A when an excessive input occurs during measurement, set this to 20A.

Resets the settings in the Range Configuration dialog box to their defaults.

- The figure above is an example for a WT310HC with the /EX2 option with the crest factor set to 3.
- On the WT310, the following current ranges cannot be set to skip because of the overcurrent protection feature.
  - When the crest factor is 3: 1 A
  - When the crest factor is 6: 0.5 A
- For details on settings, see chapter 2 in the WT User's Manual IM WT310-01EN.

Measurement Condition Setting Box



Set the measurement period.

Set the MATH function.

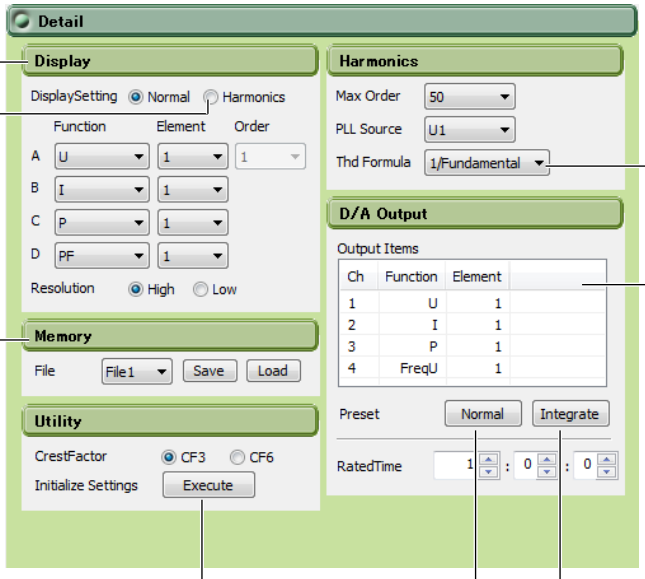
Linear: Moving average
Exponential: Exponential average

Select All to set all elements at once.
Select Each to set the value for each element.

External current sensor scaling constant

For details on settings, see chapter 2 in the WT User's Manual IM WT310-01EN.

Detail Setting Box



WT display settings

Turns on or off harmonic data

Save or load setup parameters.

1/Fundamental: IEC
1/Total: CSA

Set the output items.
Click the Function and Element cells, and set each item using the combo box that appears.

Initializes the WT setup parameters.
Communication settings are not initialized.

Default settings for integration

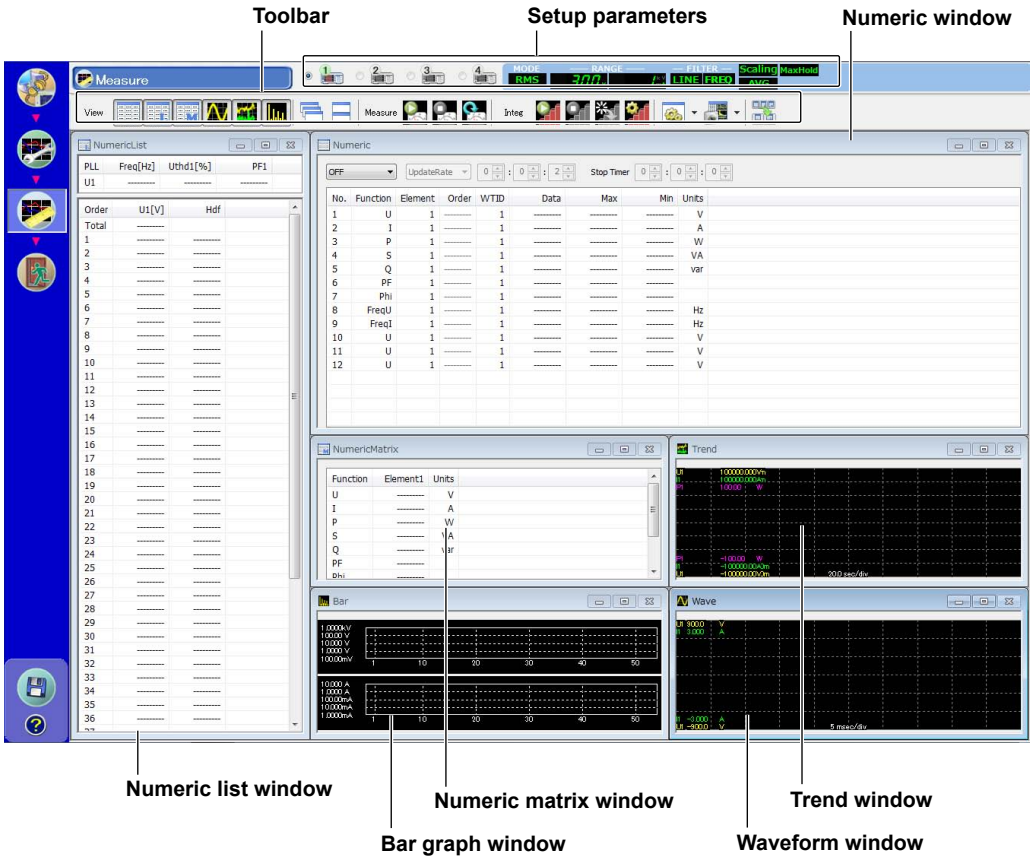
Default settings for normal measurement

For details on settings, see the following chapters in the WT User's Manual IM WT310-01EN.

- Display: Chapters 4 and 6
- Harmonics: Chapter 6
- Memory: Section 7.2
- D/A Output: Section 8.4
- Utility: Section 2.7 (crest factor), section 8.2 (initialization)

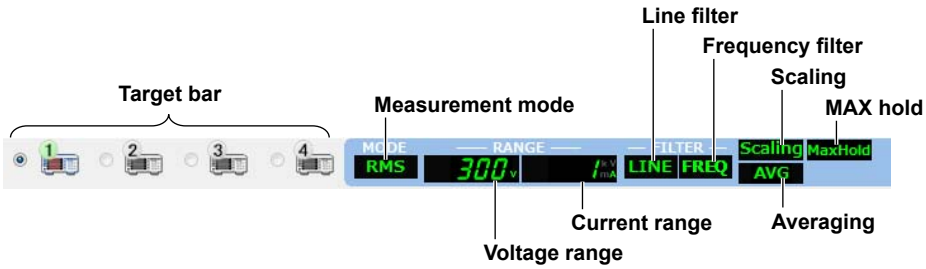
6.1 Measurement Screen

1. Click  in the menu area. The measurement screen appears.



Unavailable icons, setting boxes, and setup parameters appear dimmed.

Setup Parameters



Target Bar

Displays the target WT. Only 1 is enabled at all times. Multiple WT connections are not supported.

Measurement Mode, Voltage Range, and Current Range

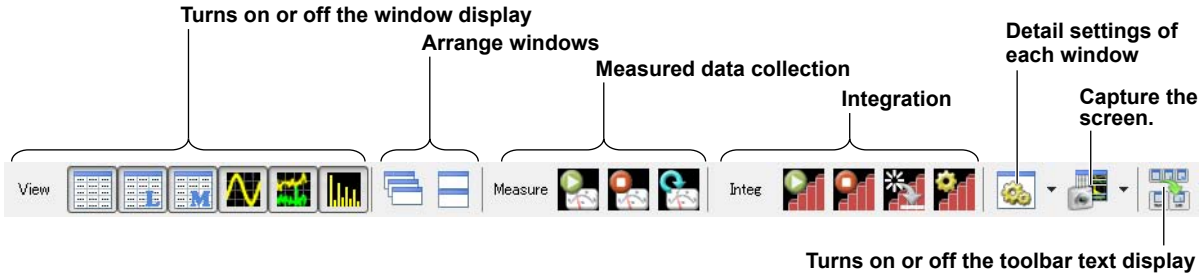
The current settings are displayed. For details on changing the settings, see chapter 5.

Line Filter, Frequency Filter, Scaling, MAX Hold, and Averaging

- ON: Displayed in green
- OFF: Displayed in gray

For details on changing the settings, see chapter 5.

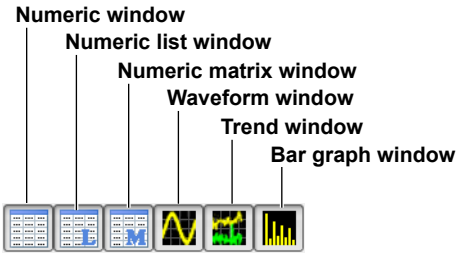
Toolbar



Turning On and Off the Window Display (View Icons)

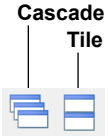
Turns on or off each window display.

- Models with the harmonic measurement (/G5 option)



- Models without the harmonic measurement (/G5 option)

Arranging Windows



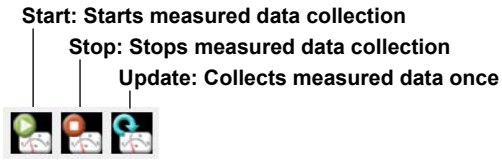
Cascade

- Displayed windows are cascaded so that all the window titles can be seen.
- The active window will be shown in front of all cascaded windows.
- The order in which the windows are cascaded varies depending on the types of windows that are being displayed.

