User Guide

PowerMax (MX249001A) Ethernet Software for use with the ML248xB and ML249xA Power Meter

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Chapter 1 — General Information

1-1 About this Manual

This manual provides an overview to the PowerMax software (MX249001A) for use with the ML248xB/ML249xA power meter. No prior knowledge of PowerMax is assumed, although a familiarity with the purpose and operation of the ML248xB/ML249xA is required.

The reader is presumed to be familiar with the operation of, and terminology associated with, a Microsoft Windows operating environment.

Comments on this Manual

Every effort has been made to ensure that this manual is thorough, easy to use, and free from errors. However, to ensure continued improvement, we would welcome your comments on this, or any other Anritsu document.

Please contact us at the address below if you have any comments, good or bad, find any errors or omissions, or have any suggestions on how our documentation could be improved further.

powermeter.support@anritsu.com

Your comments will be logged and reviewed, and whenever possible, will be reflected in a subsequent release of the document.

Software Versions

This manual provides details of the operation and functionality of the following software versions:

PowerMax: 2.00

Conventions

The following conventions have been adopted in this manual.

Table 1-1. Notation Conventions

Item	Convention
ML248xB	Used to refer jointly to both the ML2487B and ML2488B power meters.
ML249xA	Used to refer jointly to both the ML2495A and ML2496A power meters.
[Set-Up]	Tabbed pages within PowerMax are enclosed in square brackets.
[PowerMax]	The names of windows and dialogs are enclosed in square brackets.
“Channel Mode”	Text appearing within the body of a window or dialog is enclosed in quotation marks.
[Autoscale]	The names of buttons that appear within windows or dialogs are enclosed in square brackets.
[Shift]	The names of keys that appear on the PC keyboard are enclosed by square brackets.
DUT	The device under test is referred to as the DUT throughout this document.

1-2 Product Description

PowerMax is a software package that allows the user to control the ML248xB/ML249xA power meter (with firmware v2.30 or greater) from a remote PC. Use of the larger PC monitor offers a number of benefits including more immediately comprehensible setting fields, a larger trace display area, and the ability to capture and save trace and image data.

PowerMax is shipped as standard with all ML248xB/ML249xA power meters purchased, or can be downloaded from the Anritsu web site. An ethernet connection is established between the power meter and the PC and measurement settings and results are then displayed on a Windows based GUI.

Figure 1-1. PowerMax Splash Screen

The key features of PowerMax are summarised below.

- Full remote control of the power meter allowing continuous real-time monitoring of measurement traces, print outs, and data archiving for later analysis.
- Familiar Windows based GUI maximizes visibility and operability.
- User information and error messages displayed without blocking the view of the trace or readout.
- Simultaneous display of information for all four gates and markers.
- Measurement settings split into a number of easily navigable tabbed pages.
- All changes made within PowerMax relayed automatically to the instrument.
- Save settings to dedicated location on power meter or to a file for transferal to separate PC.

Chapter 2 — Preparation for Use

2-1 Operating Environment

The following operating environment is required in order to install and run the PowerMax software.

- Intel-based PC with Pentium processor or equivalent.
- Microsoft Windows 2000 or Windows XP operating system.
- English, Chinese, or Japanese language environment.
- 16 MB RAM minimum.

2-2 Installing PowerMax

The PowerMax software can be downloaded from the Anritsu website:

https://www.anritsu.com/en-US/test-measurement/support/downloads/software/dwl003400

Follow the displayed instructions to install PowerMax. By default PowerMax is installed to C:\Program Files\Anritsu.

2-3 GUI Overview

The [PowerMax] window comprises of four main areas as identified in the figure below.

