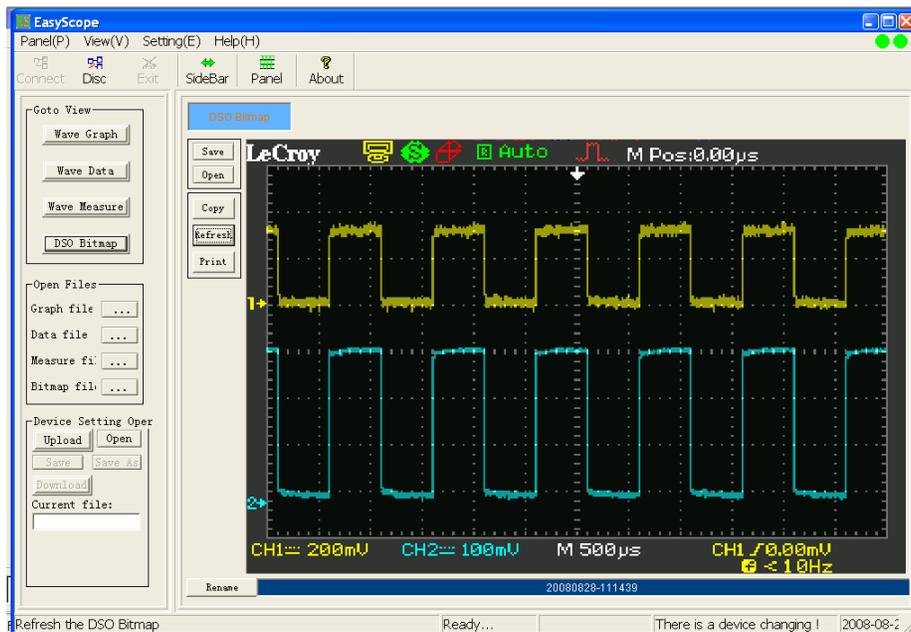


LeCroy

WaveAce

EasyScope



EasyScope Operator's Manual
September, 2008



LeCroy Corporation

700 Chestnut Ridge Road
Chestnut Ridge, NY, 10977-6499
Tel: (845) 578-6020, Fax: (845) 578 5985

Internet: www.lecroy.com

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EasyScope Overview

The EasyScope software utility is provided to connect your WaveAce series oscilloscope to your PC. The EasyScope application lets you view waveforms, waveform data, waveform measurements, and bitmap images of your waveforms. You can also upload/download oscilloscope settings. You can connect your WaveAce series oscilloscope to your PC using the USB serial interface or RS-232 interface.

Installing EasyScope

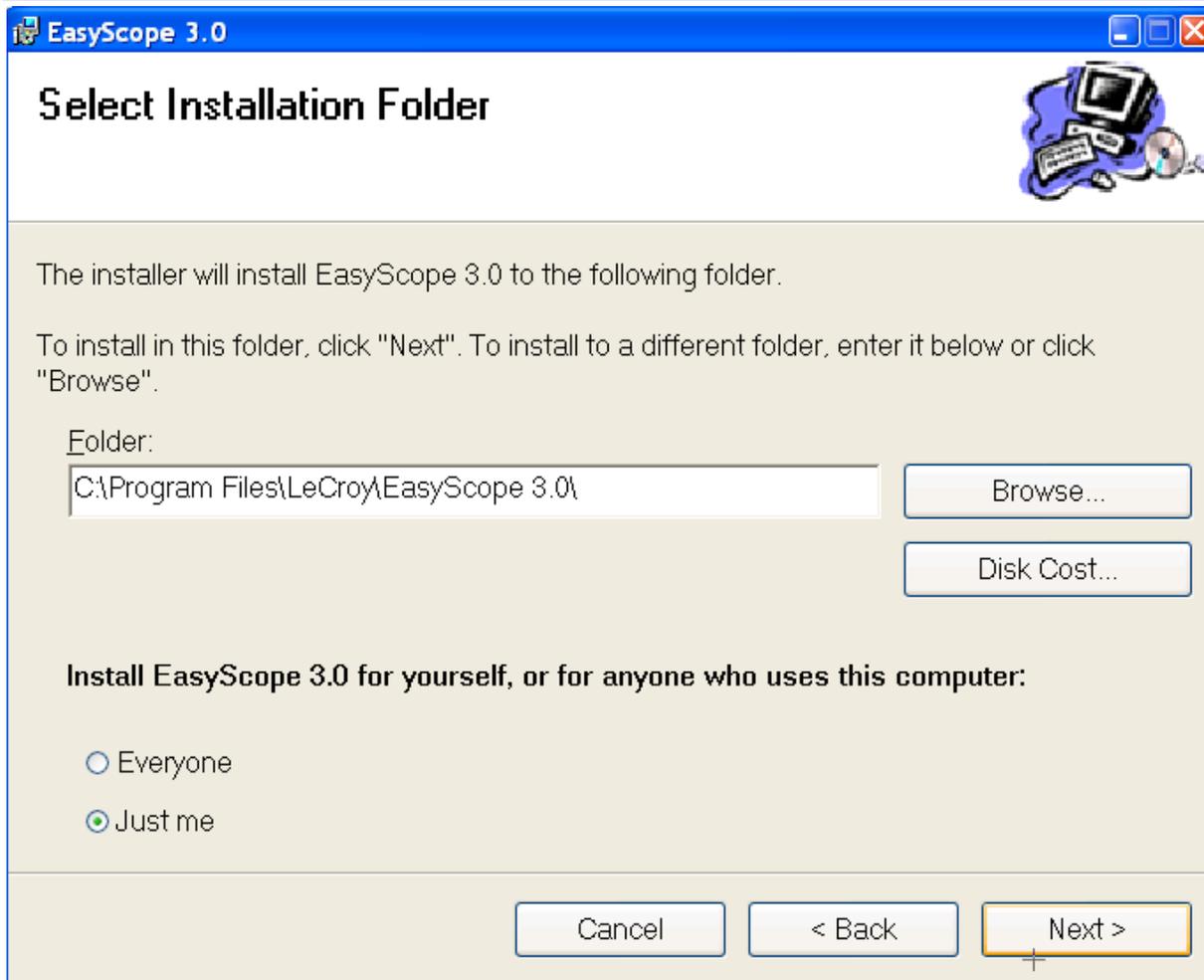
The EasyScope software provides an easy-to-use Wizard. Simply run the SETUP.EXE file and follow the on-screen instructions. The wizard creates a new program group, installs the files and drivers, and puts an icon on your desktop.

1. Insert the installation CD into the CD-ROM drive.
2. Double-click **EasyScope3.0**→**Set up**→**SETUP.EXE** to start the EasyScope 3.0 Setup Wizard.



3. Click **Next** to select an installation folder.

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4. Click **Next** to use the default installation folder. The **Confirm Installation** window opens.

Note: If you want to install EasyScope 3.0 to a different folder, click the **Browse** button and choose a location.

5. Click **Next** to start the installation.
6. When the installation is complete, a confirmation message is displayed. Click **Close** to exit the EasyScope installation.