Tile

- All displayed windows are tiled.
- The order in which the windows are arranged varies depending on the types of windows that are being displayed. The numeric list window is always shown vertically in the left edge.

Collecting Measured Data (Measurement Icons)



Starting Measured Data Collection

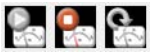
The software collects data from the WT after the data on the WT is updated and then displays the data. While data is being collected, the Integ-Setup icon, View-Set icon, and Snapshot icon are unavailable.

Collecting Measured Data Once

The software collects data from the WT once and then displays the data.

Before collection is started or when Stop is clicked

When Start is clicked



When Update is clicked

All icons are unavailable until the data collection is complete.

Note

To collect measured data for windows other than those that are currently shown, click the relevant viewer icons to show the windows, and then start data collection.

Stopping Measured Data Collection

Stops collecting measured data from the WT.

Integration

Starting Integration

Integration on all elements installed in the WT will start.

Check the following points before starting integration.

- Set measurement functions and elements so that integrated values appear in the numeric window.
- The software must collect values integrated on the WT; otherwise integrated values will not appear even if you start integration. Therefore, start data collection first, and then start integration.

Pausing and Stopping Integration

Integration on all elements installed in the WT will be paused.

- If you click Stop before the specified integration time is reached, integration is paused. If you click Start in this condition, integration will resume.
- If integration is paused or if the specified integration time has been reached and integration is finished, click Reset and then Start to reset and start integration from the beginning.

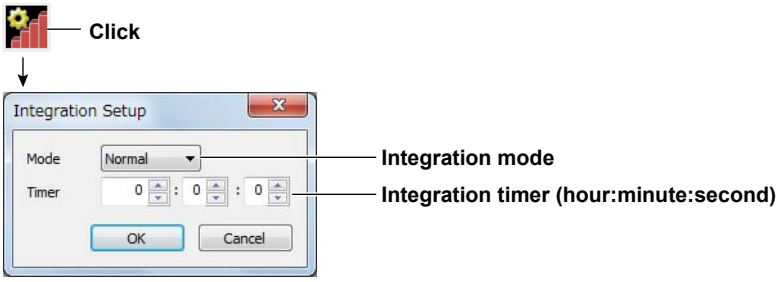
Resetting Integration

Integration on all elements installed in the WT will be reset.

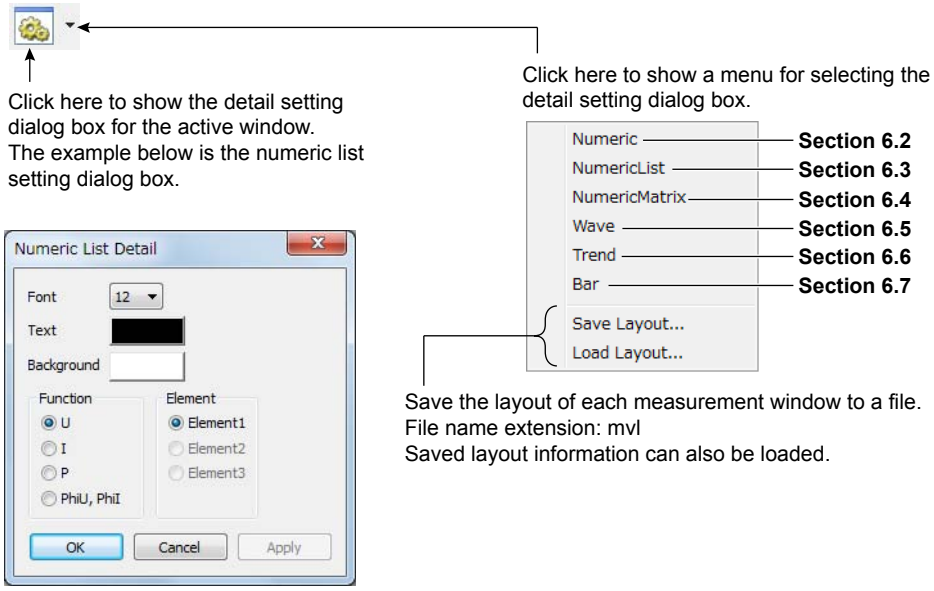
- If you click Reset, the integrated data in the WT will be cleared, but the integrated values of this software will remain.
- If integrated values are displayed in the numeric window of the software, the integrated values will remain displayed. If you start integration again, the integrated values will be updated.

Setting Integration Parameters

The integration setting dialog box appears.



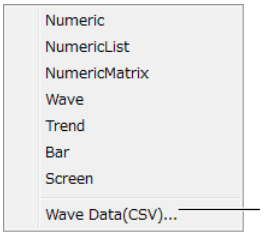
Detail Settings of Each Window (View-Set icon)



Capturing the Screen (Snapshot icon)

Click here to capture the entire screen in BMP format.

Click here to select the window to capture in BMP format.



Save waveform display data in CSV format.

Location Where Files Are Saved In

The files are saved to the C:\ProgramFiles\YOKOGAWA\WTViewerFreePlus\DATA folder. You cannot change the location.

File Names

The following file names are used. You cannot change them.

- Entire screen
  Screen_All_yyyymmddhhmmss.bmp
- A specific window

Numeric:	Screen_Numeric_yyyymmddhhmmss.bmp
Numeric list:	Screen_NumericList_yyyymmddhhmmss.bmp
Numeric matrix:	Screen_NumericMatrix_yyyymmddhhmmss.bmp
Waveform:	Screen_Wave_yyyymmddhhmmss.bmp
Trend:	Screen_Trend_yyyymmddhhmmss.bmp
Bar graph:	Screen_Bar_yyyymmddhhmmss.bmp

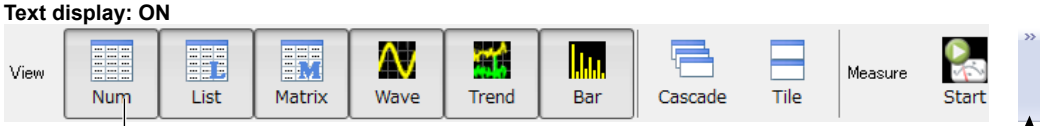
yyyymmddhhmmss is a 14-digit number consisting of the year, month, day, hour, minute, and second. The year is four digits; the hour is based on a 24-hour clock.

Turning On or Off the Toolbar Text Display (Toolbar icon)

The toolbar text display toggles on and off every time you click the icon.

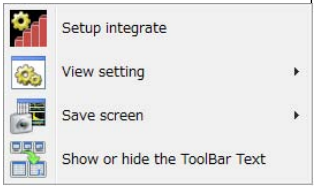
Text display: OFF

Text display: ON



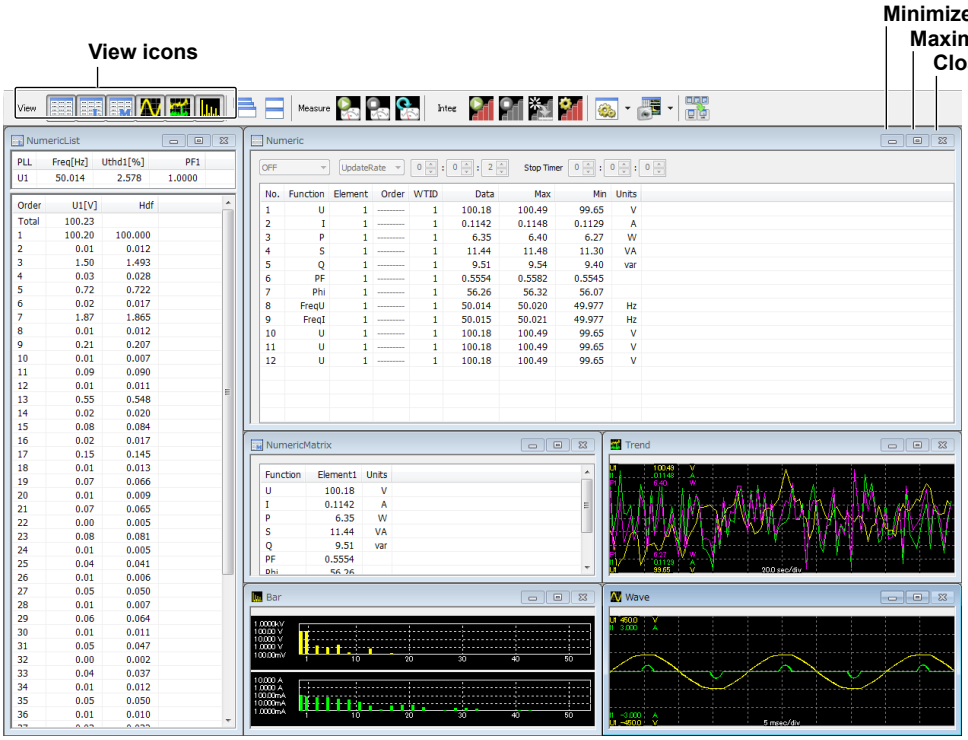
Toolbar text

Click here to show the icons that do not fit on the screen.