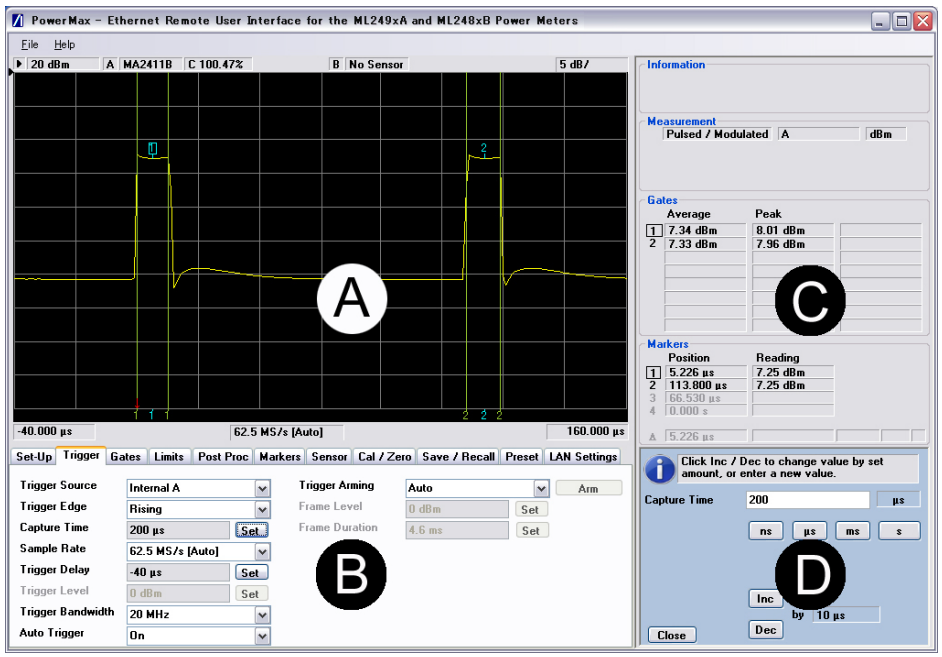

Figure 2-1. [PowerMax] window

- A: The display area

The main display area is used for viewing trace data and displaying gates and markers. This area is an exact enlargement of the display area on the power meter itself. Any changes or updates to the trace or markers are reflected simultaneously on both PowerMax and power meter displays.

- B: The settings area

  The setting area is located immediately beneath the display area. For ease of operation, the settings within the hard and soft key menus on the ML248xB/ML249xA itself have been re-arranged into a number of tabbed pages. Although some of the settings have been repositioned, the names of the tabbed pages and the commands found within correlate largely to the hierarchy of the commands on the power meter.

  The first six PowerMax tabbed pages [Set-Up], [Trigger], [Gates], [Limits], [Post Proc], and [Markers] correspond with the soft keys and associated settings found within the [Channel] hard key.

  The following four tabbed pages correlate to the other four hard keys on the power meter, although as some of the display and configuration settings are not relevant to PowerMax, the [System] hard key has been renamed as [Save/Recall].

  Each tabbed page houses a number of associated settings at which the user makes a selection from the drop-down menu or clicks [Set] and enters the required value in the single setting area (D).

- C: The message and results area

  The area to the right of the main display area is used for the display of measurement results and marker readings. The upper section of this area is also used for the display of status or error messages.

- D: The single setting area

  Several of the tabbed pages include [Set] buttons that, when clicked, display a blue area in the bottom right corner of the interface. The user enters the required value in the entry field (or uses the [Inc] / [Dec] commands), and selects the units of measurement. The space occupied by the single setting area appears gray until one of the [Set] buttons is clicked.

2-4 Configuring the Equipment

Follow the procedure below to configure the equipment. Do not connect the DUT to the sensor until instructed.

1. Connect the PC to the ML248xB/ML249xA by means of an Ethernet crossover cable.
2. Turn on the power meter.
3. Go to the Remote menu (press System > Config > Remote) and press [LAN Reset Manual]. This forces the power meter to use the factory default (static) IP address.
4. Go to the identity screen (System > Service > Identity) and confirm that the IP address is 192.168.0.2.
5. Set up the PC's network interface to a static IP address of 192.168.0.1.
6. Start PowerMax and wait for the information to be relayed from the instrument.

7. Click the [LAN Settings] tab and ensure that the IP address for the power meter is set to 192.168.0.2.

Note	The power meter can also be connected to a controlling PC by means of a hub or switch. A crossover Ethernet cable is not required in this case. Refer to the ML248xB/ML249xA Operation Manual for details.

2-5 Resetting the System

1. Click the [Preset] tab in Powermax and select "Reset" from the list of presets.

2. Click the [Preset] button to reset the system.

Note	Once PowerMax is in operation, users are recommended to avoid making manual setting changes from the power meter's front panel.

2-6 Zeroing and Calibrating the Sensor

Remove any residual DC offset by zeroing and calibrating the sensor.

1. Connect the sensor cable to input A on the ML248xB/ML249xA and connect the sensor to the calibrator port.

2. Click the PowerMax [Cal/Zero] tab.

3. Click the [Zero/Cal A] button. The sensor is zeroed and the status is indicated at the green progress bar at the bottom of the [Cal/Zero] page.

4. Disconnect the sensor from the calibrator port and connect it to the DUT.

5. Zero again after making sure that RF is not being applied.

2-7 Setting the Cal Factor

Follow the procedure below to set the frequency for sensor A.

