User's Manual

Voltage Fluctuation/Flicker Measurement Software for WT5000

(with Power Supply Control Function, IEC 61000-3-11 Compliant)

YOKOGAWA
Yokogawa Test & Measurement Corporation

IM D025-03EN
1st Edition

Harmonic/Flicker Measurement Software for WT5000 (with Power Supply Control Function) consists of the following software applications.

- IEC 61000-3-2 Harmonic Measurement Software
- IEC 61000-3-3 Voltage Fluctuation and Flicker Measurement Software
- IEC 61000-3-11 Voltage Fluctuation and Flicker Measurement Software
- IEC 61000-3-12 Harmonic Measurement Software

Of these applications, this user's manual explains **the power control features and operating procedures** of the **IEC 61000-3-11 Voltage Fluctuation and Flicker Measurement Software**. To ensure correct use, please read this manual thoroughly before operation.
After reading this manual, keep it in a safe place for quick reference in the event that a question arises.
The manuals for the Harmonic/Flicker Measurement Software for WT5000 (with Power Supply Control Function) are listed on the next page. Please read all manuals.

For **the handling precautions, features, and operating procedures** of the IEC 61000-3-11 Voltage Fluctuation and Flicker Measurement Software, see IM D024-03EN.

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

1st Edition: February 2020

1st Edition: February 2020 (YMI)

Manuals

The following manuals, including this one, are provided as manuals for the **Harmonic/ Flicker Measurement Software for WT5000 (with Power Supply Control Function)**.

PDF Data of Manuals

The downloaded zip file contains the following PDF data files. The zip file also contains Japanese manuals.

File Name	Manual Title	Manual No.
Manuals explaining the power supply control features and operating procedures of each software		
IEC 61000-3-2 NFPower Users manual.pdf	Harmonic Measurement Software for WT5000 (with Power Supply Control Function, IEC 61000-3-2 Compliant) User's Manual	IM D025-01EN
IEC 61000-3-3 NFPower Users manual.pdf	Voltage Fluctuation/Flicker Measurement Software for WT5000 (with Power Supply Control Function, IEC 61000-3-3 Compliant) User's Manual	IM D025-02EN
IEC 61000-3-11 NFPower Users manual.pdf	This manual. Voltage Fluctuation/Flicker Measurement Software for WT5000 (with Power Supply Control Function, IEC 61000-3-11 Compliant) User's Manual	**IM D025-03EN**
IEC 61000-3-12 NFPower Users manual.pdf	Harmonic Measurement Software for WT5000 (with Power Supply Control Function, IEC 61000-3-12 Compliant) User's Manual	IM D025-04EN
Manuals explaining the handling precautions, features, and operating procedures of each software		
IEC 61000-3-2 Users Manual.pdf	Harmonic Measurement Software for WT5000 (IEC 61000-3-2 Compliant) User's Manual	IM D024-01EN
IEC 61000-3-3 Users Manual.pdf	Voltage Fluctuation/Flicker Measurement Software for WT5000 (IEC 61000-3-3 Compliant) User's Manual	IM D024-02EN
IEC 61000-3-11 Users Manual.pdf	Voltage Fluctuation/Flicker Measurement Software for WT5000 (IEC 61000-3-11 Compliant) User's Manual	**IM D024-03EN**
IEC 61000-3-12 Users Manual.pdf	Harmonic Measurement Software for WT5000 (IEC 61000-3-12 Compliant) User's Manual	IM D024-04EN

Online Help

The above user's manuals are incorporated in the software as help files.
For instructions on how to use the help feature, see section 3.8.

* You can also view the WT5000 User's Manual from the online help.

Manual Title	Manual No.
WT5000 Precision Power Analyzer Features Guide	IM WT5000-01EN
WT5000 Precision Power Analyzer User's Manual	IM WT5000-02EN
WT5000 Precision Power Analyzer Getting Started Guide	IM WT5000-03EN
WT5000 Precision Power Analyzer Communication Interface User's Manual	IM WT5000-17EN

Software License Agreement

Yokogawa Test & Measurement Corporation

Harmonic/Flicker Measurement Software for WT5000 (with Power Supply Control Function) Software License Agreement

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Should a dispute arise as a result of using This Software or in regards to this license agreement, both parties agree to discuss the issue in good faith. If an agreement cannot be reached, the Tokyo District Court shall be the exclusive agreement jurisdictional court of the first hearing.

Contents

1.1 Features

The Harmonic/Flicker Measurement Software for WT5000 (with Power Supply Control Function) has the following feature added to the Harmonic/Flicker Measurement Software for WT5000.

- NF Corporation's power supply (hereafter referred to as the NF power supply) control

Compatible Instruments

This software is dedicated to YOKOGAWA's WT5000 Precision Power Analyzers.

For the handling precautions, features, and operating procedures of the WT5000, see the WT5000 User's Manual.
This user's manual (IM D025-03EN) explains the case in which the IEC 61000-3-11 Voltage Fluctuation and Flicker Measurement Software (one of the applications of this software) and the WT5000 (hereafter referred to as the WT) are used in combination.

This software can be used with the following power supplies and reference impedance networks (RINs) made by NF Corporation.

ES series

Power Supply	Reference Impedance Network (RIN)
ES2000S	ES4152
ES2000U	ES4153

DP series

- **Power Supply**

  DP□□□ □ (E)[3]
  1 2

  1 Output capacity 015 (1.5 kVA) to 480 (48 kVA)
  2 Output format
  S/SL: single-phase, D: single-phase three-wire, T: three-phase, M: multi-phase
  3 If you specify CEE7 (outlet for Europe), an "E" is appended to the model (except for DP240S/DP360S/D420LS/DP480LS).

- **Reference Impedance Network (RIN)**

Model	Capacity	Wiring
DP4162	20A	Single-phase two-wire
DP4163	20A	Single-phase two-wire, single-phase three-wire, three-phase three-wire, three-phase four-wire
DP4164	30A	Single-phase two-wire, single-phase three-wire
DP4165	30A	Single-phase two-wire, single-phase three-wire, three-phase three-wire, three-phase four-wire
DP4166	50A	Single-phase two-wire, single-phase three-wire
DP4167	50A	Single-phase two-wire, single-phase three-wire, three-phase three-wire, three-phase four-wire
DP4168	75A	Single-phase two-wire, single-phase three-wire
DP4169	75A	Single-phase two-wire, single-phase three-wire, three-phase three-wire, three-phase four-wire

DP4164 to DP4169 are displayed on the software as follows:
- Single-phase: DP4162
- Three-phase: DP4163

Power Supply Control Function

Power Supply Configuration

From the dialog box of this software, you can turn the power supply output on and off and set various parameters, such as voltage and frequency.