Measurement Screen

When you start the software for the first time, all possible windows are displayed tiled.



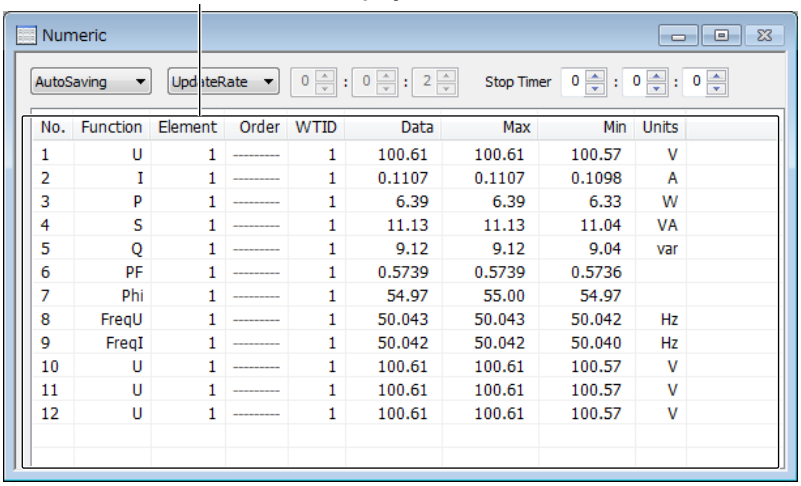
- You can maximize or minimize any measurement window.
- After you maximize a window, you can click a window arrange icon (Cascade or Tile) to clear the maximization and arrange the windows as specified.
- To close a measurement window, click the corresponding view icon. The close button at the upper right of each measurement window is disabled.
- Right-click the measurement window to display the detail setting dialog box of the window. This is not possible when measured data collection is in progress.
- Numeric list window, waveform window, and bar graph window can be displayed when the WT is equipped with the harmonic measurement option (/G5).

6.2 Numeric Display

The numeric display shows measured data numerically. You can customize the types of functions to display, the display order, the font size, the color, and so on.

Numeric Data Display Area

Numeric data display area



No.	Function	Element	Order	WTID	Data	Max	Min	Units
1	U	1	---------	1	100.61	100.61	100.57	V
2	I	1	---------	1	0.1107	0.1107	0.1098	A
3	P	1	---------	1	6.39	6.39	6.33	W
4	S	1	---------	1	11.13	11.13	11.04	VA
5	Q	1	---------	1	9.12	9.12	9.04	var
6	PF	1	---------	1	0.5739	0.5739	0.5736	
7	Phi	1	---------	1	54.97	55.00	54.97	
8	FreqU	1	---------	1	50.043	50.043	50.042	Hz
9	FreqI	1	---------	1	50.042	50.042	50.040	Hz
10	U	1	---------	1	100.61	100.61	100.57	V
11	U	1	---------	1	100.61	100.61	100.57	V
12	U	1	---------	1	100.61	100.61	100.57	V

Function

Displays the functions.

For the function symbols and definitions, see section 1.1, “Items That This Instrument Can Measure” in the WT User’s Manual IM WT310-01EN.

Element

Displays the elements.

Order

Displays the harmonic order of numeric data when the harmonic data display is set to ON (see section 5.1).

“-----” is displayed when the harmonic data display is set to OFF or for functions that harmonic orders cannot be specified.

WT ID

Displays the ID of the WT from which data was collected. This is fixed at 1.

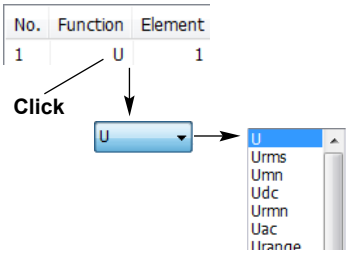
Max and Min

Displays the maximum and minimum values of each display item, obtained through the comparison of numeric data that has been collected from the WT. When a measurement is started, these values are initialized with the first measured data.

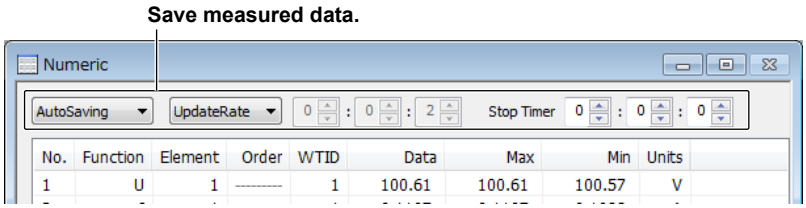
Setting the Display Items

You can change the function, element, harmonic order, and WT ID display items by following the procedure below. You cannot change them while measured data collection is in progress.
You can also set the display items using the item setting dialog box, which is described on page 6-11.

1. Click a Function, Element, Order, or WT ID cell. A combo box appears.
2. Select the item you want to display.



Saving Measured Data

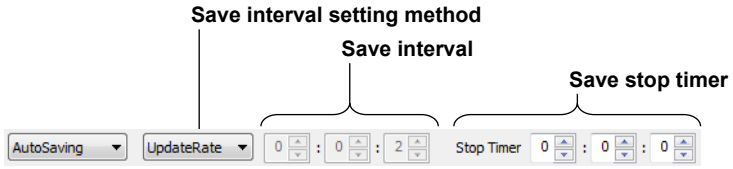


Set how to save measured data.

- OFF: Measure data is not saved.
- AutoSaving: Measured data is saved automatically at a fixed period.
- ManualSaving: Save measured data manually.

If you select AutoSaving or ManualSaving, the displayed measured data are saved to CSV files. You can open these files using a spreadsheet program (such as Excel).
Set the save destination and file name using the detail setting dialog box (see page 6-9).

AutoSaving



Save Interval Mode

- UpdateRate: Measured data is saved at the WT data update interval.
- Custom: Measured data is saved at the interval that you specify.

Save Interval

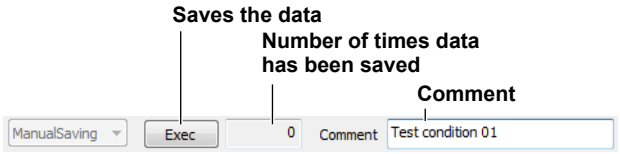
This setting is enabled if you set the save interval mode to Custom.
Selectable range: 2 seconds to 23 hours 59 minutes 59 seconds

Save Stop Timer

Set the length of time to run auto saving.

- **When the Timer Is Set to 0:0:0**
  Auto saving of measured data continues until you stop the collection of measured data.
- **When the Timer Is Not Set to 0:0:0**
  Auto saving of measured data continues for the specified length of time. The timer counts down as time elapses. When the save stop timer reaches 0:0:0, auto saving of measured data stops.

ManualSaving



Saving Data

While measured data collection is in progress, click this button to save measured data.

Number of Times Data Has Been Saved

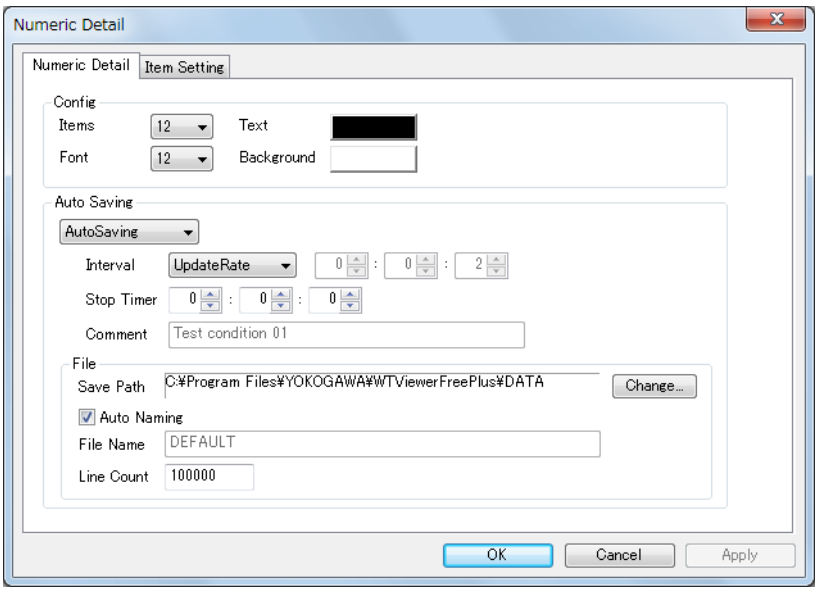
Shows the number of times data has been saved.

