FRA5022/FRA5014 DATA DISPLAY SOFTWARE

Instruction Manual

NF Corporation

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FRA5022/FRA5014 DATA DISPLAY SOFTWARE

Instruction Manual

Preface

Thank you for purchasing the **FRA5022 Frequency Response Analyzer** or **FRA5014 Servo Analyzer**.

To ensure safe and proper use of this software, please read first **INSTRUCTION FOR SAFE USE** on the following pages.

■ Before Reading This Manual

This instruction manual is provided in PDF format.

This manual assumes that you are familiar with the basic operations of the operating system that runs on your computer. For the basic operations of Windows and Windows-related terms such as "click" and "drag", refer to the user's guide or other related documents on Windows.

■ Caution Symbols Used in This Manual

The following caution symbols are used in this manual. Be sure to follow the instructions marked with this caution symbol.

⚠ CAUTION

Cautions on handling the program are described.

● This manual has the following chapter organization.

If reading this manual for the first time, start from **1. OVERVIEW**.

1. OVERVIEW

This chapter provides a functional overview of the **FRA5022/FRA5014 Data Display Software**.

2. INSTALLATION

This chapter describes the operation environment and installation procedure of the **FRA5022/FRA5014 Data Display Software**.

3. GRAPH DISPLAY FUNCTION

This chapter describes graph display functions.

4. OTHER FUNCTIONS

This chapter describes the functions for setting the measurement conditions and for remote control.

— INSTRUCTIONS FOR SAFE USE —

To ensure safe use, be sure to observe the following warnings and cautions.

NF Corporation shall not be held liable for damages that arise from a failure to observe these warnings and cautions.

● **Be sure to observe the contents of this instruction manual.**

This instruction manual contains information for the safe operation and use of this software.

Be sure to read this information first before using this product.

All the warnings in the instruction manual must be heeded to prevent hazards that may cause major accidents.

● **In case of suspected anomaly**

If the equipment controlled by this product produces smoke or if you notice a strange noise or smell, turn it off immediately.

If such an anomaly occurs, do not use this product until it has been repaired, and immediately report the problem to the location of purchase (either NF Corporation or one of our distributors).

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1. OVERVIEW

1.1 Overview

The **FRA5022/FRA5014 Data Display Software** is a program that supports the functions of the FR5022 frequency response analyzer and FRA5014 servo analyzer.

This program runs on a Windows operating system for personal computers, acquires measurement data and measurement conditions from the FRA5022/FRA5014, and sets measurement conditions, via a USB or GPIB interface.

The main functions of the **FRA5022/FRA5014 Data Display Software** are as follows:

- Acquiring measurement data from the FRA5022/FRA5014
- Reading measurement data from a CSV file
- Saving measurement data to a CSV file
- Displaying measurement data on a graph
- Printing graphs of measurement data
- Acquiring measurement conditions from the FRA5022/FRA5014
- Reading measurement conditions from an XML file
- Saving measurement conditions to an XML file
- Editing measurement conditions
- Setting measurement conditions of the FRA5022/FRA5014
- Remote control of the FRA5022/FRA5014

For details on the remote control function, refer to the **Instruction Manuals** of the FRA5022/FRA5014.

1.2 Product Configuration

The product configuration of the **FRA5022/FRA5014 Data Display Software** is as follows.

- Instruction Manual ·· 1
- Installer ·· 1

2. INSTALLATION

2.1 System Requirements

Before installing the **FRA5022/FRA5014 Data Display Software**, confirm that the system satisfies the following conditions.

2.1.1 Personal computer

- Free hard disk space: 50 MB, minimum

- Display: 1024×768 pixels, minimum

- OS: Windows 7/8.1/10 (32-bit/64-bit)

                               .NET Framework 4.0 must be installed.

- Disk drive: CD-ROM drive

- USB interface: USB 1.1 full-speed

The company names and product names shown are trademarks or registered trademarks of their respective owners.

⚠ **Caution**

The CD-ROM drive is necessary only when installing this software.

2.2 Installation Procedure

To install or uninstall this software, log on to Windows with an administrator privilege..

