User's Manual

Additional Information about the WT130 Digital Power Meter GP-IB Window

This User's Manual describes the procedures to control the WT130 Digital Power Meter using the GP-IB window (WT130 operation panel) of the GP-IB Controller Module WE7021. The contents of this manual describe the software Ver. 1.02.

This manual only describes information about the operational panel that is displayed when the 7555 control software file [WT130.gpl] is loaded by selecting [File] > [Load] in the GP-IB window's menu. For the procedures regarding the steps necessary to display the WT130 operation panel in the GP-IB window, see the User's Manual for the GP-IB Controller Module WE7021 (IM 707021-01E). Because this software application uses communication commands complying with the IEEE488.2-1987 Standard, set the WT130 Digital Power Meter's mode setting to "488.2."
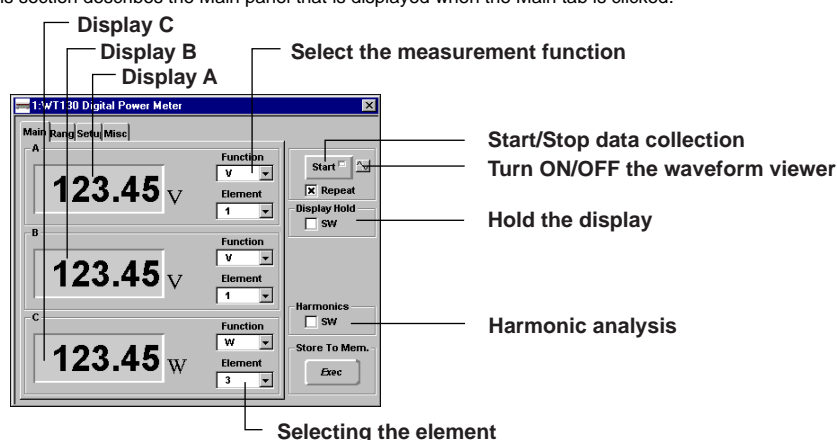
The GP-IB Window can be used to control a WT130 Digital Power Meter (Model: 253503) that has a software version of 2.01 or later.

For information regarding the PC-based Measurement Instruments WE7000 or the WE7021, see the following manuals.

Manual Title	Manual No.
WE7000 User's Manual	IM 707001-01E
GP-IB Controller Module WE7021 User's Manual	IM 707021-01E

Main panel

This section describes the Main panel that is displayed when the Main tab is clicked.

Selecting the measurement function

Select the function that you wish to measure, compute, and display in the [Function] list box.
The items that can be selected in displays A, B, and C vary as follows.
For details related to selectable items and specifications, see the sections indicated below in the WT130 User's Manual IM253401-01E.

Display A
- V (voltage), A (current), W (active power)   : See section 5.1, "Measuring/Displaying Voltage, Current and Active Power."
- VA (apparent power), var (reactive power)   : See section 6.1, "Computing/Displaying Apparent Power, Reactive Power, Power Factor."
- TIME   : See section 7.3, "Displaying Integrated Values."

Display B
- V (voltage), A (current), W (active power)   : See section 5.1, "Measuring/Displaying Voltage, Current and Active Power."
- PF (power factor)   : See section 6.1, "Computing/Displaying Apparent Power, Reactive Power, Power Factor."
- deg (phase angle)   : See section 6.2, "Computing/Displaying Phase Angle."

Display C
- V (voltage), A (current), W (active power)   : See section 5.1, "Measuring/Displaying Voltage, Current and Active Power."
- VHz (voltage frequency), AHz (current frequency)   : See section 5.2, "Measuring/Displaying Frequency"
- Wh (Total watt hour value of the positive and negative side), Wh+ - 1 (Watt hour value of the positive side)   : See section 7.3, "Displaying Integrated Values."
- Wh+ - 2 (negative power), Ah (total ampere hour value)   : See section 7.3, "Displaying Integrated Values"
- Ah+ - 1 (ampere hour value of the positive side), Ah+ - 2(ampere hour value of the negative side)   : See section 7.3, "Displaying Integrated Values."
- MATH (computation), V Peak, A Peak   : See section 5.3, "Measuring/Displaying Four Arithmetical Operation Value, Crest Factor and Peak Value."

Selecting the element

Select the element to be measured, computed, or displayed in the [Element] list box. For details related to selectable items and specifications, see the section 5.1, "Measuring/Displaying Voltage, Current and Active Power" in the WT130 User's Manual IM253401-01E.