Power Supply Quality Check Function

When the power supply output is turned on, this function checks the voltage, frequency, total harmonic distortion of the voltage, and so on.

Saving and Loading Power Supply's Setting Information

The power supply model and setting information can be saved to a file. And setting information saved in a file can be loaded into the software. Further, when online, the power supply settings can be loaded from the power supply into the software.

Inclusion of the Power Supply Name in Reports

The name of the power supply used in testing is included in voltage fluctuation/flicker measurement reports.

1.2 PC System Requirements

For the PC system requirements of this software, see section 1.2 in the IEC 61000-3-11 Voltage Fluctuation/Flicker Measurement Software User's Manual (IM D024-03EN). However, the Ethernet requirement of the communication board is as follows:

Communication Interface

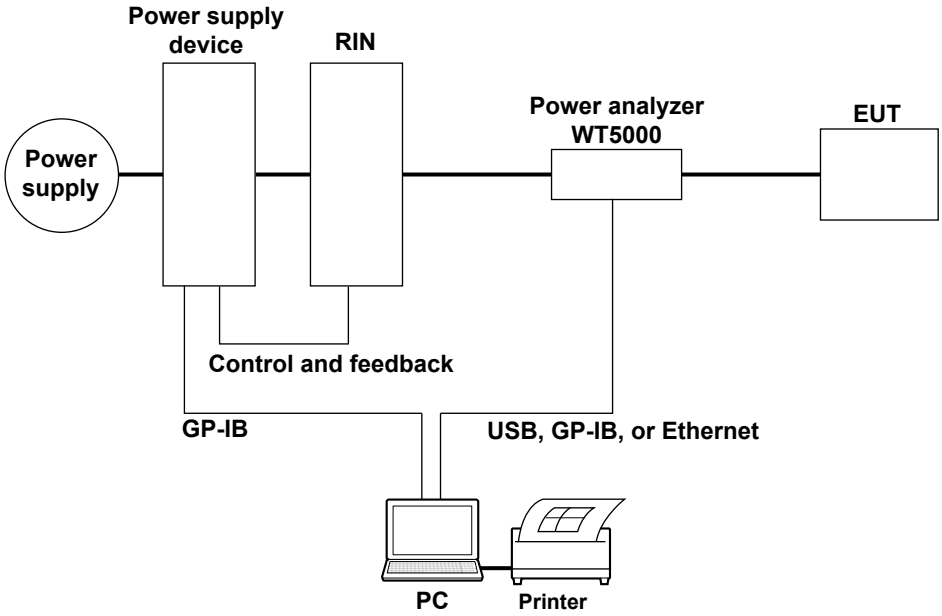
Between the WT and PC

USB, GP-IB, or Ethernet can be used. A 100BASE-TX or 1000BASE-T Ethernet port is required to use Ethernet.

Between the NF Power Supply and PC

Only GP-IB can be used.

2.1 System Configuration



To increase the power supply capacity, you need to connect a booster to the power supply unit.
For a three-phase power supply, you add a slave to the master power supply.
For details on how to connect the cables of each device, see the user's manual for the device.

2.2 Connecting the WT5000 to the PC and Starting the Software

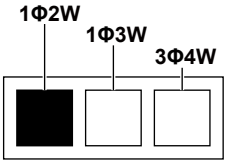
Connecting the WT to the PC and Installing the Software

See sections 2.1 to 2.4 in the IEC 61000-3-11 Voltage Fluctuation/Flicker Measurement Software User's Manual (IM D024-03EN)

Starting the Software

Start the software according to section 3.1 in the IEC 61000-3-11 Voltage Fluctuation/Flicker Measurement Software User's Manual (IM D024-03EN). Also, note the following:

- If you are using the ES2000U, set the single-phase/three-phase slide switch appropriately before starting the software.
- If you are using the multi-phase model of the DP series power supply, set the phase mode switch appropriately before starting the software.



To connect using the same settings as the last time, select "Same Condition as Last Execution" in the software startup connection conditions.
When you start the software for the first time, default settings according to the power supply type described in section 3.4 are used.

Note

If you manually change the power supply settings, such as the voltage range and output voltage, after starting or closing the software, those settings are not reflected, and the settings of connection condition (default, loaded conditions, or conditions used the last time) are used. In such a case, check or change the power supply settings on the software before turning the output on.

3.1 Power Supply Functions

Icon	Function	Power Supply Function
	**Start**	None
	**Open**	Load power supply model and setting information from a file.
	**Connect**	Establish a connection between the PC and power supply using the GP-IB interface.
	**Setting**	Set various power supply parameters, such as voltage and frequency.
	**Test**	• Turn the power output on and off. • When the power output is turned on, this function checks the voltage, frequency, total harmonic distortion of the voltage, and so on. (Power supply quality check function)
	**Analyze**	None
	**Print**	The name of the power supply used in testing is included in harmonic measurement reports.
	**Save**	Save the power supply model and setting information to a file.
	**Close**	When you close the software, the power is turned off, regardless of whether the power is on or off.

3.2 Loading Power Supply Setting Information

Power supply setting information is saved in .ini files. Load the setting information according to the procedure in section 5.1, “Loading Setting Information and Measured Data” in the IEC 61000-3-11 Voltage Fluctuation/Flicker Measurement Software User’s Manual (IM D024-03EN). An .ini file contains the following power supply parameters.