Comment

Set a comment that you want to include in the saved files.

Detail Setting Dialog Box

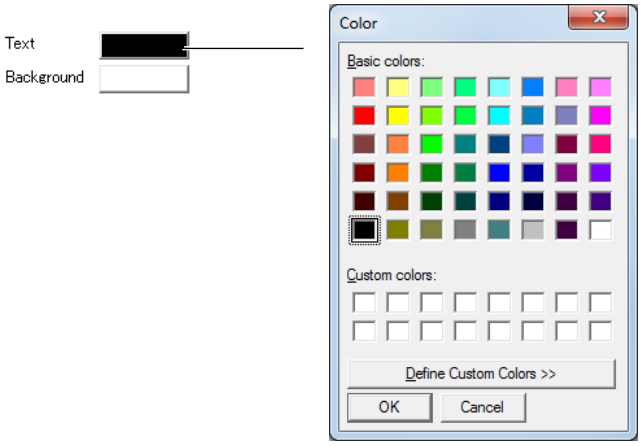
Right-click the numeric window to display the detail setting dialog box of the window. This is not possible when measured data collection is in progress.



Items
Select the number of numeric data items to display from 12, 24, 48, and 200.

Font
Set the font size to a value between 6 to 40 in steps of 2.

Text and Background
Select the text and background colors.



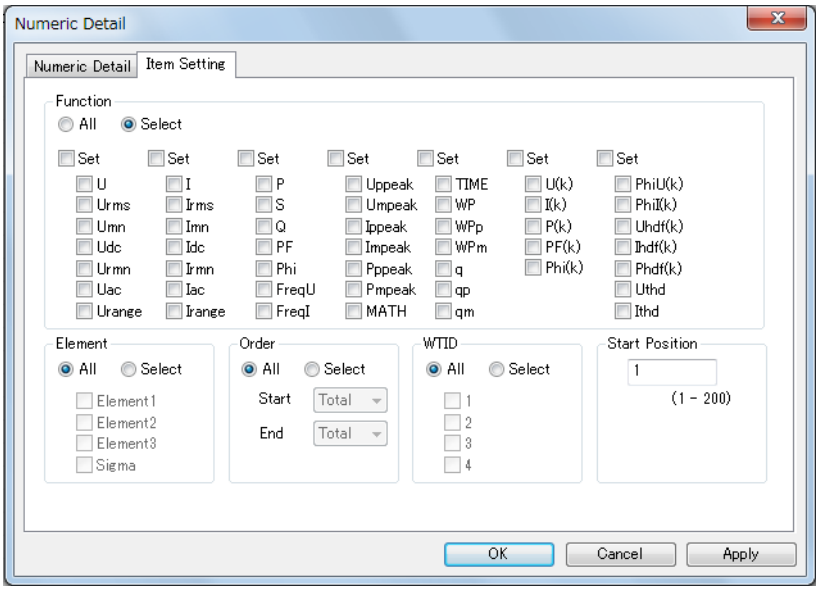
Auto Naming
If you select the Auto Naming check box, files are saved with the name Auto_yyyymmddhhmmss.csv. yyyymmddhhmmss is a 14-digit number consisting of the year, month, day, hour, minute, and second. The year is four digits; the hour is based on a 24-hour clock.

File Name
To specify the file name, clear the Auto Naming check box, and enter the file name.
- File Name: You can assign any name that is allowed on your PC.
- Extension: .csv

Line Count
If the number of numeric data entries saved to a file reaches the number specified by Line Count, a new file is created with a name whose number at the end of the name is incremented. This process is repeated (e.g., DEFAULT_0001.csv, DEFAULT_0002.csv, . . ., DEFAULT_9999.csv).

Item Setting Dialog Box

You can select which items to display in the numeric window in this dialog box.



Function

- If you select **All**, all functions will be selected. The check boxes of each function will remain unchanged and will appear dimmed.
- If you select **Select**, you can select functions individually.
- If you select a **Set** check box, all the check boxes of the functions in the column will be selected. If you clear it, all the check boxes of functions will be cleared.

Element

- If you select **All**, all elements will be selected. The check boxes of each element will remain unchanged and will appear dimmed.
- If you select **Select**, you can select elements individually.

Order

- If you select **All**, all harmonic orders will be selected. The combo box conditions will remain unchanged and will appear dimmed.
- If you select **Select**, you can set the start and end harmonic orders.

WT ID

Regardless of what you select here, the target will be the WT whose ID is 1.

Note

Functions, elements, and harmonic orders that cannot be selected depending on the WT specifications, options, or other conditions will be unavailable.

Start Position

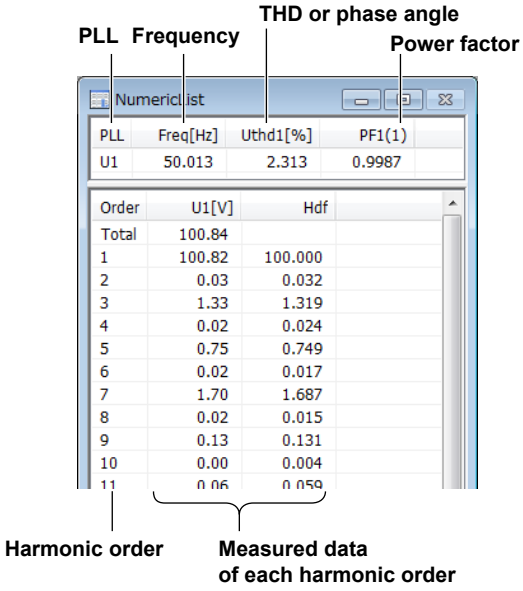
Set the line number in the numeric data display that you want to start applying the above settings to.
Selectable range: 1 to the value specified in the Items box.

Applying the Settings

Click **OK** or **Apply** to apply the settings to the numeric display. Items that cannot be set are not displayed (skipped).

6.3 Numeric List Display

The numeric list display lists harmonic measurement data for each harmonic order.
The numeric list window can be displayed when the WT is equipped with the harmonic measurement option (/G5).



PLL

Shows the function and element assigned to be the PLL source.

Freq

Shows the PLL source frequency.

THD or Phase Angle

Shows any of the following depending on the function that you selected in the detail setting dialog box (see the next page).

- When voltage (U) is selected: THD of voltage (total harmonic distortion), Uthd1*
- When current (I) is selected: THD of current, Ithd1*
- When power (P) is selected: No display (------ is displayed)
- When phase angle (Phi) is selected: Phase difference between the fundamental voltage and current, Phi1*(1)

* The number is the element number selected in the detail setting dialog box.

PF

Shows the power factor PF1*(1) of the fundamental wave (1st harmonic). The number on the right is the element number.

* The number is the element number selected in the detail setting dialog box.

Order

Shows the harmonic order.
Total is the total value of all components from harmonic order 1 to the maximum order.

Measured Data of Each Harmonic Order

Shows the measured values of the functions and elements that you selected in the detail setting dialog box.

- When voltage (U) is selected: Shows U and Uhdf (hdf: harmonic distortion factor)

PLL	Freq[Hz]	Uthd1[%]	PF1(1)
U1	49.989	2.633	0.9995

Order	U1[V]	Hdf
Total	100.84	
1	100.81	100.000
2	0.03	0.032

- When current (I) is selected: Shows I and Ihdf

PLL	Freq[Hz]	Ithd1[%]	PF1(1)
U1	50.005	140.086	0.9995

Order	I1[A]	Hdf
Total	0.1103	
1	0.0641	100.000
2	0.0004	0.696

- When power (P) is selected: Shows P and Phdf

PLL	Freq[Hz]	---------	PF1(1)
U1	50.007	---------	0.9995

Order	P1[W]	Hdf
Total	19.20	
1	19.30	---------
2	0.00	---------

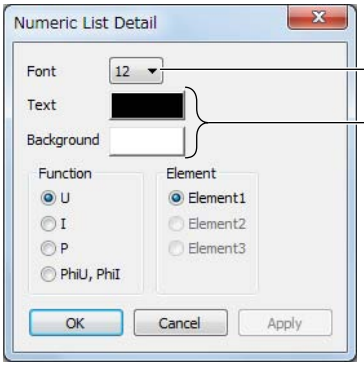
- When phase difference (PhiU and PhiI) is selected: Shows PhiU and PhiI
  - PhiU: Phase angles of the 2nd harmonic to the 50th harmonic voltages with respect to the fundamental voltage
  - PhiI: Phase angles of the 2nd harmonic to the 50th harmonic current with respect to the fundamental current

PLL	Freq[Hz]	Phi1(1)	PF1(1)
U1	49.956	-1.76	0.9997

Order	PhiU1[deg]	PhiI1[deg]
Total	---------	---------
1	---------	---------
2	127.01	-177.03

Detail Setting Dialog Box

Right-click the numeric list window to display the detail setting dialog box of the window. This is not possible when measured data collection is in progress.

