

About EasyWave

EasyWave waveform creation and editing tool for function / arbitrary waveform generator is PC-based software that runs on the Windows 2000, and Windows XP Professional operating systems. It provides a powerful waveform draw, edit, view, and mathematical process, With EasyWave you can easily draw out the desired waveform.

Draw: Provides five drawing ways:

- Nine types of standard waveform drawing
- Hand drawing
- Horizontal, vertical, oblique drawing
- Equation drawing
- Coordinates drawing (coordinates of inputs can from mouse and table)

Edit: In addition to the usual undo, redo, cut, copy, paste, delete, but also provides a Horizontal reversal and vertical reversal operation. Editing area can be set accurately by setting the cursor slider position.

View: Provides the point of view, horizontal, vertical, regional enlarged view of the waveform, you can see the small part of waveform information. Cursor tracking can also view the specific coordinates of points. Waveform color settings, providing users to set up their own favorite color of the plot area.

Math: Provides a waveform with a constant value, or with another waveform do math operation of addition and subtraction and multiplication, also providing a variety of types of Window treatment, filtering and smoothing functions.

The waveform generated from EasyWave can be send to the function / arbitrary waveform generator, or load waveform from the function / arbitrary waveform generator to EasyWave with the same CSV format Waveform data, you can implement the function / arbitrary waveform generator, EasyWave and the oscilloscope connection to each other seamless.

From the user point of view, the software interface design simple, elegant, easy to use. The main interface as shown below:



Configuration requirements

Hardware configuration requirements

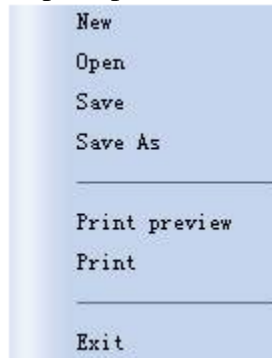
1. 1GHz or higher processor.
2. 200M or more hard disk space.
3. 1024x768 monitor resolution or above.
4. 128M or more RAM.
5. USB communication, to be equipped with USB interfaces device and the USB communication cable.

Software configuration requirements

1. Microsoft Windows2000, XP system

File Menu

File menu for the operation of the waveform data files, including the new, open, save, save as, print, print preview, exit and other functions. As shown below:



The sub-menu function:

1. **New**
Pop-up [new waveform dialog](#), set some attributes of the new waveform window.
2. **Open**
Open the saved CSV format waveform files.
3. **Save**
Save the current active window to a CSV file waveform, if it is the first save, the save file dialog will pop up, if the window has been saved, the changes made directly to save.
4. **Save as**
Save file dialog pop-up each time, the user enters the path and file name to save the current active windows waveform.
5. **Print preview**
Print previews the currently active windows Waveform.
6. **Print**
In the absence of connecting the printer, the Print dialog box will pop-up, the user can do some print settings, such as setting the printer name and some other printing parameters.
7. **Exit**
Close EasyWave Software

Edit Menu

Edit menu , provide users with Undo, redo, cut, copy, paste, delete, select all editing operations, the editing area range is set by the cursor slider, only the left and right cursor slider is displayed, the editing is available, the menu is as follows shown below:

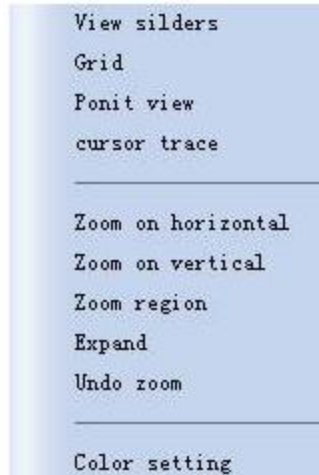


The sub-menu function:

1. **Undo**
Revocation of the last operation, you can undo multiple times.
2. **Redo**
And the revocation of the anti-operates and maintains the last operation. Redo operation can be repeated.
3. **Cut**
Cut wave between the left and right cursor slider.
4. **Copy**
Copy the waveform between the left and right cursor slider.
5. **Paste**
Paste copied or cut data to the end of the waveform. If the waveform is a full window, you cannot paste.
6. **Delete**
Remove the waveform between the left and right cursor slider.
7. **Select all**
Set left and right cursor slider for the whole range of waveforms.
8. **Horizontal reversal**
Horizontal reversal waveform between the left and right cursor slider.
9. **Vertical reversal**
Vertical reversal waveform between the left and right cursor slider

View Menu

Offer a variety of ways to watch waveform. Menu as shown below:

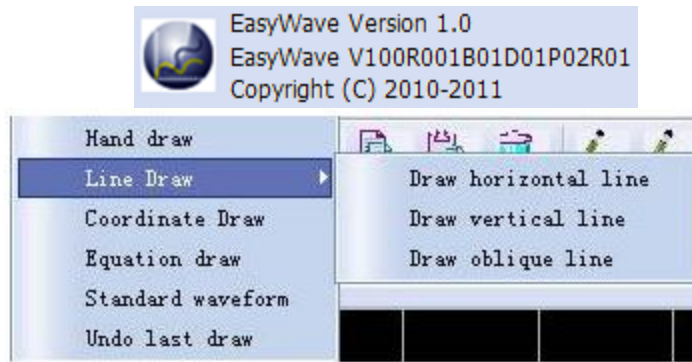


The sub-menu function:

1. **View slider**
Show or hide the cursor slider of the active window.
2. **Grid**
Show or hide the grid of the active window.
3. **Point view**
Display the current waveform in point style, or solid line style.
4. **Cursor trace**
Follow the mouse movement a cross cursor display.
5. **Zoom on horizontal**
This function is available by selecting. In the waveform window, push down the left mouse button, move left or right to select an interval, then release the left mouse button, then waveform is zoomed. After zoom, a scroll bar will appear below the waveform, user can drag the scroll bar to view different regional waveforms.
6. **Zoom on vertical**
This function is available by selecting. In the waveform window, push down the left mouse button, move up or down to select an interval, then release the left mouse button, then waveform is zoomed.
7. **Zoom on region**
This function is available by selecting. In the waveform window, push down the left mouse button, move left or right or up or down to select an interval, then release the left mouse button, then waveform is zoomed.
8. **Expand**
If the waveform is not full screen display in Window, then it will be extended to full screen display in Window.
9. **Undo zoom**
Undo zoom, the waveform back to the original size.
10. **Color setting**
Pops-up [color settings dialog](#). You can set the current active windows waveform color, background color, grid line color, the cursor slider color.