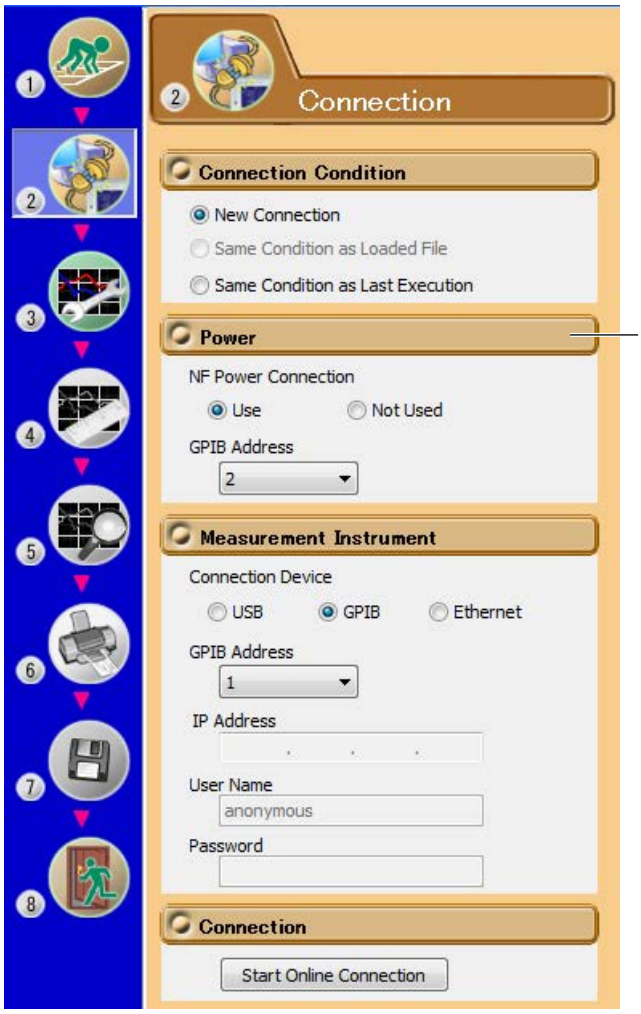
- Power supply model
- Power supply ROM version
- Wiring system
- Voltage range
- Voltage limit
- Rated voltage (phase)
- Rated frequency
- Impedance[1]
- Setting mode (basic/advanced)
- Power supply quality check availability
- Phase voltage/line voltage
- GP-IB address of the power supply
- Reference impedance network (RIN) usage

1 This information is saved regardless of whether reference impedance network (RIN) connection is present.

3.3 Configuring a New Set of Power Supply to PC Communication Parameters (New connection)

Procedure

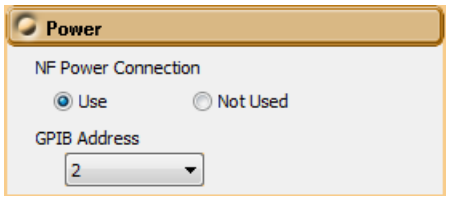
1. Click  in the menu area. The detailed connection menu appears.



Power supply connection
Configure the connection to the NF power supply.

Configuring the Connection to the Power Supply

2. For NF Power Connection, select **Use** or **Not Used**.
3. If you select Use, select the GP-IB address of the target power supply.



Note

- GP-IB address 0 is reserved for the PC, so you cannot select it.
- To control the WT and NF power supply using GP-IB, set different addresses for each. If the addresses overlap, an error dialog box will appear.

Explanation

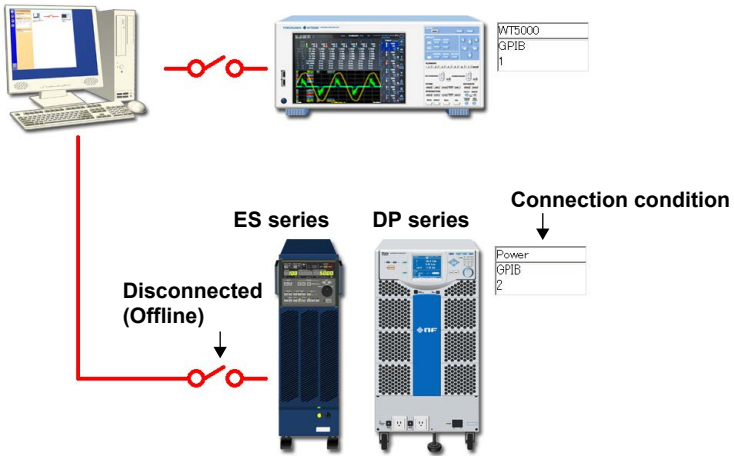
Configuring the Connection to the Power Supply

Select the GP-IB address of the target power supply.
Selectable range: 1 to 30

Connection Condition and Connection Status Display

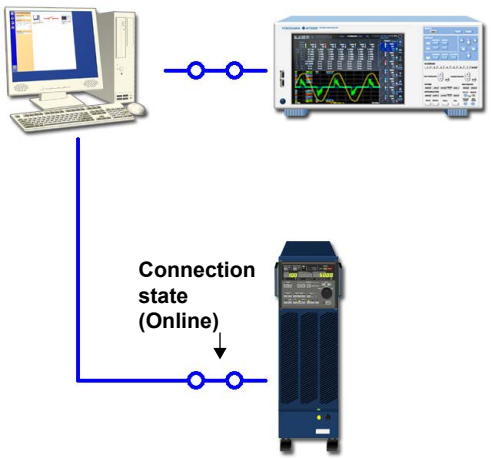
The connection conditions on the detailed menu and the current connection status are shown in the setting and display area.

- **When Disconnected (offline)**
  Illustration of both the ES series power supply and DP series power supply is shown.

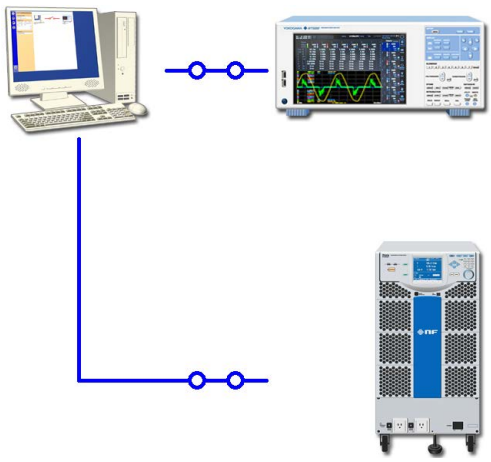


- **When Connected (online)**
  Illustration of either the ES series power supply and DP series power supply, whichever is connected, is shown.

