KIKUSUI

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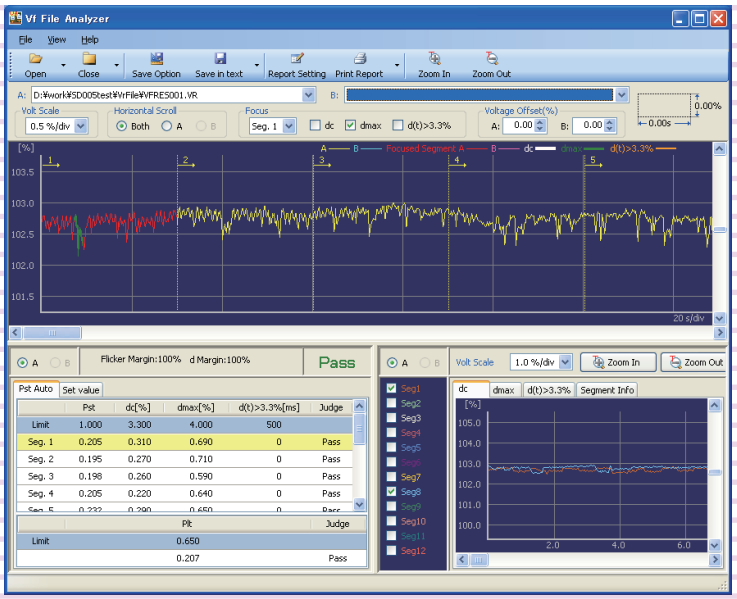
Operation Guide

Application Software

Vf File Analyzer

Ver. 3.5



About This Guide

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Introduction

This operation guide explains how to:

- Analyzes the data of a test results file that is acquired during a voltage fluctuation test using HarmoCapture or acquired with KHA1000, and
- Print reports of test result files.

Product versions that this guide covers

This operation guide applies to Vf File Analyzer with version 3.5.

You can check the version from the help menu **Vf File Analyzer**.

Who should read this operation guide?

The intended audience of this operation guide is anyone using the KHA1000 to control a harmonic current and voltage fluctuation test system or anyone teaching operators how to use such a system.

Explanations are given under the presumption that the reader has electrical knowledge related to harmonic current and voltage fluctuation tests.

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Notations used in this guide

- The KHA1000 Harmonic/Flicker Analyzer may be called the KHA1000.
- "Personal computer" and "PC" are generic terms for personal computers and workstations.
- The following symbols are used with the explanations in this guide.

⚠CAUTION	This symbol indicates a potentially hazardous situation. Ignoring the symbol may result in damage to the product or other property.
NOTE	Indicates information that you should know.

What is Vf File Analyzer?

Vf File Analyzer is application software that analyzes the data of a test results file (xxx.vr) that is acquired during a voltage fluctuation test using HarmoCapture or acquired with KHA1000. Vf File Analyzer operates without being connected to the KHA1000.

Vf File Analyzer can be used to:

- Load the voltage fluctuation test results file acquired by the KHA1000 or HarmoCapture.
- Display test results lists (pass/fail judgment and segment information list.)
- Display graphs (the maximum dc, the maximum dmax, and the maximum time over which d(t) exceeds 3.3 %.)
- Save test results files as text.
- Print reports (comments, test conditions, results lists, and various waveform graphs.)

Opening a Test Results File

You can open two test result files at the same time in Vf File Analyzer3. The files are displayed as test data A and test data B.

You can open test result files that you have already opened from the file list.

Opening a Test Results File Acquired by HarmoCapture

1 **In the toolbar, click the ▼ next to Open and select File A or File B.**

The **FileA(B) Open** dialog box appears.

If you click **Open**, priority is given to file A, and the **FileA Open** dialog box appears.

2 **Select the file that you want to open.**

The test results file name extension for voltage fluctuation tests is .vr.

Opening a Test Results File Acquired by the KHA1000

Follow the procedure below to load a test condition file that was acquired on the KHA1000 to the PC and open it with Vf File Analyzer.

1. **Remove the CompactFlash card that contains the test conditions from the KHA1000.**

2. **Connect the CompactFlash card to the PC.**

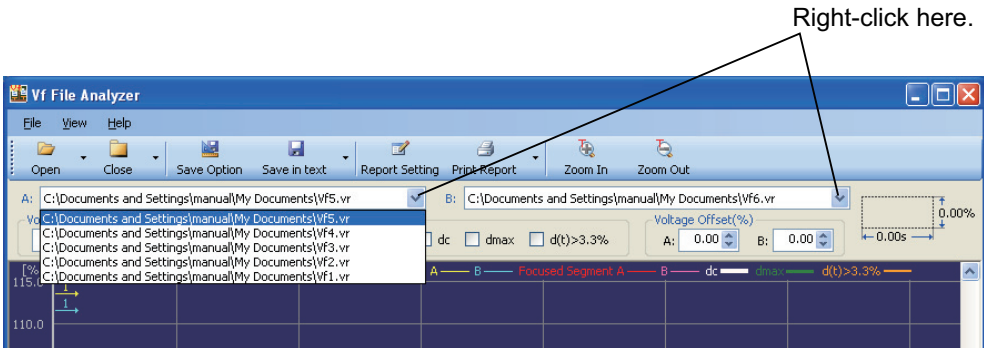
3. **Load the test condition file from the CompactFlash card to the PC.**

4. **In the toolbar, click the ▼ next to Open and select File A or File B.**
   The **FileA(B) Open** dialog box appears.
   If you click **Open**, priority is given to file A, and the **FileA Open** dialog box appears.