Draw menu

Used to draw waveform, menus as shown below:



The sub-menu function:

1. Hand Draw

Click the left mouse button and drag the mouse to draw. Release the mouse button to complete the hand-drawn.

2. Line Draw

Click the left mouse button and drag the mouse, according to the choice of straight line, or vertical line or oblique line, draw the corresponding line. Release the mouse button to complete once draw.

3. Coordinate Draw

Pop-up [Coordinates Drawing dialog](#).

4. Equation Draw

Pop-up [Equation Drawing dialog](#).

5. Standard Waveform

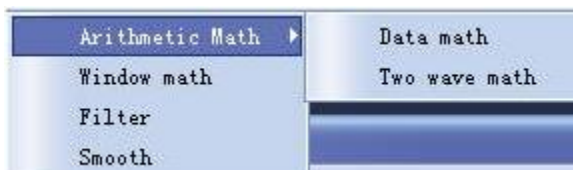
Pop-up [Standard waveform dialog](#).

6. Undo last draw

Remove the last draw operation result.

Math Menu

DO mathematical process to the selected waveform. Menu as shown below:



The sub-menu function:

1. Arithmetic math

1) Date math

Pop-up [Math value dialog](#).

2) Two wave math

Pop-up [Math wave dialog](#).

2. Window math

Pop-up [Math Window dialog](#), can select the waveform for many types of window functions of Window treatment.

3. Filter

Pop-up [filtering dialog](#), select the waveform to filter, can used a variety of types of filtering function.

4. Smooth

Smooth the current editing windows waveform.

Property Menu

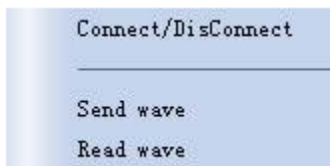
Properties menu to view and modify the properties of the waveform, as shown below:



Click the "Property setting" sub-menu, bring up the [properties dialog](#), you can modify the name of the waveform, VPP, frequency and period.

Communications Menu

Communications menu is used to communicate with the instrument. Has options of connect, disconnect, send wave, read wave. As shown below:



The sub-menu function:

1. **Connect / Disconnect**

Pop-up [Connection setting dialog](#), set which and how you want to connect.

2. **Read wave**

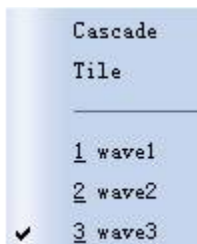
Pop-up [Read Waveform dialog](#), select a waveform name, read to the current waveform editor window.

3. **Send wave**

Pop-up [Send Waveform dialog](#), send the waveform selected to the instrument.

Windows Menu

Window menu is used to manage all the open waveforms layout of display, As shown below:



The sub-menu function:

1. **Cascade**

Arrange all of open Waveforms windows in a hierarchical display.

2. **Tile**

Arrange all of open Waveforms windows in a horizontally display.

3. **Waveform list**

List all of the open waveform window, and the current editor window is set checked, when there is a lot of windows, you can easily select the window you want.

Style Menu

Used to set the display interface style and interface language, as shown below:



The sub-menu function:

1. **Skin change**

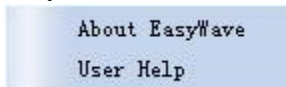
Users can change the interface display style.

2. **Language**

Including Chinese and English options for dynamically set interface display

Help Menu

The help menu provide users with basic software information and how to use the EasyWave software, as shown below:



The sub-menu function:

1. **About EasyWave**

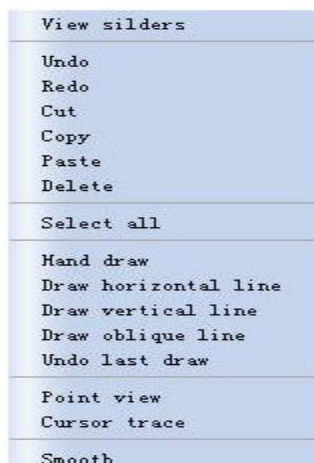
Show some of the software version information.

2. **User help**

Provides links to help documentation, based on the current interface language, display the corresponding language help.

Pop-up Menu

Correspond to some operation of the editors, views, Draw, mathematical treatment. As shown below:



This menu is a combination of other menu items, the specific function with other functions corresponding to the same menu. Right-click the plot area will be able to bring up the menu.

Dialog

New Waveform dialog

New waveform dialog set the basic properties of the waveform, including the name, VPP, frequency, period of the waveform. As shown below:



Parameters:

1. Waveforms Name

Define the name of the waveform created, the default name for wave1, wave2, wave3 ... the user can enter their own meaningful name, but the name's maximum length is 32 characters.

2. Samples.

Waveform's maximum points, Function / arbitrary waveform generator uses direct digital synthesis (DDS) to generate arbitrary waveforms, the more points, the smaller waveform distortion, the more smooth, The current function / arbitrary waveform generator supports 16384 (16K) points. The value is depended on the function / arbitrary waveform generator model to connect.