- **When connected to an ES series power supply**



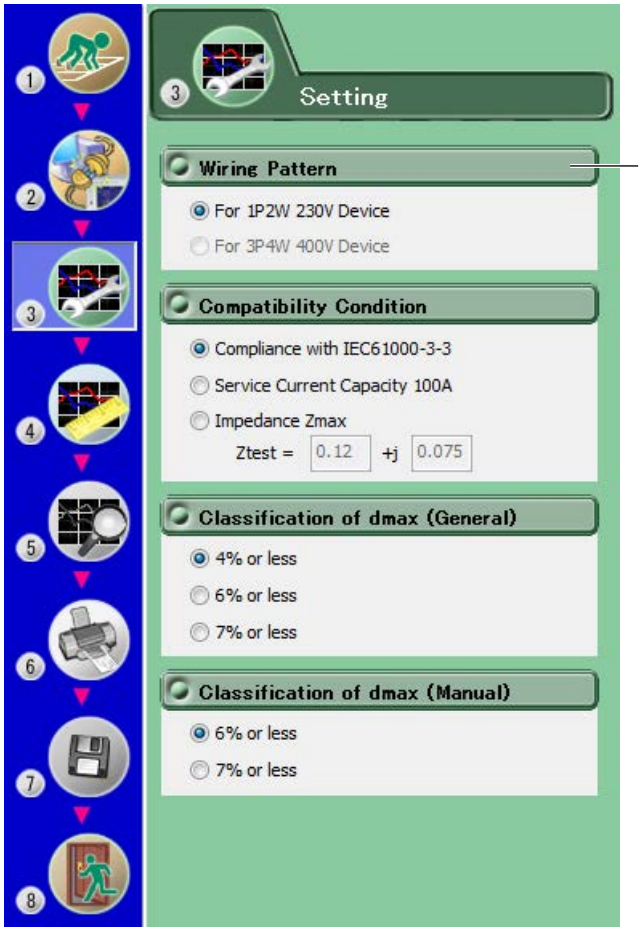
- **When connected to a DP series power supply**



3.4 Configuring the Power Supply

Procedure

1. Click  in the menu area. The detailed setting menu appears.



Wiring system
Only the selectable items become available depending on the type of connected NF power supply.

1. In the setting and display area, select the **NF Power Supply** tab. An NF power supply setting dialog box appears.
2. Click the basic settings  or advanced settings  button.
3. Specify the settings.

In basic setting mode, the following dialog box appears.

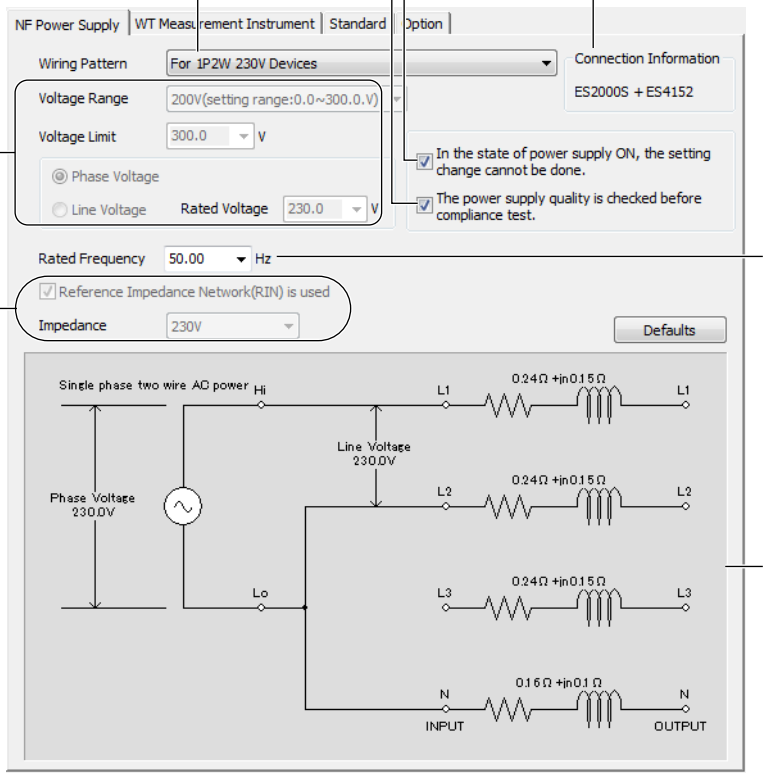
In basic setting mode, when you set the wiring system, these boxes are set automatically.
For details, see the next page.
To view or change these settings, select advanced setting mode.

Select this check box to check the power supply quality before measurement.
For details on the power supply quality check, see section 3.5.

Select this check box to prohibit changes to the settings when the power output is on.

Power supply and reference impedance network (RIN) information
The power supply and RIN model are obtained automatically and displayed.*

Wiring system



Rated frequency
Select 50 Hz or 60 Hz from the drop-down list.
If you click the box, you can set the frequency in the range of 45.00 to 66.00.
You can select values that have been entered recently from the drop-down list.

Illustration of the setting information

* If any of the models from DP4164 to DP4169 is connected for the RIN, the software displays it as follows:

- Single-phase: DP4162
- Three-phase: DP4163

Wiring System

Depending on the type of power supply that is connected, the following wiring system is selected automatically. In addition, voltage range and other parameters are set to the following values.

When an ES2000S (Single-Phase Model) Is Connected

Wiring System	Voltage Range	Voltage Limit	Phase Voltage/ Line Voltage	Rated Voltage
Single-phase two-wire 230 V, 50 Hz device	200	300.0	Phase voltage	230.0

When an ES2000U (Three-Phase Model) Is Connected with the Slide Switch Set to Single-Phase Mode

Wiring System	Voltage Range	Voltage Limit	Phase Voltage/ Line Voltage	Rated Voltage
Single-phase two-wire 230 V, 50 Hz device	200	300.0	Phase voltage	230.0

When an ES2000U (three-phase model) Is Connected with the Slide Switch Set to Three-Phase Mode

Wiring System	Voltage Range	Voltage Limit	Phase Voltage/ Line Voltage	Rated Voltage
Three-phase four-wire 400 V, 50 Hz device	200	300.0	Line voltage	400.0

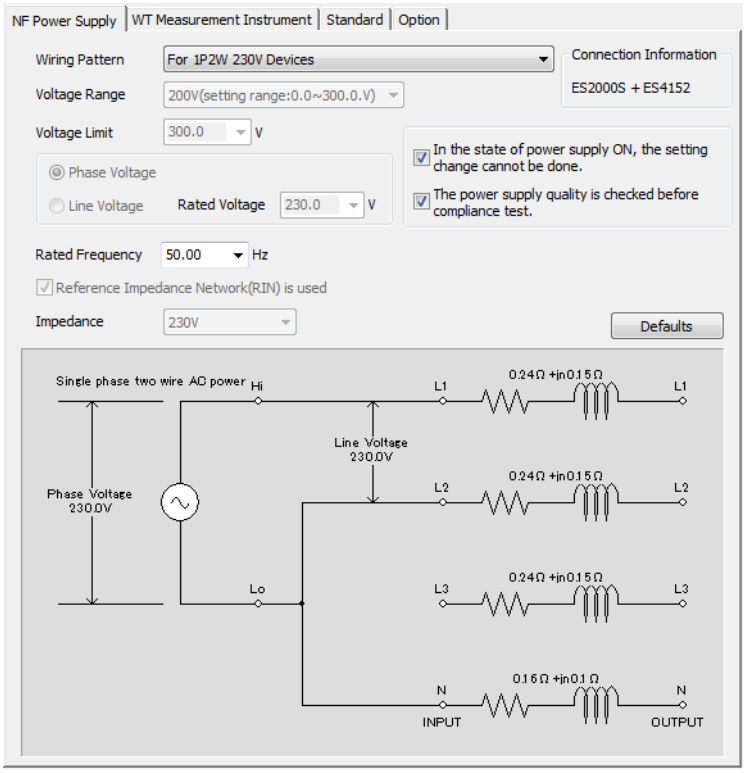
When a DP Power Supply Single-Phase Model Is Connected or Multi-Phase Model with the Phase Mode Set to Single-Phase Two-Wire Output