2.2.1 Installing GPIB interface

A GPIB interface is necessary for using this program with GPIB.

See the operation manual of the GPIB interface to be used for how to install the GPIB interface.

2.2.2 Installing USB driver software

Download the USB driver software from the following web site and install it as follows.

1. Search the VISA Run-time Engine page on the web site of National Instruments Corporation..

2. Download VISA Run-time Engine from the VISA Run-time Engine page. A user must be registered at this time. This software is verified with Ver 16.0 operation.

3. The downloaded file is self-extracting. Extract the file and install the software.

4. When installation has been correctly completed, the USB driver software is installed.

For details, visit the National Instruments Corporation web site.

2.2.3 Installing FRA5022/FRA5014 Data Display Software

Note that .NET Framework 4.0 or later must be installed.

The .NET Framework 4.0 is available from the Microsoft website (http://www.microsoft.com)

It is possible to download.

If you execute Seup.msi While .NET Framework 4.0 is not installed,

You will be prompted to install the .NET Framework.

(a) Insert the CD-ROM supplied with the **FRA5022** or **FRA5014** into the CD-ROM drive of your PC.

(b) Run [\English\Application\Setup.msi] on the CD-ROM from Explorer, or select [Run] of the Windows Start menu and specify [D:\English\Application\Setup.msi].
[D:] is the CD-ROM drive. If a different drive name is used in your system, replace it with the drive name you use.

(c) In accordance with the instructions on the screen, click the [Next] button to install the software.

(d) When installation has been completed, the **FRA5022/FRA5014 Data Display Software** can be executed.
To execute it, click [Start] - [Program] - [FRA Data Display Software] - [DataDsp12].

⚠ **Caution**

If an earlier version was used, uninstall it before installing the new version.

2.2.4   Uninstalling FRA5022/FRA5014 Data Display Software

When Windows 7 is used, click **[Uninstall a program]** on the control panel, select **DataDsp12** and then click the **[Uninstall]** button. The software will be uninstalled.

3. GRAPH DISPLAY FUNCTION

3.1 Menu Configuration

The **FRA5022/FRA5014 Data Display Software** menu configuration is shown below. Note that items marked with an asterisk cannot be used if none of the graphs is displayed.

File
    Open from File: Reads measurement data from a specified CSV file and displays a graph.

    Open from Device: Acquires measurement data from the FRA5022/FRA5014 and displays a graph.

    Save active plot to csv (*): Saves the measurement data of the active graph to a CSV file.

    Page set up: Makes a setting for printing.

    Preview (*):   Shows printing preview.

    Print (*):   Prints the active graph.

    Copy to clipboard (*):   Copies the bitmap image of an active graph onto the clipboard.

    Exit: Terminates the software.

Device
    Remote Control: Remotely controls the FRA5022/FRA5014.

    Connection setting: Changes the connection setting to the FRA5022/FRA5014.

Graph
    Display setting (*):   Makes setting for displaying graphs.

Cursor
    None: Does not display a cursor on graphs.

    HairLine cursor: Displays a hairline cursor on a graph.

    Data cursor: Displays a data cursor on a graph.

Window (*):   Selects a graph window to be displayed forefront.

Help
    Version: Displays the version information.

3.2 Displaying Graphs

The **FRA5022/FRA5014 Data Display Software** can display the measurement data read from a CSV file or acquired from the FRA5022/FRA5014 on a graph. Graphs can be displayed as a Bode diagram or Nicols Chart by changing the setting. Graphs can also be printed out and copied onto the clipboard as bitmap images.

3.2.1 Reading measurement data from CSV file

By using [File]-[Open from file] menu, measurement data can be read from a specified CSV file and displayed in a graph. Note that only the CSV file that has been saved by [File]-[Save active plot to csv], explained below, can be read.

When a file is selected, the [Display setting] dialog box is displayed and setting to display a graph can be made (☞ see **3.2.3 Setting of graph display**).

When reading two or more sets of measurement data, the [Target select] dialog box is displayed to select whether to display superimposed graphs, or to open a new graph window.