3. VPP

Set the waveform peak. You can choose to use the "V" or "mV" as input units. The current function / arbitrary waveform generator supports range resolution is 0.3mV, the maximum peak value of 6V.

4. Quantify

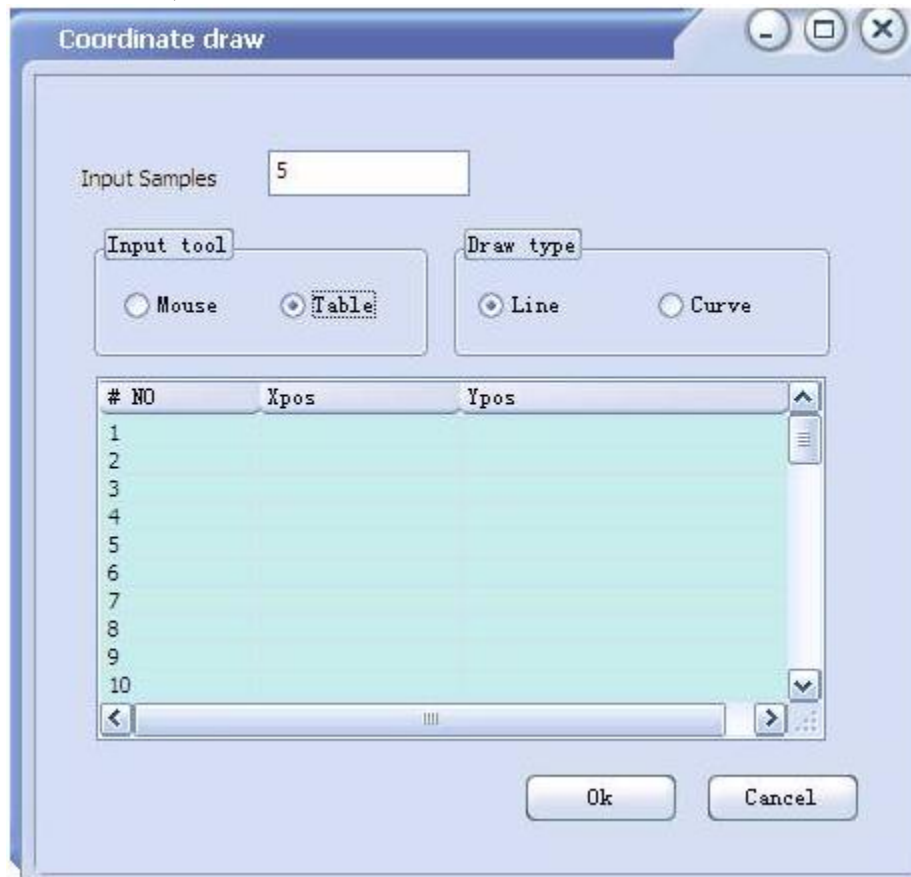
Quantify number of bits. The magnitude of each point was quantified as an integer, and then normalized into a real number. Quantification of software support 14-bit, the greater the number of bits, amplitude resolution, the greater the distortion is smaller. The current function / arbitrary waveform generator supports 14-bit.

5. Frequency / Period

Set the waveform frequency. The current function / arbitrary waveform generator to support a minimum 1uHz, the maximum 50MHz arbitrary waveform output, the minimum frequency resolution is 1uHz.

Coordinate Drawing dialog

Coordinate Drawing dialog, Provide user input coordinates to draw the waveform. Enter the coordinates in two ways: the mouse input and table input. Waveform generation ways are straight lines and curves, as shown below:



Parameters:

1. Input feature points

The coordinate's point's counts use to plot.

2. Mouse

Point of input from mouse, in plot area by click the left mouse button to input position.

3. Table

Point of input from table, the input point of the X coordinates and Y coordinates to mark the location of the input point. Starting from the first line, continuous input point coordinate information.

4. Line

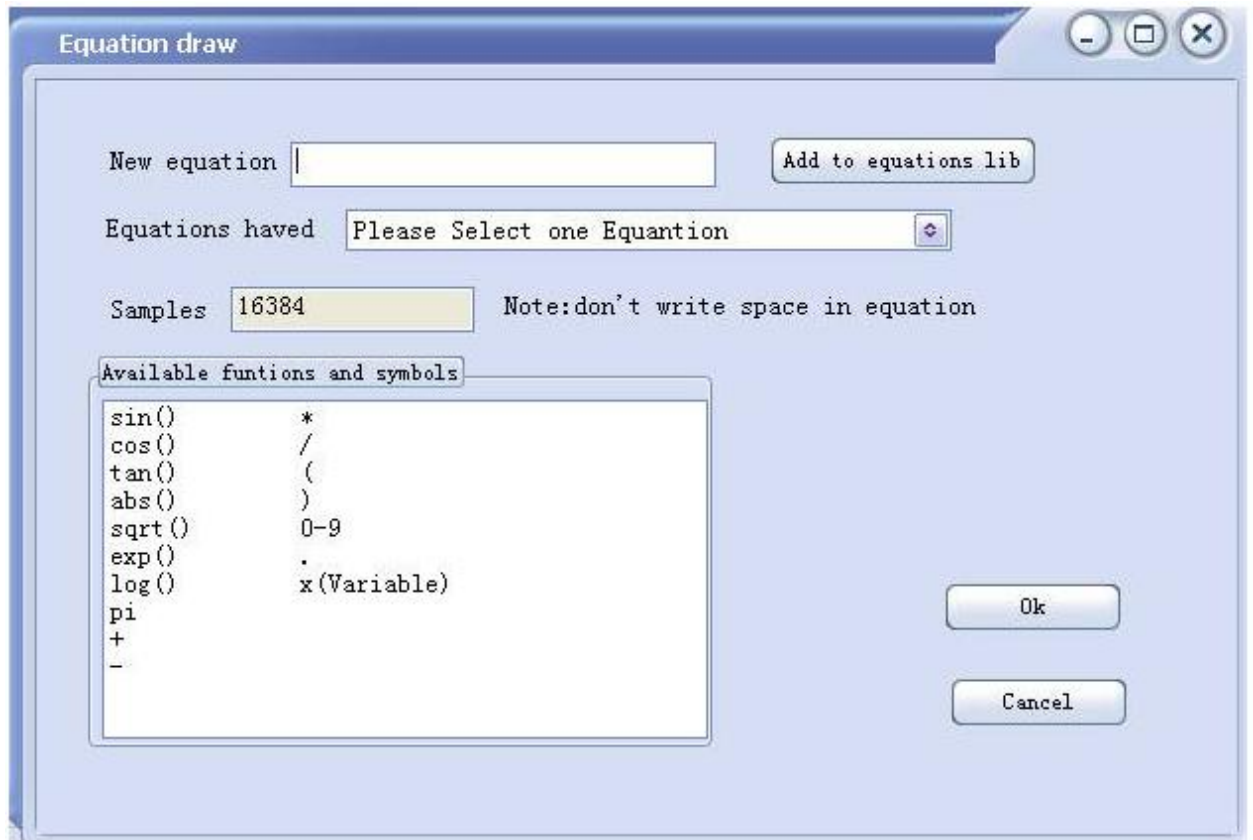
Enter a straight line between the input points connected together.