1. Click the PowerMax [Sensor] tab.

2. Set the "Cal Factor Source" to "Frequency".

3. Click the [Set] button to the right of the "Frequency" display field.

4. Set the frequency in the blue area that displays in the bottom right of the [PowerMax] window.

5. Click the button for the correct units of measurement and then click [Close]. The specified frequency now displays in the "Frequency" field on the [Sensor tab].

Chapter 3 — Operation Overview

As explained earlier in this manual, PowerMax is a tool designed to enhance the operability of the power meter rather than the functionality. Although grouped and positioned differently, settings reflect those to be found on the power meter itself and users should refer to the ML248xB/ML249xA Operation Manual for individual setting explanations that will not be repeated in this document

To quickly demonstrate the operation of PowerMax this chapter describes how to make a number of standard measurements on a 1 GHz, 10 dBm signal with a pulse width of 10 microseconds. The purpose of this explanation is merely to familiarize the user with the various setting types within PowerMax and also to demonstrate the ease of operation. Users are recommended to walk themselves through the procedures below until familiar with the program.

3-1 Setting up Measurements

1. Start PowerMax and click the [Set-Up] tab to display the setting area shown below. Follow the procedure below to set up the power meter to make average and peak power measurements on a pulsed waveform.

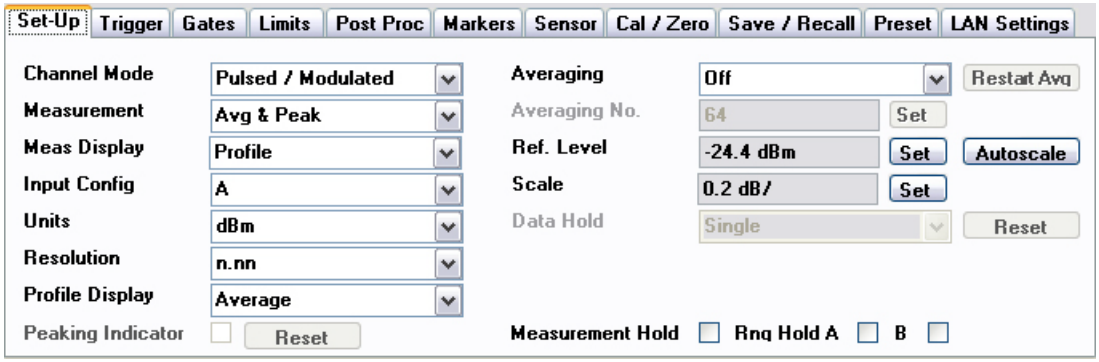

Figure 3-1. [Set-Up] Tab

2. Set the “Channel Mode” item to “Pulsed / Modulated”.

3. Set the “Measurement” item to “Avg & Peak”.

4. Set the “Meas Display” item to “Profile”

5. Set the “Input Config” item to match the input in use on the power meter.

6. Click the [Autoscale] button that displays on the right of the page.

3-2 Selecting the Trigger Mechanism

1. Click the PowerMax [Trigger] tab to display the setting area shown below. Follow the procedure below to set up the power meter to trigger on the pulse's rising edge with a capture time of 200 microseconds and a delay of -40 microseconds.

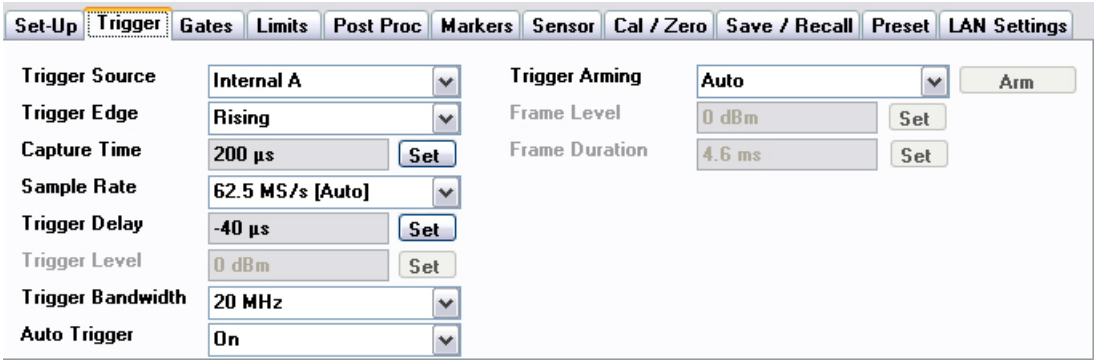

Figure 3-2. [Trigger] Tab

2. Set the "Trigger Source" item to "Internal A".

3. Set the "Trigger Edge" item to "Rising".

4. Set the "Capture time" item to "200" microseconds.

5. Set the "Sample Rate" item to "Auto".

6. Set the "Trigger Delay" item to "-40" microseconds. The trace within PowerMax should now be similar to the one shown below.