To superimpose a new graph onto an existing graph window, select the target graph window name and click [OK] or [Setting] (the graph window name is the file name of the data by which the graph window has been opened for the first time). If [Setting] is clicked, the setting to display the graph can be changed.

To open a new graph window, select "(New graph)" and click the [Setting] button.

Figure 3-1. [Target select] Dialog Box

3.2.2 Acquiring measurement data from FRA5022/FRA5014

Measurement data can be acquired from the FRA5022/FRA5014 connected to your PC via a USB or GPIB interface, by using the [File]-[Open from device] menu. When the FRA5022 is used, data stored in memory A can be acquired as measurement data.

To display two or more sets of data on a graph, whether to display superimposed data. or to open a new graph window, can be selected in the same manner as reading measurement data from a CSV file.

The setting of connection between the PC and FRA5022/FRA5014 can be changed by using [Device]-[Connection setting]. To connect the FRA5022/FRA5014 via a USB cable, select the [USB] radio button, click the [Search] button, and select the analyzer to be connected from the

"Product" list box.

To connect to the FRA5022/FRA5014 via a GPIB cable, select the [GPIB] radio button, input the address assigned to the analyzer to be connected, and click the [Search] button.

Figure 3-2. [Connection setting] Dialog Box

3.2.3 Setting of graph display

Setting to display graphs can be made when measurement data is read from a CSV file, acquired from the FRA5022/FRA5014, or by using the [Graph]-[Setting] menu. The meaning of each settable item is as follows.

Tab Name	Item	Meaning
General	Title	Graph title
	Background color	Background color of graph
	Template	Sets x and y axes.
	Graph size[mm]	Specifies horizontal and vertical widths of graph.
	Font	Selects font of file name and graph title.
Data	Delete	Whether a plot is displayed can be selected by the plot check box. The color of plot can be changed by C1 and C2 color palettes. The thickness of a plot can be set by the W1 and W2 text boxes. Data can be deleted from a graph by selecting File name and clicking the Delete button.
Horizontal	Data	Selects type of data to be displayed on the x axis. Selectable from "Frequency", "Re" (real part of amplitude), and "Phase"
	Caption	Caption on the x axis
	Use default	When this is selected, the default setting is used for the caption on the x axis. When it is de-selected, caption on the x axis can be arbitrarily set.
	Scale	Scale on the x axis Selectable from Linear, Linear (dB) (decibels), and Log (logarithm).
	Format	Specifies number of digits of memory displayed on the x axis
	Grid	Specifies the color and width of grid lines on the x axis, and whether the grid lines are to be displayed.
	Margin[mm]	Specifies the margin on the left and right of a plot.
		Specifies the maximum value, minimum value, and step width of the x-axis memory.
	Scale option	Only Auto can be specified as Step when "Log" is specified for Scale.
	Font	Sets the format of the caption and scale on the x axis.
Vertical 1	Data	Selects type of data to be displayed on the y1 axis. Selectable from R (amplitude), Re (real part of amplitude), -Re (negative real part of amplitude), Im (imaginary part of amplitude), -Im (negative imaginary part of amplitude), and Phase.
	Caption	Caption on the y1 axis
	Use default	When this is selected, the default setting is used for the caption on the y1 axis. When it is de-selected, the caption on y1 axis can be arbitrarily set.
	Scale	Scale on the y1 axis Selectable from Linear, Linear (dB) (decibels), and Log (logarithm).
	Format	Specifies number of digits of memory displayed on the y1 axis.
	Grid	Specifies color and width of grid lines on the y1 axis, and whether the grid lines are to be displayed.
	Margin[mm]	Specifies the margin on the top and bottom of a plot.
		Specifies the maximum value, minimum value, and step width of the y1-axis memory.
	Scale option	Only Auto can be specified as Step when "Log" is specified for Scale.
	Font	Sets the format of the caption and scale on the y1 axis.