Wiring System	Voltage Range	Voltage Limit	Phase Voltage/ Line Voltage	Rated Voltage
Single-phase two-wire 230 V device	200	300.0	Phase voltage	230.0

When a DP Power Supply Multi-Phase Model Is Connected or Multi-Phase Model with the Phase Mode Not Set to Single-Phase Two-Wire Output

Wiring System	Voltage Range	Voltage Limit	Phase Voltage/ Line Voltage	Rated Voltage
Three-phase four-wire 400 V device	200	300.0	Phase voltage	230.9

In advanced setting mode, the following dialog box appears.



Voltage Range

Select 100 V or 200 V. The range of values that you can set for the rated voltage and voltage limit is displayed.

Voltage Limit

You can select the following values from the drop-down list for the voltage limit depending on the voltage range.

Voltage Range	Voltage Limit
100 V	150.0 V
200 V	300.0 V

By clicking the box, you can set the value down to the first decimal place within the range shown in the Voltage Range box.

Output Voltage Setting

Set the output voltage to **Phase Voltage** or **Line Voltage**.

Rated Voltage

You can select the following values from the drop-down list for the rated voltage output depending on the Phase Voltage/Line Voltage setting and voltage range.

		Phase Voltage/Line Voltage	
		Phase Voltage	**Line Voltage**
Voltage Range	100 V	100.0 V or 115.0 V	200.0 V or 230.0 V
	200 V	200.0 V or 230.0 V	200.0 V or 400.0 V

By clicking the box, you can set the value down to the first decimal place within the range shown in the Voltage Range box.

If the phase voltage of the rated voltage exceeds the value in the voltage limit table, the following values are set depending on the power supply type and voltage range.

Voltage limit: The value in the voltage limit table
Phase voltage/line voltage: Phase voltage
Rated voltage: Same value as the voltage range

Note

If the rated voltage is set using a line voltage, the line voltage is converted into phase voltage according to the wiring system and compared to the value in the voltage limit table.

Impedance

If you select the “Reference Impedance Network (RIN) is used” check box, you can set the following impedances according to the connected RIN. If you do not select the check box, DEFEAT appears in the box.

When an ES4152 is connected

Or when the RIN under Connection Information in the upper right of the tab sheet is DP4162*

- DEFEAT
- 100 V
- 200 V
- 230 V

When an ES4153 is connected

Or when the RIN under Connection Information in the upper right of the tab sheet is set to DP4163*

- DEFEAT
- JPN 1φ
- JPN 3φ
- EU 1φ/3φ

* For the connection information when any of the models from DP4164 to DP4169 is connected for the RIN, see page 3-6.

Depending on the connected power supply type and compatibility condition, the impedance is set to the following default values.

		Power Supply Type	
		• **ES2000S** • **DP series** - Single-phase model - When phase mode on a multi-phase model is set to single-phase two-wire	• **ES2000U** • **DP series** - Three-phase model - When phase mode on a multi-phase model is not set to single-phase two-wire
Compatibility Condition	Compliance with IEC61000-3-3	230 V	EU1φ/3φ
	Service Current Capacity 100A	DEFEAT	DEFEAT
	Impedance Zmax	DEFEAT	DEFEAT

If the RIN for the DP series power supply is not connected, you cannot select the “Reference Impedance Network (RIN) is used” check box. Consequently, you cannot change the impedance setting.

Defaults

The settings are reset to the following conditions (default values).

Setting mode: basic

Wiring system

The wiring system is set as follows according to the connected power supply.

- When an ES2000S (single-phase model) is connected
  For 1P2W 230 V, 50 Hz Device
- When an ES2000U (three-phase model) is connected with the slide switch set to single-phase mode
  For 1P2W 230 V, 50 Hz Device
- When an ES2000U (three-phase model) is connected with the slide switch set to three-phase mode
  For 3P4W 400 V, 50 Hz Device
- When a DP series power supply single-phase model is connected or multi-phase model with the phase mode set to single-phase two-wire output
  For 1P2W 230 V Device
- When a DP series power supply multi-phase model is connected or multi-phase model with the phase mode not set to single-phase two-wire output
  For 3P4W 400 V Device

Voltage ranges: As shown in the table on page 3-7 according to the connected power supply and wiring system.

Voltage limit: As shown in the table on page 3-7 according to the connected power supply and wiring system.

Phase voltage/line voltage: As shown in the table on page 3-7 according to the connected power supply and wiring system.

Rated voltage: As shown in the table on page 3-7 according to the connected power supply and wiring system.

Rated frequency: 50 Hz

The power supply quality is checked before compliance test: Selected

Reference Impedance Network (RIN) is used

- When an ES2000S or ES2000U is connected: Selected
- When a DP series power supply is connected
  - When DP series RIN is connected: Selected
  - When DP series RIN is not connected: Not selected

Impedance: As shown in the table on page 3-9 according to the connected power supply and compatibility condition.

Settings at Startup

The above settings when the software is started are set as follows depending on the connection conditions.