5. Curve

Enter a smooth curve between the points connected together.

Equation Draw dialog

Users can enter the equation to drawing waveform, as shown below:

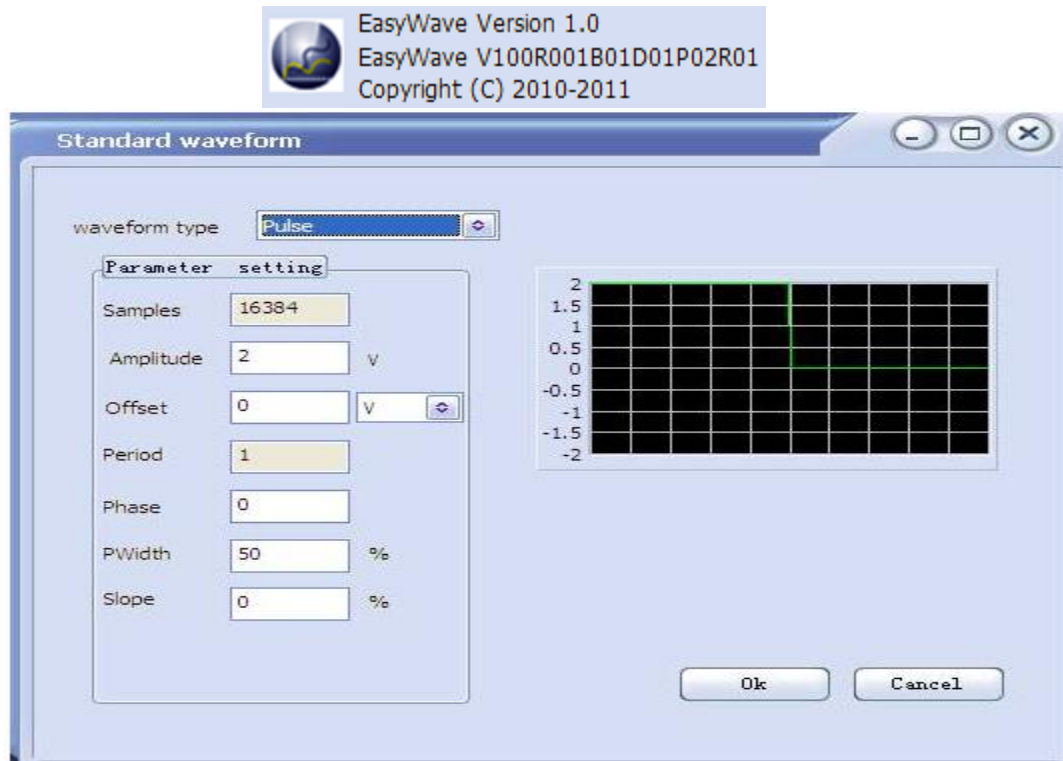


Users can use the available functions and operators to write your own equation to draw waveform, or from an existing database, select a equation to drawing, the user can add their equation to the equation library for later use.

Samples: the length of the drawing area.

Standard Waveform dialog

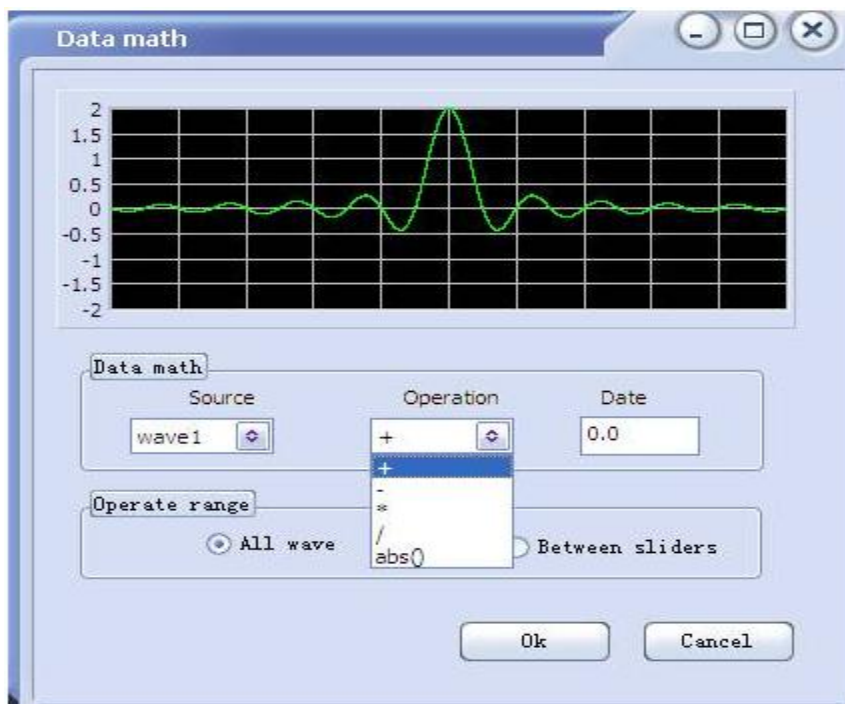
Offers nine standard waveform draw, as shown below:



Users from the drop-down list to select one standard waveforms, including sine, square, ramp, pulse, sync, noise, exponential rise , exponential fall, DC. When the parameters changed, the preview area will show it.

Math value

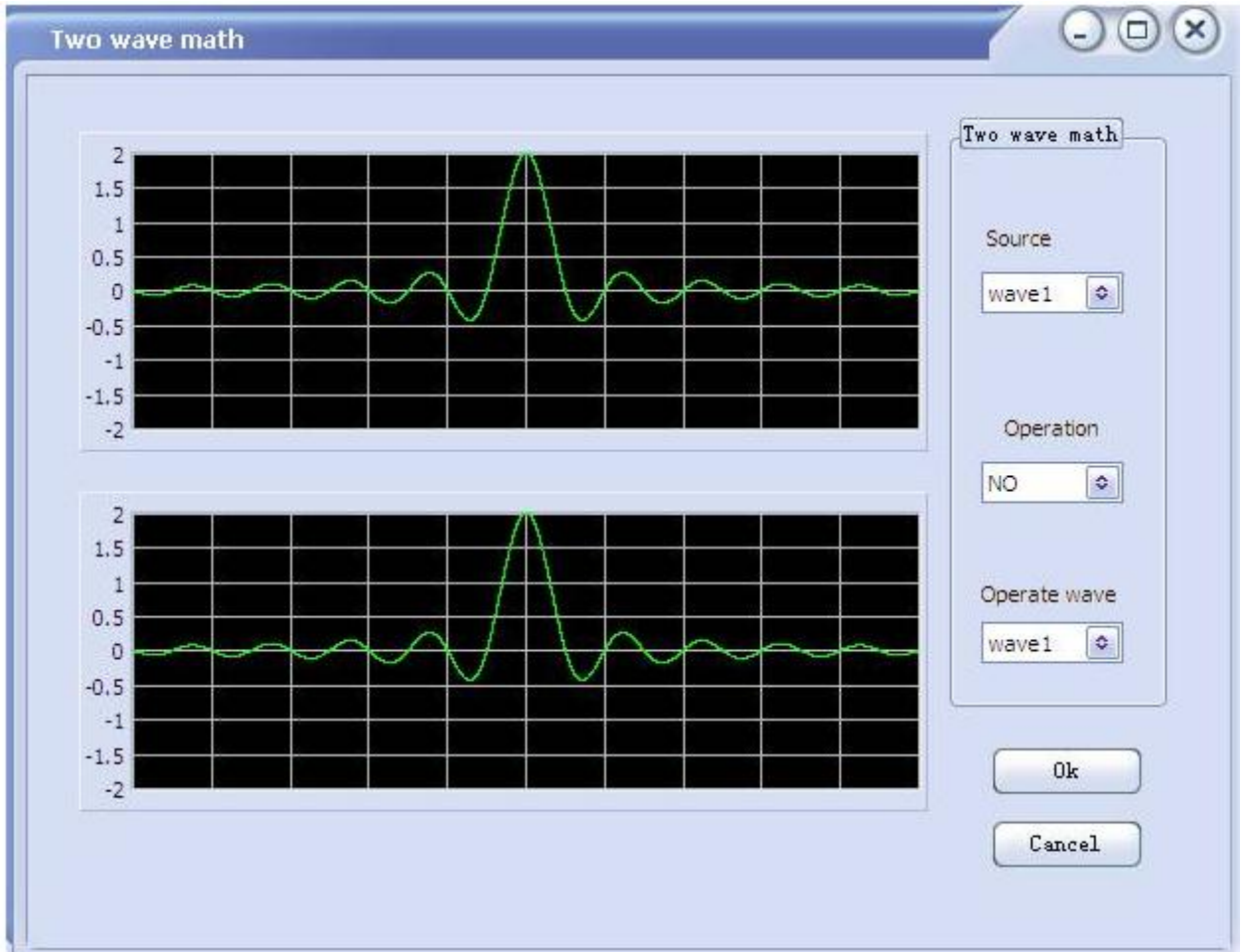
Select the waveform with a constant value do addition and subtraction multiplication and division operation, and absolute operation. As shown below:



You can also select the range of operation, when the waveform windows cursor slides show; you can move the cursor slider to determine which parts of the waveform computing constant values. Select all waveform as operation is ok all the time.