Start/Stop data collection

When the [Start] button is clicked, measured data are collected and the specified values appear in displays A, B, and C of the Main panel. Clicking the icon by the [Start] button opens the waveform viewer. Clicking the same icon again closes the waveform viewer. For the operating procedures of the waveform viewer, see the help on the waveform viewer. The LED lights while the data collection is in progress.
If the [Repeat] box is checked, data are repetitively collected and displayed until the next time the [Start] button is clicked.
If the [Repeat] box is not checked, one set of measured data is collected and displayed every time the [Start] button is clicked.
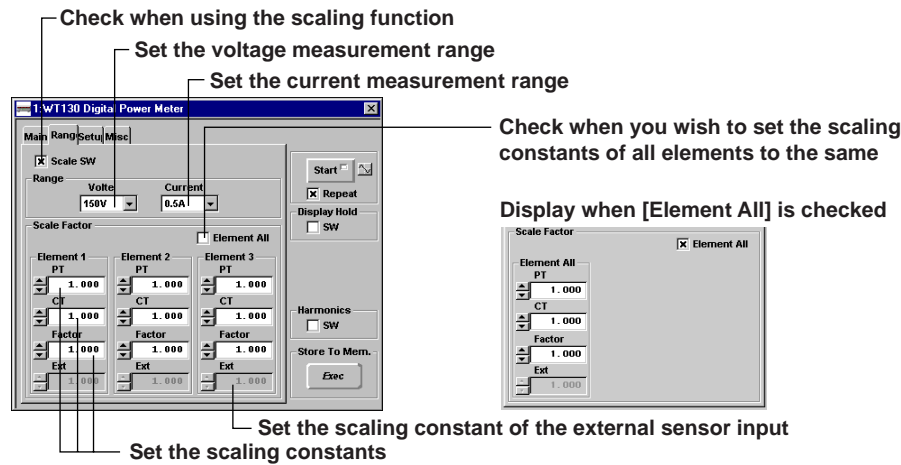
Display hold

Checking the [SW] box under [Display Hold] will hold the values displayed on each display. Removing the check releases the hold.

Harmonic analysis

Checking the [SW] box under [Harmonics] will enable the operation panel used for harmonic analysis.
For the operation panel of the harmonic analysis function (Harm panel), see page 4.

Range panel

This section describes the Range panel that is displayed when the Range tab is clicked.

Check when using the scaling function

Set the voltage measurement range

Set the current measurement range

Check when you wish to set the scaling constants of all elements to the same

Display when [Element All] is checked

Set the scaling constant of the external sensor input

Set the scaling constants

Using the scaling function

Checking the [Scale SW] box turns ON the scaling function.

Setting the scaling constant

The following four scaling constants are available. Enter their values in the respective entry boxes.
- PT ratio
- CT ratio
- Power factor (Factor)
- Ext (can be specified only when using the external sensor)

By checking the [Element All] box and specifying each scale constant, the respective constants of all elements can be set to the same values. If the check is removed, separate scaling constants can be specified for each element.

If the scaling function is OFF, scaling constants cannot be specified.

For details related to selectable items and specifications, see section 4.4, "Setting the Scaling Value when External PT/CT is Used" or section 4.5, "Selecting the Measurement Range and Setting the Scaling Value when External Sensor is Used (option)" in the WT130 User's Manual IM253401-01E.
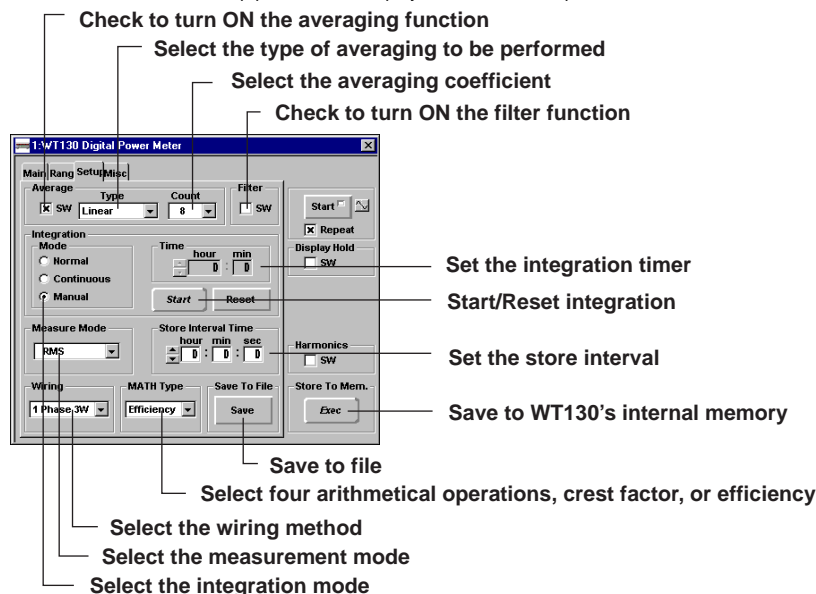
Setting the measurement range

Set the measurement range for the case when the signal is directly input or for when an external sensor input is used.