Connection Condition	Settings
New connection	Default values
Same conditions as those of the loaded file	Settings of the loaded file
Same conditions as the last time	Settings used the last time

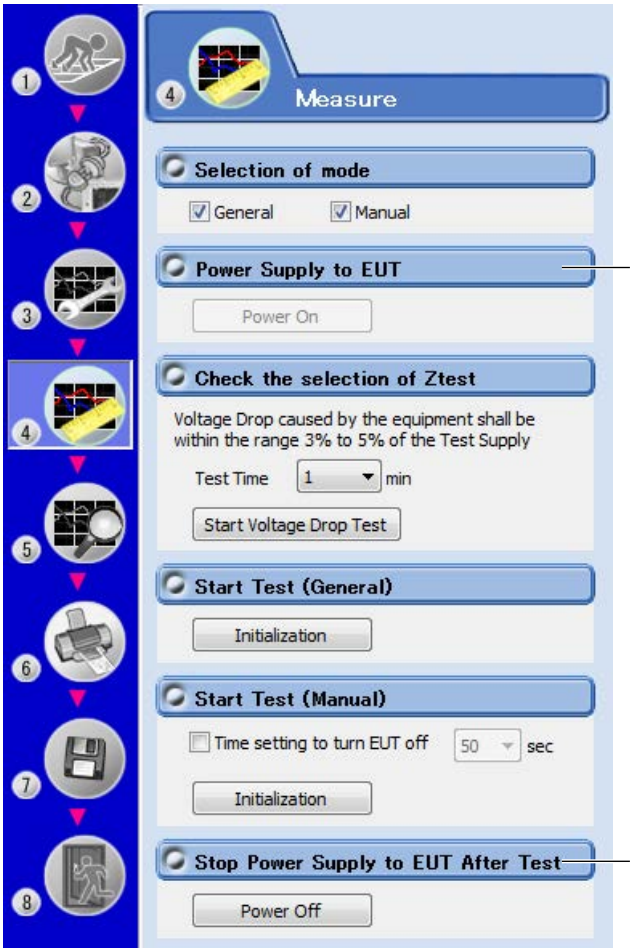
3.5 Executing Voltage Fluctuation/Flicker Measurements

Procedure

1. Click  in the menu area. A detailed measurement menu appears according to the compatibility condition settings of section 7.1 in the IEC 61000-3-11 Voltage Fluctuation/Flicker Measurement Software User's Manual (IM D024-03EN).

- If Compatibility Condition is set to Impedance Zmax, the detailed measurement menu shown in the following figure appears.
- If Compatibility Condition is set to Compliance with IEC61000-3-3 or Service Current Capacity 100A, the detailed measurement menu shown on the next page appears.

- **When the compatibility condition is Impedance Zmax**



- **When the compatibility condition is Compliance with IEC 61000-3-3 or Service Current Capacity 100A**

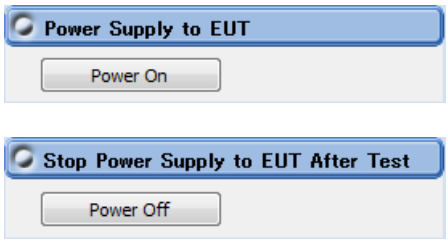
 in the setting and display area is an power supply output on/off icon.

* Unavailable icons appear dimmed.

Turning the Power Output On and Off

The following methods are available for turning the power output on and off.

- Click Power On or Power Off in the detailed menu area.



- Click  (Power On) or  (Power Off) in the setting and display area.

Whether the Power On, Power Off, Initialize, Start, Reset, and Move buttons are enabled or disabled in each of the software states are as follows:

Flicker Measurement

Software State	Power Supply State	Power On	Power Off	Initialize	Start	Reset
Before measurement initialization	Power On	Disabled	Enabled	Enabled	Disabled	Disabled
(Reset)	Power Off	Enabled	Disabled	Disabled	Disabled	Disabled
Measurement initialization complete	Power On	Disabled	Enabled	Disabled	Enabled	Enabled
(Ready)	Power Off	Enabled	Disabled	Disabled	Disabled	Enabled
Measuring	Power On	Disabled	Enabled	Disabled	Disabled	Enabled
(Start)						
Measurement complete	Power On	Disabled	Enabled	Disabled	Disabled	Enabled
(Complete)	Power Off	Enabled	Disabled	Disabled	Disabled	Enabled
Offline		Disabled	Disabled	Disabled	Disabled	Disabled

WT states are indicated in parentheses.

Manual dmax Measurement

Software State	Power Supply State	Power On	Power Off	Initialize	Start	Reset	Move
Before measurement initialization	Power On	Disabled	Enabled	Enabled	Disabled	Disabled	Disabled
(Reset)	Power Off	Enabled	Disabled	Disabled	Disabled	Disabled	Disabled
Measurement initialization complete	Power On	Disabled	Enabled	Disabled	Enabled	Enabled	Enabled
(Ready)	Power Off	Enabled	Disabled	Disabled	Disabled	Disabled	Disabled
Measuring	Power On	Disabled	Enabled	Disabled	Disabled	Enabled	Disabled
(Start)							
Measurement complete	Power On	Disabled	Enabled	Disabled	Disabled	Enabled	Enabled
(Complete)	Power Off	Enabled	Disabled	Disabled	Disabled	Disabled	Disabled
Offline		Disabled	Disabled	Disabled	Disabled	Disabled	Disabled

WT states are indicated in parentheses.

Note

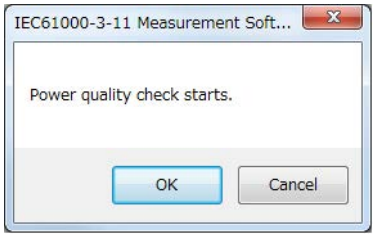
- In the measurement initialization complete (Power Off) or measurement complete (Power Off) states, if the state is changed from Power Off to Power On, a power supply quality check is not performed regardless of whether the check box is selected.
- If the software is in the Power On state and the software is switched from online to offline, the software switches to the Power Off state.
- If the software is switched from offline to online, the software is set to the Power Off state regardless of whether the software is in the Power On or Power Off state.
- When the software is closed, the software is set to the Power Off state regardless of whether the software is in the Power On or Power Off state.

Power Supply Quality Check

If the “The power supply quality is checked before compliance test” check box in the power supply setting dialog box is selected, the power supply quality is checked before the power output is turned on.

Note

If the /G7 option is not installed in the WT, the power supply quality cannot be checked.



The following items are checked.

- Measurement time 500 ms
- Power supply judgment conditions

Rated voltage[1]	Within ±2.0%[4]
Nominal frequency[2]	Within ±0.5%[4]
Total harmonic distortion of supply voltage[3]	Less than 3%[4]

1 For the rated voltage, the rated voltage value in the power supply setting dialog box and the measured voltage (rms) are compared.

2 For the nominal frequency, the rated frequency value in the power supply setting dialog box and the measured value are compared.

3 Total harmonic distortion of supply voltage is calculated as follows with the denominator of the equation set to the fundamental voltage waveform.