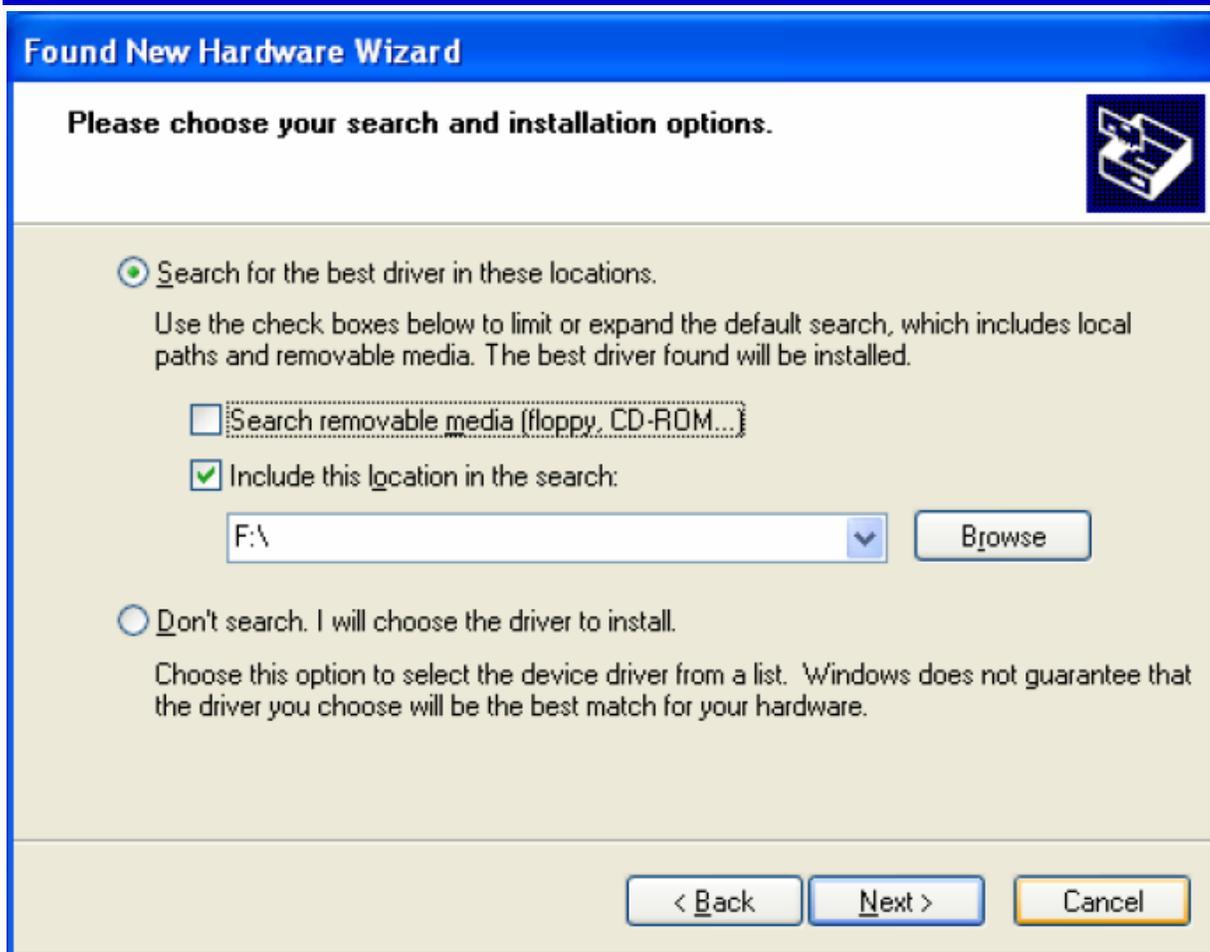
Installing the USB Driver

If you connect your WaveAce series oscilloscope by the USB interface, you need to install the USB driver. If you connect your WaveAce series oscilloscope by RS-232 interface, you do not need to install a device driver.

1. Connect the oscilloscope to your PC using the USB serial cable. Microsoft Windows automatically detects the oscilloscope and display the Found New Hardware window.
2. Click the **Found New Hardware** window. The **Found New Hardware Wizard** opens.



3. Choose **Install from a list or specific location (Advanced)** and click **Next**. The **Please choose your search and installation options** window opens.



4. Choose **Include this location in the search** and click **Browse** to locate the **EasyScope3.0→USB Driver folder** and then click **Next**. The USB Driver will be installed.
5. Click **Finish** to close the wizard.

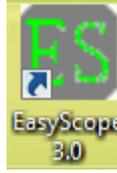
Uninstalling EasyScope

You can uninstall EasyScope using Add/Remove Programs in the Microsoft Windows Control Panel.

1. To open **Add/Remove Programs**, click **Start→Control Panel** and then double-click **Add/Remove Programs**.
2. Click **Change or Remove Programs**, and then click **EasyScope3.0**.
3. To remove EasyScope, click **Remove**.

Getting Started with EasyScope

Once you have installed the EasyScope application, make sure your oscilloscope is connected to your PC.



Double-click the EasyScope icon on your desktop. The EasyScope main window opens.

Make sure your oscilloscope is connected to your PC. Turn on your oscilloscope. The left Link Status indicator light should be displayed green.



Click the Connect button on the toolbar. The Link Status indicator lights in the upper right corner both display green to indicate that the oscilloscope was successfully connected.

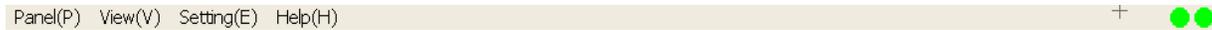
Getting to Know EasyScope

The EasyScope screen is divided into these main sections:

- **Menu Bar**
- **Toolbar**
- **Base Control Panel**
- **Data/Graph Display Area**
- **Status Bar**

Menu Bar

The top of the screen contains a menu bar of commonly used functions.



There are four menus:

- **Panel(P)** - Provides menu options for connecting/disconnecting your oscilloscope using EasyScope and exiting the application.
- **View(V)** - Provides menu options to view/hide the Toolbar, Status Bar, and Base Control Panel.
- **Setting(S)** - Provides menu options to define EasyScope settings, such as connection settings.
- **Help(H)** - Provides information about your EasyScope software.
- **Link Status Indicator** - Indicates whether the link between the PC and the oscilloscope is normal and whether EasyScope and the oscilloscope are communicating. The left indicator turns green when a the PC and the oscilloscope are connecting and it turns red when the link is disconnected. The right indicator turns green when the oscilloscope and EasyScope are communicating data and it turns red when they stop data communication.

Note: You can quickly access a menu by clicking the **Alt** button and the keyboard shortcut for that menu. For example, to quickly access the View menu, press **Alt + v**.

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Toolbar

The Toolbar lets you quickly access EasyScope functions.



- Press **Connect** to connect to your oscilloscope (this is the same as choosing **Panel**→**Connect** from the menu bar).
- Press **Disc** to disconnect your oscilloscope (this is the same as choosing **Panel**→**Disconnect** from the menu bar).
- Press **Exit** to exist the EasyScope application (this is the same as choosing **Panel**→**Exit** from the menu bar).
- Press **Sidebar** to turn the Base Control Panel On or Off (this is the same as choosing **View**→**Base Control Panel** from the menu bar).
- Press **Panel** to display the Virtual Panel. You can operate the oscilloscope using the Virtual Panel.
- Press **About** to display information about your EasyScope software (this is the same as choosing **Help**→**About EasyScope** from the menu bar).