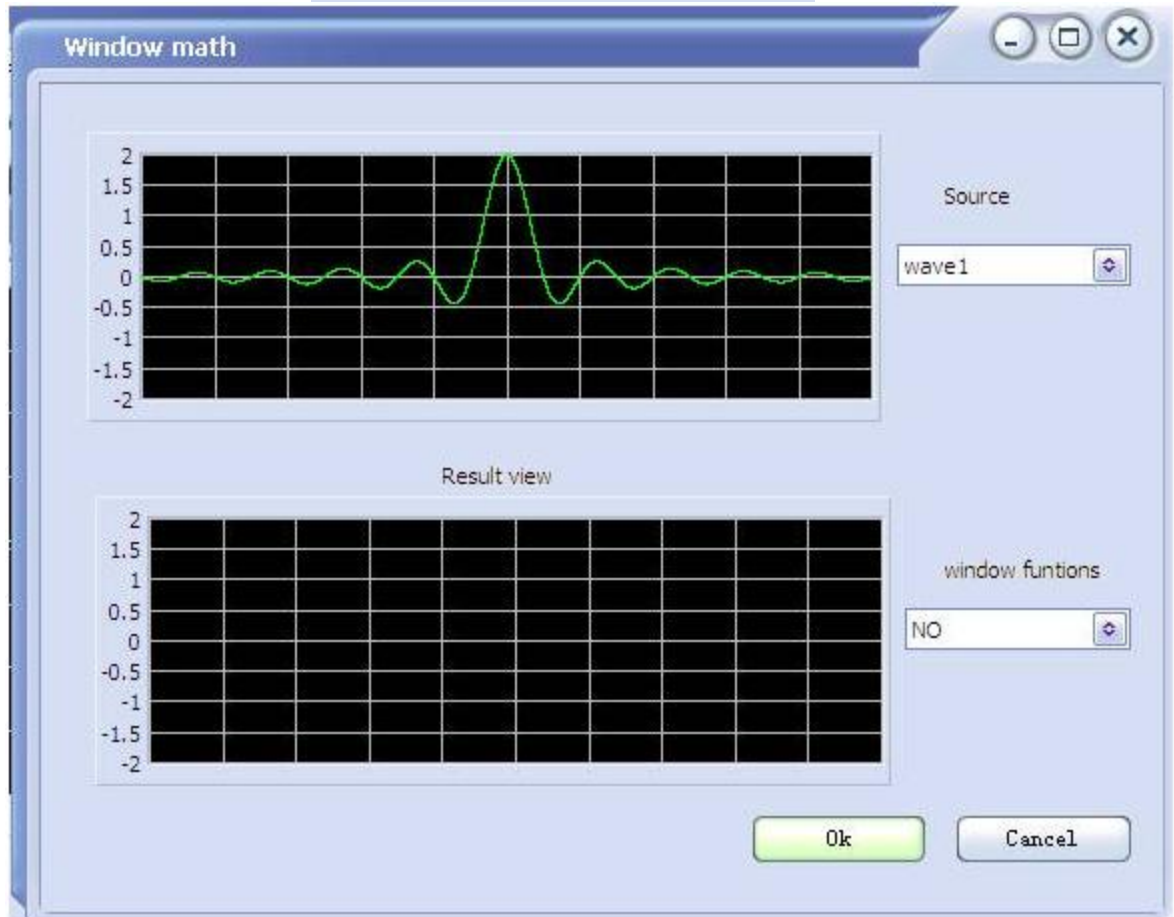
Math wave

Two windows can be achieved on addition and subtraction and multiplication operation, operation result will be show in the first preview window .as show below:



Math window

Selected one waveform for window treatment, as shown below:

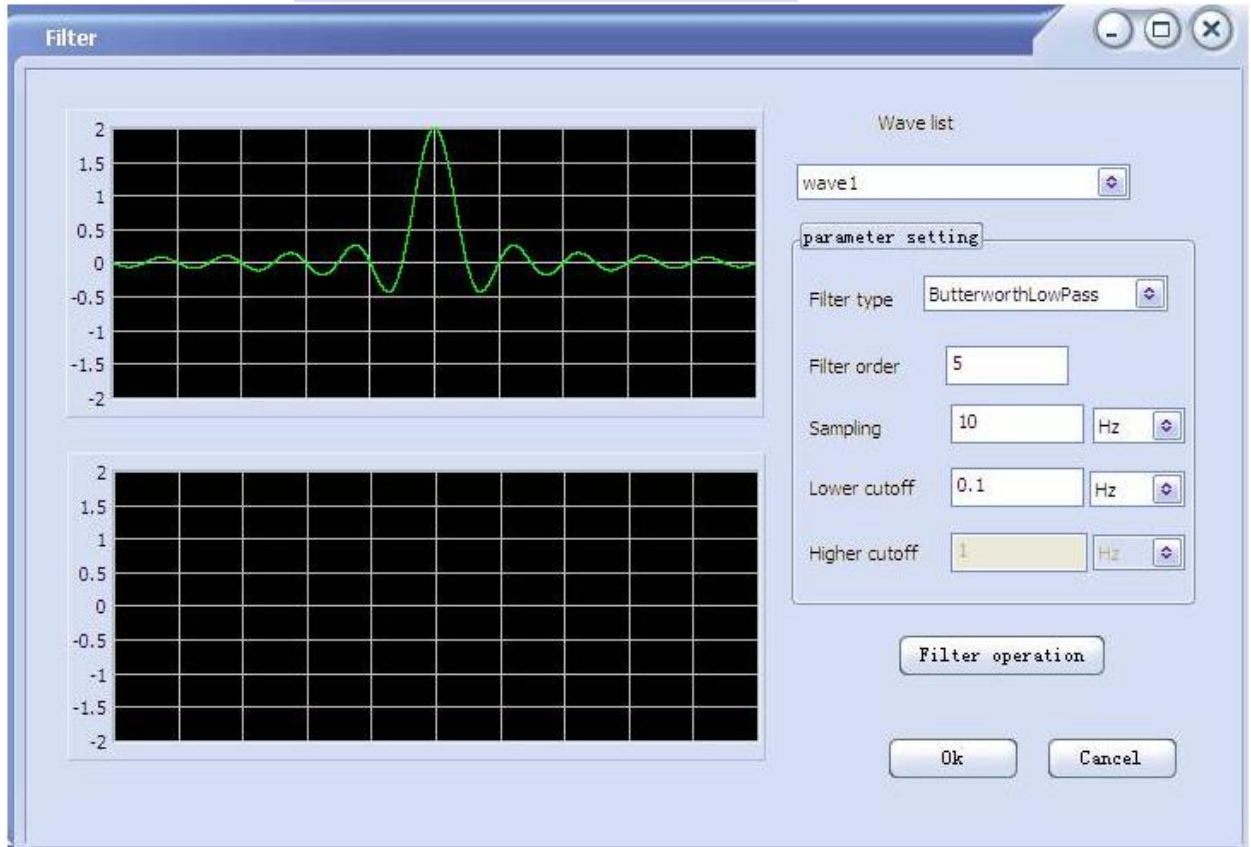


Window function can be choosing is below:

1. Triangle
2. Hanning
3. Hamming
4. Blackman
5. Kaiser
6. Blackman Harris
7. Extend Cosine
8. Fall Exp
9. Flat Top
10. Force

Filter dialog

Filter The waveform of selected by different types filtering Function, as shown below:



Parameters

1. Filter Type

Overall divided into low-pass, high-pass, band-pass, band-stop four filter types, specific are:

- 1) ButterworthLowPass
- 2) ButterworthHighPass"
- 3) ButterworthBandPass
- 4) ButterworthBandStop
- 5) ChebyshevLowPass
- 6) ChebyshevHighPass
- 7) ChebyshevBandPass
- 8) ChebyshevBandStop
- 9) EllipticLowPass
- 10) EllipticHighPass
- 11) EllipticBandPass
- 12) EllipticBandStop

2. Filter order

3. Sampling frequency

4. Low cutoff frequency

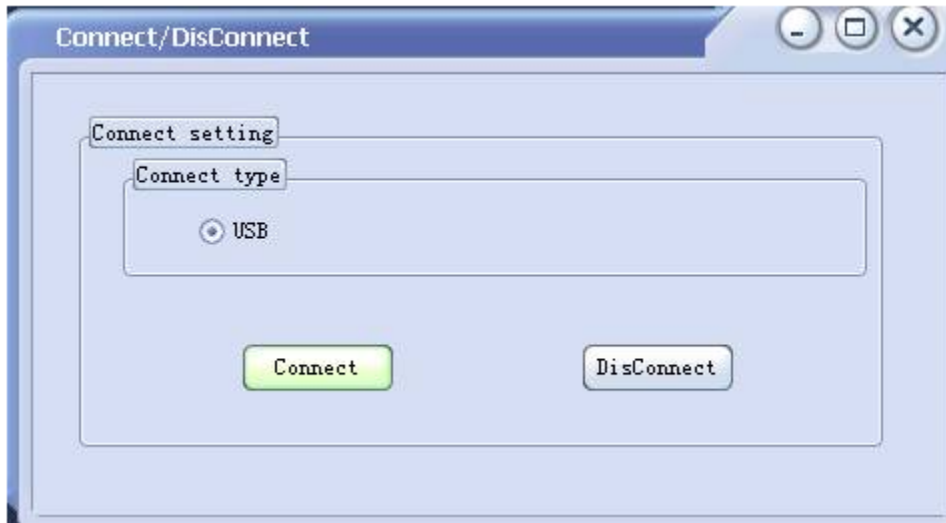
For the low-pass filtering

5. High cutoff frequency

For the high -pass filtering

Connect / Disconnect dialog

Connect / Disconnect dialog, to connect the instrument by Model and connection Selected. As shown below:



Parameters:

1. Connect type

Currently only supports USB connections.

Read dialog

Read waveform from the function / arbitrary waveform generator to EasyWave, as shown below:



Parameters

1. Waveforms list

Users select from the list to read the waveform by name.

Send dialog

Send waveform to the function / arbitrary waveform generator, as shown below:



Parameters:

1. Store location

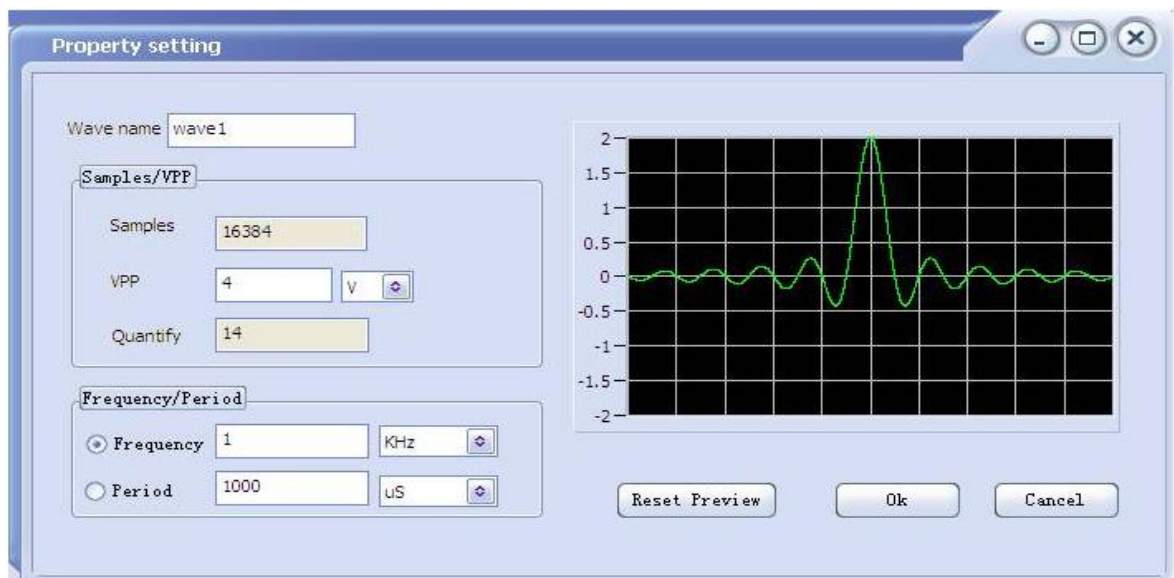
Select which location to send,

2. Name

Users can select the current waveform of all open windows for transmission waveform, by default, the waveform for the current active window name. If the same name waveform has been stored, a message box will tip you go to [properties change dialog](#), change the name first then to send again.