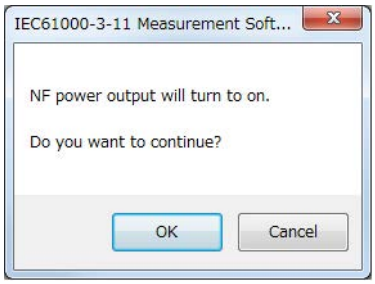
Total harmonic distortion of voltage Uthd [%]

$$\frac{\sqrt{\sum_{k=2}^{max} U(k)^2}}{U(1)} \cdot 100$$

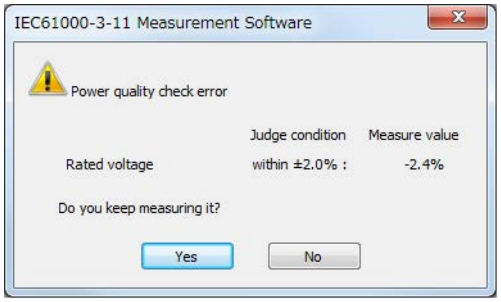
k: Harmonic order
max: Upper Limit of Harmonic Analysis

4 Judgment is performed in normal measurement mode of the WT. For details on the measurement specifications, see the Features Guide (IM WT5000-01EN) and User’s Manual (IM WT5000-02EN).

If no problems are found in the power supply quality, a power output confirmation message appears.



If problems are found in the power supply quality, an error message appears. The item that resulted in error is displayed.



Starting Voltage Fluctuation/Flicker Measurements

Start a voltage fluctuation/flicker measurement according to section 8.1 or 8.2 in the IEC 61000-3-11 Voltage Fluctuation/Flicker Measurement Software User's Manual (IM D024-03EN). However, note the following:

Voltage Range Validity Check

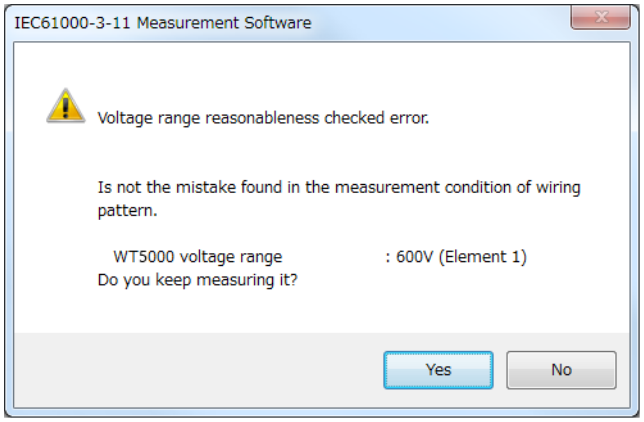
When a voltage fluctuation/flicker measurement is started, the software checks whether the NF power supply, WT, and Voltage Fluctuation/Flicker Measurement Software are configured as shown in the following table.

- Check items when the NF Power Connection is set to Use in the NF power supply communication setting dialog box (section 3.3)

Wiring System	NF Power Supply Setting Dialog Box		WT
	Rated Voltage	Rated Frequency	Voltage Range[1]
Single-phase two-wire 230 V, 50 Hz device	100 to 230 V	45 to 66 Hz	CF3: 100 V to 300 V
Three-phase four-wire 400 V, 50 Hz device	220 to 240 V	45 to 66 Hz	CF3: 300 V to 600 V

1 "CF3" in the table indicates that the crest factor is set to 3.

If the settings are different from those in the table, an error message will appear. The item that resulted in error is displayed.



Measured Element

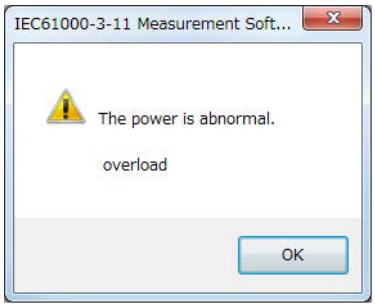
The measured element is determined by the WT measurement target (Object) setting.[1]

1 See section 7.2 in the IEC 61000-3-11 Voltage Fluctuation/Flicker Measurement Software User's Manual (IM D024-03EN).

For example, even when a three-phase power supply is being measured, if the WT measurement target (Object) is set only to Element 1, only input element 1 will be measured.
Also, when a single-phase power supply is being measured, if the WT measurement target (Object) is set to Element 1 and 2, input element 2 (which is not receiving any signal) will also be measured, and the total judgment may indicate Fail.

Power Supply Error Check during Measurement

This software checks whether an error is occurring in the power supply during measurement. If an error is found, an error message appears. For example, if an overload occurs, the following error message will appear.



Note

The power output remains on even if the voltage fluctuation/flicker measurement is ended or aborted. (It is not automatically turned off.)

