

Setup Guide

Application Software

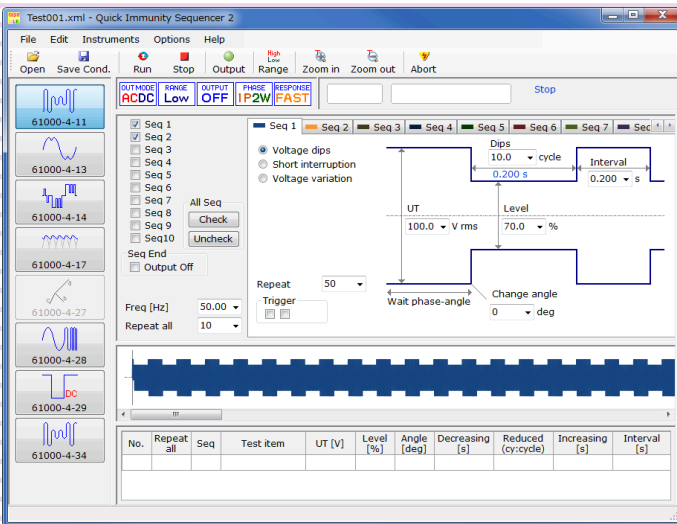
SD009-PCR-LE/WE Quick Immunity Sequencer 2 Ver. 4.x

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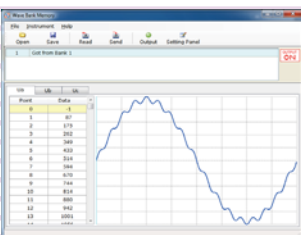
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Wave Bank Memory Ver. 4.x



Thank you for purchasing the SD009-PCR-LE/WE.

About This Guide

This guide is intended for first-time users of the SD009-PCR-LE/WE. 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 your Kikusui agent or distributor. At that time, inform your agent or distributor of the "Part No." written on the front cover of this guide.

Every effort has been made to ensure the accuracy of this guide. However, if you have any questions, or find any errors or omissions, contact your Kikusui agent or distributor.

■ Product versions that this guide covers

This guide applies to version 4.x of Quick Immunity Sequencer 2 and Wave Bank Memory.

■ Related equipment versions

- PCR-LE Series and PCR-LE2 Series AC power supply
Firmware version 4.0 or later
- PCR-WE Series and PCR-WE2 Series AC power supply
Firmware version 1.32 or later

The version is displayed in the control panel display section when the AC power supply is turned on.

■ How to read this guide

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

■ Who should read this guide?

This operation guide is intended for users who will use Quick Immunity Sequencer 2 and the AC power supply to perform immunity tests on electrical and electronic devices that are connected to low frequency power distribution systems and on electrical and electronic devices that have a DC input power port. The guide is also intended for instructors who will teach these users.

■ Trademarks

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The specifications of this product and the contents of this guide are subject to change without prior notice.

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For Safe Use

Before using SD009-PCR-LE/WE to perform tests, thoroughly read the manuals of the hardware you will be using, and be sure to connect and operate the product correctly.

Improper connections or handling can lead to serious accidents, injury, and fire.

Notations Used in This Guide

- In this guide, Quick Immunity Sequencer 2 is also called "QIS2," Wave Bank Memory is also called "WBM."
- In this guide, the PCR-LE series and PCR-LE2 series AC power supplies are also referred to as the "PCR-LE," and the PCR-WE series and PCR-WE2 series (including the PCR-WE2R, a model with a regeneration function) AC power supplies are also referred to as the "PCR-WE." In addition, all the above series may be referred to collectively as the "PCR-LE/WE."
- The term "PC" is used to refer generally to both personal computers and workstations.
- The following markings are used in the explanations in the text.



CAUTION Indicates a potentially hazardous situation which, if ignored, may result in damage to the product and other property.



NOTE Indicates information that you should know.



See Indicates a reference to detailed information.

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General Description

The SD009-PCR-LE/WE package contains the following two software applications.

- Quick Immunity Sequencer 2 (QIS2)
- Wave Bank Memory (WBM)

Quick Immunity Sequencer 2

QIS2 is application software that uses a Kikusui AC power supply listed below to perform tests.