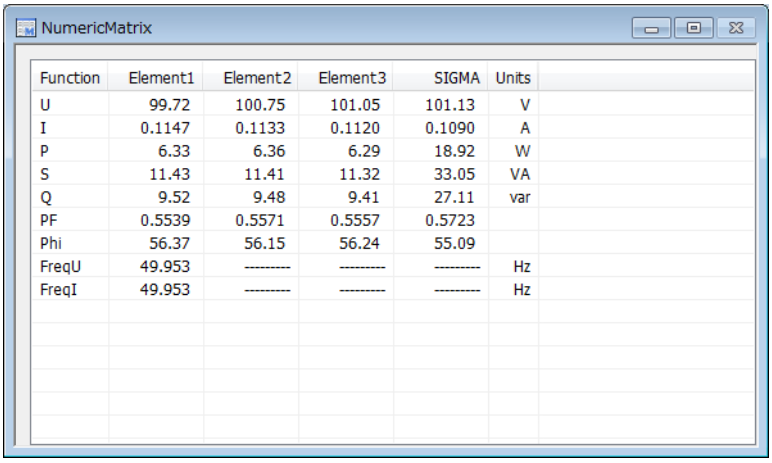


Font: see page 6-10.

Text color and background color: see page 6-10.

6.4 Numeric Matrix Display

The numeric matrix display shows measured data of each element in a matrix.



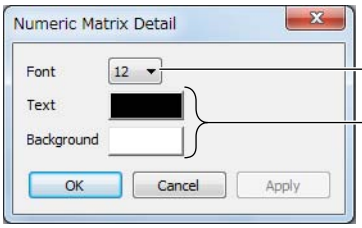
Function	Element1	Element2	Element3	SIGMA	Units
U	99.72	100.75	101.05	101.13	V
I	0.1147	0.1133	0.1120	0.1090	A
P	6.33	6.36	6.29	18.92	W
S	11.43	11.41	11.32	33.05	VA
Q	9.52	9.48	9.41	27.11	var
PF	0.5539	0.5571	0.5557	0.5723	
Phi	56.37	56.15	56.24	55.09	
FreqU	49.953	---------	---------	---------	Hz
FreqI	49.953	---------	---------	---------	Hz

Function

The functions are displayed in the following fixed order.
U, I, P, S, Q, λ, φ, FreqU, FreqI

Detail Setting Dialog Box

Right-click the numeric matrix window to display the detail setting dialog box of the window. This is not possible when measured data collection is in progress.

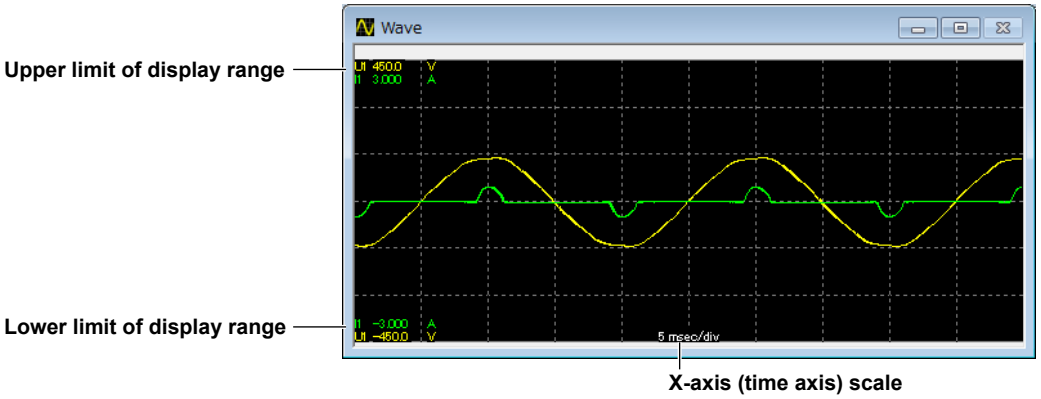


Font: see page 6-10.

Text color and background color: see page 6-10.

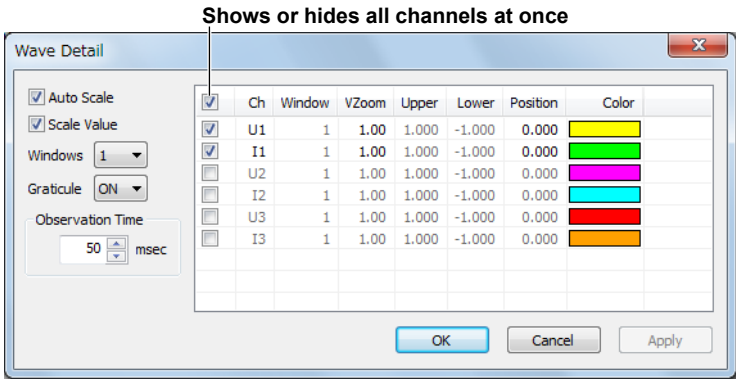
6.5 Waveform Display

The waveform display shows waveform display data that has been collected from the WT.
Waveforms can be displayed when the WT is equipped with the harmonic measurement option (/G5).



Detail Setting Dialog Box

Right-click the waveform window to display the detail setting dialog box of the window. This is not possible when measured data collection is in progress.



Auto Scale

- When the check box is selected, the scale values change automatically.
- When the check box is not selected, you can click upper or lower limit cells to display combo boxes to set the upper and lower limits of the display range for each channel.

Scale Value

Select whether to show the upper and lower limits on the left edge of the waveform display area.

Windows

Set the number of waveform windows to show in the range of 1 to 6. If you set this value to 2 or more, you can click the Window cells to display combo boxes where you can specify which waveform display area (counted from the top) to display the waveform in.

Graticule

Select whether to show the graticule in the waveform display area.

Observation Time

Set the X-axis (time axis) in the waveform display area. You can set the value in 10 ms steps in the following range.
10 ms to the upper limit of the data update interval

Ch

Select the waveforms to display using the check boxes.

Window

When you divide the waveform display into windows, select which area (counted from the top) to display the waveform in.

1. Click a Window cell. A combo box appears.
2. Select the window.

VZoom

Set the vertical zoom factor of the waveform.

1. Click a VZoom cell. A combo box appears.
2. Set the vertical zoom factor.

Upper and Lower

If the Auto Scale check box is not selected, set the upper and lower limits of the display range.

1. Click a Upper or Lower cell. A combo box appears.
2. Set the limit of the display range.

Position

Set the vertical display position of the waveform in the waveform display area. The vertical center of the window is 0. The upper limit is 100%; the lower limit is –100%.

1. Click a Position cell. A combo box appears.
2. Set the waveform display position.

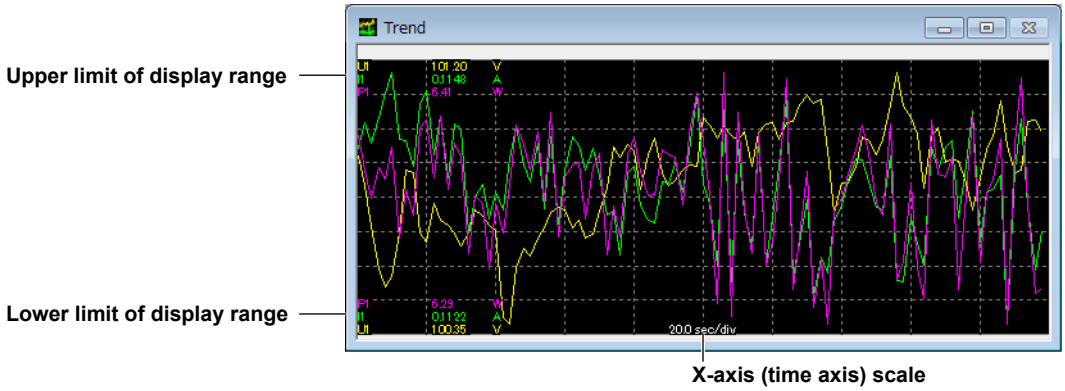
Color

Select the waveform color.

1. Click a color cell. A combo box appears.
2. Select the waveform color.

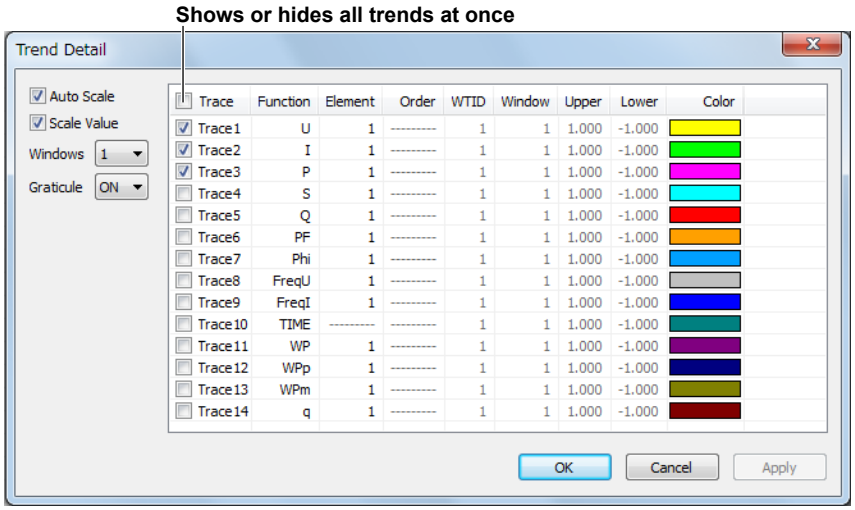
6.6 Trend Display

The trend display shows changes in measured data over time on a trend graph.