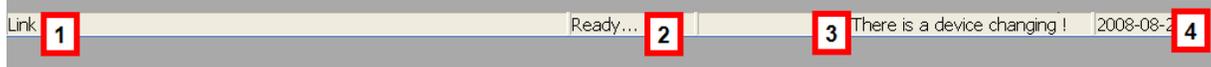
Base Control Panel

The Base Control Panel is divided into three areas:

- Goto View
- Open Files
- Device Setting Oper

<p>Goto View</p> <p>Wave Graph</p> <p>Wave Data</p> <p>Wave Measure</p> <p>DSO Bitmap</p>	<ul style="list-style-type: none">• Wave Graph - displays up to seven waveforms at the same time in the Graph Display Area.• Wave Data - displays data for up to seven waveforms.• Wave Measure - displays waveform measurement values for up to seven waveforms.• DSO Bitmap - displays a bitmap image of a waveform in the display area.
<p>Open Files</p> <p>Graph file ...</p> <p>Data file ...</p> <p>Measure fi. ...</p> <p>Bitmap fil. ...</p>	<ul style="list-style-type: none">• Graph file - click this button to recall saved waveform graph files.• Data file - click this button to recall saved waveform data files.• Measure file - click this button to recall saved waveform measurement value files.• Bitmap file - click this button to recall saved bitmap image files.
<p>Device Setting Oper</p> <p>Upload Open</p> <p>Save Save As</p> <p>Download</p> <p>Current file:</p> <input type="text"/>	<ul style="list-style-type: none">• Upload - uploads settings to your oscilloscope• Download - downloads setting from your oscilloscope

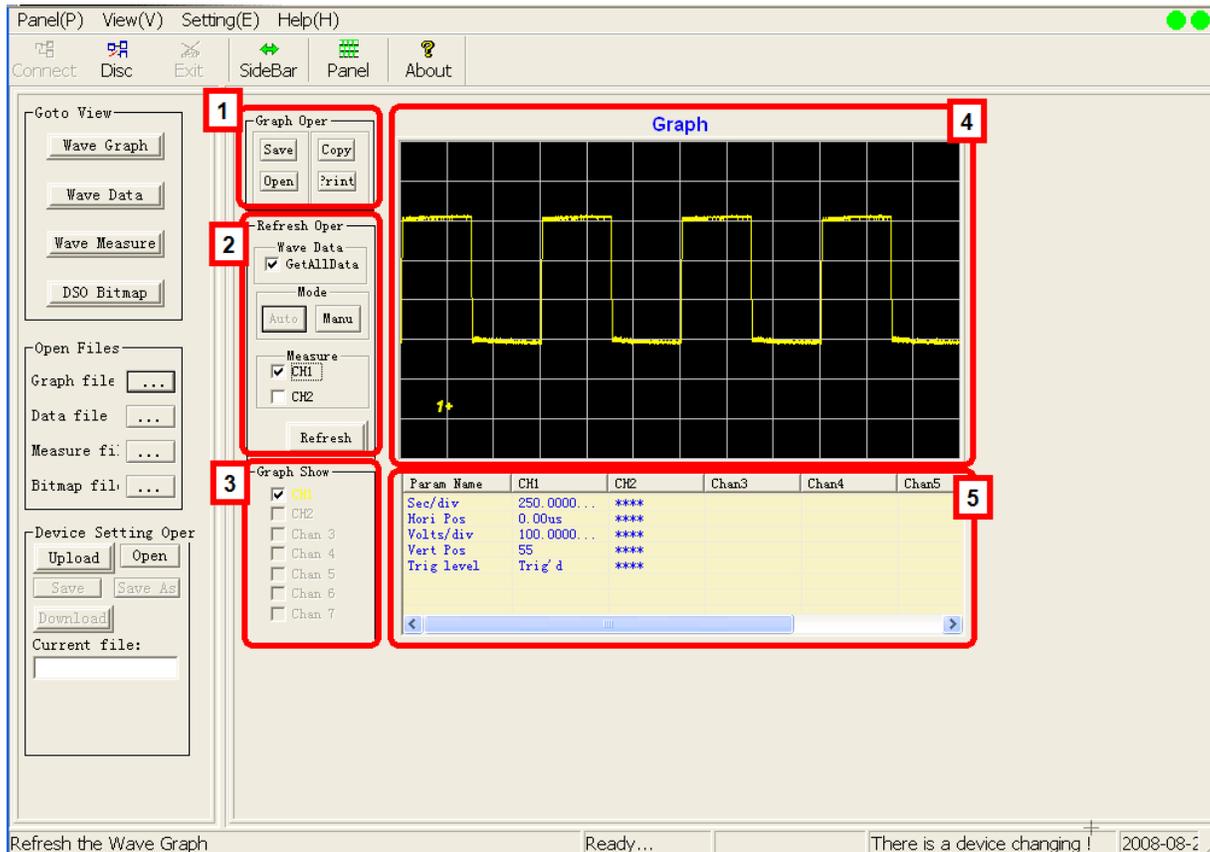
Status Bar



1. Current operation
2. Communication status
3. Link status or oscilloscope model
4. Current Date

Wave Graphs

You can use the **Wave Graph** function to view waveforms.



1. **Graph Oper** - lets you save, copy, open, and print waveform graphs.
2. **Refresh Oper** - lets you obtain and display waveform graphs.
3. **Graph Show** - lets you indicate the channels you want to display in the Graph display area.
4. **Graph Display** - displays the waveform graph(s).
5. **Parameters** - displays the waveform parameters for the selected channels, such as Sec/div, Horizontal position, Volts/div, Vertical Position, and Trigger Level.

Displaying WaveGraphs

When displaying waveform graphs, there are two modes: **Auto** and **Manual**. **Auto** mode automatically refreshes the waveform and parameter data using the **Refresh Rate** setting. **Manual mode**, the default mode, the waveform graph and data are refreshed once each time you press the **Refresh** button.

PLEASE NOTE THE FOLLOWING:

- If you use **Auto** mode, do not press the **RUN/STOP** front panel or Virtual Panel button. When you stop the acquisition, EasyScope will not be able to automatically refresh.
 - If you want to change the **Refresh Rate** for **Auto** mode, make sure you set the display mode to Manual. Then, change the Refresh Rate and set it to **Auto** mode.
1. To display waveform graphs, click the **Wave Graph** button on the **Base Control Panel**.
 2. Click **GetAllData**.
 3. If you want to automatically refresh the waveform, click **Auto**.

OR

If you want to manual refresh the waveform, click **Manual**.

4. To display waveform measurements in the parameter table below the graph, click **CH1** and/or **CH2**.
5. Choose the channels you want to display in the **Graph Show** area. The channels you selected are displayed in the Graph display area

6. Click the **Refresh** button.

Note: When you choose **Manual** refresh mode, you must click the **Refresh** button to refresh the display. In **Auto** refresh mode, the waveform is automatically refreshed.