AC power supplies that can be used

- PCR-LE Series
- PCR-LE2 Series
- PCR-WE Series
- PCR-WE2 Series (including the PCR-WE2R, a model with a regeneration function)

This software can simulate various phenomena that occur in AC power supply environments. It can be used to perform immunity tests with conditions that match the following standards on electrical and electronic devices that are connected to low frequency power distribution systems and on electrical and electronic devices that have a DC input power port. You can set test conditions that exceed the ranges defined in the standards, so this software can be used to perform preliminary tests before the tests for the standards, immunity allowance tests, and stress tests.

- | | |
|--|--|
| • IEC61000-4-11(2004-03)Edition2.0
Corrigendum(2010-08) | Voltage dips, short interruptions, and voltage variations |
| • IEC61000-4-13(2015-12)Edition1.2 | Harmonics and interharmonics |
| • IEC61000-4-14(2009-08)Edition1.2 | Voltage fluctuation |
| • IEC61000-4-17(2009-01)Edition1.2 | Ripple on d.c. input power port |
| • IEC61000-4-27(2009-04)Edition1.1 | Unbalance |
| • IEC61000-4-28(2009-04)Edition1.2 | Variation of power frequency |
| • IEC61000-4-29(2000-08)1st.Edition | Voltage dips, short interruptions, and voltage variations on d.c. input power port |
| • IEC61000-4-34(2009-11)Edition1.1 | Voltage dips, short interruptions, and voltage variations |

●Items that do not comply with the requirements of the standards

In QIS2, for test configurations that include hardware, there are items that do not comply with the requirements of the standards. For details, see the items of the appropriate specification.

●Data saving function

- You can save test conditions.
- You can save test results. You can specify the format of the test result file (text or comma-separated value).

Wave Bank Memory

WBM is application software that can be used to view and save the contents of the PCR-LE/WE waveform banks.

Waveform banks are used in QIS2. Because the waveform data in the waveform banks will be overwritten, use WBM to view and save the waveform data that you have used on the PCR-LE/WE.

- Reading data from waveform banks
- Transmitting data to waveform banks
- Saving data with a new file name
- Displaying waveforms
You can use the displayed waveforms to determine whether the load that is presently connected to the PCR-LE/WE will be damaged.
- Specifying waveform banks (by number) and generating the waveforms in them from the PCR-LE/WE
- Configuring PCR-LE/WE panel settings (output voltage, frequency, and output on/off)
- Displaying an operation log

System requirements

To use the SD009-PCR-LE/WE, you require the following hardware and software.

- A PC with Microsoft Windows¹ 10 or 7
- 8 GB or more of RAM (16 GB or more recommended)
- 1366×768 dots or higher resolution
- 100 MB or more of free hard disk space (additional space is required to save data)
- CD-ROM drive
- Mouse or other pointing device
- VISA library
NI-VISA 5.0.3 or later, Keysight IO Libraries Suite 16.1 or later, or KI-VISA 5.0.5 or later
- USB cable (only when using the USB interface)
- Crossover serial cable (only when using the RS-232C interface)
- LAN cable² (only when using the LAN interface)

1. 64 bit or 32 bit

2. PCR-LE

When using the LAN through a HUB: Straight cable

When using the LAN with a one-to-one connection: Crossover cable

If the PC's LAN port supports Auto-MDIX, either cable can be used for the LAN connection.

PCR-WE

A straight or crossover cable can be used for the LAN connection because the PCR-WE is equipped with Auto-MDIX.

Test configuration

Hardware to use

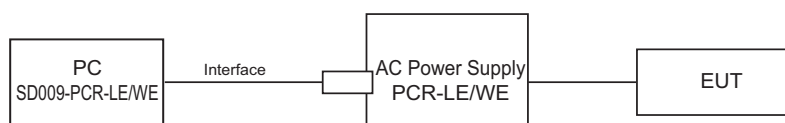
- AC Power Supply
 - PCR-LE Series
 - PCR-LE2 Series
 - PCR-WE Series
 - PCR-WE2 Series (including the PCR-WE2R, a model with a regeneration function)
- DIP Simulator
 - DSI1020
 - DSI3020

We recommend that you use the DIP Simulator in IEC61000-4-11 (voltage dips, short interruptions, and voltage variations) tests.