| Tab Name	Item	Meaning
Vertical 2	Data	Selects type of data to be displayed on the y2 axis. Selectable from Re (real part of amplitude), Im (imaginary part of amplitude), -Im (negative imaginary part of amplitude), and Phase.
	Caption	Caption on the y2 axis
	Use default	When this is selected, the default setting is used for the caption on the y2 axis. When it is de-selected, the caption on the y2 axis can be arbitrarily set.
	Scale	Scale on the y2 axis Selectable from Linear, Linear (dB) (decibels), and Log (logarithm).
	Format	Specifies the number of digits of memory displayed on the y2 axis.
	Grid	Specifies the color and width of the grid lines on the y2 axis, and whether grid lines are to be displayed.
	Margin[mm]	Specifies margin on the top and bottom of a plot. Specifies the maximum value, minimum value, and step width of the y2-axis memory.
	Scale option	Only Auto can be specified as Step when Log is specified for Scale.
	Font	Sets the format of the caption and scale on the y2 axis.
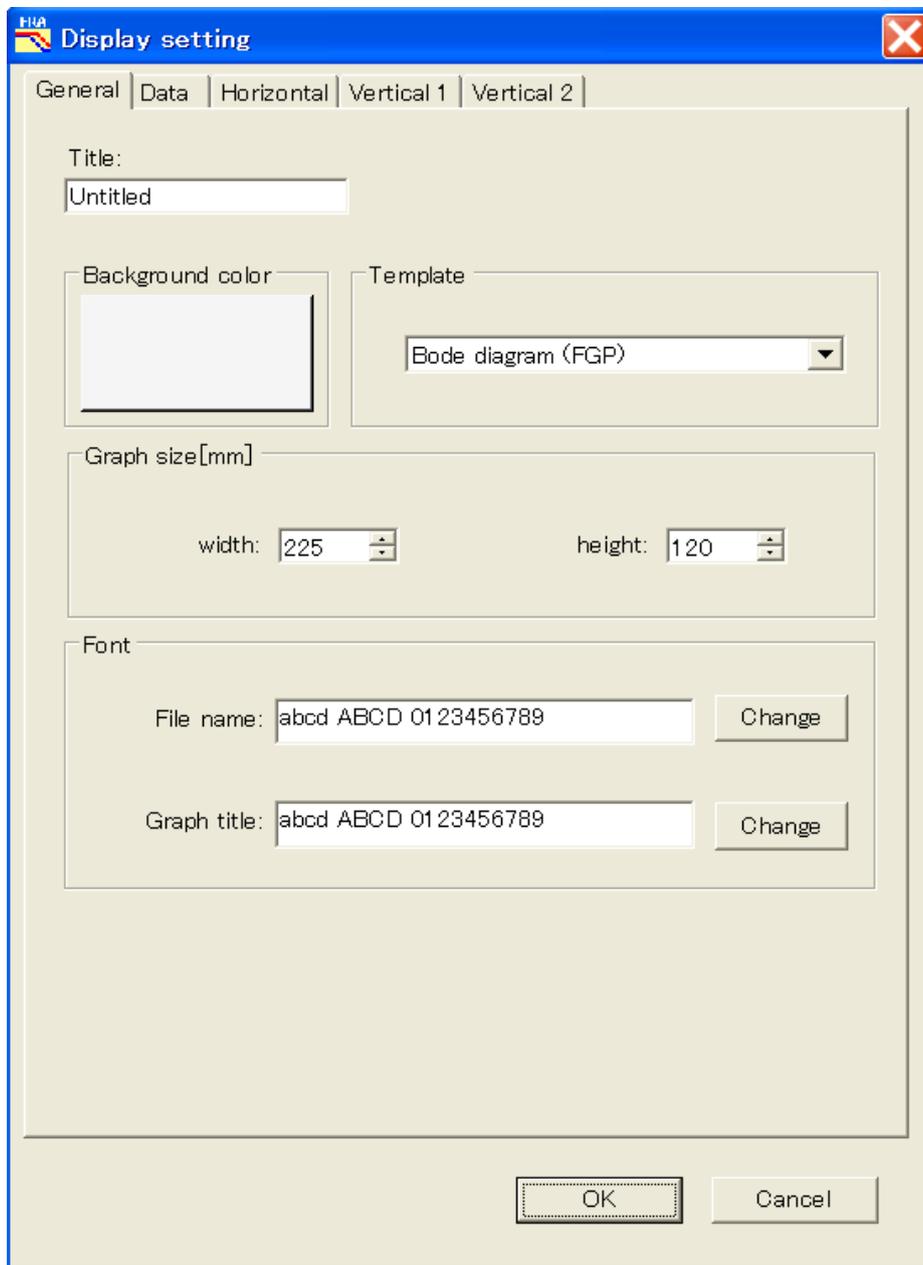
Figure 3-3. [Display setting] Dialog Box

