

# Setup Guide

## Application Software

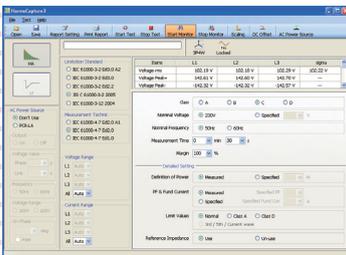
# SD006-KHA Harmonics Analyzing Suite Ver. 2.2

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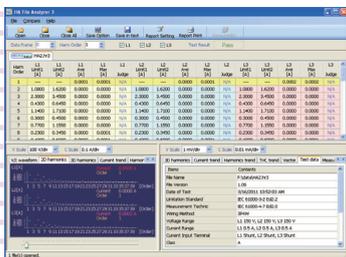
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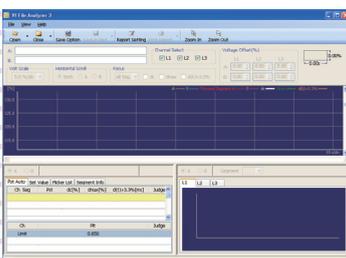
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**HarmoCapture3**



**HA File Analyzer 3**



**Vf File Analyzer 3**

Thank you for purchasing the Harmonics Analyzing Suite.

## About This Guide

This guide is intended for first-time users of the Harmonics Analyzing Suite. It gives an overview of the product, explains how to install the software, provides notes on the usage, explains how to start the software, and so on.

After reading this guide, keep it in a safe place for quick reference. If you find any misplaced or missing pages in this guide, it will be replaced.

If you lose or damage this guide, you can purchase a new copy. In either case, please contact a Kikusui distributor or agent, and indicate the "Part No." given on the cover.

Every effort has been made to create this guide. However, if you have questions or find errors in this guide, please contact a Kikusui distributor or agent.

### ■ Product Version that This Guide Covers

This guide applies to the Harmonics Analyzing Suite with version 2.2.

### ■ Related Equipment Versions

- KHA3000 Harmonic/Flicker Analyzer  
Firmware version 3.2

The version appears on the screen when the KHA3000 is turned on.

- PCR-LA (AC power supply)

Firmware version other than 3.32 or 3.33

The version appears on the control panel display when the PCR-LA is turned on.

### ■ How to Read This Guide

This guide is designed to be read from beginning to end. We recommend that you read the guide thoroughly from the beginning before using this product for the first time.

### ■ Who Should Read This Guide?

This guide is intended for those using the KHA3000 to control a harmonic current and voltage fluctuation test system and those teaching operators how to use it.

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## For Safe Use

Before executing a test using the Harmonics Analyzing Suite, carefully read the operation manuals (especially the hardware explanations) for the products given below and pay careful attention when making connections and performing operations. Improper handling may cause serious accidents such as injuries or fire.

- Harmonic/flicker analyzer KHA3000
- AC power supply PCR-LA Series
- Line impedance network LIN40MA-PCR-L

## Notations Used in This Guide

- The KHA3000 Harmonic/Flicker Analyzer may be called the KHA3000.
- "Personal computer" and "PC" are generic terms for personal computers and workstations.
- The following symbols are used with the explanations in this guide.



Indicates a potentially hazardous situation that, if ignored, may result in damage to the product or other property.



Indicates information that you should know.



Indicates reference to detailed information.

# General Description

The Harmonics Analyzing Suite can remotely control the KHA3000 Harmonic/Flicker Analyzer from a PC.

By using this application in combination with the PCR-LA AC Power Supply Series and the LIN40MA-PCR-L Line Impedance Network, you can perform tests that comply with IEC and JIS standards.

The Harmonics Analyzing Suite displays measured values in various ways in real time. It can evaluate, analyze, and make pass/fail judgments based on standard compliance tests.

## Harmonics Analyzing Suite structure

Harmonics Analyzing Suite is made up of three application software below.

- HarmoCapture3
- HA File Analyzer 3
- Vf File Analyzer 3

## Conformance Standards

The Harmonics Analyzing Suite conforms to the standards listed in below.