5. **Select the file that you want to open.**
   The test results file name extension for voltage fluctuation tests is .HR3.

Opening a Previously Opened Test Result File

1. **Right-click the box next to A: or B:.**
   A list of previously opened files appears.
   Up to nine previous entries are stored in the boxes' lists. The oldest entry is removed first.

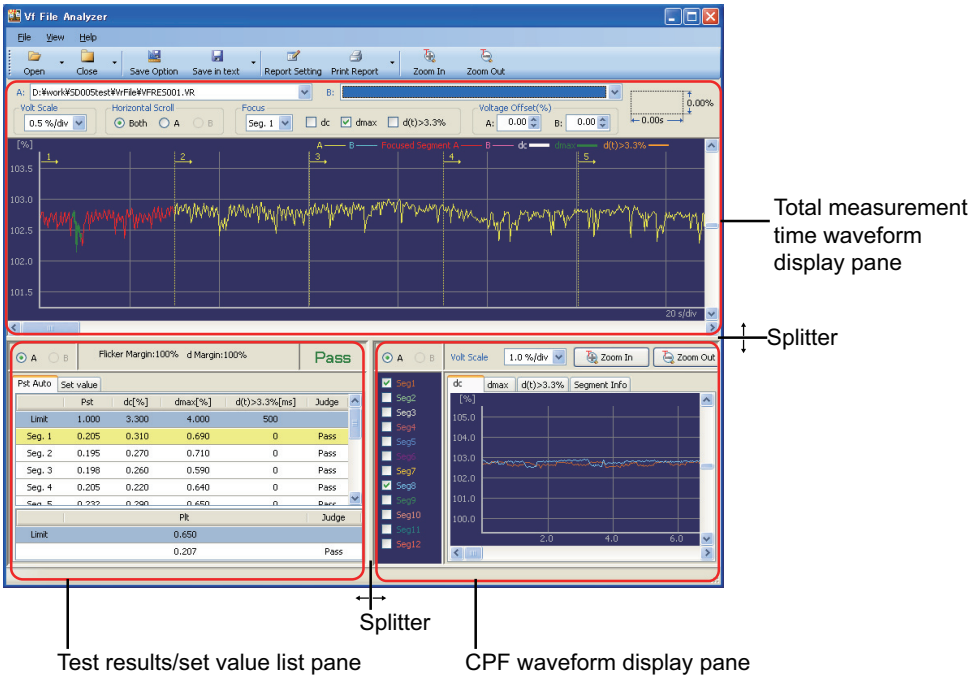


2. **Select the file that you want to open from the list.**

Window Configuration

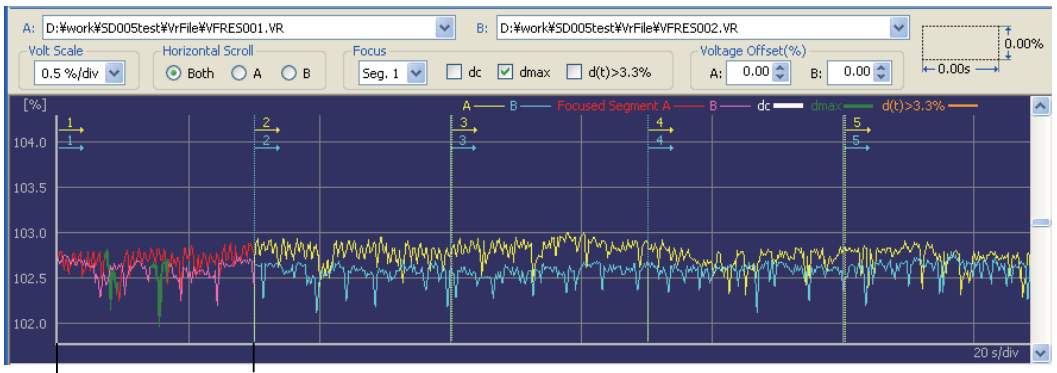
The window is divided into three panes.

You can drag the splitters to resize the panes.



Item	Description
Total Measurement Time Waveform Display Pane See p. 7	Displays the voltage fluctuation waveform of each measurement time. Each measurement time is connected together along the time axis. The vertical axis represents the voltage ratio with respect to the nominal voltage in terms of a percentage. The horizontal axis represents the elapsed time in unit of seconds. Test data A and B are displayed simultaneously.
Test Results/Set Value List Pane See p. 9	Displays the test results list and test conditions. The judgment result of each segment and the final judgment over all the measurement times are displayed. You can click the tab to switch between the test results list and test conditions data displays. Select test data A or B to be displayed.
Segment Waveform Display Pane See p. 12	Displays the voltage fluctuation waveform of each segment simultaneously. You can show or hide each segment using the check box. You can also select dc, dmax, or d(t) > 3.3 % to be displayed using tabs. The Segment Info list displays the start time and steady-state count in the segment of the dc, dmax, and d(t) > 3.3 % waveforms. Select test data A or B to be displayed.