Opening Waveform Graphs

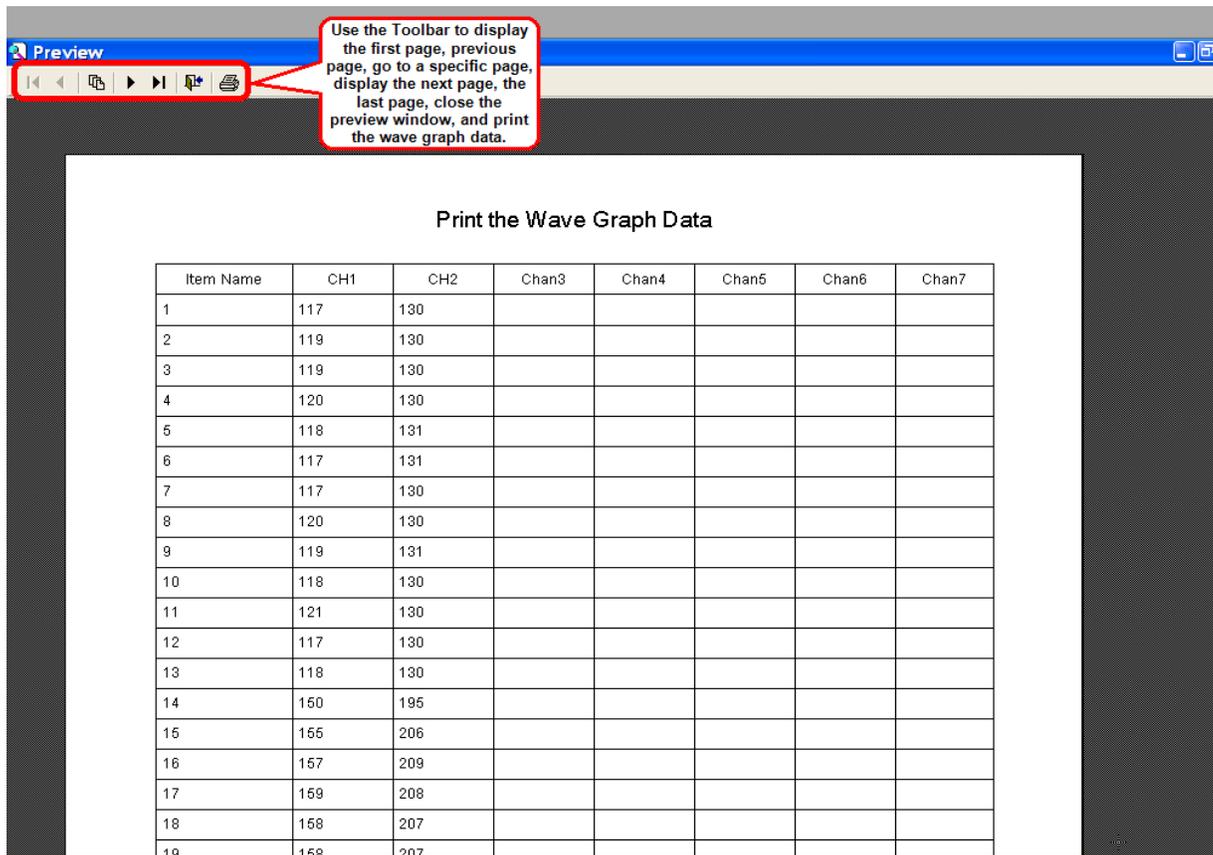
You can open saved waveform graph files by clicking the **Open** button in the **Graph Oper** area or by clicking the button next to **Graph File** in the **Open Files** area. An **Open File** window is displayed. Select the file you want to open and click **OK**.

Copying Waveform Graphs

You can copy waveform graphs quickly by clicking **Copy** in the **Graph Oper** area. This takes a screen print of the wave graph so you can paste it in another application.

Printing Waveform Graphs

You can print the wave graph data by clicking the **Print** button in the **Graph Oper** area. When you click **Print**, a print preview of the wave graph data is displayed.

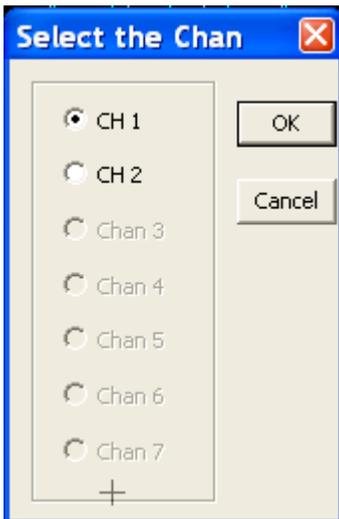


To print the wave graph data click the **Print** toolbar button.

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Saving Waveform Graphs

1. You can save the waveform graph data by clicking the **Save** button in the **Graph Oper** area. The **Select the Channel** window opens.

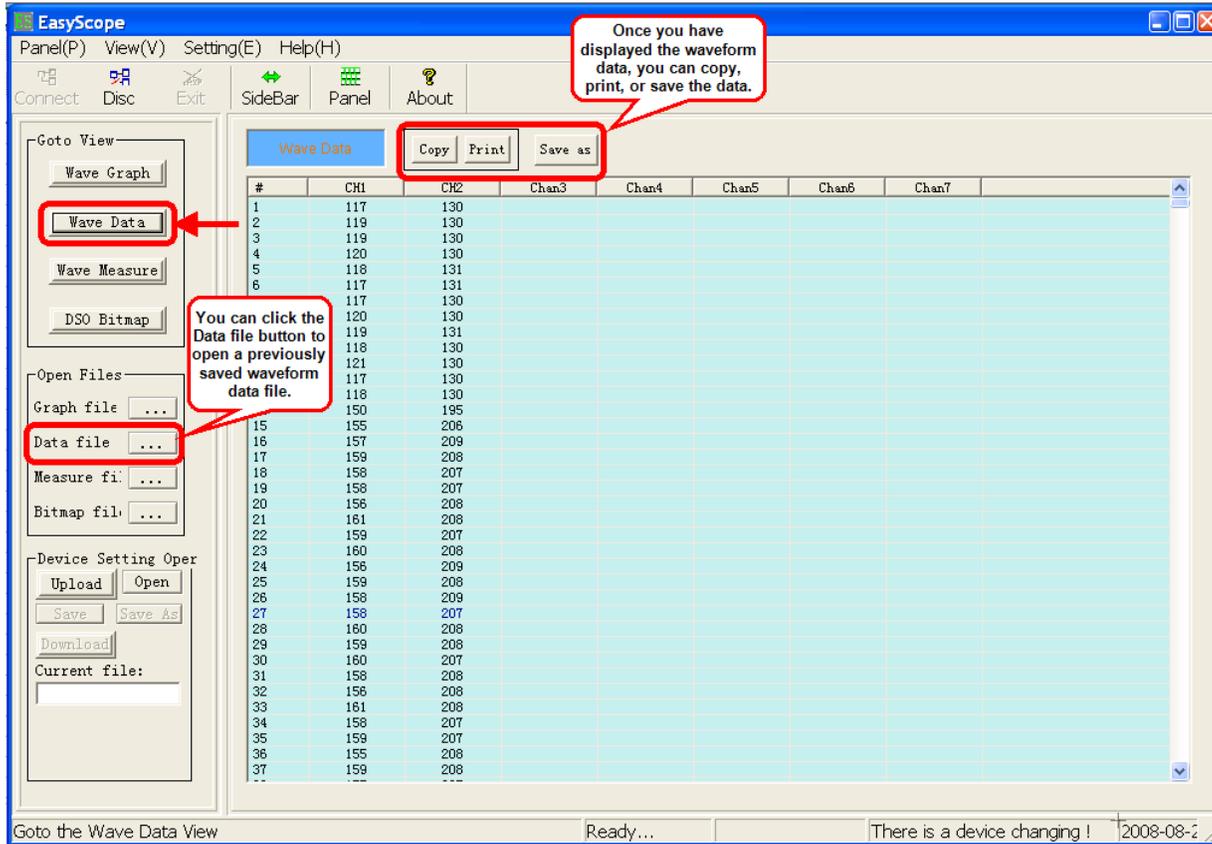


2. Select a channel and click **OK**.
3. In the **Save Graph** window, click **Browse** to choose a location for the saved file. Type a filename and click **OK** to save the data.

The wave graph data is saved as a comma separated file (.csv). You can then open this file in other programs, such as Microsoft Excel.

Wave Data

You can use the Wave Data function to obtain and display waveform data. To display waveform data, click the **Wave Data** button.

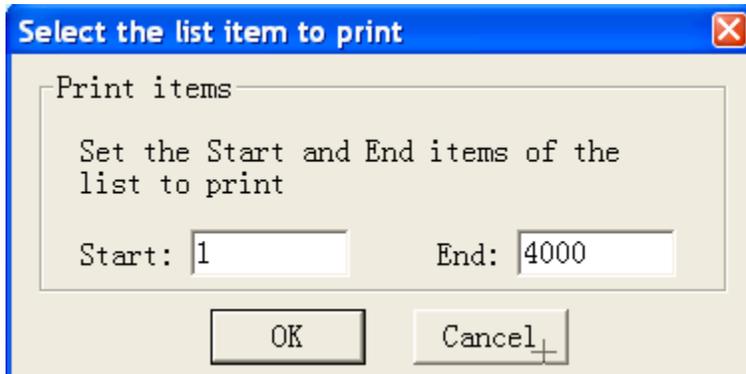


Copying Wave Data

You can copy waveform data quickly by clicking the **Copy** button at the top of the window. This takes a screen print of the wave data so you can paste it in another application.