Classification	Standards for limits and measurement techniques	Standard number and edition for limits*1
Harmonic current	Standards for limits	IEC 61000-3-2 Ed3.0 (2005)
		EN 61000-3-2 (2006)
		IEC 61000-3-2 Ed3.0(2005)/A2(2009)
		EN 61000-3-2 (2006)/A2(2009)
		IEC 61000-3-2 Ed2.2 (2004)
		EN 61000-3-2 (2000)/A2(2005)
Harmonic current	Standards for measurement techniques	JIS C 61000-3-2 (2005)
		IEC 61000-3-12 Ed1.0(2004)
		IEC 61000-4-7 Ed2.0 (2002)*2
		EN 61000-4-7 (2002)
		IEC 61000-4-7 Ed2.0(2002)/A1(2008)
		EN 61000-4-7(2002)/A1(2009)
Flicker voltage fluctuation	Standards for limits	IEC 61000-4-7 Ed1.0 (1991)*3
		EN 61000-4-7 (1993)
		IEC 61000-3-3 Ed2.0(2008)
		EN 61000-3-3(2008)
		IEC 61000-3-11 Ed1.0 (2000)
		EN 61000-3-11 (2000)
Flicker voltage fluctuation	Standards for measurement techniques	IEC 61000-4-15 Ed1.1 (1997)/A1(2003)
		EN 61000-4-15(1998)/A1(2003)
		IEC 61000-4-15:Ed2.0(2010)

\*1. When the report is printed, the EN standard number also is written.

\*2. The window width for measuring is 0.2 seconds. This corresponds to 10 cycles and 12 cycles for the fundamental frequencies of 50 Hz and 60 Hz, respectively. Interharmonics are measured at 5-Hz intervals. Harmonic groups are measured.

\*3. The window width for measuring is 16 cycles at the fundamental frequency. This corresponds to 0.32 seconds and 0.266 seconds for the fundamental frequencies of 50 Hz and 60 Hz, respectively. Interharmonics are not measured. Only harmonics are measured.

## Main Features



### HarmoCapture3 can be used to:

- Remotely control the KHA3000 and the PCR-LA AC power supply from a PC.
- Test a single-phase/three-phase equipment that the KHA3000 with 3-channel input supports.
- Configure and save test conditions.
- Start and stop tests.
- Display test results (pass/fail judgment.)
- Create and save test result files.
- Monitor measured values (rms current and voltage, positive and negative current and voltage peaks, active power, apparent power, reactive power, power factor, THC, POHC, and frequency.)
- Print reports (comments, test conditions, data lists, and 2D harmonics.)

### HA File Analyzer 3 can be used to:

- Load the harmonic current test results file acquired by the KHA3000 or HarmoCapture3.
- Display test results lists (pass/fail judgment.)
- Display graphs (V/I waveform, 2D harmonics, 3D harmonics, current trend, harmonics trend, THC trend, and vector.)
- Check AC power source.
- Check repeatability.
- Save test results files as text.
- Print reports (comments, test conditions, results lists, and various waveform graphs.)

### Vf File Analyzer 3 can be used to:

- Load the voltage fluctuation test results file acquired by the KHA3000 or HarmoCapture3.
- Display test results lists (pass/fail judgment, and segment information lists.)
- 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.)

## System Requirements

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Below are the hardware and software requirements for using the Harmonics Analyzing Suite.

- Personal computer with Microsoft Windows 7 or Windows Vista or Windows XP Service Pack 2 or later
- Microsoft.NET Framework 2.0
- At least 256 MB of memory (512 MB or more recommended)
- 1024 x 768 dots or higher resolution
- 100 MB or more free hard disk space (more space required for saving data)
- CD-ROM drive
- Mouse or other pointing device
- VISA library  
NI-VISA 4.1 or later; Agilent IO Libraries Suite 14.1 or later; or KI-VISA 4.2.2 or later
- USB cable (when using USB)
- GPIB card and IEEE488 cable (when using GPIB)
- Cross serial cable (when controlling the PCR-LA)
- CompactFlash slot, CompactFlash Type I (CFA), up to 512 MB (when using KHA3000 files)

## VISA Driver

You must install a VISA driver to use the Harmonics Analyzing Suite.

**CAUTION** Do not install multiple different VISA drivers, because they may not operate properly.

- NOTE**
- VISA  
VISA (Virtual Instrument Software Architecture) is a standard developed by the VXIplug&play Systems Alliance that defines software specifications for communicating with instruments from a PC.
  - VISA driver  
A VISA-compliant driver software.
  - KI-VISA  
Kikusui original VISA driver compatible with VXIplug&play VISA.

The VISA driver that is required varies depending on the I/O interface that you will be using. See below to select the appropriate VISA driver.