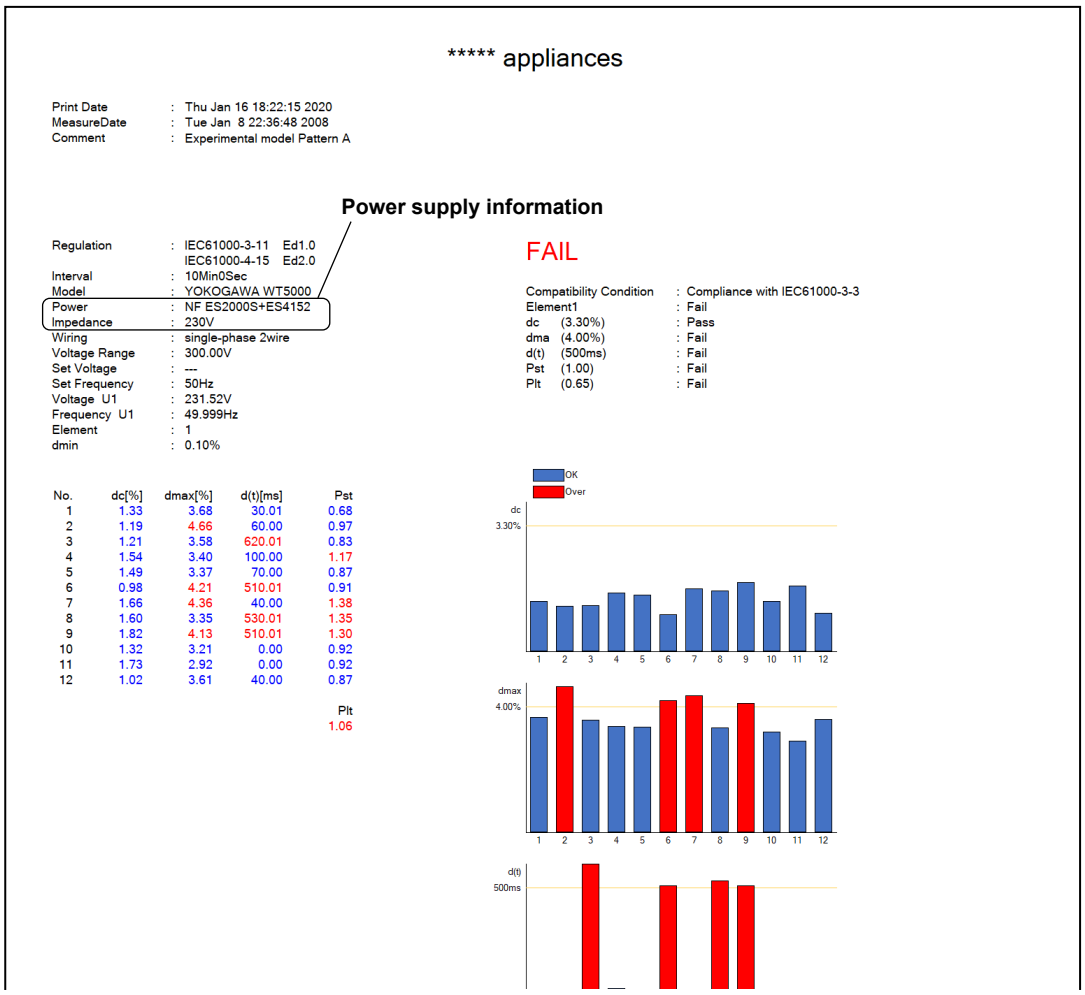
3.6 Printing Reports

You can print reports by following the procedure in section 10.4 in the IEC 61000-3-11 Voltage Fluctuation/Flicker Measurement Software User's Manual (IM D024-03EN).
If the NF Power Connection is set to Use in the NF power supply communication setting dialog box (section 3.3), the following items are included in the report.

- Power: The type of power supply and reference impedance network (RIN)[1]
- Impedance: Reference impedance network (RIN) setting[1]

1 This is displayed if you select the "Reference Impedance Network (RIN) is used" check box in the power supply setting dialog box.

Report printout example



***** appliances

Print Date : Thu Jan 16 18:22:15 2020
MeasureDate : Tue Jan 8 22:36:48 2008
Comment : Experimental model Pattern A

Power supply information

Regulation : IEC61000-3-11 Ed1.0
IEC61000-4-15 Ed2.0
Interval : 10Min0Sec
Model : YOKOGAWA WT5000
Power : NF ES2000S+ES4152
Impedance : 230V
Wiring : single-phase 2wire
Voltage Range : 300.00V
Set Voltage : ---
Set Frequency : 50Hz
Voltage U1 : 231.52V
Frequency U1 : 49.999Hz
Element : 1
dmin : 0.10%

FAIL

Compatibility Condition : Compliance with IEC61000-3-3
Element1 : Fail
dc (3.30%) : Pass
dma (4.00%) : Fail
d(t) (500ms) : Fail
Pst (1.00) : Fail
Plt (0.65) : Fail

No.	dc[%]	dmax[%]	d(t)[ms]	Pst
1	1.33	3.68	30.01	0.68
2	1.19	4.66	60.00	0.97
3	1.21	3.58	620.01	0.83
4	1.54	3.40	100.00	1.17
5	1.49	3.37	70.00	0.87
6	0.98	4.21	510.01	0.91
7	1.66	4.36	40.00	1.38
8	1.60	3.35	530.01	1.35
9	1.82	4.13	510.01	1.30
10	1.32	3.21	0.00	0.92
11	1.73	2.92	0.00	0.92
12	1.02	3.61	40.00	0.87

Plt
1.06

3.7 Saving the Power Supply Setting Information

Power supply setting information is saved in .ini files. Save the setting information according to the procedure in section 11.1, “Saving Setting Information and Measured Data” in the IEC 61000-3-11 Voltage Fluctuation/Flicker Measurement Software User’s Manual (IM D024-03EN).

The following power supply parameters are included in .ini files.

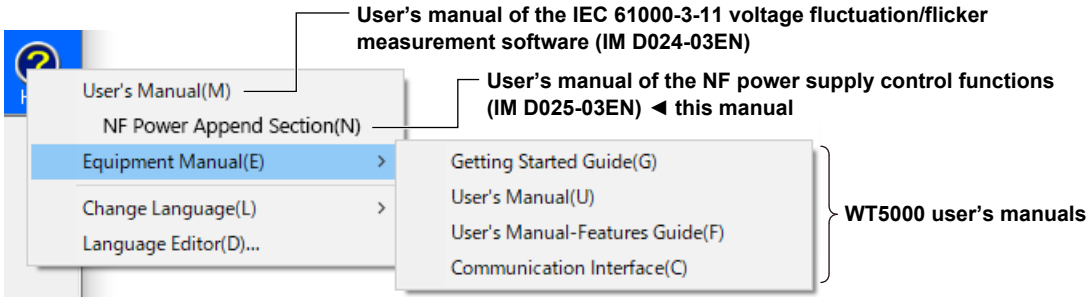
- Power supply model
- Power supply ROM version
- Wiring system[1]
- Voltage range[1]
- Voltage limit[1]
- Rated voltage (phase)[1]
- Rated frequency[1]
- Impedance[*1*2]
- Setting mode (basic/advanced)[1]
- Power supply quality check availability[1]
- Phase voltage/line voltage[1]
- GP-IB address of the power supply
- Reference impedance network (RIN) usage[1]

1 Set in the NF power supply dialog box in section 3.4

2 This information is saved regardless of whether reference impedance network (RIN) connection is present.

3.8 Using the Help Feature

Follow the procedure in section 12.3 in the IEC 61000-3-11 Voltage Fluctuation/Flicker Measurement Software User's Manual (IM D024-03EN). The following PDF document will open.



Obtaining the Latest User's Manual and Alteration Notices

Download the user's manual and alteration notices for the software from the YOKOGAWA manual download webpage. If there are alteration notices, they are downloaded as file attachments to the user's manual.

Change the file name of the manual or alternation notice to that shown below, and overwrite the existing files in the software installation folder.

Latest User's Manual or Alteration Notice	File Name
Document explaining the NF power supply control functions (IM D025-03EN) (this manual)	IMD025-03EN.pdf
Alteration notice for this manual	Alterations-S01CE.pdf

3.9 Closing the Software

Close the software according to the procedure in section 4.2 in the IEC 61000-3-11 Voltage Fluctuation/Flicker Measurement Software User's Manual (IM D024-03EN). When you close the software, the power is turned off, regardless of whether the power is on or off.