Total Measurement Time Waveform Display Pane



Segment 2 boundary line

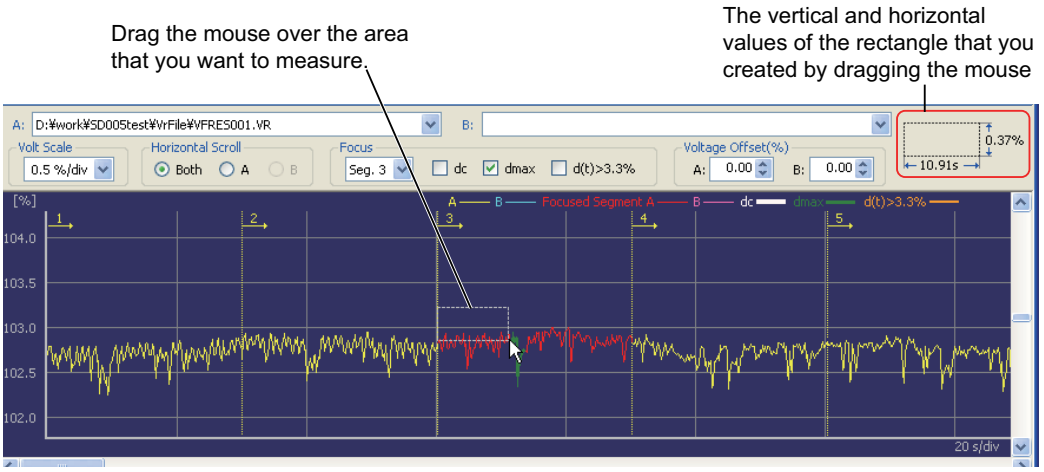
Segment 1 boundary line

Item	Description
A and B	The full paths of the files that you specified as test data A and B are displayed in these boxes. Lower-level folder names that do not fit into the boxes are indicated with ellipses ("..."). Click to display a history of up to nine previous paths.
Volt Scale	Used to select the graph along the voltage fluctuation ratio axis (vertical axis).
Horizontal Scroll	Used to specify the test data that is scrolled along the time axis. Select **Both** to scroll both test data A and B. Select **A** to scroll only test data A. Select **B** to scroll only test data B.
Focus	Vertical lines with arrows and numbers indicate the boundaries between segments. The segments are arranged in order by segment number from the left edge of the graph. Specify the segments that you want to display in the **Focus** box. If you select dc, dmax, or d(t) > 3.3 %, the items that you select are highlighted with different colors.
Voltage offset	Used to offset a waveform vertically for easier viewing if waveforms A and B are overlapped. Enter a positive value to shift the waveform up or a negative value to shift it down. You can adjust a value by using the arrows to its right.

Total Measurement Time Waveform Display Pane (continued)

Measuring the voltage fluctuation ratio and the time

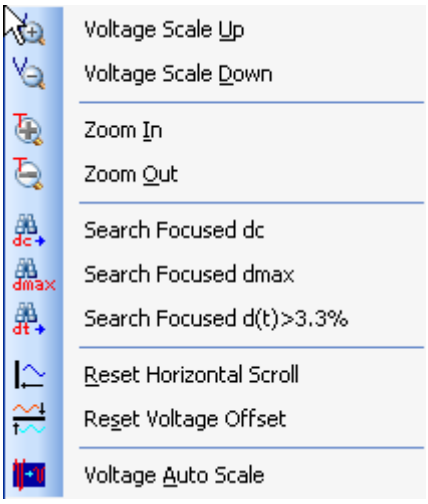
You can measure the voltage fluctuation ratio (vertical axis) and time (horizontal axis) at any location on the graph. When you drag the mouse and create a rectangle, it's vertical and horizontal values are displayed in the upper right of the pane.



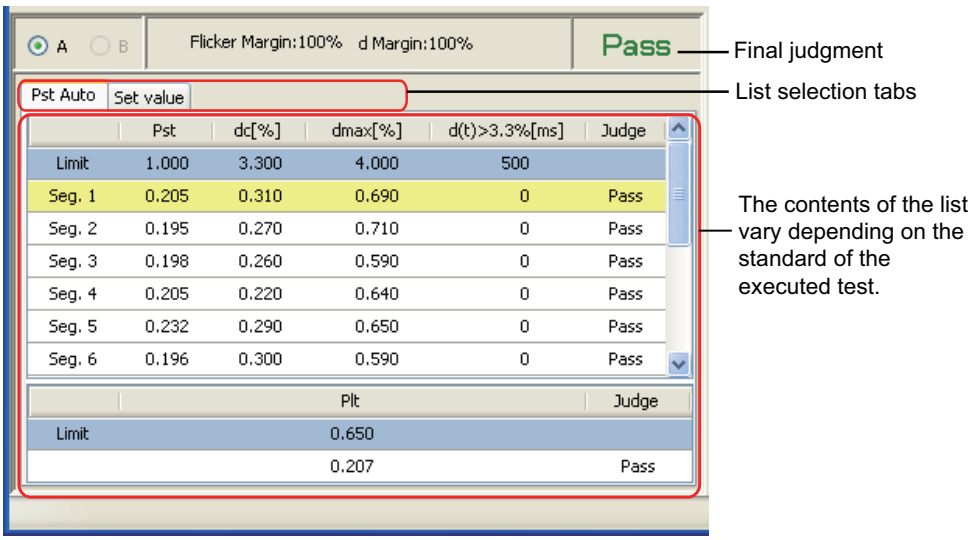
Concurrent menu

See p. 22

Right-click the graph area to display a Concurrent menu. A number of useful features for observing waveforms are arranged in the Concurrent menu. Features that cannot be used because of the current condition of the waveform are dimmed.