3.2.4 Displaying cursor

By using the [Cursor] menu, a cursor to read a value on a graph can be displayed on the graph. When [Cursor]-[HeaLine cursor] is selected, a hairline cursor used to read any point on the graph window is displayed. Selecting [Cursor]-[Data cursor] displays a cursor to read a value at any point on measurement data. Measurement data on which the cursor is to be displayed can be changed by using the tab key if graphs are displayed superimposed onto each other. Values are displayed at the lower left of the graph window.
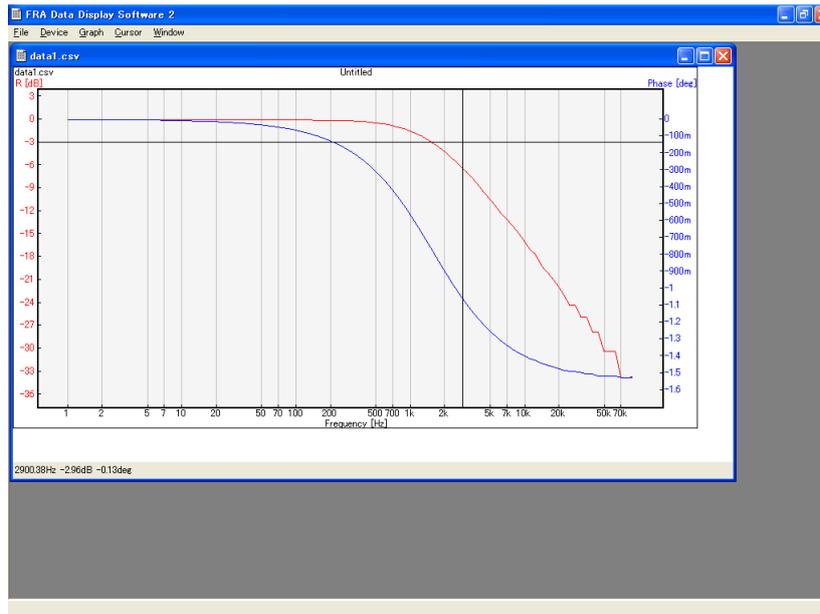
Figure 3-4. Hairline Cursor

Figure 3-5. Data Cursor

3.2.5 Saving measurement data to CSV file

Measurement data on an active graph can be saved into a CSV file by selecting the [File]-[Save active plot to csv] menu. When this menu is selected, the [Save as CSV] dialog box is displayed. When "Displayed data without header" is selected, a CSV file is created by using the scale of each axis specified by Display setting. "FGP format," "FGdBP format," and "Fab format" create a CSV file in a specified format, regardless of the Display setting. Only a file saved by FGP format, FGdBP format, or Fab format can be correctly read by using the [File]-[Open from file] menu. Note that measurement data that has been saved by Displayed data without header may not be correctly opened.

The contents of each format are as follows:

FGP format: F (frequency), G (gain (linear)), P (phase)

FGdBP format: F (frequency), GdB (gain (logarithmic)), P (phase)

Fab format: F (frequency), a (real part), b (imaginary part)

Figure 3-6 [Save as CSV] Dialog Box

3.2.6 Printing graph and copying graph to clipboard

The graph on an active window can be printed by selecting the [File]-[Print] menu. The settings such as paper size and printing direction can be changed by using the [File]-[Page setup] menu. The preview of printing can be displayed by using the [File]-[Preview] menu.