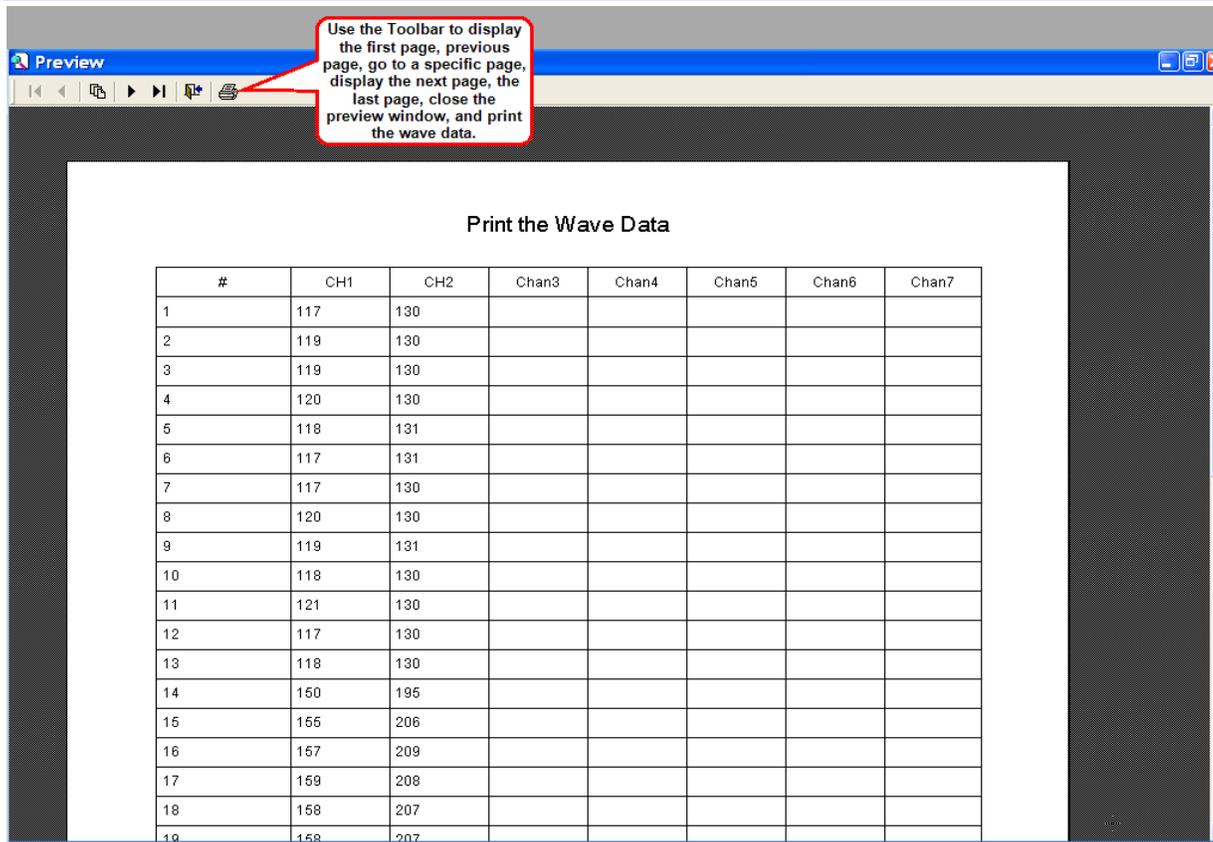
Printing Wave Data

To print the wave data click the **Print** button at the top of the wave data window. The **Select the list item to print** window opens.



Type a starting and ending item in the list that you want to print and click **OK**. A print preview of the wave data is displayed.

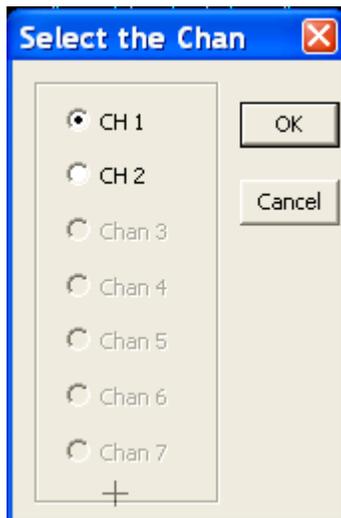
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To print the wave data, click the **Print** toolbar button.

Saving Wave Data

1. You can save the waveform data by clicking the **Save** button at the top of the window. The **Select the Channel** window opens.



2. Select a channel and click **OK**.
3. In the **Save Data** window, click **Browse** to choose a location for the saved file. Type a filename and click **OK** to save the data.

The wave data is saved as a wave data file (.wdf).

Note: You can open a wave data file (.wdf) using the **Data File...** button in the **Open Files** area.

Wave Measurements

The WaveAce series oscilloscope can automatically measure 32 parameters. Once you have a waveform graph displayed, you can view its' waveform measurements. You can copy, print, and save the waveform measurements. You can also set Pass/Fail ranges for each measurement.

Note: You should use **Auto** mode when displaying waveform graphs to display waveform measurement values.

To display waveform measurements, click the **Wave Measure** button.

Once you have displayed the waveform measurements, you can copy, print, or save the measurements. You can also set Pass/Fail ranges for each measurement.

You can click the Measure file button to open a previously saved waveform measurement file.