Detail Setting Dialog Box

Right-click the trend window to display the detail setting dialog box of the window. This is not possible when measured data collection is in progress.



Auto Scale

- When the check box is selected
  The scale values change automatically.
- When the check box is not selected
  You can click upper or lower limit cells to display combo boxes to set the upper and lower limits of the display range for each channel.

Scale Value

Select whether to show the upper and lower limits on the left edge of the trend display area.

Windows

Set the number of trend windows to show in the range of 1 to 6. If you set this value to 2 or more, you can click the Window cells to display combo boxes where you can specify which trend display area (counted from the top) to display the trend in.

Graticule

Select whether to show the graticule in the trend display area.

Trace

Select the trends to display using the check boxes.

Function

Select which function to display the trend of.

1. Click a Function cell. A combo box appears.
2. Select the function.

Element

Select which element to display the trend of.

1. Click an Element cell. A combo box appears.
2. Select the element.

Order

Select the harmonic order of numeric data to display the trend of when the harmonic data display is set to ON (see section 5.1).
"-----" is displayed when the harmonic data display is set to OFF or for functions that harmonic orders cannot be specified.

1. Click an Order cell. A combo box appears.
2. Select the harmonic order.

WT ID

This is the ID of the WT to display the trend of. This is fixed at 1.

Window

When you divide the trend display into windows, select which area (counted from the top) to display the trend in.

1. Click an Order cell. A combo box appears.
2. Select the window.

Upper and Lower

If the Auto Scale check box is not selected, set the upper and lower limits of the display range.

1. Click a Upper or Lower cell. A combo box appears.
2. Set the limit of the display range.

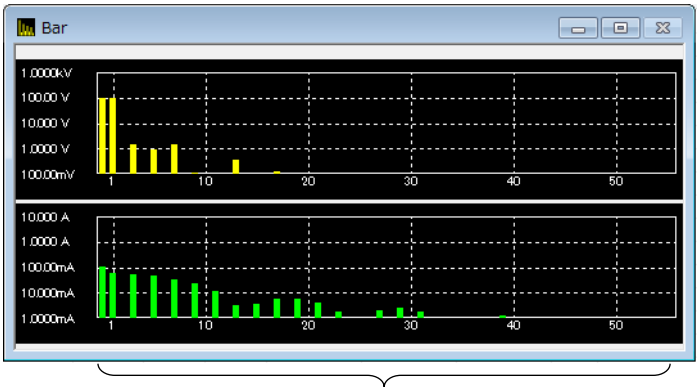
Color

Select the trend color.

1. Click a color cell. A combo box appears.
2. Select the trend color.

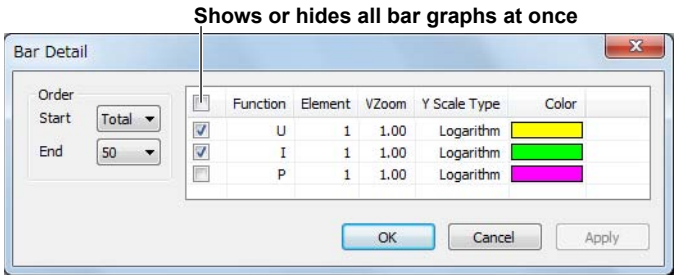
6.7 Bar Graph Display

The bar graph display shows harmonic measurement data for each harmonic order in a bar graph. The bar graph window can be displayed when the WT is equipped with the harmonic measurement option (/G5).



Detail Setting Dialog Box

Right-click the bar graph window to display the detail setting dialog box of the window. This is not possible when measured data collection is in progress.



Start and End

Select the harmonic order of the numeric data to display.

- Start harmonic order: 0 to 40
- End harmonic order: 10 to 50

The difference between the start and end harmonic orders must at least be 10.

Function

Select the bar graph to display using the check boxes.
The bar graph is displayed for the combination of the functions and elements that you select.
Up to three bar graphs can be displayed.

Element

Select which element to display the bar graph of.

1. Click an Element cell. A combo box appears.
2. Select the element.

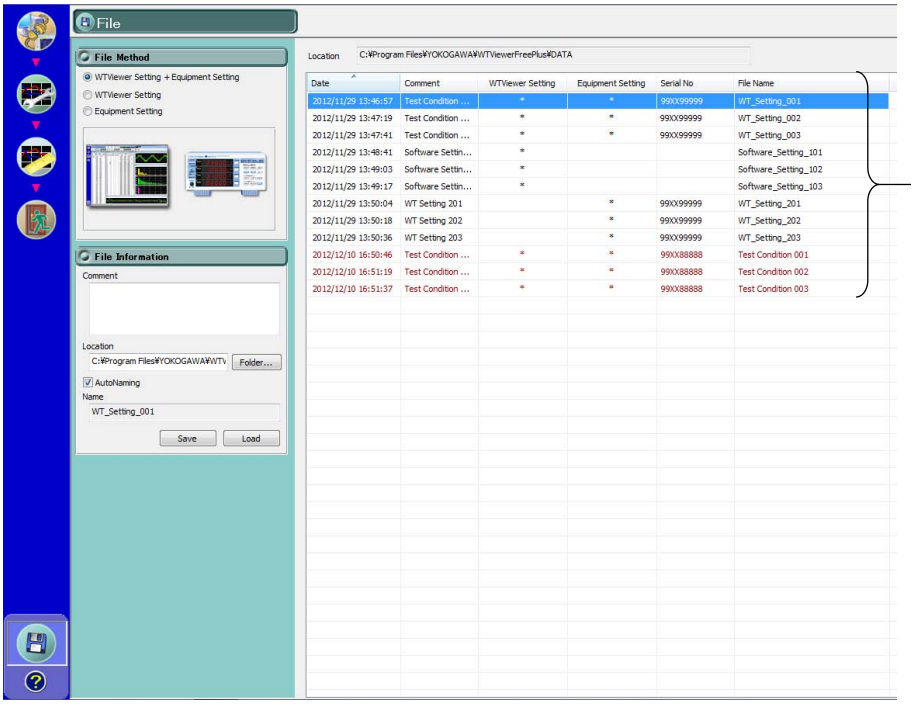
VZoom

Set the vertical zoom factor of the bar graph.

1. Click a VZoom cell. A combo box appears.
2. Set the vertical zoom factor.

7.1 Saving and Loading Setup Parameters

1. Click  in the menu area. The File screen appears.

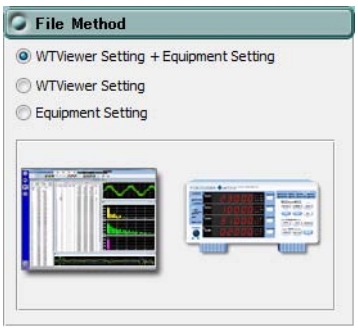


Selecting the Type of File to Save

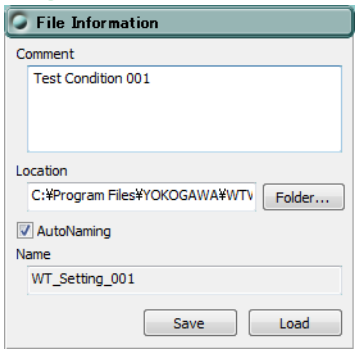
Select the type of data to save from the following:

- WTViewer Setting + Equipment Setting
- WTViewer Setting: The software setup parameters will be saved.
- Equipment Setting: The WT setup parameters will be saved.

The illustration will change depending on the item that you select.



Setting the Save Conditions



Comment

You can enter a comment if you like. You can enter up to 100 characters.

Location

Specify the folder to save the file.

AutoNaming

If you select the Auto Naming check box, files are saved with the name Auto_yyyymmddhhmmss.csv. yyyymmddhhmmss is a 14-digit number consisting of the year, month, day, hour, minute, and second. The year is four digits; the hour is based on a 24-hour clock.

Name

To specify the file name, clear the Auto Naming check box, and enter the file name.

- File Name: You can assign any name that is allowed on your PC.
- Extension: .cfg

Save Button

Executes the saving of data.

Load Button

Loads the data that is selected in the saved-file list.

If a file that cannot be loaded is selected, a warning will appear.