VISA driver	Version and how to obtain the driver
KI-VISA	KI-VISA Ver 4.2.2 or later From the software CD-ROM or from the KIKUSUI Website
NI-VISA	Ver 4.1 or later From the CD-ROM provided with the GPIB card or from the National Instruments Website
Agilent IO Libraries	Suite 14.1 or later From the CD-ROM provided with the GPIB card or from the Agilent Technologies Website

- If you are using USB, any VISA driver can be used. However, for details on licensing, refer to the license terms of the respective VISA driver.
- If you are using GPIB, you must use the appropriate VISA driver; otherwise, it will not work.
- KI-VISA supports the following GPIB models.

CONTEC CO., LTD.	GP-IB(PCI)L, GP-IB(PM), GP-IB(PCI)F, GP-IB(CB)F. API-GPIB driver VER4.01 or later recommended. When using GPIB cards by Contec Co., Ltd, use the ordinary API-GPIB driver, not the API-GPLV driver (LabVIEW compatible and NI-488.2M API compatible).
Interface Corporation	PCI-4301 LabVIEW compatible version (GPC-4301N driver version 1.21 or later recommended) When using GPIB cards by Interface Corporation, use the GPC-4301N driver (LabVIEW compatible and NI-488.2M API compatible), not the ordinary GPC-4301 driver.

## Package Contents

The Harmonics Analyzing Suite package contains the following items.

Name	Quantity
Program CD-ROM	1
Harmonics Analyzing Suite Setup Guide	1

## Available Manuals

The Harmonics Analyzing Suite comes with the following manual in addition to this Setup Guide.

- Operation Guide (electronic manual)

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The operation guide details the Harmonics Analyzing Suite operation. There are two types of HTML help and PDF. For instructions on how to view the Operation Guide, see [Viewing the Operation Guide.](#)

## Notes on use

The Harmonics Analyzing Suite is used to retrieve KHA3000 test data to your PC. To ensure that test data is retrieved, disable the following features on your PC during testing.

- Windows power save mode
- Screen saver
- Memory-resident programs

Do not run other software applications during testing.

## Inserting the CD-ROM

Insert the program CD-ROM in the drive. After a short time, the menu program window opens. If the menu program window does not open, browse the CD-ROM with Windows Explorer, and double-click index.htm. The menu program will start.



Install the following programs exactly in the order listed; otherwise, the software may not start. Be sure to install them according to the instructions.

- Windows Installer 3.1\*<sup>1</sup>
- Microsoft.NET Framework 2.0
- IVI Shared Components\*<sup>2</sup>
- VISA driver
- Harmonics Analyzing Suite

\*<sup>1</sup> This is only required when you are installing the programs on Windows XP.

\*<sup>2</sup> IVI Shared Components are installed at the same time when you install KI-VISA. There is no need to separately install them. They are also installed at the same time if you install some of the other VISA drivers.

## Installation

### ■ If you are using Windows XP

Proceed to [Step 1](#).

### If you are using Windows Vista or Windows 7

See [p. 10](#)

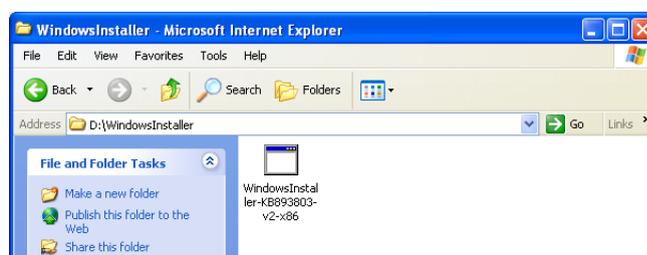
Read “If you are not installing KI-VISA” described after [Step 7](#), and follow the instructions.

#### NOTE

There is no need to install Microsoft Windows Installer 3.1 and Microsoft.NET Framework 2.0 on Windows Vista or Windows 7. If you try to do so, an error will occur.

### 1 Click Microsoft Windows Installer 3.1.

The WindowsInstaller-KB893803-v2-x86.exe file on the CD-ROM appears in the window.



### 2 Double-click WindowsInstaller-KB893803-v2-x86.exe.

Then, follow the instructions on the screen.

When the installation is complete, the following dialog box opens.



