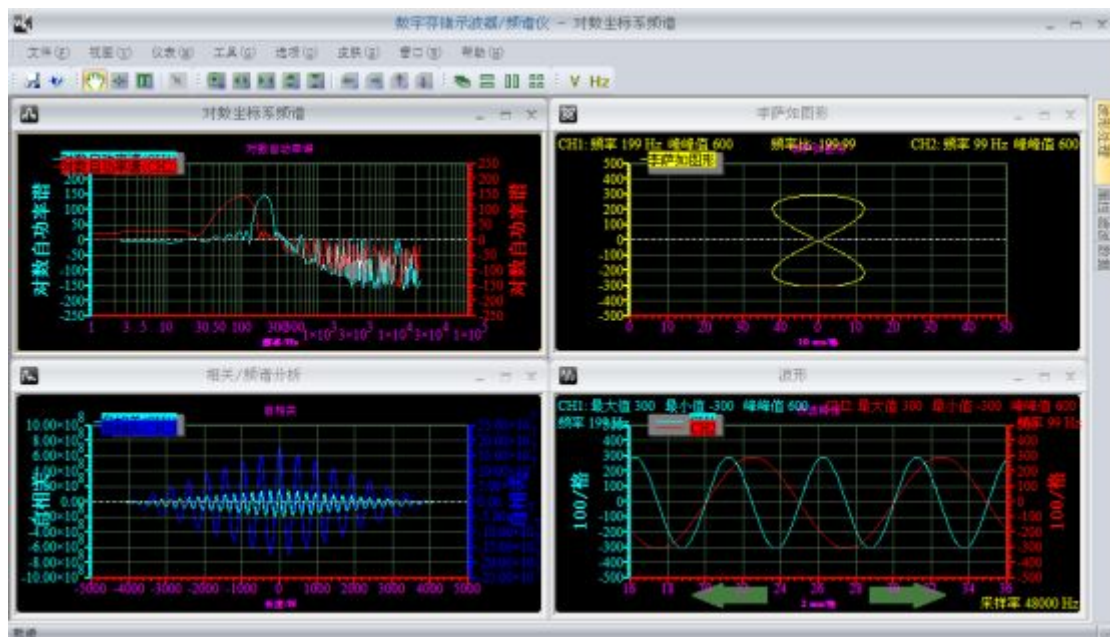


# Digital Storage Oscilloscope (Professional Version)



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## **PC SYSTEM REQUIREMENTS**


- Windows XP, Win7, Win8, Win10
- Pentium or higher processor
- USB2.0 High speed port.
- 512MB RAM
- 1GB hard disk space

## 1. File Operation

### 1.1 File Open

Non operation state of the oscilloscope, you can use the menu to "open" or  icon to open the CSV and OSC format file.

### 1.2 File Save

Using Menu "save" or  icon, to save the wave as a CSV or BMP format file.

## 2. View

### 2.1 Toolbar

Hide and display the corresponding toolbar.

### 2.2 Status Bar

Hide and display status bar.

## 3. Meter

Hide and display meter.

## 4. Display

### 4.1 Display Settings

“Vectors”: Display waveform in the form of vector connection.

“Dots”: Display waveform in the form of points.

### 4.2 Color Settings

Set the color of the interface and the waveform.

## 5. Tools

### 5.1 Cursor

Supports 3 forms of cursor measurement function "X/Time", "Y/Voltage" and "Track".

#### 5.1.1 X/Time

The "X/Time" mode, the horizontal direction of the 2 measuring lines, respectively measure the corresponding line position and vertical value; and the difference between the horizontal direction of the 2 lines.

#### 5.1.2 Y/Voltage

The "Y/Voltage" mode, the vertical direction of the 2 measurement lines, respectively measure the corresponding line position of the vertical direction of the value; as well as the vertical direction of the difference between the 2 lines.

#### 5.1.3 Track

The "Track" model, based on the "X/Time" model, provides a tracking line corresponding to the vertical direction values.

#### 5.1.4 Measurement Line

Measurement line is divided into "selected" and "non selected" state. The "selected" state of the line, will be displayed on both sides of the white tips. Press the left mouse button to move the "selected" state of the measurement line. In the measurement line, click the left mouse button, you can switch between the "selected" and "non selected" state. Move a measurement line at the same



time, press "Shift" to move another measurement line at the same time. The keyboard "C" can quickly switch the Cur1 "check" and "non selected" state. The keyboard "Shift+C" can quickly switch the Cur2 "check" and "non selected" state. Rolling the mouse wheel can be fine tuned line.