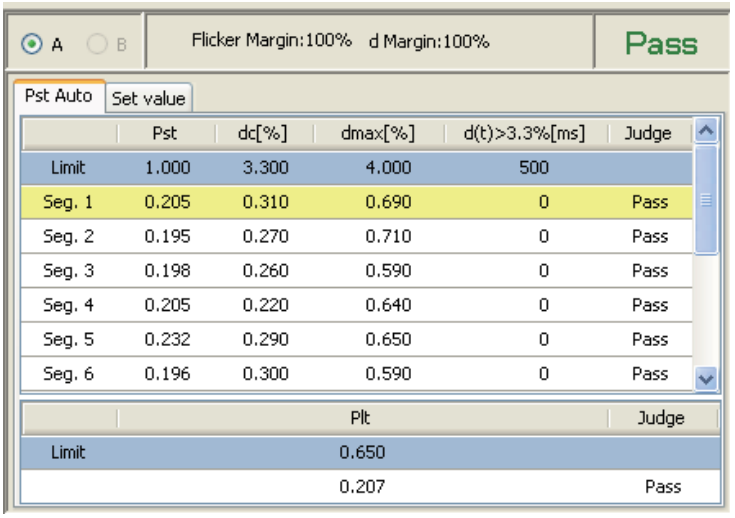
Test Results/Set Value List Pane



Item	Description
A and B	Used to select the test data, A or B, to be displayed in the test results/set value list pane.
Flicker Margin	The flicker margin (as a percentage) that has been specified in the HarmoCapture or KHA1000 test conditions. This value does not appear when d measurement is performed manually.
d Margin	The d margin (as a percentage) that has been specified in the HarmoCapture or KHA1000 test conditions.
Final judgment	Displays the final pass/fail judgement from the judgment of each segment. Pass : Less than equal to the specified margin Warn : Greater than the specified margin but less than the limit value Fail : Greater than the limit value
List selection tabs	Select the list that you want to display. The name of the tab on the far left indicates the standard of the executed test. Auto : IEC61000-3-3(Pst Auto) Manual : IEC61000-3-3(Manual)

Test Results/Set Value List Pane (continued)

■ Items in the test results list for IEC61000-3-3(Pst Auto)

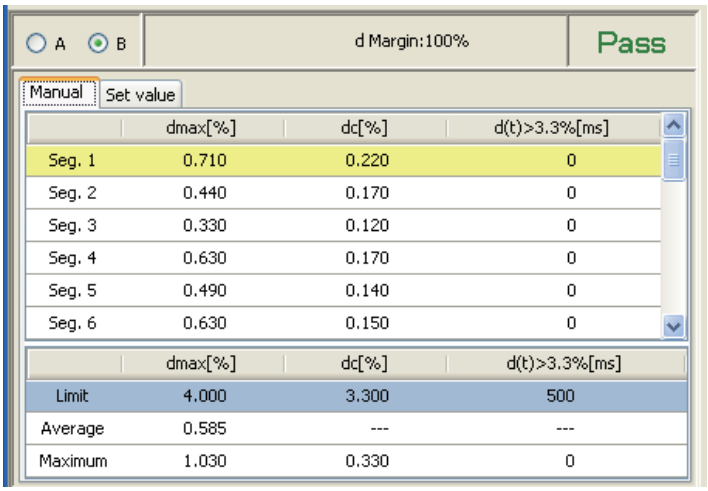


	Pst	dc[%]	dmax[%]	d(t)>3.3%[ms]	Judge
Limit	1.000	3.300	4.000	500	
Seg. 1	0.205	0.310	0.690	0	Pass
Seg. 2	0.195	0.270	0.710	0	Pass
Seg. 3	0.198	0.260	0.590	0	Pass
Seg. 4	0.205	0.220	0.640	0	Pass
Seg. 5	0.232	0.290	0.650	0	Pass
Seg. 6	0.196	0.300	0.590	0	Pass

	Plt	Judge
Limit	0.650	
	0.207	Pass

Item	Description
Pst	Short-term flicker value in one segment time.
dc [%]	Maximum value of the relative steady-state voltage fluctuation in one segment time.
dmax [%]	Maximum value of the maximum relative voltage fluctuation in one segment time.
d(t) > 3.3 % [ms]	Maximum value of the time during which d(t) exceeds 3.3 % in one segment time.
Judgment (each segment)	Indicates the pass/fail judgment of the voltage fluctuation and flicker in one segment time. Pass : Less than equal to the specified margin Warn : Greater than the specified margin but less than the limit value Fail : Greater than the limit value
Limit	Limit value of each item
Plt	Long-term flicker value over the total measurement time.
Judgment (Plt)	Indicates the pass/fail judgment of the long-term flicker value over the total measurement time. Pass : Less than equal to the specified margin Warn : Greater than the specified margin but less than the limit value Fail : Greater than the limit value

Items in the test results list for IEC61000-3-3 (Manual)



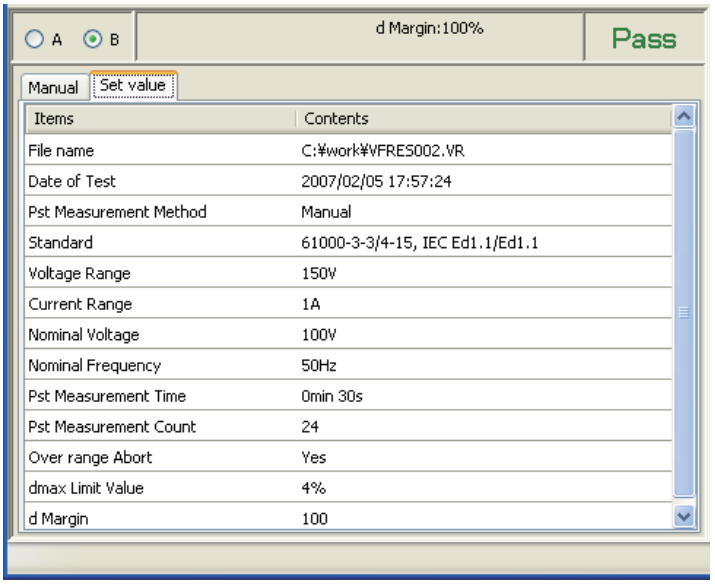
	dmax[%]	dc[%]	d(t)>3.3%[ms]
Seg. 1	0.710	0.220	0
Seg. 2	0.440	0.170	0
Seg. 3	0.330	0.120	0
Seg. 4	0.630	0.170	0
Seg. 5	0.490	0.140	0
Seg. 6	0.630	0.150	0

	dmax[%]	dc[%]	d(t)>3.3%[ms]
Limit	4.000	3.300	500
Average	0.585	---	---
Maximum	1.030	0.330	0