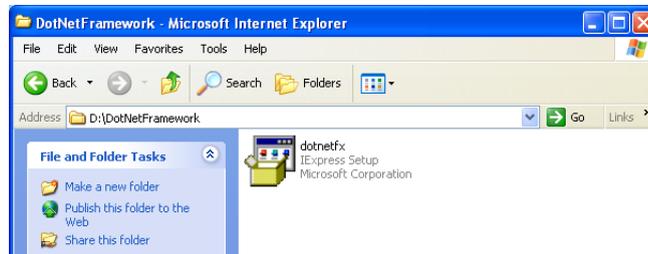
### 3 Click Finish and return to the browser window and click Back.

Proceed to the Microsoft.NET Framework 2.0 installation.

## Installation (continued)

### 4 On the menu program window, click Microsoft.NET Framework 2.0.

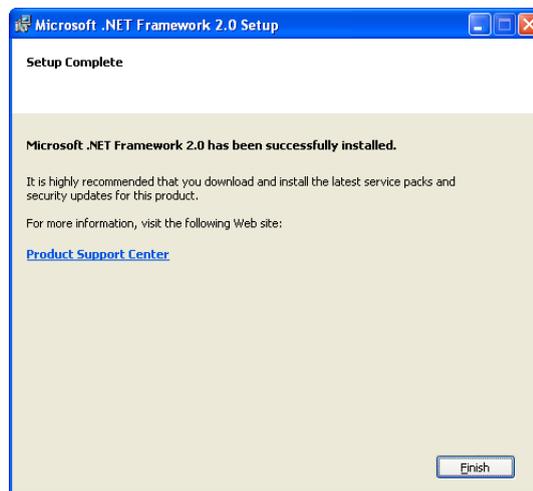
The dotnetfx.exe file on the CD-ROM appears in the window.



### 5 Double-click dotnetfx.exe.

Then, follow the instructions on the screen.

When the installation is complete, the following dialog box opens.



### 6 Click Finish and return to the browser window shown and click Back.

Proceed to the KI-VISA installation.

### If you are not installing KI-VISA

- To use an NI-VISA or Agilent Technologies VISA driver, refer to the manual of the respective product. If you are not installing KI-VISA, proceed to [Step 10](#).

**CAUTION** Do not install multiple different VISA drivers, because they may not operate properly.

## 7 On the menu program window, click KI-VISA x.x.x.

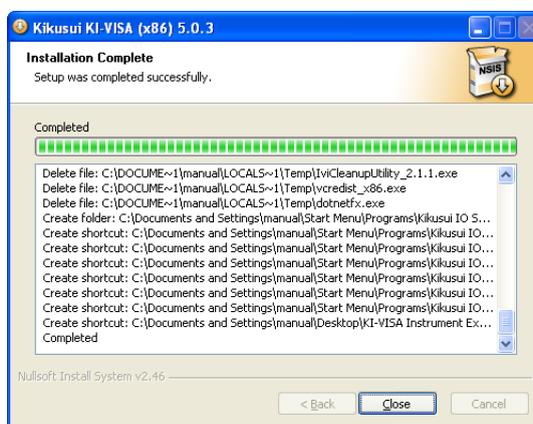
The Kivisa\_x\_x\_x.exe file on the CD-ROM appears in the window. x\_x\_x is version number. Install the KI-VISA\_x\_x\_x\_(x86) to 32-bit OS or the KI-VISA\_x\_x\_x\_(x64) to 64-bit OS.



## 8 Double-click Kivisa\_x\_x\_x.exe.

Then, follow the instructions on the screen.

When the installation is complete, the following dialog box opens.



## 9 Click Close and click Back in the browser window.

Proceed to the Kikusui Harmonics Analyzing Suite for KHA3000 installation.

## 10 On the menu program window, click Kikusui Harmonics Analyzing Suite for KHA3000.

The Sd006\_X\_X\_X.exe file on the CD-ROM appears in the window.

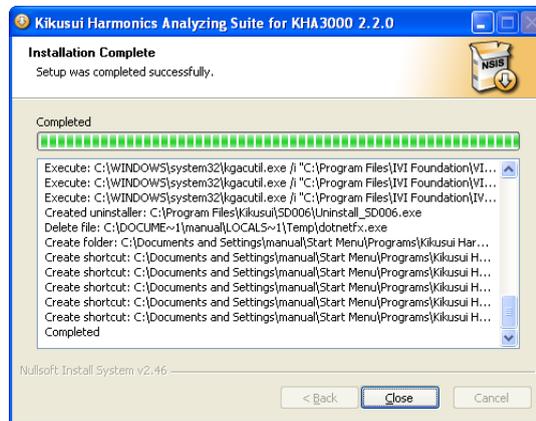


## Installation (continued)

### 11 Double-click Sd006\_X\_X\_X.exe.

Then, follow the instructions on the screen.