Conditions Necessary for Loading Files

The following conditions must match those of the WT.

- Model
- Suffix code (/EX1, /EX2, /G5, /DA4, /DA12)

Saved-File List

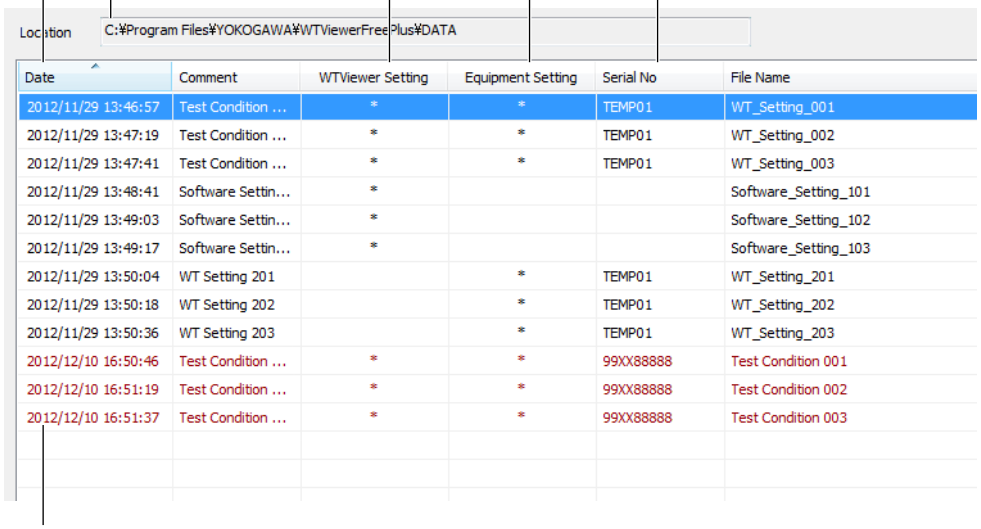
Date and time when the file was saved

Path to the file save destination folder

An asterisk appears when the file data type is set to WTViewer Setting.

An asterisk appears when the file data type is set to Equipment Setting.

Instrument number of the WT that was connected when the file was saved



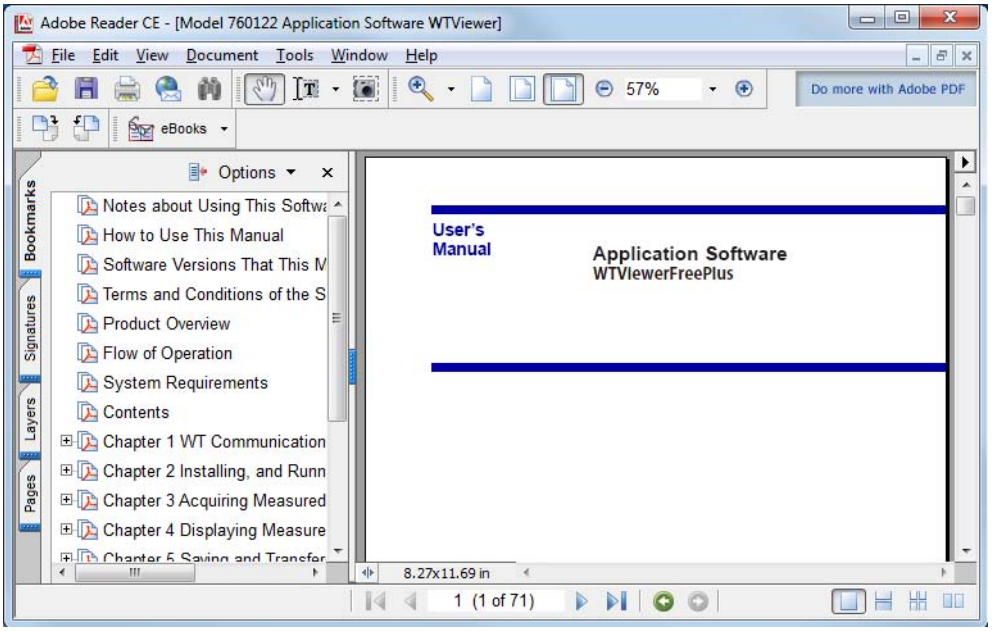
Date	Comment	WTViewer Setting	Equipment Setting	Serial No	File Name
2012/11/29 13:46:57	Test Condition ...	*	*	TEMP01	WT_Setting_001
2012/11/29 13:47:19	Test Condition ...	*	*	TEMP01	WT_Setting_002
2012/11/29 13:47:41	Test Condition ...	*	*	TEMP01	WT_Setting_003
2012/11/29 13:48:41	Software Settin...	*			Software_Setting_101
2012/11/29 13:49:03	Software Settin...	*			Software_Setting_102
2012/11/29 13:49:17	Software Settin...	*			Software_Setting_103
2012/11/29 13:50:04	WT Setting 201		*	TEMP01	WT_Setting_201
2012/11/29 13:50:18	WT Setting 202		*	TEMP01	WT_Setting_202
2012/11/29 13:50:36	WT Setting 203		*	TEMP01	WT_Setting_203
2012/12/10 16:50:46	Test Condition ...	*	*	99XX88888	Test Condition 001
2012/12/10 16:51:19	Test Condition ...	*	*	99XX88888	Test Condition 002
2012/12/10 16:51:37	Test Condition ...	*	*	99XX88888	Test Condition 003

In the saved-file list, files that cannot be loaded are displayed in red.

8.1 Help Feature

Displaying Help

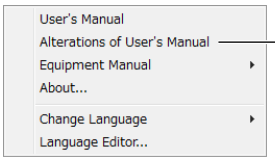
Click the help button. If Adobe Reader is installed on your PC, it will start, and the PDF of the software user's manual will open. You can look up how to use the software and terminology.



Displaying Alteration Notices

If alteration notices are available, you can view them by following the procedure below.

1. Right-click the help button.
2. Click **Alterations of User's Manual**.



Shows alterations to the manual

Obtaining the Latest User's Manual and Alteration Notices

To obtain the PDFs of the latest user's manual and alteration notices, visit the YOKOGAWA website indicated below, click **Y-LINK** to show the manual download page. Download the user's manual and alteration notices for the software from this page.

http://tmi.yokogawa.com/service-support/

Change the file name of the manual or alternation notice to that shown below, and overwrite the existing file in the Manuals folder in the software installation folder that you specified in the procedure described on page 3-2. Then, you will be able to view the file by clicking User's Manual or Alteration of User's Manual on the Help menu.

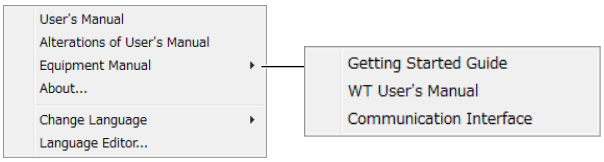
- User's manual file name: EN_WTViewerFreePlus Users Manual.pdf
- Alteration notice file name: EN_WTViewerFreePlus Alterations.pdf

Note

- You can download Adobe Reader from the Adobe website.
- The latest user's manual and alteration notice that you can download from the YOKOGAWA website correspond to the latest version of this software. If necessary, update the software. You can download updates to the software from the YOKOGAWA website indicated above.

View the WT310/WT310HC/WT330 User's Manual

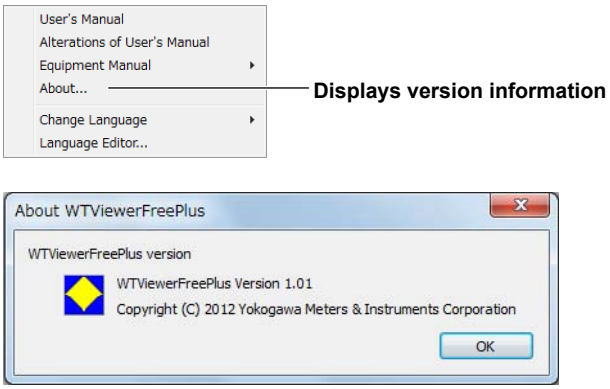
1. Right-click the help button.
2. Click **Equipment Manual**.
3. Click the manual you want to view.



- Getting Started Guide
  Describes the installation procedure, precautions, specifications, etc.
- User's Manual
  Describes how to use the various features of the WT.
- Communication Interface
  Describes communication commands.

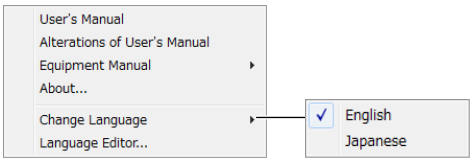
8.2 Viewing the Version Information

1. Right-click the help button.
2. Click **About**.



8.3 Setting the Displayed Language

1. Right-click the help button.
2. Click **Change Language**.
3. Select the language you want to use.



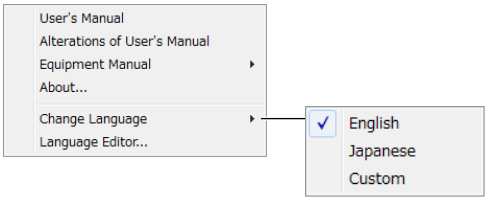
Note

Depending on the operating system, some language fonts may not be installed. In such cases, if you change the language, text will not be displayed properly. To display the text properly, you need to install appropriate fonts in the operating system.