## **5.2 Area**

### **5.2.1 Area Selection**

After selecting the "area selection button", the waveform display interface, press the left mouse button and drag the mouse, you can select a region of the waveform.

### **5.2.2 Area Zoom In**

After the area waveform is selected, click on the "area zoom In" button, which can enlarge the selected waveform to the entire display area.

## **6.Measure**

Set the measurement parameters of the waveform and FFT.

## **7.Option**

### **7.1 Default Directory**

Set file to save the default directory.

### **7.2 Oscilloscope Parameters**

Set the parameters of the oscilloscope algorithm, not recommended to adjust.

### **7.3 Color setting**

Set the color of the interface and the waveform.

## **8.Skin**

The main color setting interface.

## **9.Help**

### **9.1 About**

Display software information dialog.

### **9.2 Update**

Open the software download site, you can choose to download the latest version of the software.

## **10.Waveform Control**

Support for the wave drag, wave zoom, easy to view the information and analysis results.

### **10.1 Wave Drag**

In the shape of the waveform display area press the left mouse button, move the mouse can drag the waveform; in the left and right sides of the vertical scale position, press the left mouse button, move the mouse can be vertical direction and drag and drop.

### **10.2 Wave Zoom**

When the mouse into the waveform display area, click the left mouse button or scroll wheel to zoom in and click the right mouse button or scroll wheel to zoom out the waveform.

When the mouse into the left and right sides of the vertical scale area, click the left mouse button or scroll wheel to zoom in and click the right mouse button or scroll wheel to zoom out the

waveform.

## 11.Oscilloscope/Spectrum Analyzer

After connecting the device to the computer, the software will automatically detect and connect with the hardware. On the right side of the working area, the top of the “property set”, a corresponding device model is provided. Select the option to pop up as shown in figure 11.1.

### 11.1 Basic Control

#### 11.1.1 Auto and Pause

Click the "Auto" button, you can start the oscilloscope automatic detection function. The oscilloscope will automatically detect the amplitude and frequency of the signal to be measured, and the corresponding adjustment time and vertical scale.

Note that this feature will change the trigger mode to "auto", and adjust the trigger level according to the wave amplitude.

Click the “Pause” button, you can pause the oscilloscope. If you choose a single trigger, the acquisition waveform is completed, it will automatically pause oscilloscope.

#### 11.1.2 Capture

"Capture" button, click it to start capturing the frame; Drop-down box to select consecutive frames capture frame, which can be from 1 to 5000.

After capture, in the "Data Record" tab you can find the time to date osc file named, for example, 10-5+14-13-2 +1.osc that this is at 14:00 on October 5 13 minutes, 2 seconds grab the first frame of data. Just double-click or right-click "Import Analysis" will be able to load the data analysis.

#### 11.1.3 CH1、CH2

"CH1", "CH2" is used to start and close the corresponding oscilloscope channel;

"Probe" set the probe multiple;

"AC/DC" set AC and DC coupling;

“Invert”Invert wave;

“Calibration”Calibration the offset and amplitude of the waveform of oscilloscope. Amplitude calibration: for example, the input 3.0V, the measurement result is 3.2V, the results of the 3.0/3.2 fill in the range of calibration. Bias calibration (mV): for example, the input signal -1V to the 1V of the sine wave, the measurement results -0.9V to 1.1V, the bias -100 fill in the bias calibration.

#### 11.1.4 Math

"Math" Start or close the Math channel;

"A+B" The method of setting up the waveform synthesis;

"Source A", "Source B" Set the source of the synthetic waveform;

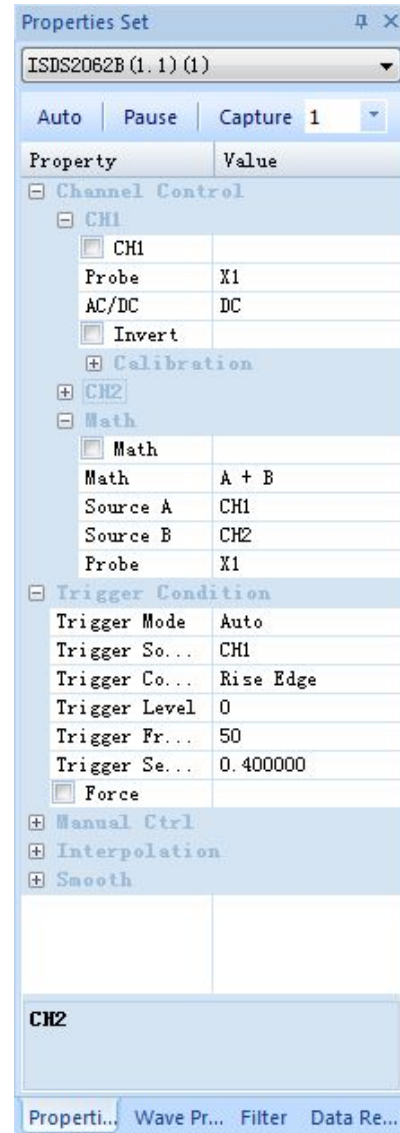


Figure 11.1 property Set

"Probe" set the probe multiple;