Properties change dialog

Offers change the name, VPP, frequency, period of the active waveform. When VPP changes, you can click the "Reset Preview" view the revised results. As shown below:

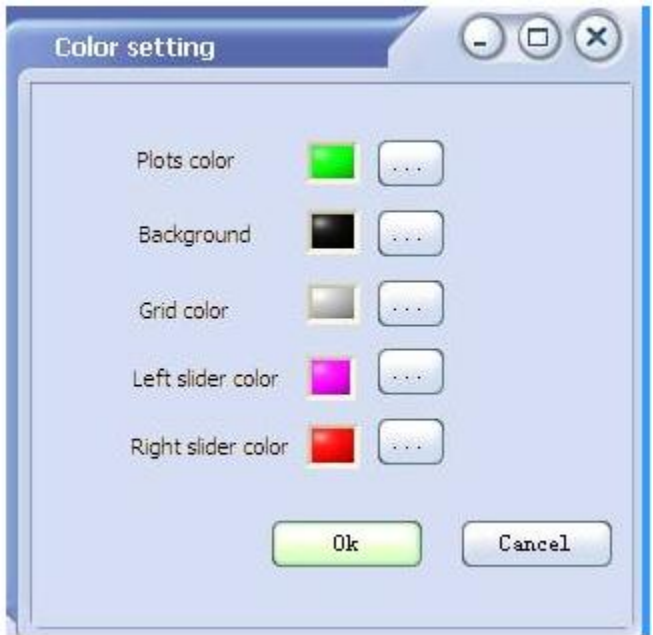


ColorSetDLG

Color Settings dialog, used to set the color of the current active waveform, through the



button to select the color you want, as shown below:



Parameters:

- 1. **Waveform Color**
The color of wave curve
- 2. **Background color**
The color of plot area background
- 3. **Grid Color**
The color of grid lines
- 4. **Color of the left slider**
When Cursor slider is displayed, the color of the left cursor slider
- 5. **Color of the right slider**
When Cursor slider is displayed, the color of the right cursor slider

Toolbar

Toolbar, providing quick operation, the toolbar in part by the File menu, Edit menu, draw menu, View menu, communication menu item. As shown below:







File menu section:



Toolbar icons from left to right:

- 1. New
- 2. Open
- 3. Save
- 4. Print

5. Print preview

<p>Edit menu section:</p>  <p>Toolbar icons from left to right:</p> <ol style="list-style-type: none"> 1. Undo 2. Redo 3. Cut 4. Copy 5. Paste 6. Delete 	<p>Draw menu section:</p>  <p>Toolbar icons from left to right:</p> <ol style="list-style-type: none"> 1. Hand draw 2. Horizontal draw 3. Vertical draw 4. Oblique draw 5. Equation draw 6. Coordinates draw 7. Undo last draw
<p>View menu section:</p>  <p>Toolbar icons from left to right:</p> <ol style="list-style-type: none"> 1. Cursor slider 2. Grid 3. Point view 4. Horizontal zoom 5. Vertical zoom 6. Region zoom 7. Out zoom 	<p>Communications menu section:</p>  <p>Toolbar icons from left to right:</p> <ol style="list-style-type: none"> 1. Connection 2. Disconnection



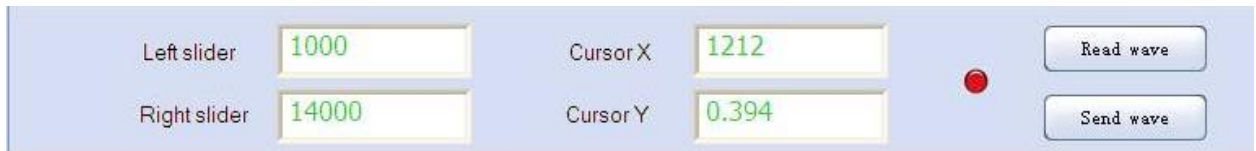
LeftdockBar

Provides nine types of standard waveforms a quick way to draw, Icon Identification of the standard waveforms from top to bottom is shown below:

1. Sine
2. Square
3. Ramp
4. Pulse
5. Sync
6. Noise
7. exprise
8. expfall
9. DC

BottomDockBar

Bottom dock bar, used to set the cursor position, indicating the location of the mouse in the drawing area, the connection status indicator and load waveforms, send waveforms, as shown below:



Parameters:

1. **Left slider**

Shows the location of the left slider; enter a value in the edit box, then press the Enter key, to set the left cursor position.

2. **Right slider**

Shows the location of the right slider; enter a value in the edit box, then press the Enter key, to set the right cursor position.

3. **CursorX**

No tracking or window at the cursor slider hide, show the mouse's X coordinate of the plot area.

4. **CursorY**

No tracking or window at the cursor slider hide, show the mouse's Y coordinate of the plot area.

5. **Connection status indicator**

Red indicates the connection to function / arbitrary waveform generator fails, and green for a successful connection.

6. **Read wave**

pop-up [Read Waveform dialog](#).

7. **Send wave**

pop-up [Send Waveform dialog](#).