Item	Description
dmax [%]	Maximum value of the maximum relative voltage fluctuation in one segment time.
dc [%]	Maximum value of the relative steady-state voltage fluctuation in one segment time.
d(t) > 3.3 % [ms]	Maximum value of the time during which d(t) exceeds 3.3 % in one segment time.
Limit	The dmax, dc, and d (t) > 3.3 % (ms) limits
Average	The average value of dmax in each segment.
Maximum	The maximum dmax, dc, and d (t) > 3.3 % (ms) values in each segment.

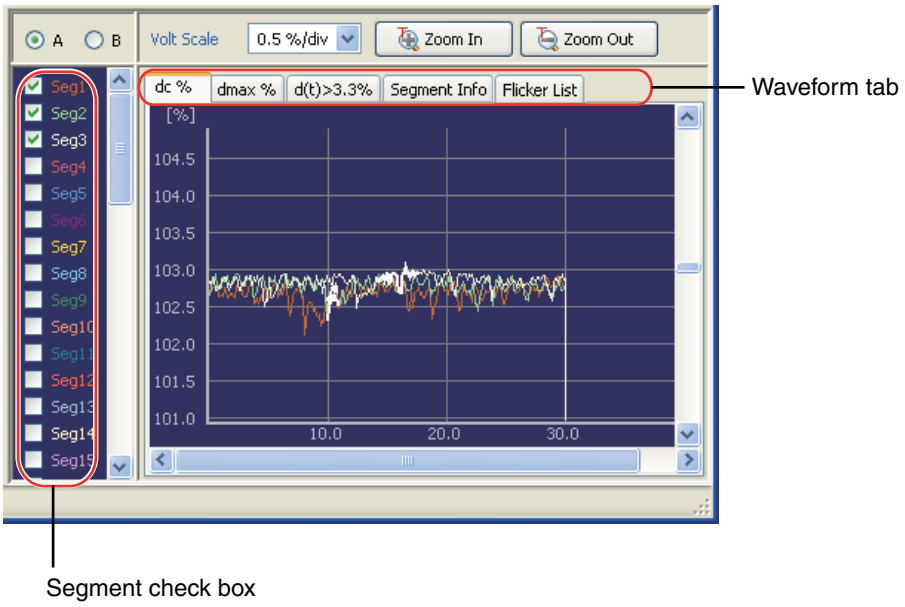
Set Value

The test conditions of the selected test results file is displayed.



Items	Contents
File name	C:¥work¥VFRES002.VR
Date of Test	2007/02/05 17:57:24
Pst Measurement Method	Manual
Standard	61000-3-3/4-15, IEC Ed1.1/Ed1.1
Voltage Range	150V
Current Range	1A
Nominal Voltage	100V
Nominal Frequency	50Hz
Pst Measurement Time	0min 30s
Pst Measurement Count	24
Over range Abort	Yes
dmax Limit Value	4%
d Margin	100

Segment Waveform Display Pane



Item	Description
A and B	Select the test data (A or b) that you want to display.
Volt Scale	Used to expand or reduce the graph along the voltage fluctuation ratio axis (vertical axis).
Zoom In and Zoom Out	Used to expand or reduce the graph along the time axis (horizontal axis).
Segment check box	Select a check box to display the waveform of the corresponding segment. This feature is useful when comparing the voltage fluctuation ratios between segments.

Waveform tab

■ dc, dmax, and d(t) > 3.3 % (ms)

You can display the dc, dmax, or d (t) > 3.3 % (ms) value of each segment by switching among them using the waveform tab.

■ Segment Info

Item	Description
Start dc	Displays the start time of the dc in the segment.
Start dmax	Displays the start time of the dmax in the segment.
d(t) > 3.3 %	Displays the start time of the d(t) > 3.3 % (ms) in the segment.
Steady count	Displays the steady-state condition count in the segment.

■ Flicker list

You can display the values of P0.1, P1s, P3s, P10s, and P50s. However, you can not use this function, if the test results file tested by the KHA1000 equipped with the firmware version prior to 1.5x.

Saving a Test Results File as Text

A test results file can be saved as text for use in Microsoft Excel and other application software.

See p. 14

1 **Click the Save Option button on the toolbar.**
The Text Save Options dialog box is displayed.

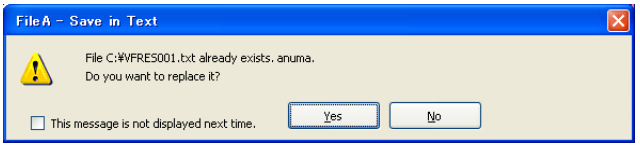
2 **Select an item to be saved as a text file.**

3 **Click the OK button.**

4 **In the toolbar, click the ▼ next to Save in text and select File A or File B.**
The **FileA(B) - Save in Text as** dialog box is displayed.