When [File]-[Copy to clipboard] menu is selected, the bitmap image of an active graph window is copied onto the clipboard. Use an appropriate application to paste the bitmap image.

4.   OTHER FUNCTIONS

4.1 Acquiring, Editing, and Setting Measurement Conditions

Measurement conditions can be acquired from or set to the FRA5022/FRA5014 by using the [Device]-[Remote control] menu. Measurement conditions can also be saved to or acquired from an XML file.

The function of each button is as follows.

| Button Name	Function
DCL	Transmits device clear command.
Load from device	Acquires the measurement conditions from the FRA5022/FRA5014.
Load from file	Acquires the measurement conditions from an XML file.
Save to file	Saves the measurement conditions to an XML file.
Break	Forcibly stops processing and returns control.
Print	Prints the measurement conditions.
Apply	Sets measurement conditions to the FRA5022/FRA5014.
Close	Closes the dialog box.
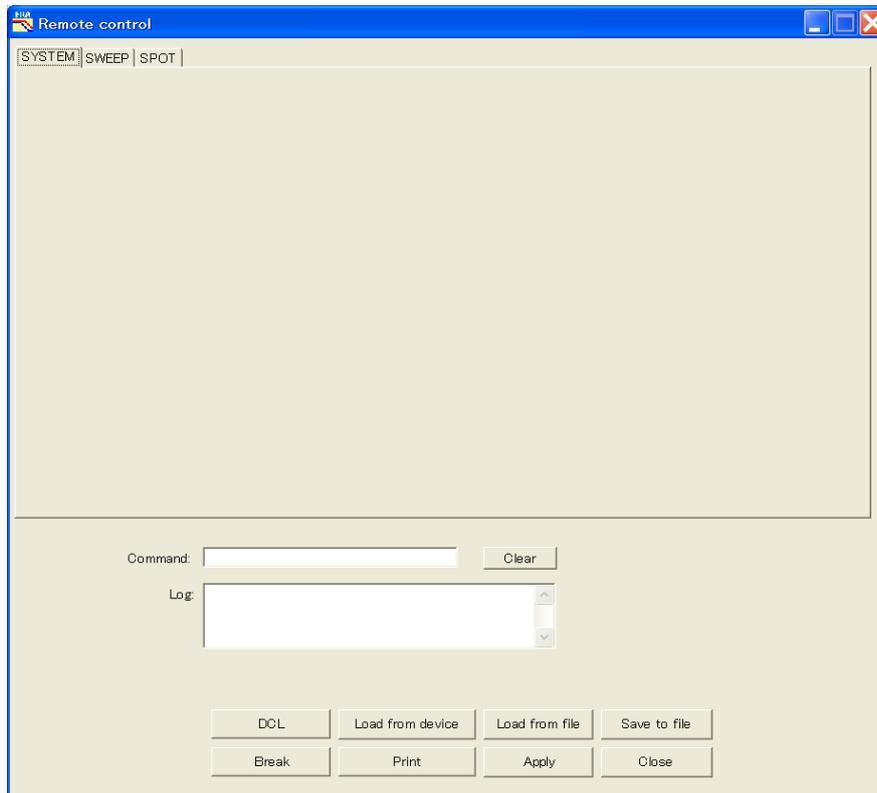
Figure 4-1. [Remote control] Dialog Box

4.2 Remote Control

The FRA5022/FRA5014 can be remotely controlled via the [Device]-[Remote Control] menu.

Any command can be executed by inputting the command to the Command dialog box on the [Remote control] dialog box, and pressing the [Enter] key.

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If a problem occurs or if you have questions, contact NF Corporation or an NF Corporation sales representative where you purchased this software.

When contacting NF Corporation or an NF Corporation sales representative, provide the model name (or product name), the manufacturing number, version number, and information as detailed as possible about the nature of the problem, conditions of use, etc.

NOTES

- Reproduction of this software or the contents of this manual is forbidden by applicable laws.

- The contents of this manual may be revised without notice.

- Information provided in this manual is intended to be accurate and reliable. However, we assume no responsibility for any damage regarding the contents of this manual.

- We assume no responsibility for influences resulting from the operations in this manual.