When the installation is complete, the following window appears.



### 12 Click Close.

## Installing Adobe Reader

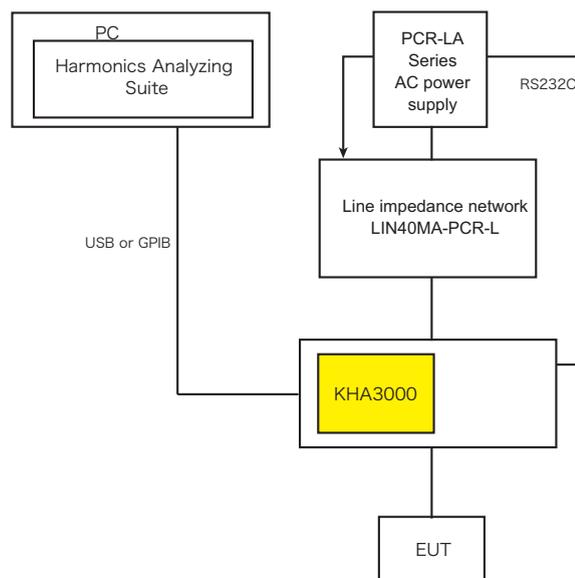
If an application used to view PDF files is not installed on your PC, proceed with the following steps to install Adobe Reader.

- 1 Click Back in the browser window.
- 2 On the installation window, click Adobe Reader x.x.
- 3 Double-click AdbeRdrxx\_en\_US.exe.  
xx described after AdbeRd is version number.  
Then, follow the instructions on the screen.

## Interface Configuration

### System Configuration

The block diagram of the harmonic current and voltage fluctuation test system is shown in the following. Before making the settings explained later, connect the devices. The Harmonics Analyzing Suite communicates with the KHA3000 via the USB (recommended) or GPIB interface. It also communicates with the PCR-LA via the RS232C. The KHA3000 firmware version must be version 2.1.x or later.



Harmonic current and fluctuation voltage test system

### KHA3000 Setup

In the KHA3000 system setup window, proceed with the following setup:

- 1** Press **SYSTEM** on the panel.
- 2** From the **I/F Select list**, select the communication interface.  
 USB: Select this to connect the KHA3000 to the PC using a USB cable (recommended).  
 GPIB: Select this to connect the KHA3000 to the PC using the GPIB cable. If you select GPIB, select an appropriate GPIB address from 1 to 30.
- 3** Turn off the **KHA3000 POWER** switch, and then turn it back on again.

## Interface Configuration (continued)

### PCR-LA setup

- 1 Turn on the PCR-LA POWER switch.
- 2 Press ESC to return to the home position.
- 3 Press SHIFT+F.
- 4 Set the communication parameter “0811” with the numeric keypad.

0	8	1	1			
				Baud rate		
				1: 9600bps	2: 19200 bps	
				Stop bits		
				1: 1 bit	2: 2 bits	
				Data length		
				7: 7 bits	8: 8 bits	
				Parity		
				0: None	1: Odd	2: Even

indicates the set value.

RS232C communication parameter setting

- 5 Press ENT then ESC.
- 6 Turn off the PCR-LA POWER switch, and then turn it back on again.

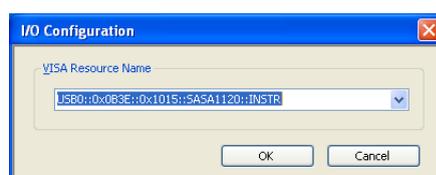
For details on the KHA3000 or PCR-LA, see the respective manual.

## Harmonics Analyzing Suite Startup

### Starting HarmoCapture3

- 1 To start HarmoCapture3, click Start on the task bar, point to Programs > Kikusui Harmonics Analyzing Suite, and then click HarmoCapture3.

If the communication with the KHA3000 fails immediately after HarmoCapture3 starts, the I/O Configuration dialog box will open. If the communication is successful, the following steps up to Step 2 are automatically executed.



- If the software is able to retrieve the device ID string

Select the ID appears in the list and click OK.

For USB and GPIB, the ID string that was retrieved appears with the word "USB" or "GPIB".