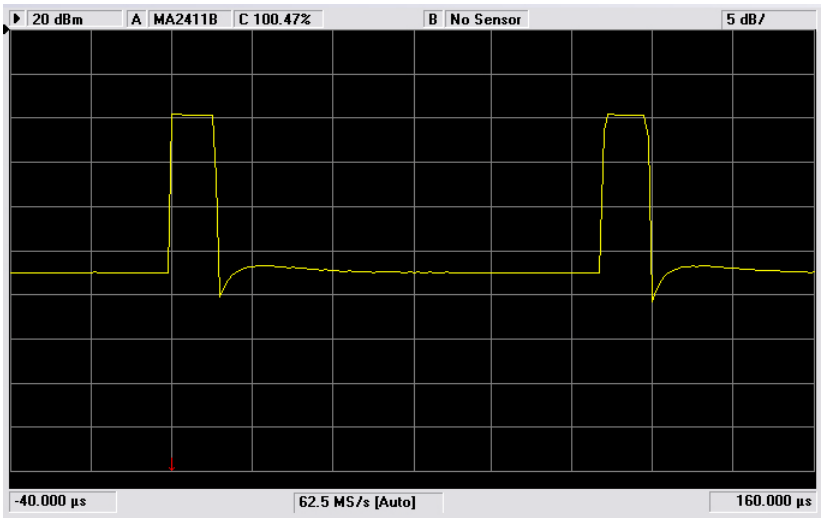

Figure 3-3. Pulsed Waveform with Trigger Delay

3-3 Positioning Measurement Gates

1. Click the PowerMax [Gates] tab to display the setting area shown below. Follow the procedure below to position gates on the rising and falling edges of both pulses.

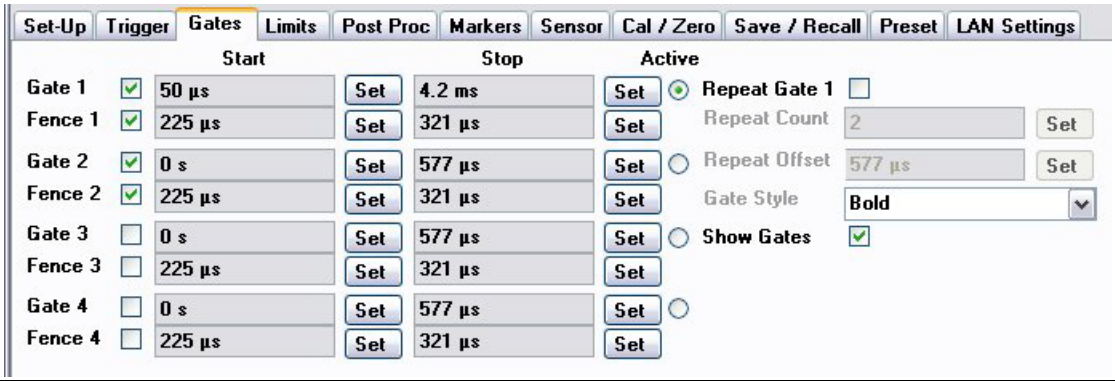

Figure 3-4. [Gates] Tab

2. Select the check box that displays immediately to the right of the "Gate 1" label. The gate appears on the trace when the check box is selected.

3. Position the gates using either of the following techniques:-

- Position the mouse pointer at the base of the gate on the trace. The pointer changes to a hand icon and the gate can now be dragged to the required position whilst holding down the mouse button.
- Enter the position manually by clicking the [Set] button to display the blue single setting area at the bottom right of the interface. Enter a value directly into the entry field and click the appropriate units of measurement. Alternatively, use the [Inc] and [Dec] buttons to step to the required value. Click [Exit] once the gate has been positioned.