When you use the DIP Simulator, the standard’s specifications for the voltage generator’s voltage rise and fall times (1 ms to 5 ms) will be met. The performance when the dip simulator is not used is approximately 30 μs (when the response is MEDIUM) on the PCR-LE series and approximately 55 μs (when the response is FAST) on the PCR-WE series.

Configuration

■ PC + PCR-LE/WE



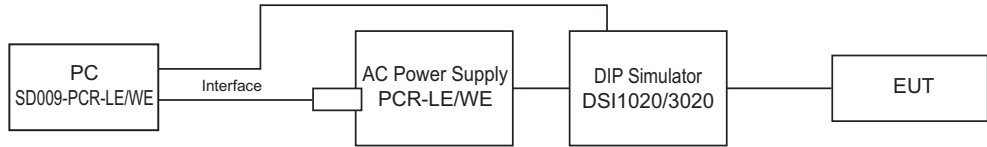
Wiring method	PCR-LE AC Power Supply			
	PCR-LE Series		PCR-L2E Series	Interface
		Driver		
Single-phase two-wire	1 unit	-	1 unit	RS232 USB (US05-PCR-LE)*2 LAN (LN05-PCR-LE)*2
Single-phase three-wire	2 units	2P05-PCR-LE (2 boards)*1		
Three-phase	3 units	3P05-PCR-LE (3 board3)*1		

*1 An optional driver board is required for each power supply.

*2 An optional interface board is required.

Wiring method	PCR-WE AC Power Supply		
	PCR1000WE PCR2000WE	PCR-WE2 Series	Interface
Single-phase two-wire	1 unit	1 unit	RS232 USB LAN
Single-phase three-wire	-		
Three-phase	-		

■ PC + PCR-LE/WE + DSI



Wiring method	PCR-LE AC Power Supply				DIP Simulator		
	PCR-LE Series		PCR-LE2 Series	Interface	DSI1020*3	DSI3020	Interface
		Driver					
Single-phase two-wire	1 unit	-	1 unit	RS232 USB (US05-PCR-LE)*2 LAN (LN05-PCR-LE)*2	1 unit	1 unit	RS232 USB*4
Single-phase three-wire	2 units	2P05-PCR-LE (2 boards)*1			2 units		
Three-phase	3 units	3P05-PCR-LE (3 board3)*1			3 units		

- *1 An optional driver board is required for each power supply.
- *2 An optional interface board is required.
- *3 On the PCR-LE, you can also use the IT01-PCR-L Immunity Tester in place of the DSI1020, but the interface will be limited to GPIB. For details, contact your Kikusui agent or distributor.
- *4 Factory option

Wiring method	PCR-WE AC Power Supply			DIP Simulator		
	PCR1000WE PCR2000WE	PCR-WE2 Series	Interface	DSI1020*1	DSI3020	Interface
Single-phase two-wire	1 unit	1 unit	RS232 USB LAN	1 unit	1 unit	RS232 USB*2
Single-phase three-wire	-			2 units		
Three-phase	-			3 units		

- *1 On the PCR-LE, you can also use the IT01-PCR-L Immunity Tester in place of the DSI1020, but the interface will be limited to GPIB. For details, contact your Kikusui agent or distributor.
- *2 Factory option

⚠ CAUTION Risk of malfunction. Turn the DIP Simulator on and off only when the PCR-LE/WE output is off.

VISA driver

To use the SD009-PCR-LE/WE, you must install a VISA driver.

CAUTION

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

NOTE

- VISA (Virtual Instrument Software Architecture): VISA 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 required VISA driver varies depending on the I/O interface that you want to use. Refer to the table below to select the VISA driver that you require.

VISA driver	Version and where to obtain the driver
KI-VISA	KI-VISA version 5.0.5 or later From the software CD-ROM or from the KIKUSUI Website
NI-VISA	Version 5.0.3 or later From the National Instruments Website
Keysight IO Libraries	Suite 16.1 or later From the Keysight Technologies Website

- If you are using a driver other than KI-VISA, check the license conditions of the VISA driver.