5 **Enter a file name and select file extension .txt or .csv.**

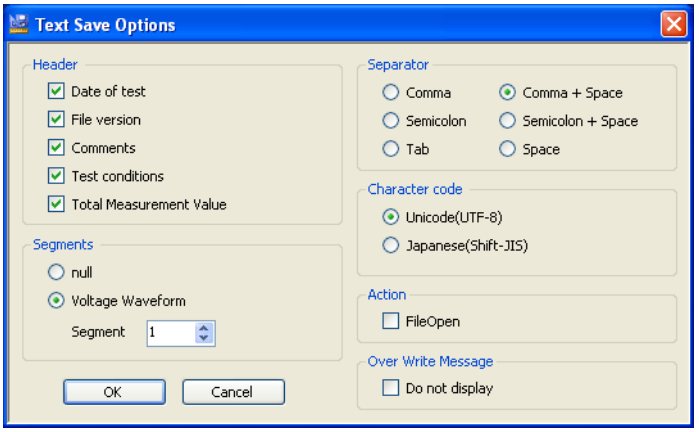
6 **Click the Save button.**
If a text file with the same name already exists, the message is displayed.



If you select the **This message is not displayed next time** check box, the message will not appear the next time. You can clear this check box in the **Text Save Options** dialog box.

Text Save Options

Click the **Save Option** button on the toolbar to display the **Text Save Options** dialog box. In the **Text Save Options** dialog box, you can specify which options can be selected when you save the test results to a text file.



Header

Check the items that you want to save.

Item	Description
Date of test	Test date
File version	Version of test results file
Comments	Information on EUT (memo, model name, type, and serial number)
Test conditions	Test conditions information (measurement method, standard, voltage/current range, nominal voltage/frequency, Pst/d measurement time, Pst/d measurement count, over range abort, dmax limit values, flicker margin, and d margin)
Total Measurement Value	Number of segments, measurement interval, Measured values for each segment (Number of segments, Pst value, dc (%), dmax (%), d(t) > 3.3 (%), steady-state condition count, fluctuation dc (%) voltage, start/end time, fluctuation dmax (%) voltage, start/end time, fluctuation d(t) > 3.3 % (ms) voltage, start/end time, and judgment result of each segment), Plt value, Plt judgment, and final judgment result

Segments

Item	Description
null	Measurement value and voltage waveform options are not selected.
Voltage Waveform	Measurement point (order) in the specified segment and measured value Saves voltage waveform data by specifying a segment using the combo box.

Separator

Select the text separator.

Character code

Set the character code of a text file.

Item	Description
Unicode (UTF-8)	Save it in a test file that supports Unicode (UTF-8).
Japanese language (Shift-JIS)	Save it in a text file that supports the Japanese language (Shift-JIS).

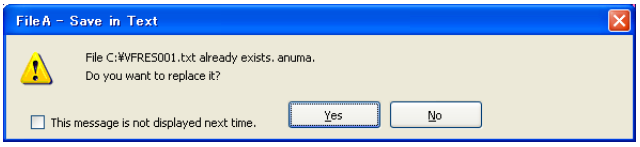
Action

After the text file is saved, you can open it with the software that text files are associated with.

Over Write Message

If you save a file with the same name already exists, a file overwrite message appears. The **Do not display** check box is used to enable or disable this message.

If you select the **This message is not displayed next time** check box in the file overwrite dialog box, the **Do not display** check box in the **Text Save Options** dialog box is also selected. If you clear the **Do not display** check box, the PDF file overwrite message is enabled.



Printing a Report

Reports are printable PDF files of test result files. Numeric value data, various waveform graph, segment information and setting list can be printed. You can include comments in reports, such as the company name and test environment.

Reports are automatically saved in the same folder as test result files using the same file name as the test result file that they are converted from and a .pdf extension.

NOTE To print PDF files, you need a PDF viewing application such as Adobe Reader.

1 **On the results list pane, select the results file to be printed in a report.**

See p. 18

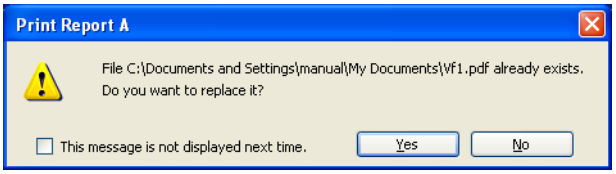
2 **Open the Report Setting dialog box, and select the data, comments, Test Information and Alias Standard to print.**

3 **Click Print.**

Your PDF viewing application (such as Adobe Reader) starts, and the report appears.

■ When a PDF file with the same name exists

The message is displayed.



Click **Print in pdf as** to save the report as a PDF file with a different file name.

If you select the **This message is not displayed next time** check box, the message will not appear the next time. You can clear this check box in the **Report Setting** dialog box.