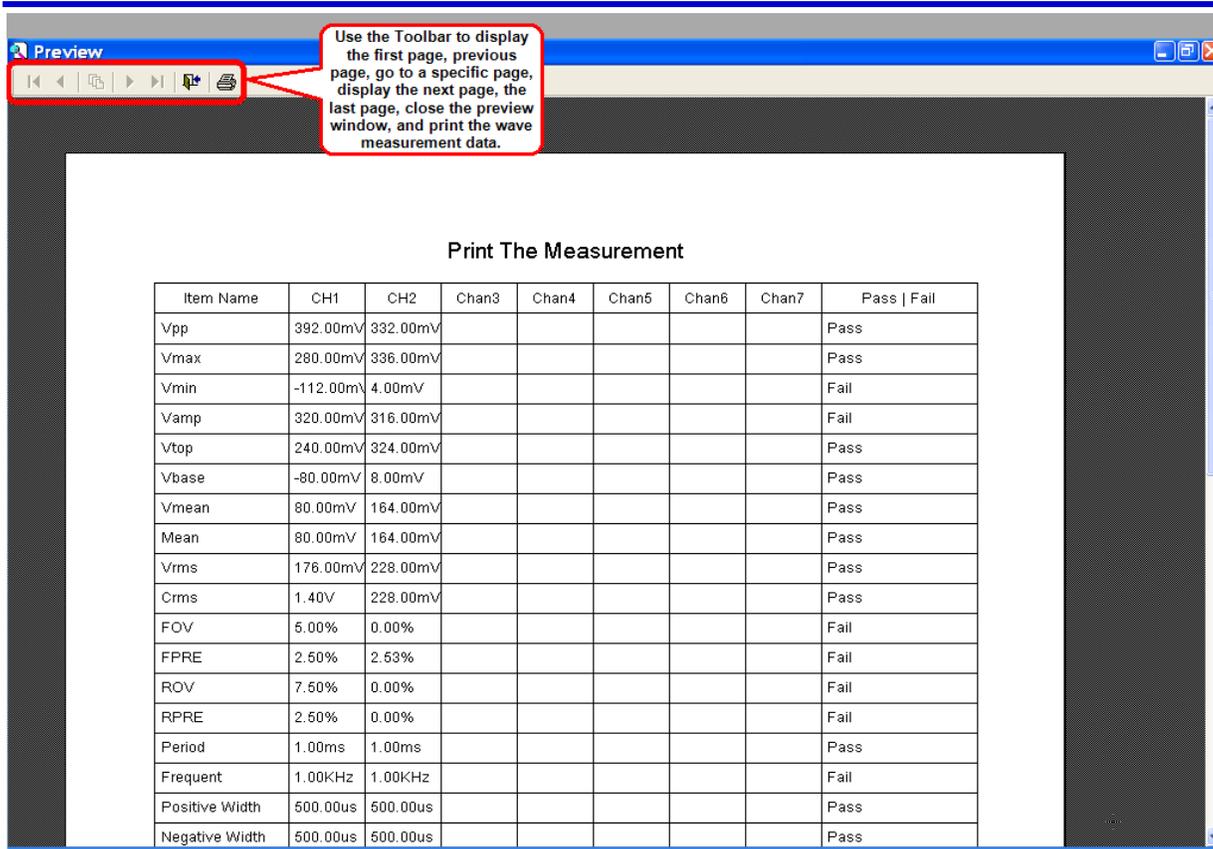
Item Name	CH1	CH2	Chan3	Chan4	Chan5	Chan6	Chan7	Pass	Fail
Vpp	392.00mV	332.00mV							Pass
Vmax	280.00mV	336.00mV							Pass
Vmin	-112.00mV	4.00mV							Fail
Vamp	320.00mV	316.00mV							Fail
Vtop	240.00mV	324.00mV							Pass
Vbase	-80.00mV	8.00mV							Pass
	80.00mV	164.00mV							Pass
	80.00mV	164.00mV							Pass
	176.00mV	228.00mV							Pass
	1.40V	228.00mV							Pass
	5.00%	0.00%							Fail
	2.50%	2.53%							Fail
	7.50%	0.00%							Fail
	2.50%	0.00%							Fail
Period	1.00ms	1.00ms							Pass
Frequent	1.00KHz	1.00KHz							Fail
Positive Width	500.00us	500.00us							Pass
Negative Width	500.00us	500.00us							Pass
Rise Time	4.00us	4.00us							Pass
Fall Time	6.00us	4.00us							Pass
Width	5.49ms	5.49ms							Pass
PDut	50.00%	50.00%							Fail
NDut	50.00%	50.00%							Fail
Phase	0.00,3	0.00,3							Fail
FRK	0.00us	0.00us							Pass
FRF	500.00us	500.00us							Pass
FFF	0.00us	0.00us							Pass
FFF	0.00us	0.00us							Pass
LRR	4.99ms	4.99ms							Pass
LRF	5.49ms	5.49ms							Pass
LFR	4.49ms	4.49ms							Pass
LFF	4.99ms	4.99ms							Pass

Copying Wave Measurements

You can copy waveform measurements quickly by clicking the **Copy** button at the top of the Wave Measure window. This takes a screen print of the wave measurements so you can paste them in another application.

Printing Wave Measurements

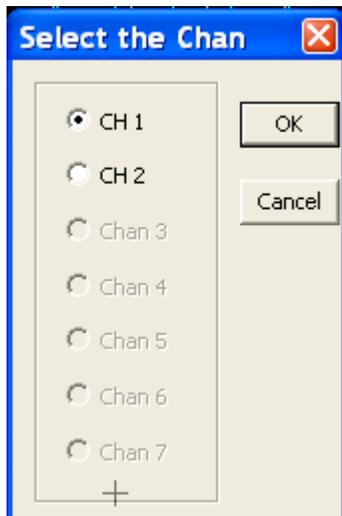
You can print the wave measurement data by clicking the **Print** button at the top of the window. When you click **Print**, a print preview of the wave measurement data is displayed.



Click the **Print** button on the toolbar to print the waveform measurements.

Saving Wave Measurements

1. You can save the waveform measurements by clicking the **Save** button at the top of the window. The **Select the Channel** window opens.



2. Select a channel and click **OK**.
3. In the **Save Data** window, click **Browse** to choose a location for the saved file. Type a filename and click **OK** to save the data.

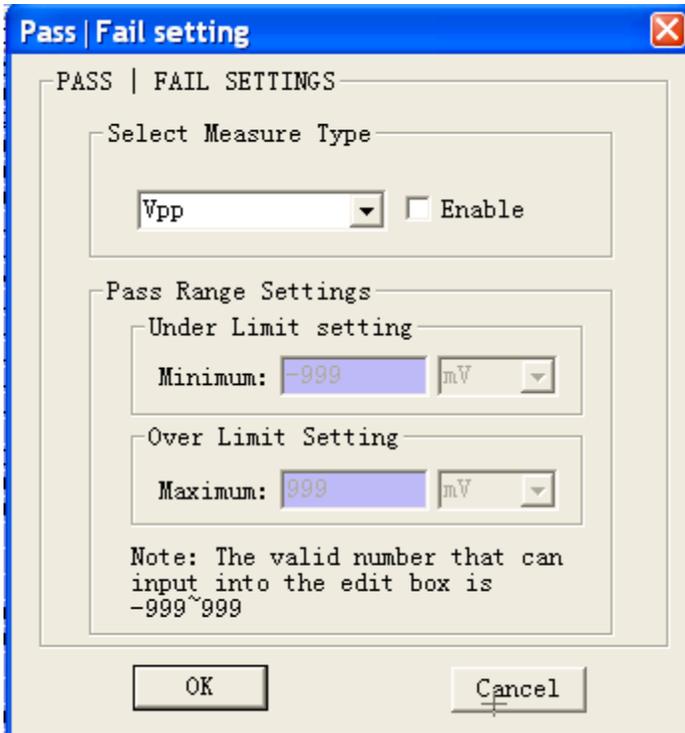
The wave data is saved as a waveform measurement file (.wmf).

Note: You can open a wave measurement file (.wmf) using the **Data File...** button in the **Open Files** area.

Setting Pass/Fail Ranges

The WaveAce series oscilloscope can automatically measure 32 parameters. You can set the Pass/Fail ranges for each of these measurements.

1. To set pass/fail ranges, in the **Wave Measure** window click the **Pass/Fail** button. The **Pass/Fail setting** window opens.



2. Click the drop-down arrow to select a measure type, such as Vpp, Vmax, Vmin, etc. and click the **Enable** checkbox.
3. Under **Pass Range Settings**, type a minimum and maximum limit.