### 11.1.5 Trigger Condition

Note: the device is different, the trigger support is different, the actual display will be different from the interface in figure. If there is no option, the device does not support to change the function.

#### Trigger Mode:

"Auto", in accordance with the setting of the trigger condition detection, if the longer time is not triggered, it is collected once and displayed;

"Normal", has been detected to meet the trigger conditions of the waveform, collection and display;

"Single", detect the waveform to meet the trigger conditions, and pause.

#### Trigger Source:

"CH1", using the CH1 trigger point;

"CH2", using the CH2 trigger point.

#### Trigger Style:

"None", For the hardware trigger, do not trigger direct acquisition. For the software trigger, the data acquisition is directly displayed, not to do any triggers; ;

"Rise Edge", Detected rising edge and higher than the trigger level will trigger;

"Fall Edge", Detected falling edge and below the trigger level;

"Edge", Meet the above "Rise Edge" or "Fall Edge" situation to trigger;

"Positive Pulse(>)", the positive pulse is greater than the width of the "pulse up" to trigger;

"Positive Pulse(<)", the positive pulse is less than the width of the "pulse down" to trigger;

"Positive Pulse(<>)", the positive pulse width is between the "pulse down" and "pulse up" to trigger;

"Negative Pulse(>)", the negative pulse is greater than the width of the "pulse up" to trigger;

"Negative Pulse(<)", the negative pulse is less than the width of the "pulse down" to trigger;

"Negative Pulse(<>)", the negative pulse width is between the "pulse down" and "pulse up" to trigger;

#### Trigger Sensitivity:

When setting the detection trigger, the use of the sensitivity to eliminate interference.

#### Trigger Front Percent:

Set the length of the acquisition before the acquisition of the entire length of the acquisition.

#### Force:

Force oscilloscope trigger once, and display waveform.

### 11.1.6 Fixed Sample

"Fixed sample" to specify the sample for oscilloscope data acquisition, not affected by the time adjustment.

### 11.1.7 Interpolation

"Auto interpolation" when the frequency of the high frequency of the waveform, the waveform is not very smooth when it is not very smooth, start the interpolation function, so that the waveform is more beautiful. "algorithm interpolation" is the interpolation algorithm to using.

### 11.1.8 Smooth

The collected signal is processed in 3 points, so that the waveform looks more smooth.



## 11.2 Wave Analysis

### 11.2.1 View Management

Figure 11.2, Click left upper corner view generation button, of "Wave Process" tab, will pop up a menu of views. Select the appropriate menu item, you can generate a new view for the analysis of the waveform display.

"Wave View" used to display the input waveform, synthetic waveform and their filtered waveform ; "Lissajous View" used to display Lissajous waveform; "Spectrum View" used to display "Amplitude" and "Phase"; "Correlation View" used to display correlation .

Click on different views, "Wave Process" tab will display Analysis parameters of the view.

### 11.2.2 Wave View

After any one of the "Wave View" is selected, the "waveform process" tab will be shown in Figure 11.3.

#### 11.2.2.1 Filter Process

"filter ctrl" Start / close filtering processing.

"filter select" For CH1, CH2 and Math channel, select the filter of designed by the "QFilter filter design software" .

### 11.2.3 Spectrum View

After any one of the "Spectrum View" is selected, the "waveform process" tab will be shown in Figure 11.4.

#### 11.2.3.1 Hor-Axis Log Coordinate

"Hor-Axis Log Coordinate" for controlling the X axis is used to display the log coordinate system.

#### 11.2.3.2 FFT

FFT1 and FFT2 are two identical spectral analysis functions, which can be used to compare different Analysis results.

"data source" Select the data source for FFT analysis;

"FFT length" Set FFT length;

"window style" Set FFT window type;

"window parameter" Set the parameters of the window style;

"style" Set FFT analysis amplitude or phase.

"scale" Set the reference value for the display waveform;

#### 11.2.3.3 Filter Process

"filter ctrl" Start / close filtering processing.