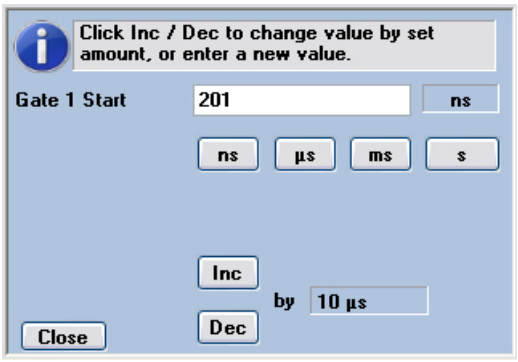

Figure 3-5. Single Setting Display Area

4. Repeat the steps above to position the start and stop gates as shown in the figure below..

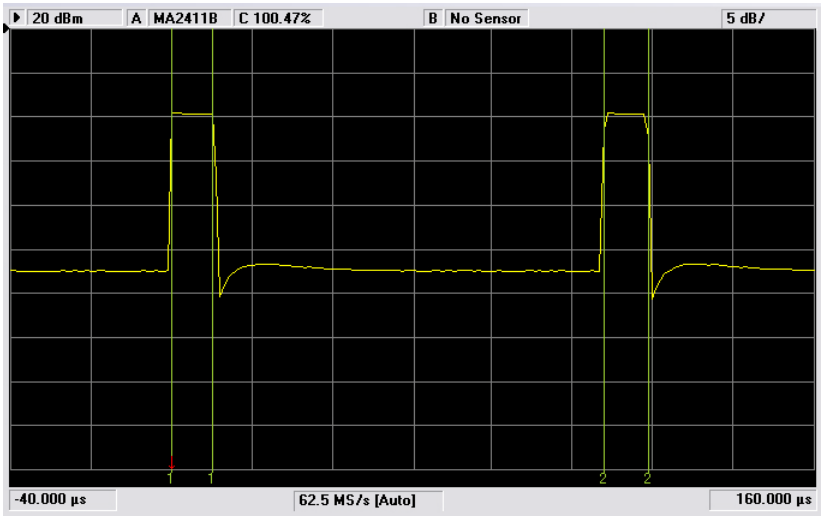

Figure 3-6. Pulsed Waveform with Gates

3-4 Positioning Markers

1. Click the PowerMax [Markers] tab to display the setting area shown below. Up to four markers and one delta marker can be displayed on the trace at any time. Follow the procedure below to position markers at the centre points within each pulse.

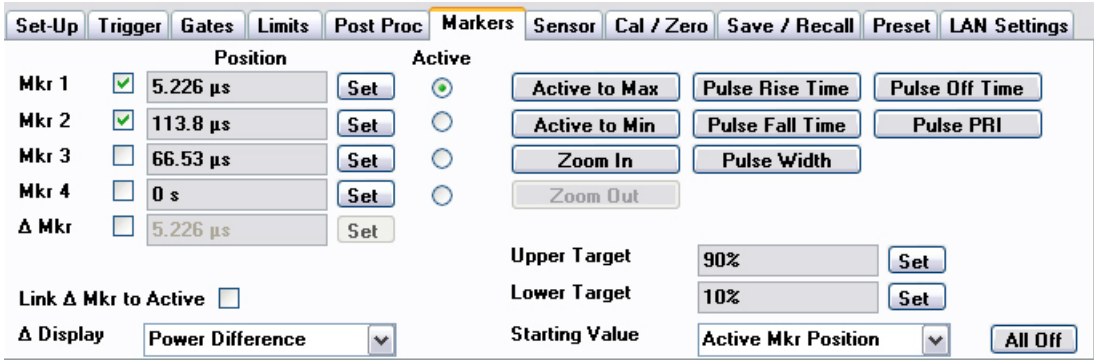

Figure 3-7. [Markers] Tab

2. Select the check box that displays to the right of the marker name to display the marker on the trace.
3. Set the markers at the centre of each pulse. The markers can be positioned by dragging or by clicking [Set] and entering a value in exactly the same way as explained in the previous section on gates.
4. The trace within PowerMax should now appear similar to the one shown below.