Package contents

The SD009-PCR-LE/WE package contains the following items.

Name	Quantity
Program CD-ROM	1
SD009-PCR-LE/WE Setup Guide (this guide)	1

Available manuals

In addition to the Setup Guide (this guide), the SD009-PCR-LE/WE also includes the following manuals.

- Operation Guide (electronic manual)
QIS2 and WBM both have HTML help files.
- Operation Guide (PDF format)
QIS2 has a PDF version of the operation guide.

For details on how to display the operation guides, see [“Viewing the operation guides.”](#)

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Notes on use

During testing, QIS2 communicates with the PC. To ensure the operation of the PC, disable the following features on your PC during testing.

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

During testing, avoid operating other software applications.

About Windows updates (Windows 10 only)

Unlike the older versions of Windows, Windows 10 is provided as Windows as a Service (WaaS) in order to continuously update the OS. It is said that updating privileges would be lost unless it is used in an Internet connected environment and Windows Update is periodically executed (currently 18 months).

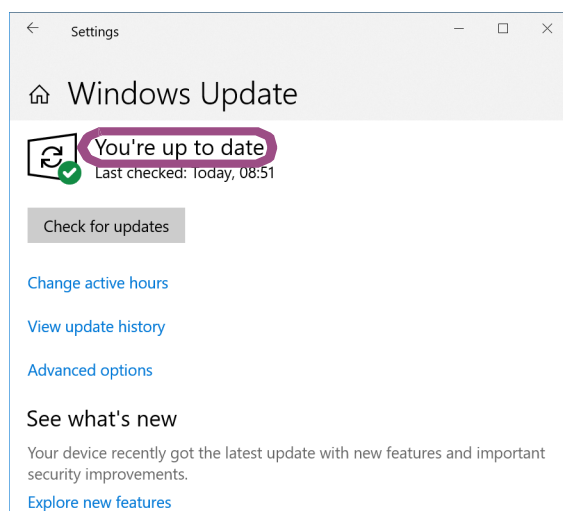
If you want to stably run a test using QIS2 over an extended period, you need to be careful about the auto update function of Window 10.

Familiarize yourself with the matter explained below, and construct the most stable OS environment possible before running a sequence.

■Running Windows Update

Run Windows Update to update the OS to the latest condition (in which “You’re up to date” is shown).

When the downloading of the update file is complete, Windows will be in an installation-wait state or restart-wait state after installation. If you run a sequence in this state, Windows may restart automatically even when the PC is not connected to the Internet. Be sure to select Install Now or Restart Now to complete the installation of the update program.



■Windows Update settings

With the default Windows Update settings, when connected to the Internet, Windows 10 automatically runs Windows Update and restarts the PC using the update program. If QIS2 is running, Windows will automatically restart while the test is in progress, and this will result in the cancellation of the test.

When executing a long-term test using QIS2, we recommend that, in the Windows Update settings, you postpone the update program installation until an appropriate time.

Before Installation

- You need to log on as an administrator to install the software applications.
- Close all software applications running on your PC. The software may not be installed properly if virus protection software is running. Disable virus protection software until the installation is complete.

Inserting the CD-ROM

- 1 Insert the program CD-ROM in the drive.**
After a short time, AutoPlay window opens.
- 2 Click Open folder to view files.**
- 3 Double-click indexE.htm.**
The menu program will start. If you double-click indexJ.htm, the Japanese menu program will start.



Installation

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

- IVI Shared Components¹
- VISA driver
- SD009-PCR-LE/WE

1 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.

Installing KI-VISA

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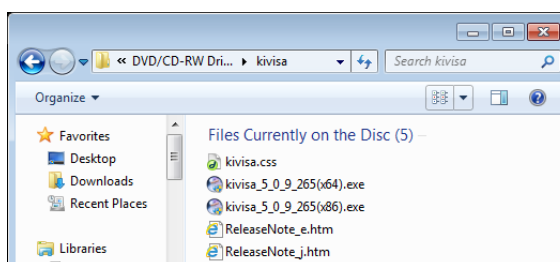
To use an NI-VISA or Keysight Technologies VISA driver, refer to the manual of the respective product. If you are not installing KI-VISA, proceed to [step 4](#).