"filter select" For CH1, CH2 and Math channel, select the filter of designed by the "QFilter filter design software" .

### 11.2.4 X-Y(Lissajous View)

After any one of the "Lissajous View" is selected, the "waveform process" tab will be shown



Figure 11.2 View Management

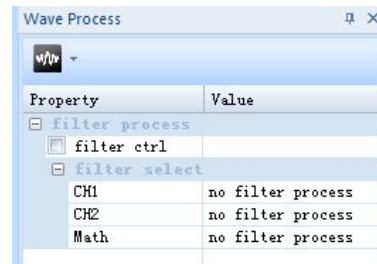


Figure 11.3 Wave View

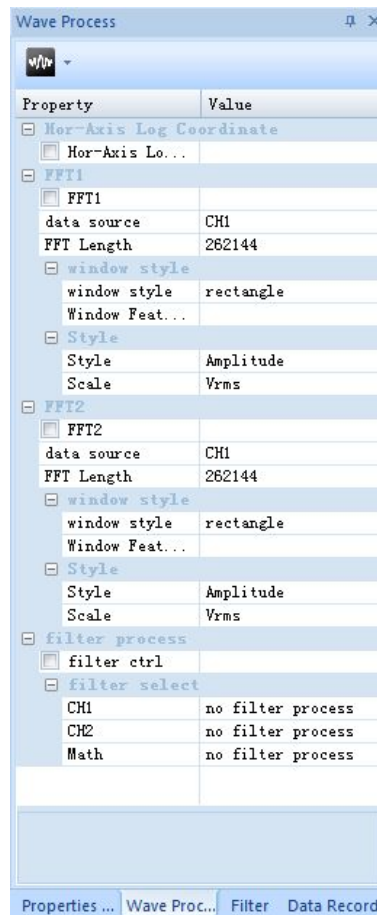


Figure 11.4 Spectrum View

in Figure 11.5.

#### 11.2.4.1 Lissajous View

"data length", For setting the length of the collection data for drawing Lissajous.

### 11.3 File Operation

Saved files can be found in the "data record" tab, as shown in figure 11.6.

#### 11.3.1 Capture Files

Files of 11.1.2 captured, can be found here. Just double-click the file to reload, view the waveform and analysis.

#### 11.3.2 Wave Save

using the "area selection" tool, select the save area. Then, the "file" menu -> "save select area", you can save the waveform.

#### 11.3.3 Filter file

On the right side of the workspace, select the bottom "filter" to open the corresponding filter file management properties. Click any file, will be in the following pop-up a property box, showing the properties of the corresponding filter.

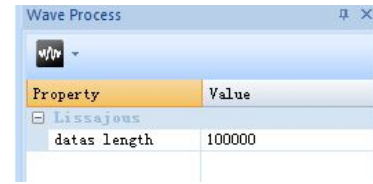


Figure 11.5 Lissajous View

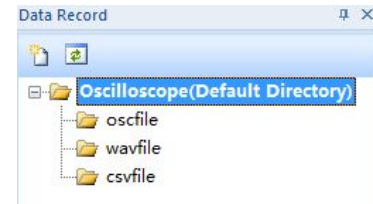


Figure 11.6 data record

## 12.DDS(Need device support)

After opening the DDS signal source interface, as shown in Figure 12.1, a waveform can be output to set the waveform and frequency; amplitude and bias need to use the 2 knob of USB port to adjust. Sweep a block, can be set according to the parameters of the sweep frequency output waveform.

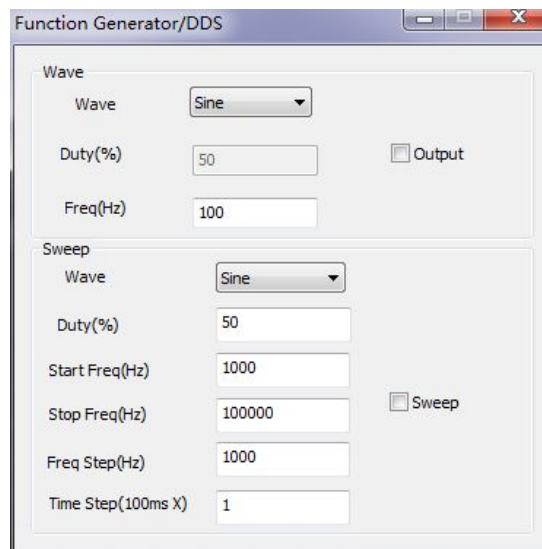


Figure 12.1 DDS