For details related to selectable items and specifications, see section 4.3, "Selecting the Measurement Range in case of Direct Input" or section 4.5, "Selecting the Measurement Range and Setting the Scaling Value when External Sensor is Used (option)" in the WT130 User's Manual IM253401-01E.

Setup panel

This section describes the Setup panel that is displayed when the Setup tab is clicked.

Check to turn ON the averaging function

Select the type of averaging to be performed

Select the averaging coefficient

Check to turn ON the filter function

Set the integration timer

Start/Reset integration

Set the store interval

Save to WT130's internal memory

Save to file

Select four arithmetical operations, crest factor, or efficiency

Select the wiring method

Select the measurement mode

Select the integration mode

Using the averaging function

Checking the [SW] box under [Average] turns ON the averaging function.

If the [SW] box is checked, select the type of averaging to be performed in the [Type] list box and set the averaging coefficient in the [Count] list box.

For details related to selectable items and specifications, see section 4.6, "Using the Averaging Function" in the WT130 User's Manual IM253401-01E.

Setting the filter

Checking the [SW] box under [Filter] turns ON the filter.

For details related to selectable items and specifications, see section 4.2, "Turning the Filter On/OFF" in the WT130 User's Manual IM253401-01E.

Using the integration function

Selecting the integration mode

Check one of the [Mode] buttons under [Integration].

• Normal   : Integrates using standard integration mode.
• Continuous   : Integrates using continuous integration mode.
• Manual   : Integrates using manual integration mode.

If Normal or Continuous is selected, set the integration timer.

Setting the integration timer

Enter a value in the [hour] and [min] boxes under [Time].

Starting/Resetting integration

Pressing the [Start] button starts the integration. After the integration is complete, pressing the [Reset] button initializes the integrated value.

For details related to selectable items and specifications, see section 7.2, "Setting Integration Mode and Integration Timer" in the WT130 User's Manual IM253401-01E.

Selecting the measurement mode

Select the measurement mode in the [Measure Mode] list box.

For details related to selectable items and specifications, see section 4.1, "Selecting the Measurement Mode" in the WT130 User's Manual IM253401-01E.

Setting the store interval

Enter values in the [hour] and [sec] boxes under [Store Interval Time].

For details related to selectable items and specifications, see section 9.1, "Storing/Recalling Measured Data" in the WT130 User's Manual IM253401-01E.

Selecting the wiring method

Select the wiring method in the [Wiring] list box.

For details related to selectable items and specifications, see section 3.9, "Selecting the Wiring Method" in the WT130 User's Manual IM253401-01E.

Selecting four arithmetical operations, crest factor, or efficiency computation

The following computations can be specified.

By setting the measurement function of display C of the Main panel to [MATH], the value of the specified computation is displayed in display C.

For details related to selectable items and specifications, see the sections indicated below in the WT130 User's Manual IM253401-01E.

• Efficiency   : Section 4.9, "Computing the Efficiency."
• A+B, A–B, AxB, A/(B*B), (A*A)/B   : Section 4.7, "Using the Four Arithmetical Operation Function."
• CFV1, CFV2, CFV3, CFA1, CFA2, CFA3 : Section 4.8, "Computing the Crest Factor"

Storing measured data

Clicking the [Exec] button changes the button into [Abort] and data begins to be stored to the WT130's internal memory.

Clicking the [Abort] button terminates the store operation. For details related to the items that are stored and specifications, see section 9.1, "Storing/ Recalling Measured Data" in the WT130 User's Manual IM253401-01E.

Save measured data (Save to a specified file)

Clicking the [Save] button displays a [Save As] dialog box.

Enter the destination file name and click [Save]. Data in the WT130's internal memory are saved to the specified file.

The measured data that are displayed on the Main or Harm operation panel are saved. When saving measured data of more than four types, change the measured item using the [Function] button and save again.
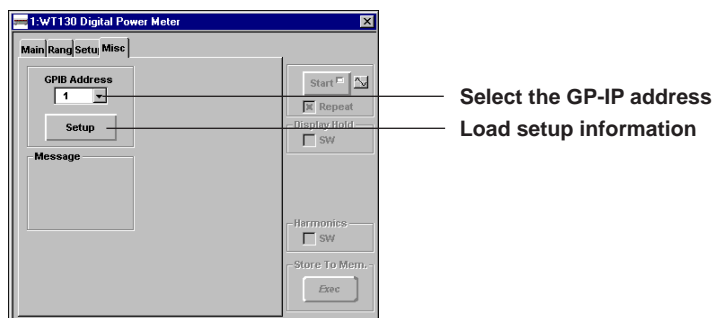
The data format in which the file is saved is ASCII (".csv" extension). A header file (text file with ".hdr" extension) containing detailed information about the data is also saved.