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

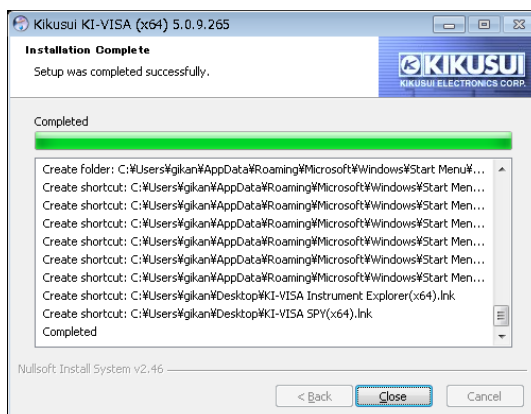
1 On the menu program window, click KI-VISA x.x.x.

The “kivisa_x_x_x.exe” file on the CD-ROM will be displayed on the screen. The string “x_x_x” indicates the version. For 32-bit operating systems, install KI-VISA_x_x_x_(x86). For 64-bit operating systems, install KI-VISA_x_x_x_(x64).



2 Double-click Kivisa_x_x_x.exe to run the installer.

Next, follow the instructions on the screen to install the software. When the installation is complete, the following dialog box appears.



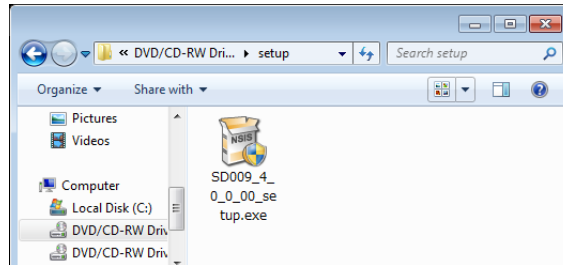
3 Click Close. Then, click Back in your browser to return to the menu program window.

Proceed to the installation of SD009-PCR-LE/WE.

Installing SD009-PCR-LE/WE

4 On the menu program window, click SD009-PCR-LE/WE.

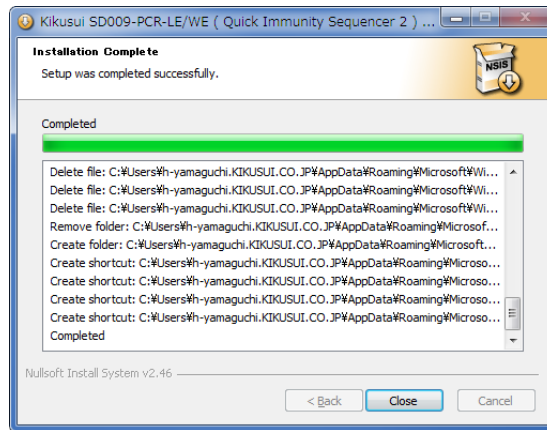
The "SD009_X_X_X_setup.exe" file on the CD-ROM will be displayed on the screen.



5 Double-click Sd009_X_X_X_setup.exe to run the installer.

Next, follow the instructions on the screen to install the software.

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



6 Click Close.

Configuring the PCR-LE/WE interface

Refer to the PCR-LE/WE communications interface manual to configure the interface that you want to use.

■When using the LAN interface

When the PCR-LE/WE shipped from the factory, the IP address assignment method is set to auto. If you are connecting the PC and PCR-LE/WE directly with a LAN cable, use the auto setting.

If you want to assign fixed IP addresses, refer to the PCR-LE/WE Communication Interface manual, and assign IP addresses to the PC and PCR-LE/WE.

■When controlling via RS232C

Set the RS232C protocol on the PCR-LE/WE as follows:

- Baudrate: 19200 bps
- Data: 8 bits
- Stop: 1 bits
- Flow Ctrl: OFF

Starting the application software

The SD009-PCR-LE/WE package contains the following two software applications. You cannot run both of these applications at the same time. You also cannot run multiple instances of the same software at the same time.