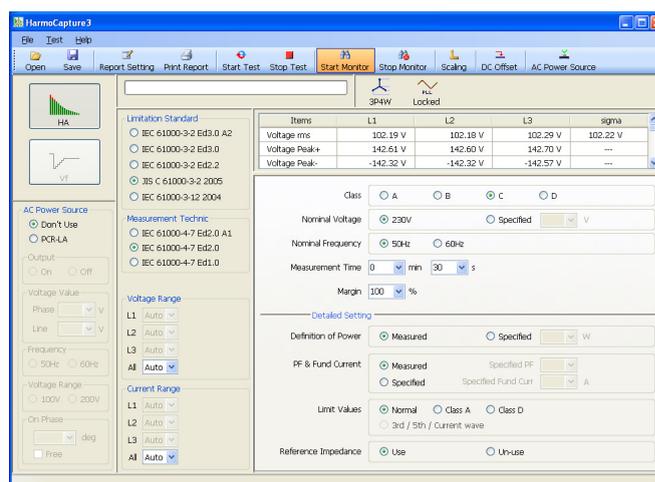
Example: USB0::0x0B3E::0x1015::12345678::INSTR

- If the ID does not appear in the list

Check the I/F cable, VISA settings, or KHA3000 system settings, and then start over from Step 1 .

- 2 HarmoCapture3 starts in the current KHA3000 test mode.

HarmoCapture3 starts in accordance with the KHA3000 test mode. The following screen is an example of the startup window when the KHA3000 is in the harmonic current test mode.



#### NOTE

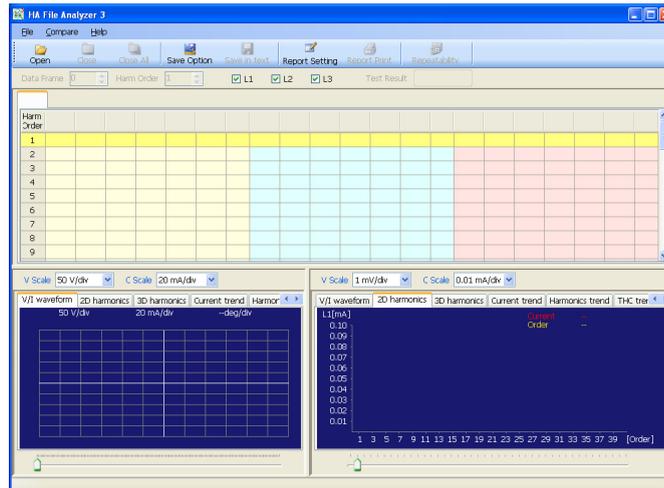
If you start HarmoCapture3 when the KHA3000 is executing a test, the test will be stopped.

## Harmonics Analyzing Suite Startup (continued)

### Starting HA File Analyzer 3

HA File Analyzer 3 operates without being connected to the KHA3000.

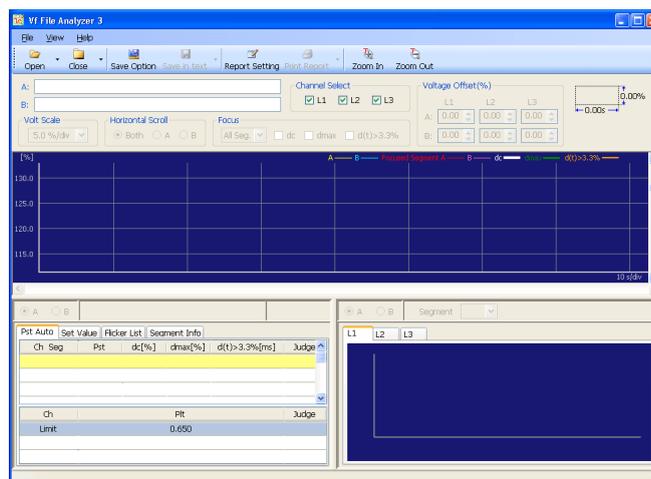
- 1 To start HA File Analyzer 3, click Start on the task bar, point to Programs > Kikusui Harmonics Analyzing Suite, and then click HA File Analyzer 3.



### Starting Vf File Analyzer 3

Vf File Analyzer 3 operates without being connected to the KHA3000.

- 1 To start Vf File Analyzer 3, click Start on the task bar, point to Programs > Kikusui Harmonics Analyzing Suite, and then click Vf File Analyzer 3.



## Viewing the Operation Guide

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The Operation Guide details the instructions on how to use each application software.

### ■ HTML help

On each application software, choose Contents (English) from the Help menu.

### ■ PDF operation guide

The PDF version is the operation guide for printing help contents.

On each application software, choose User's manual (English) from the Help menu.