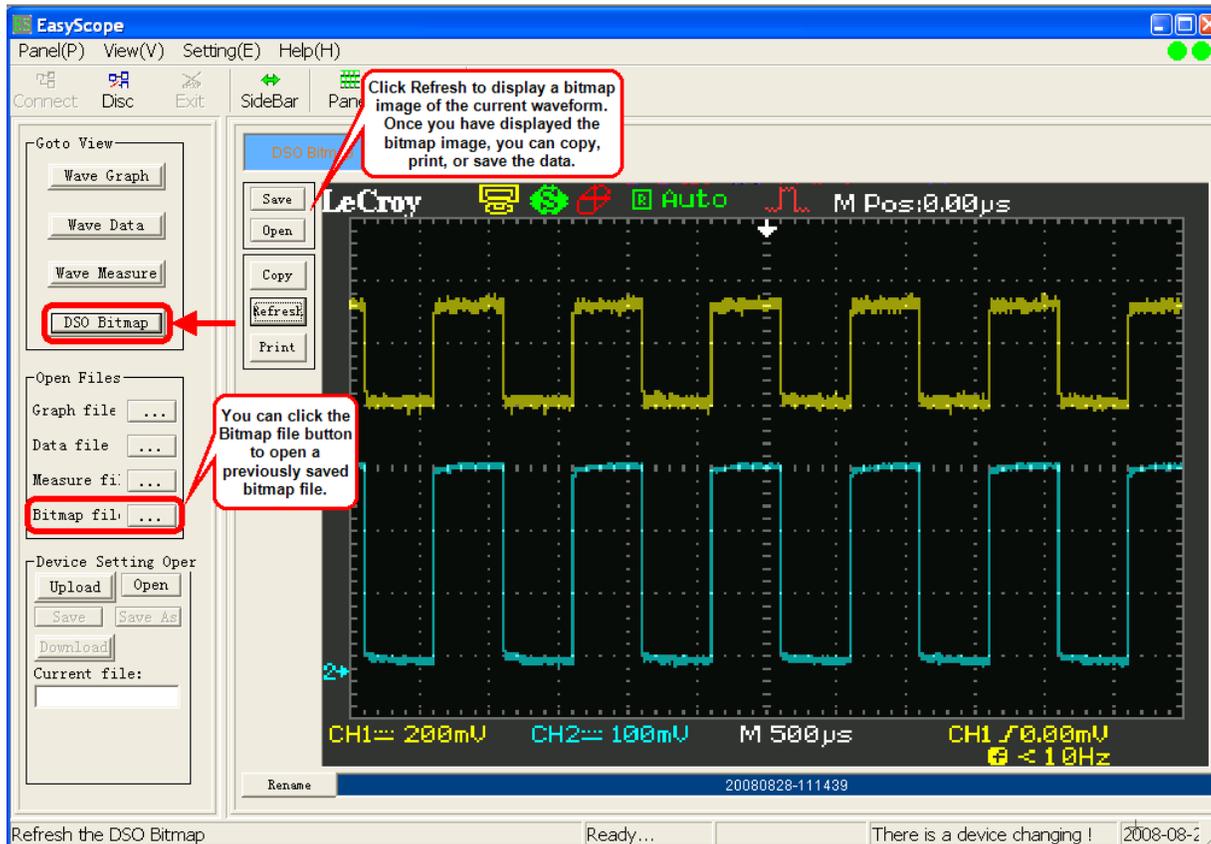
Note: The limits must be between -999 and 999.

2. Click **OK**.

DSO Bitmaps

Displaying Bitmap Images

You can use the DSO Bitmap function to display a bitmap (.bmp) image of the current waveform in the display area. Once you have displayed a bitmap image, you can copy, print, and save it.



Click **Refresh** to display a bitmap image of the current waveform.

OR

Click **Open** to open a previously saved bitmap image file (.bmp).

Copying Bitmap Images

You can copy bitmap images quickly by clicking the **Copy** button at the top of the DSO Bitmap window. This takes a screen print of the image so you can paste it in another application.

Printing Bitmap Images

To print the bitmap image click the **Print** button at the top of the window. When you click **Print**, a print preview of the image is displayed.



To print the bitmap image, click the **Print** toolbar button.

Saving Bitmap Images

1. You can save the waveform bitmap image by clicking the **Save** button at the top of the window.
2. In the **Save Bmp file** window, click **Browse** to choose a location for the saved file. Type a filename and click **OK** to save the data.

The image is saved as a bitmap file (.bmp).

Note: You can open a previously saved bitmap image file (.bmp) using the **DSO Bitmap...** button in the **Open Files** area.

Device Settings

Transferring Device Settings

You can transfer the oscilloscope's settings to your PC and save it for use at another time. You can also download the oscilloscope setup data from a saved scope setting file to the oscilloscope.



Uploading Device Settings to your PC

1. In the **Device Setting Oper** area, click the **Upload** button. The current oscilloscope settings are uploaded to your PC and a default filename is listed in the **Current file** field.
2. If you want to save the uploaded settings, click **Save** to save settings to the default scope setting file (.ssf) listed in the **Current file** field.

OR

Click **Save As** to select a location and enter a new filename for the scope setting file.

Downloading Device Settings to your Oscilloscope

1. In the **Device Setting Oper** area, click the **Open** button.
2. In the **Open Setting File** window, locate the scope setting file (.ssf) you want to download and click **OK**. The scope setting file you chose is listed in the **Current file** field.
3. Click the **Download** button. The scope settings are downloaded to your oscilloscope.

Virtual Panel

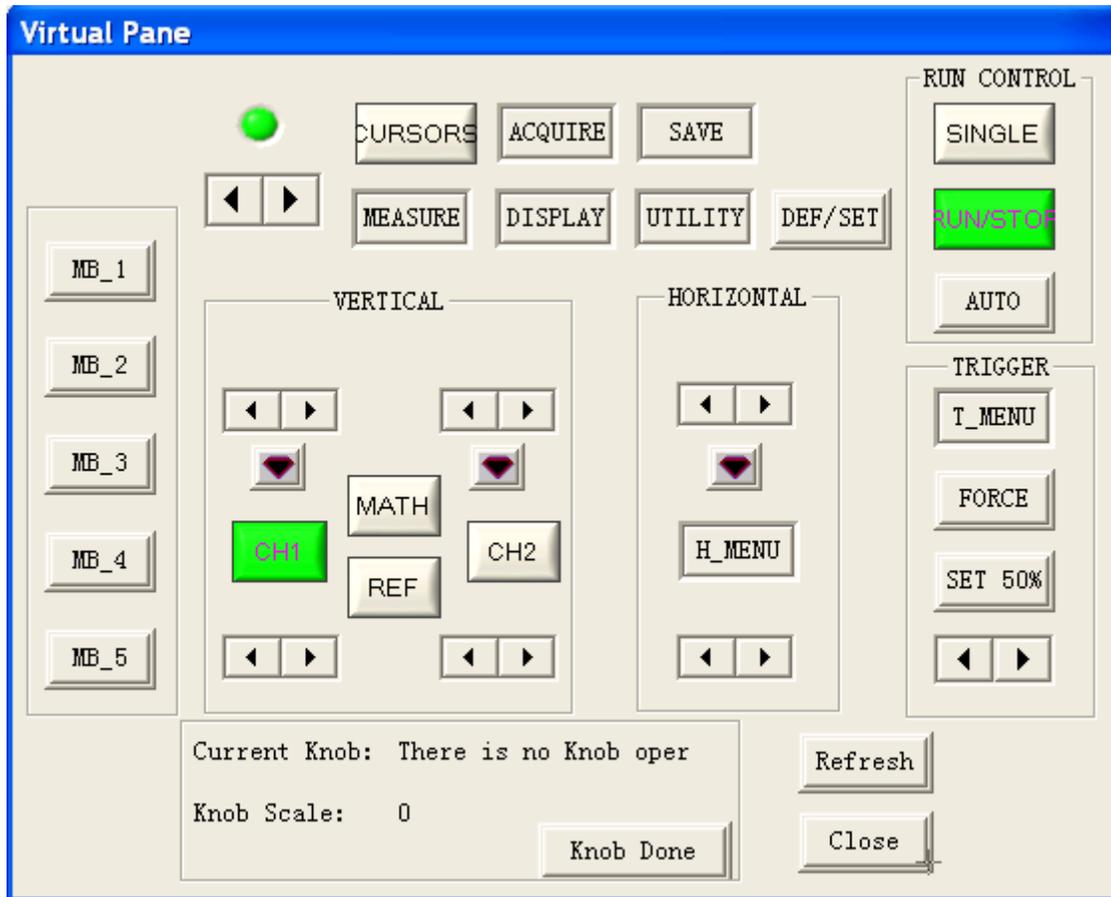
Using the Virtual Panel

You can use the EasyScope Virtual Panel to control your oscilloscope using your PC. The Virtual Panel is arranged to be the same as your Front Panel Controls on your WaveAce oscilloscope.

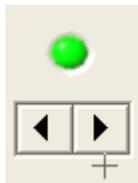


To access the Virtual Panel, click the Panel toolbar button.

The Virtual Panel is displayed.