4 **Print the report from your PDF viewing application.**

Configuring the Report Format

In the **Report Setting** dialog box, you can:

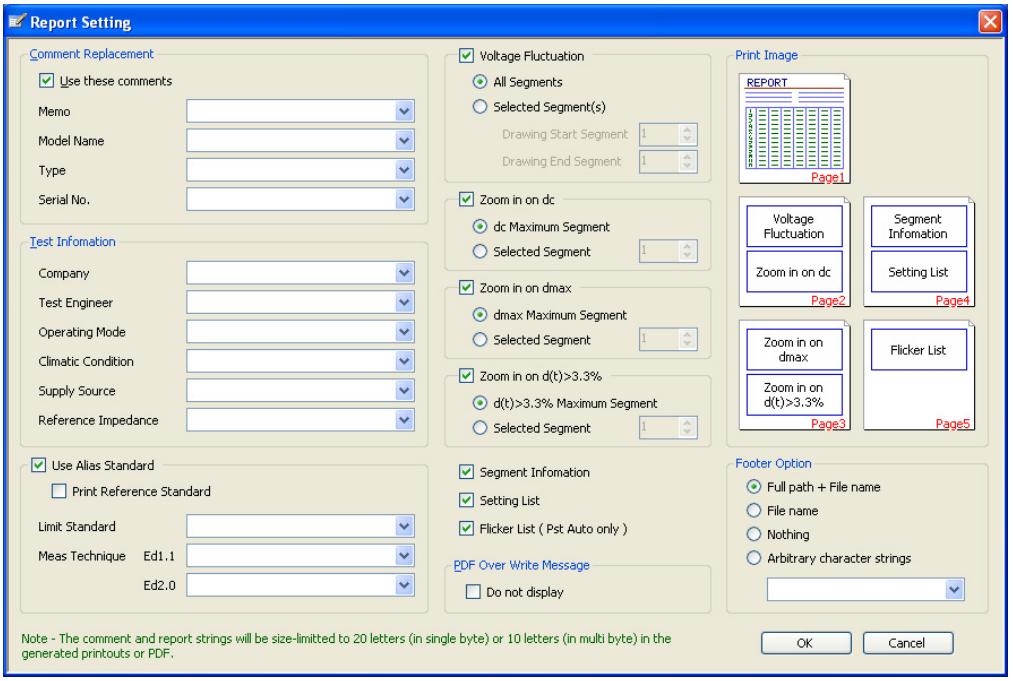
- Select the data to print.
- Enable or disable the PDF file overwrite message.

See p. 20

Entering Comments, Test Information and Alias Standard

You can print the comments, test information, and alias standards.

The information that you enter into the boxes is registered when you click **Print**. Up to eight previous entries are stored in the boxes' lists. The oldest entry is removed first.



Comments

You can select which comments to print in the report: the comments included in the test results file or the comments in the boxes listed under the "Use these comments" check box.

Item	Description
Use these comments	If you select this check box, the comments in the boxes listed under this check box will be printed in the report.
Memo	
Model Name	The name of the EUT
Type	The model number of the EUT
Serial No.	The serial number of the EUT

Entering Comments, Test Information and Alias Standard (continued)

Test information

You cannot set the test information from the KHA1000 panel.

Item	Description
Company	
Test Engineer	
Operating Mode	
Climatic Condition	
Supply Source	
Reference Impedance	

Alias standard

You can enter up to 31 characters for the alias standards.

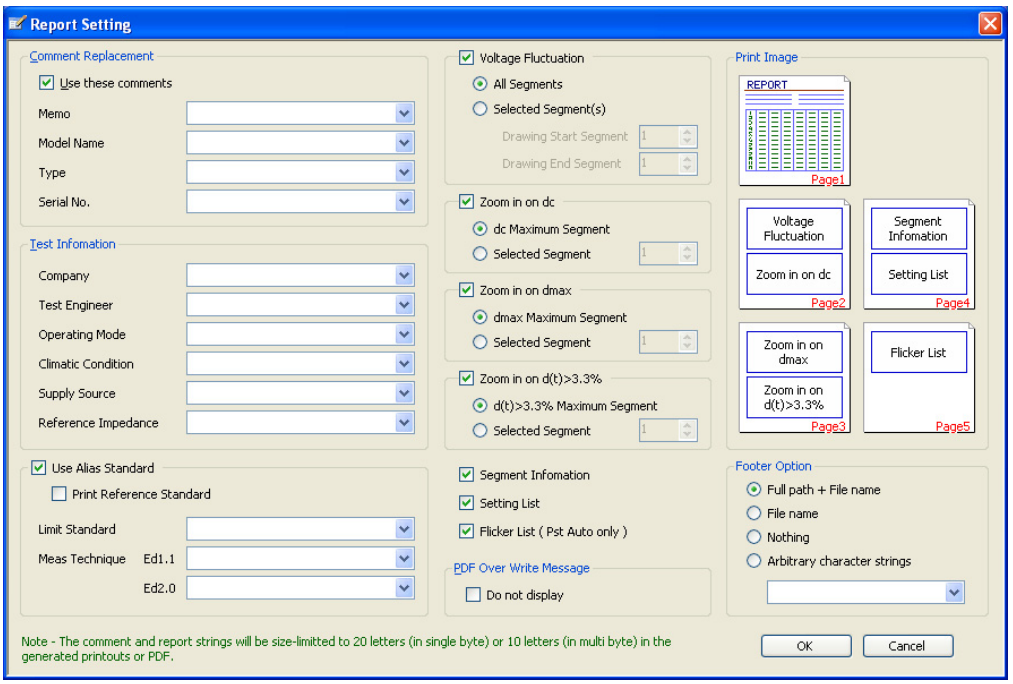
Item	Description
Use Alias Standard	Select this option to print standard names other than the default standard names on the report.
Print Reference Standard	Select this option to print on the report the standard names also that are displayed when you select the test standards using the KHA1000 or the HarmoCapture.

Deleting characters

Press **Delete** to delete a character. To clear a combo box, enter one space. If you do not enter any characters, the corresponding comment is not updated. After you close the dialog box, the previous comment will return.

Selecting which Data to Print

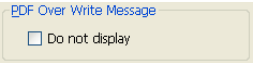
You can select which data and graphs to print in reports using the check boxes. After selecting which data to print, you can preview how the report will be printed.