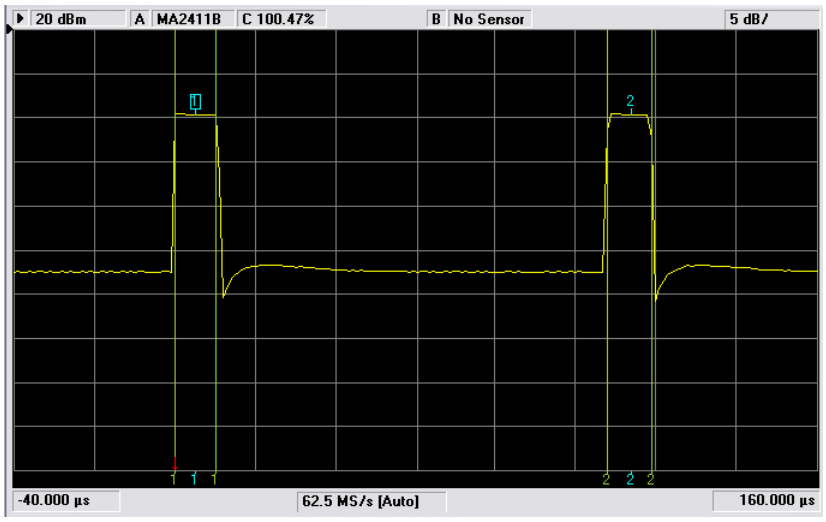

Figure 3-8. Pulsed Waveform with Gates and Markers

3-5 Saving and Recalling Settings

1. Click the PowerMax [Save / Recall] tab to display the setting area shown below. Follow the procedure below to save all the settings made over the course of the previous explanations.

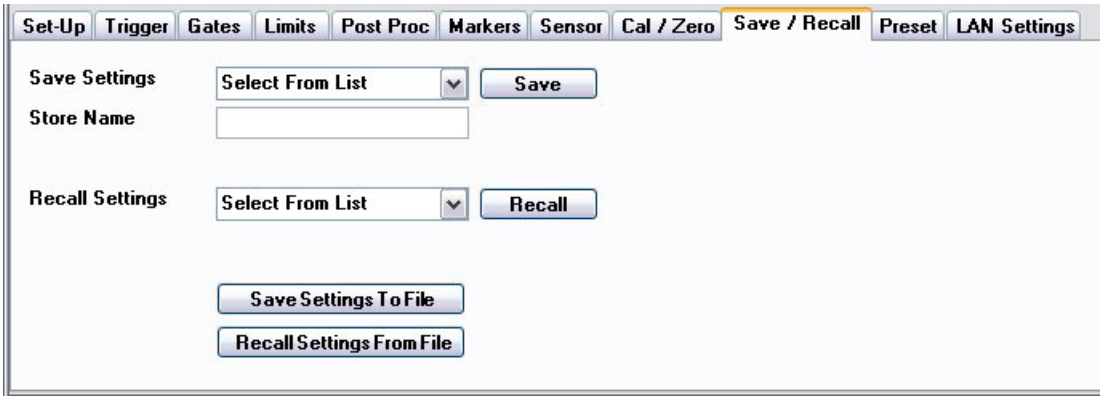

Figure 3-9. [Save / Recall] Tab

2. Open the "Save Settings" drop down list and select a location to which the settings will be saved.
3. Enter a name in the "Store Name" entry field under which the settings will be saved.
4. Click [Save].
5. Recall the settings by simply selecting the specified name from the "Recall Settings" drop down list and clicking [Recall].

3-6 Saving Trace Data

1. Select [Save Trace] from the PowerMax [File] menu.
2. Save the trace data to a text file that can then be opened in a spread sheet program such as Microsoft Excel.

3-7 Saving the Trace Image

1. Select [Save Image] from the PowerMax [File] menu.
2. Save the trace image to a jpeg file that can then be viewed in any graphics program.

3-8 Saving and Recalling Settings

PowerMax settings can be saved to an external file. This file can be transferred to a separate PC and recalled when required.

1. Click the PowerMax [Save / Recall] tab.
2. Click [Save Settings To File] and specify a file name and location in the normal manner.
3. Click [Recall Settings From File] to read the saved settings back into PowerMax at any time.

Appendix A PC Regional Settings

The PowerMax software is designed to operate on Windows 2000 or XP in an English, Japanese, or Chinese language environment. Performance cannot be guaranteed when installed on any other system.

Operation difficulties may be experienced if PowerMax is operated on a PC running in a language environment, such as Swedish and German, where a comma is used as the decimal symbol (e.g., 3,6), instead of a point (e.g., 3.6).

Follow the appropriate procedure below to change the decimal symbol to a point (.).

A-1 Windows XP

1. Open the [Control Panel] from the Windows [Start] menu.

2. Open [Regional and Language Options].

3. Click the [Customize...] button.

4. Select the point (.) setting from the "Decimal Symbol" drop-down field.

A-2 Windows 2000

1. Open the [Control Panel] from the Windows [Start] menu.

2. Open [Regional options].

3. Click the [Numbers] tab.

4. Select the point (.) setting from the "Decimal Symbol" drop-down field.

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C

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