Customizing the Displayed Language

To customize the displayed language, edit the language file by following the procedure in section 8.4.

If there is a language file that you create (custom file), the submenu will appear as follows:



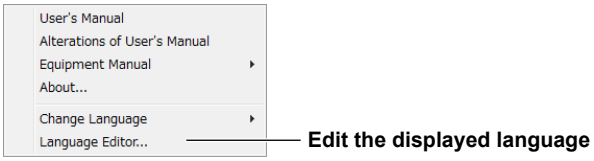
Select **Custom** to load the custom file.

8.4 Editing the Displayed Language

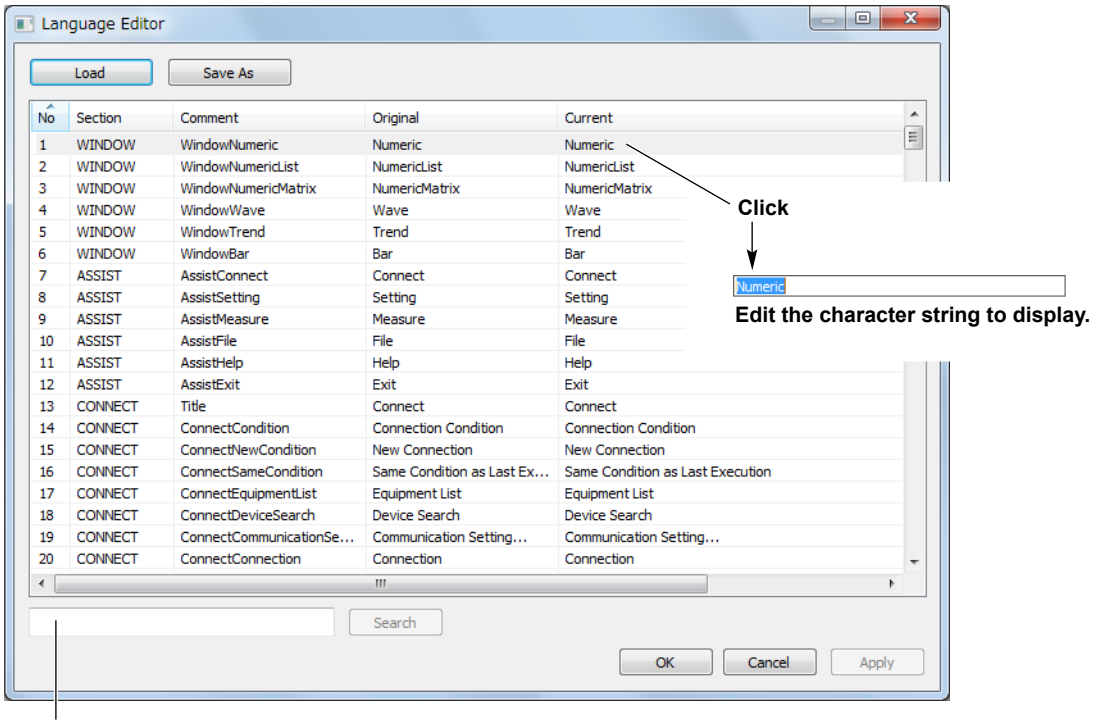
You can edit the text that is displayed in the dialog boxes and windows of the software.

Editing the Displayed Language

1. Right-click the help button.
2. Click **Language Editor**.



3. In the Language Editor dialog box, click the cells in the Current column to edit the text to display.



Saving the Edited Language Information

Click **Save As** to save the edited language information to a file. The file name extension is .lang.

Note

The English and Japanese language information files are in the following folder.
C:\Program Files\Yokogawa\WTViewerFreePlus\Language

Loading Saved Language Information

Click **Load** to load a language information file into the Language Editor dialog box.

9.1 If a Problem Occurs

If a message appears on the screen, see section 9.2, “Error Messages.” If servicing is necessary, or if the instrument does not operate properly even after you have attempted to deal with the problem according to the instructions in this section, contact your nearest YOKOGAWA dealer.

Problems and Solutions	
Unable to communicate with the WT using USB.	
	Using Device Manager, check whether the USB driver is appropriate for the WT series. If the driver is not appropriate, switch to the appropriate USB driver (see page 3-6).
Unable to communicate with the WT using GP-IB.	
	Communication may not work properly on GP-IB cards other than those of NI (National Instruments). Use a GP-IB card by NI (see page 1-6).
Unable to change the Function, Element, and Order settings in the dialog boxes.	
	Click a Function, Element, or Order cell to show a combo box. Then select the appropriate item.
Waveforms, bar graphs, or trends do not appear even when data collection is started.	
	Stop data collection (see section 6.1), select the items you want to show using the view buttons on the toolbar, open the relevant windows, and start data collection.
Waveforms are not displayed.	
	Change the **VZoom** and **Position** values in the detail setting dialog box (see section 6.5).
Waveform or trend traces overflow from the screen.	
	In the detail setting dialog box, select the **Auto Scale** check box, or change the **Upper**, **Lower**, and **VZoom** values to appropriate values (see section 6.5 or 6.6).
Even when the **UpdateRate** on the Setting screen is changed, the display update interval of the software does not change.	
	The display update interval of the software is not synchronized to the display update interval of the WT. It is dependent on the performance of your PC and the communication interface (USB, GP-IB, RS-232, or Ethernet). If the WT data update interval is set to a short value such as 100 ms, the software cannot keep up, and some of the data points that the WT is measuring will not be collected. If you want to synchronize the display update interval between the WT and software, configure your environment by referring to the items below. • The less number of data points that the software has to collect from the WT, the shorter the display update interval. • The communication interfaces listed in descending order by data rate are as follows: USB, Ethernet, GP-IB, RS-232. • Use a faster PC. Example: The display update interval of the WT and that of the software may match if you use the GP-IB, Ethernet, or USB interface and set the WT display update interval to 100 ms.

9.2 Error Messages

Message	Corrective Action
Equipment can not be found. • Please check the power supply. • Please check the Device Manager. • Please refer to help.	Check the following items. • Is the WT turned on? • Is the GP-IB, RS-232, Ethernet, or USB cable connected properly? • If you are using GP-IB, are the GP-IB addresses in the same system all unique? Is the GP-IB address set on the WT the same as the GP-IB address set in WTViewerFreePlus? Is the GP-IB driver installed correctly in your PC? • If you are using RS-232, are the communication parameters, such as the baud rate, set to the same values on the WT and WTViewerFreePlus? • If you are using Ethernet, are the IP address, user name, and password set to the same values on the WT and WTViewerFreePlus? • If you are using USB, are the ID used in the same system all unique? Is the ID set on the WT the same as the ID set in WTViewerFreePlus? Is the USB driver installed correctly in your PC? • If you are using USB, is the USB driver is appropriate for the WT series?
Integrate timer is out of range Updaterate is out of range Stop timer is out of range Rated time is out of range Wave observe is out of range Please input a value from 0.001 to 9999.	The value that you tried to set is outside the allowed range. Set a value within the allowed range.

10.1 Specifications

Item	Specifications	
Data formats that the software can save to		
	The following table lists the data formats (extensions) that the software can save to. Note that CSV files cannot be loaded into the software.	
	Setup parameters[1]	CFG format (.cfg)
	Numeric data	CSV format (.csv)
	Waveform display data	CSV format (.csv)
	1 Setup parameters cannot be saved to CSV files.	
Data formats that the software can load from		
	The following table lists the data formats that the software can load from. Data saved with the auto saving feature explained in section 4.1 cannot be loaded into the software.	
	Model	WT310, WT310HC, WT330
	Setup Parameters	CFG format (.cfg)
	Numeric data[2]	—
	Waveform display data[2]	—
	2 Numeric data and waveform display data cannot be loaded into the software.	
Data display update interval	Depends on the PC processing speed, the communication interface in use, and the number of data points that the software is collecting from the WT.	
Screens	Numeric Displays the numeric data that the software collects from the WT Numeric list[3] Lists the harmonic data that the software collects from the WT Numeric Matrix Displays the numeric data that the software collects from the WT for each element in a table Waveform[3] Displays the waveform display data that the software collects from the WT Bar Graph[3] Displays bar graphs of the harmonic components for each harmonic order during harmonic measurement Trend Displays the numeric data that the software collects from the WT as trend graphs 3 Harmonic measurement option must be installed in the WT.	
WT Configuration	All functions that are available as communication commands	
System Requirements	See section 1.3.	

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