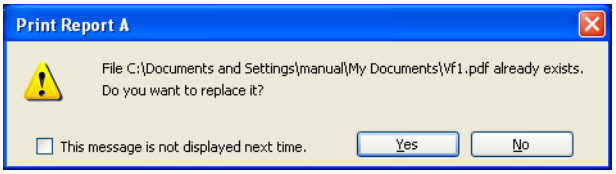
Item	Description
Voltage Fluctuation	The ratios of dc, dmax, and d(t) > 3.3 % to the measurement time are printed as a voltage fluctuation waveform. You can select to print the waveform for **All Segments** or for **Selected Segment(s)**. To print the waveform for a selected group of segments, specify the **Drawing Start** and **Drawing End** segments. You can select up to 24 segments.
Zoom in on dc	You can select to print the waveform for **dc Maximum Segment** or for **Selected Segment**. To print the waveform for a selected segment, specify the segment.
Zoom in on dmax	You can select to print the waveform for **dmax Maximum Segment** or for **Selected Segment**. To print the waveform for a selected segment, specify the segment.
Zoom in on d(t) > 3.3%	You can select to print the waveform for **d(t)>3.3% Maximum Segment** or for **Selected Segment**. To print the waveform for a selected segment, specify the segment.
Segment Information	Prints a segment information list.
Setting List	Prints a list of test conditions.
Flicker List (Pst Auto only)	Prints the values of P0.1, P1s, P3s, P10s, and P50s. However, you can not used this function, if the test results file tested by the KHA1000 equipped with the firmware version prior to 1.5x.
Footer Option	Adds a footer to a report. You can select any one of **Full path + File name**, **File name**, **Nothing**, or **Arbitrary Character Strings**. The character strings that you enter in the **Arbitrary Character Strings** combo box are stored, when you click the **OK**. Up to eight of the most recent characters are stored.

PDF Overwrite Message

If you select a test result file that you have printed before, a PDF file overwrite message appears. The **Do not display** check box is used to enable or disable this message.



If you select the **This message is not displayed next time** check box in the PDF file overwrite dialog box, the **Do not display** check box in the **Report Setting** dialog box is also selected. If you clear the **Do not display** check box, the PDF file overwrite message is enabled.



Menu Reference

Menu		Description
File		
	Open...*1, *2	Opens a test condition file (.vr extension) that you created using HarmoCapture or a test condition file that you saved on the KHA1000.
	Close*1, *2	Closes a test results file.
	Save in text*1, *2	Saves a test results file being selected in text or CSV format.
	Save in text As...*1, *2	Saves a test results file in text or CSV format with another name.
	Text Save Options...*1	You can specify which options can be selected when you save the test results to a text file.
	Report Setting...*1	You can specify which data and graphs to print in reports.
	Print Report...*1, *2	Creates a report (PDF) from a test results file and prints it.
	Exit	Exit from Vf File Analyzer.
View		
	Zoom In-main graph*1, *3	Expands along the time axis the waveform selected.
	Zoom Out-main graph*1, *3	Reduces along the time axis the waveform selected.
	Reset Horizontal Scroll*3	Resets the waveform that had been scrolled along the time axis in the total measurement time waveform display pane to the original position.
	Reset Voltage Offset*3	Resets the waveform that had been moved along the voltage fluctuation ratio axis in the total measurement time waveform display pane to the original position.
Help		
	Contents (Japanese)	Opens the Vf File Analyzer Japanese Operation Guide.
	Contents (English)	Opens the Vf File Analyzer English Operation Guide.
	User's Manual (Japanese)	Opens the Vf File Analyzer Japanese PDF Operation Guide.
	User's Manual (English)	Opens the Vf File Analyzer English PDF Operation Guide.
	About Vf File Analyzer...	Displays the version of Vf File Analyzer.

*1 The toolbar provides buttons.
*2 You can select the test data A or test data B file.
*3 You can select this menu item by right-clicking in the total measurement time waveform display pane.

Concurrent menu

(When right-clicking in the total measurement time waveform display pane)

Menu	Description
Voltage Scale Up	Expands the graph along the voltage fluctuation ratio (vertical) axis.
Voltage Scale Down	Reduces the graph along the voltage fluctuation ratio (vertical) axis.
Zoom In	Expands the graph along the time (horizontal) axis. You can also expand the graph along the time axis by clicking **Zoom In** on the toolbar or by clicking **View** and then selecting **Zoom In-main graph**.
Zoom Out	Reduces the graph along the time (horizontal) axis. You can also expand the graph along the time axis by clicking **Zoom Out** on the toolbar or by clicking **View** and then selecting **Zoom Out-main graph**.
Search Focused dc	Adjusts the scroll position so that the dc of the segment specified by the Focus combo box is displayed at the center of the total measurement time waveform display pane.
Search Focused dmax	Adjusts the scroll position so that the dmax of the segment specified by the Focus combo box is displayed at the center of the total measurement time waveform display pane.
Search Focused d (t) > 3.3 %	Adjusts the scroll position so that the d(t) > 3.3 % of the segment specified by the Focus combo box is displayed at the center of the total measurement time waveform display pane.
Reset Horizontal Scroll	Resets the waveform that had been scrolled along the time (horizontal) axis to the left position. You can also reset the waveform by clicking **View** and then selecting **Reset Horizontal Scroll**.
Reset Voltage Offset	Resets the voltage offset value along the voltage ratio (vertical) axis to zero. You can also reset the voltage offset by clicking **View** and then selecting **Reset Voltage Offset**
Voltage Auto Scale	The magnitude of the Volt Scale combo box is adjusted so that the waveform is shown.