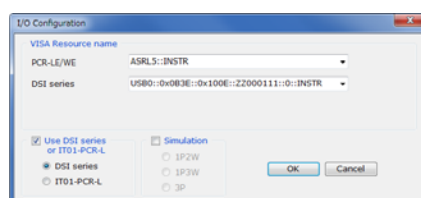
- Quick Immunity Sequencer 2
- Wave Bank Memory

Starting Quick Immunity Sequencer 2

1 To start QIS2, on the taskbar, click All Programs, Kikusui Quick Immunity Sequencer 2, and then Quick Immunity Sequencer 2.

If the software fails to communicate with the PCR-LE/WE immediately after QIS2 starts, the I/O Configuration dialog box is displayed. If the communication with the PCR-LE/WE is successful, the configuration up to **step2** is performed automatically.

QIS2 determines single-phase or three-phase from the connection and displays the appropriate dialog box.



■ If the device's ID string could be retrieved

Select an ID from the list, and click OK.

For RS232, USB and LAN the string "ASRL", "USB" or "TCPIP" is displayed together with the retrieved strings.

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

■ If the device's ID string could not be retrieved

Check the interface cable, VISA setup and PCR-LE/WE test configuration, and then start again from **step1**.

NOTE

- If you are using the LAN interface with KI-VISA and the PCR-LE/WE ID string does not appear in the list, perform the procedure below.
On the Windows taskbar, click Start, Kikusui IO Software, Instrument Explorer, and KI-VISA IO Config. Select the LAN tab, and click Search Now.
- If the resource name displayed in the KI-VISA IO Config dialog box changes every time KI-VISA is started with the above procedure, this behavior may be resolved by performing the following procedure.
Select Network and Sharing Center, Ethernet, Ethernet Status, and Properties, and clear the Internet Protocol Version 6 (TCP/IPv6).
- If the connection is already established, you cannot select the resource name. If you want to use another interface, reconnect and then restart QIS2.

■ To use the DIP Simulator

Select the "Use DSI series or IT01-PCR-L" check box, and select DSI series.

NOTE

- On the PCR-LE, you can also use the IT01-PCR-L Immunity Tester in place of the DSI1020. For details, contact your Kikusui agent or distributor.
- Kikusui does not guarantee proper operation when the PCR-WE and IT01-PCR-L are used in combination.

The factory default communication interface on the DIP simulator is set to RS232C. To use the USB interface factory option on the DIP simulator, you need to change its setting. For details, see the operation manual of the DIP simulator.

■Simulation

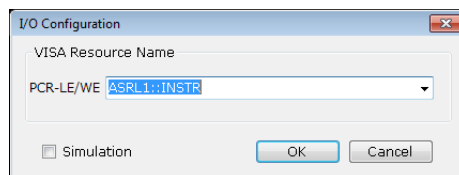
If you select the Simulation check box, you can simulate the operation of QIS2 without connecting it to a PCR-LE/WE. You can select single-phase two-wire (1P2W), single-phase three-wire (1P3W) or three-phase (3P). In this manner, QIS2 can be used for demonstration.

2 QIS2 starts.

Starting Wave Bank Memory

1 To start WBM, on the taskbar, click Start, All Programs, Kikusui Quick Immunity Sequencer 2, and then Wave Bank Memory.

If the software fails to communicate with the PCR-LE/WE immediately after WBM starts, the I/O Configuration dialog box is displayed. If the communication with the PCR-LE/WE is successful, the configuration up to **step2** is performed automatically.



■If the device's ID string could be retrieved

Select an ID from the list, and click OK.

For RS232C, USB and LAN the string "ASRL", "USB", or "TCPIP" is displayed together with the retrieved strings.

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

■If the device's ID string could not be retrieved

Check the interface cable, VISA setup and PCR-LE/WE test configuration, and then start again from **step1**.

■Simulation

If you select the Simulation check box, you can simulate the operation of WBM without connecting it to a PCR-LE/WE. In this manner, WBM can be used for demonstration.

2 WBM starts.

Viewing the operation guides

The operation guides contain information on how to operate the software applications.

■HTML help

In each software application, click Help and then Contents.

■PDF version of the operation guide

The PDF version is provided so that you can print it. This is only available for QIS2.

In QIS2, click Help and then User's Manual.