Intensity/Adjust Knob



- Intensity/Adjust knob** - You can use the **Adjust** knob with many functions, such as adjusting the holdoff time, moving cursors, setting the pulse width, setting the video lineage adjusting the upper and lower frequency limits, adjusting X and Y masks when using the Pass/Fail function, etc. You can also use the **Adjust** knob to adjust the storage position of setups, waveforms, pictures when saving/recalling and to select menu options. Click the left/right arrow buttons to "turn" the knob.

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Menu Control Buttons



- **Menu Option buttons (1-5)** - Press to choose menu options. Press a menu option button adjacent to your selection.

Menu Function Buttons



- **CURSORS** - Press to turn on the cursors and display the **Cursor** menu. You can use the **Cursor** menu to set the Cursor Mode (**Auto, Off, Manual, Track**). When Cursors are on (**CURSORS** button is lit), press the left/right arrow buttons to "turn" the **Adjust knob** to position the cursors.
- **ACQUIRE** - Press to display **Acquire** menu. You can use the **Acquire** menu to set the acquisition Sampling Mode (**Sampling, Peak Detect, Average**).
- **SAVE/RECALL** - Press to display the **Save/Recall** menu. You can use the **Save/Recall** menu to save and recall up to 20 scope setups or waveforms in internal memory (up to 20 waveforms) or on a USB memory device (limited by memory capacity of USB device). You can also use it to recall the default factory settings, to save waveform data as a comma-delimited file (.CSV), and to save or print the displayed waveform image.
- **MEASURE** - Press to display a menu of measurement parameters. The **Display Type** must be set to **YT** mode.
- **DISPLAY** - Press to open the **Display** menu. You can use the **Display** menu to set grid and waveform display styles, and persistence.
- **UTILITY** - Press to open the **Utility** menu. You can use the **Utility** menu to configure WaveAce features, such as sound, language, counter, etc. You can also view system status and update software.

General Control Buttons



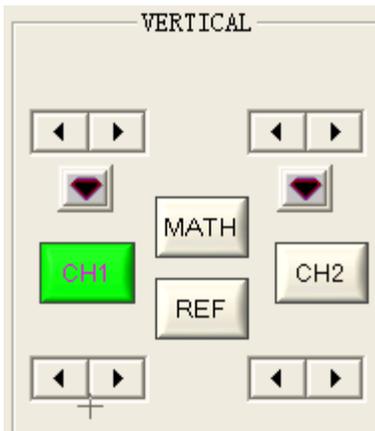
- **DEFAULT SETUP** - Press to reset the oscilloscope's settings to the default factory configuration. For a list of default settings, see your *WaveAce Getting Started Manual*.

Run Control Buttons



- **SINGLE** - Press to acquire a single waveform. Each time you press the **SINGLE** button, the oscilloscope acquires another waveform. When the oscilloscope detects a trigger it completes the acquisition and stops.
- **RUN/STOP** - Press when you want the oscilloscope to acquire waveforms continuously. Press **RUN/STOP** again to stop the acquisition.
- **AUTO** - Press to have the oscilloscope automatically identify the type of waveform and adjust the controls to produce a usable display of the input signal. When you press the AUTO front panel button, the Auto Set menu opens. You can use this menu to display multiple-cycle signals, a single-cycle signal, the rising edge, the falling edge or recall the previous setup.

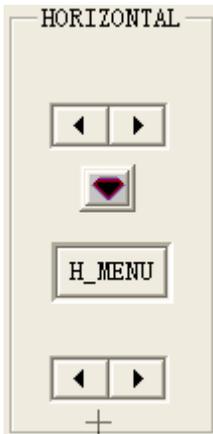
Vertical Controls



- **Volts/Div knobs (CH1/CH2)** - Click the left/right arrow buttons to "turn" the Volts/Div knob to adjust the volts/division setting (vertical gain) of the corresponding channel (CH1 or CH2). Press the knob to toggle between fine (variable) and coarse (fixed) adjustments.
- **Channel buttons (CH1/CH2)** - Press a channel button (CH1 or CH2) to turn that channel ON or OFF and open the **Channel** menu for that channel. You can use the **Channel** menu to set up a channel. When the channel is ON, the channel button is lit.
- **Vertical Position knobs (CH1/CH2)** - Click the left/right arrow buttons to "turn" the Vertical Position knob to adjust the vertical position of the corresponding channel (CH1 or CH2). Press to set the vertical position to zero.
- **MATH** - Press to display the **Math** menu. You can use the **Math** menu to use the oscilloscopes Math functions.
- **REF** - Press to display the **Ref Wave** menu. You can use this menu to save and recall two reference waveforms (REFA and REFB) in internal memory.

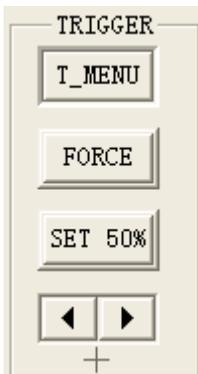
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Horizontal Controls



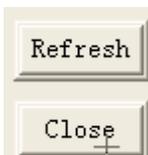
- **Horizontal Position knob** - Click the left/right arrow buttons to "turn" the Horizontal Position knob to adjust the horizontal position of all channels and math waveforms (the position of the trigger relative to the center of the screen). The resolution of this control varies depending on the timebase setting. Press to set the horizontal position to zero.
- **HORI MENU** - Press to display the **Horizontal** menu. You can use the **Horizontal** menu to display the waveform and to zoom a segment of a waveform.
- **Time/Div knob** - Click the left/right arrow buttons to "turn" the Time/Div knob to change the horizontal time scale to magnify or compress the waveform. When Window Zone is enables, it changes the width of the Window Zone by changing the window timebase. When Time/Div control is set to 100 ms/div or slower and the trigger mode is set to Auto, the oscilloscope enters the scan acquisition mode. In this mode, the waveform display updates from left to right. There is no trigger or horizontal position control of waveforms during scan mode.

Trigger Controls



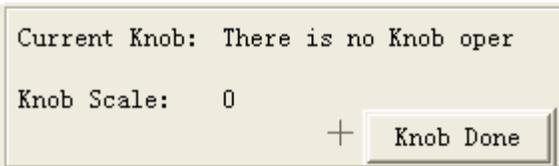
- **TRIG MENU** - Press to display the **Trigger** menu. You can use the **Trigger** menu to set the trigger type (**Edge, Pulse, Video, Slope, Alternative**) and trigger settings.
- **FORCE** - Press to complete the current waveform acquisition whether the oscilloscope detects a trigger or not. This is useful for SINGLE acquisitions and Normal trigger mode.
- **SET TO 50%** - Press to stabilize a waveform quickly. The oscilloscope can set the Trigger Level to be halfway between the minimum and maximum voltage levels automatically. This is useful when you connect a signal to the EXT TRIG connector and set the trigger source to Ext or Ext/5.
- **LEVEL** - Press the left/right arrows to select the trigger threshold level.

Virtual Panel Controls



- **Refresh** - Press to refresh the data.
- **Close** - Press to close the Virtual Panel.

Knob Controls



- **Knob Scale** - Displays the knob scale when you press the left/right Adjust knob arrows.
- **Knob Done** - Press **Knob Done** when you want to apply the knob scale setting.

Exiting EasyScope

Disconnecting and Exiting EasyScope

Before you can exit the EasyScope application, you must first disconnect the oscilloscope.

Disconnecting the Oscilloscope



To disconnect, click the **Disc** toolbar button  or choose **Panel→Disconnect** from the menu bar. The right Link Status indicator light will turn red when the oscilloscope is no longer communicating with EasyScope.

Exiting EasyScope



To exit EasyScope, click the **Exit** toolbar button  or choose **Panel→Exit** from the menu bar.