To save data that are stored during normal measurement, change the operation panel to normal measurement. To save data that are stored during harmonic measurement, change the operation panel to harmonic analysis.

The name of the harmonic data file becomes "xxx_**.csv" (where ** is a value from 00 to 29). The operation of saving measured data takes a long time. During this period, key operations are suspended.
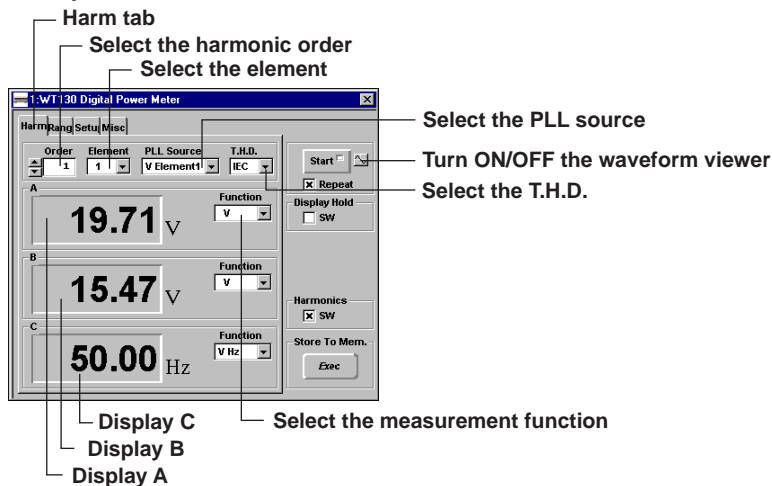
Misc Panel

This section describes the Misc panel that is displayed when the Misc tab is clicked.
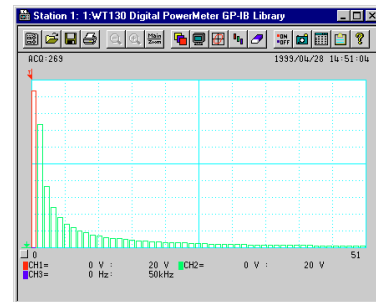

Select the GP-IB address of the WT130 with which you wish to communicate in the [GP-IB Address] list box. Click the [Setup] button to load the WT130's current setup information in the GP-IB window.

Harm panel

This section describes the Harm panel that is displayed when the Harm tab is clicked. The Main tab changes into Harm tab when the [SW] box under [Harmonics] is checked.

Harm tab
Select the harmonic order
Select the element

Waveform viewer display example

Select the PLL source
Turn ON/OFF the waveform viewer
Select the T.H.D.

19.71 V
15.47 V
50.00 Hz

Display C
Display B
Display A
Select the measurement function

Selecting the measure ment function
Select the function that you wish to analyze and display from the [Function] list box.
The items that can be selected in displays A, B, and C vary. For details related to selectable items and specifications, see section 8.1, "Harmonic Analysis Function" in the WT130 User's Manual IM253401-01E.

Selecting the harmonic order
Select the harmonic order to be analyzed. The analyzed value of the specified harmonic order appears in display B. For details, see section 8.4, "Setting the Harmonic Order and Displaying the Results of Harmonic Analysis" in the WT130 User's Manual IM253401-01E.

Selecting the element
Select the input element on which to perform harmonic analysis. For details, see section 8.2, "Setting the Element, PLL Source and Harmonic Distortion Method" in the WT130 User's Manual IM253401-01E.

Selecting the PLL source
Select the reference signal for the harmonic order under analysis. For details, see section 8.2, "Setting the Element, PLL Source and Harmonic Distortion Method" in the WT130 User's Manual IM253401-01E.

Selecting the T.H.D
Select the equation used to calculate the total harmonic distortion. For details, see section 8.2, "Setting the Element, PLL Source and Harmonic Distortion Method" in the WT130 User's Manual IM253401-01E.

Displaying the waveform viewer
When the harmonic data that have been analyzed are displayed on the waveform viewer, the value of each display shows the following:
- Display A   : Displays the value using a red bar
- Display B   : Displays the value from the first to 50th order using a green bar.
- Display C   : Displays the value using a blue bar

Precautions to be taken when using the operation panel
- A WT130 control software file with limited functions is also available. For details, see the [ReadmeWT130.txt] file in the folder to which the WT130 Control Software [WT130.gpl] was installed. (The default folder is WE7000/GPIB.)
- If you are saving measured data using [Save Acquisition Data] from the [Active Module] menu, save the data in the free run mode for normal measurement and in the trigger mode for harmonic measurement.