

**User Manual for
UTD1000L Oscilloscope
Communication Control Software**

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Chapter I Installation of the Oscilloscope Communication Control Software

1.1 Hardware Requirement

Equipment requirement	Minimum requirement
Computer	Windows 2000/XP/Vista/win7 system, 1G internal memory, 16 times CD-ROM or better (VISTA/win7 system, see its relevant hardware requirement) VGA display or better

1.2 Installation Procedures of Oscilloscope Communication Control Software

The digital oscilloscope will be equipped with UTD1000CL oscilloscope principal computer software (hereinafter short for principal computer software) in purchasing, or you can download it from our company's website.

Company Website: <http://www.uni-trend.com>

Name of Software: UTD1000L Oscilloscope Communication Control Software

Installation procedures:

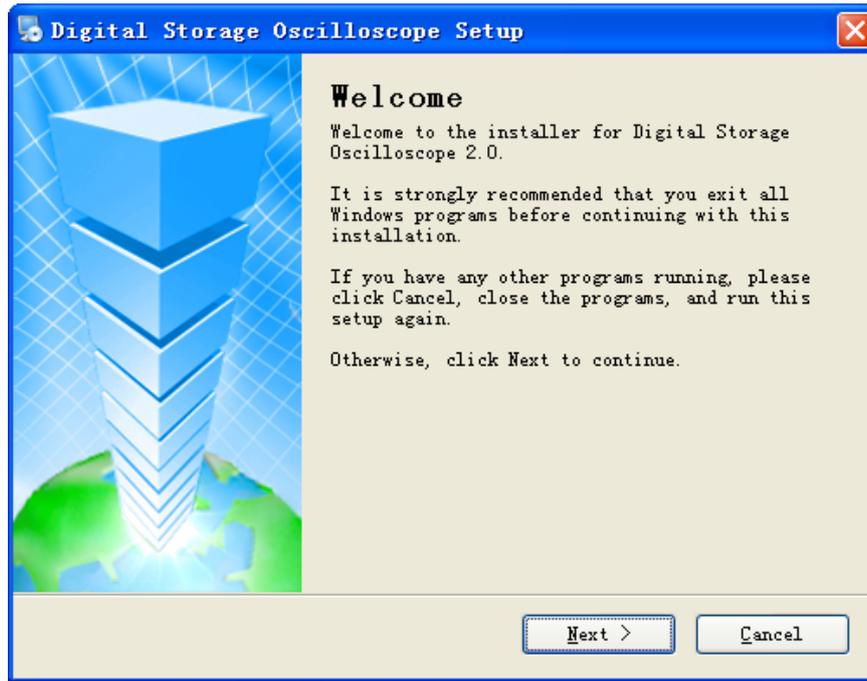
Step 1: insert the attached disk into CD-ROM of computer, after reading contents of the attached disk, find the folder **UTD1000L Oscilloscope Communication Control Software** and open it with double-click (picture 1-1)



Picture 1-1

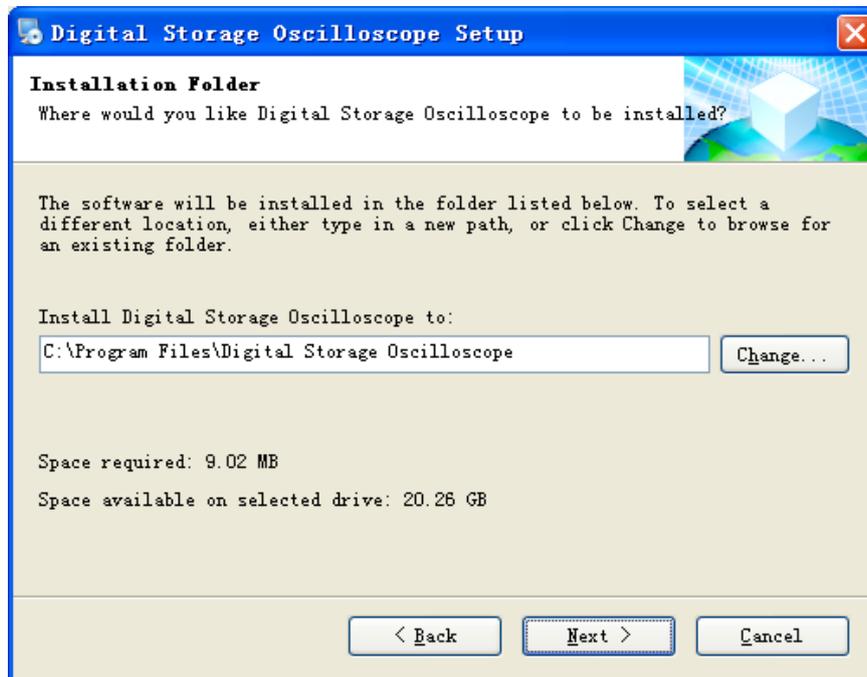
- Notes:**
- 1.The package of waveform analysis software downloaded from website can be used only after extracting it.
 - 2.Waveform analysis software support operation systems such as Windows 2000、 Windows XP、 Vista and win7.

Step 2: select relevant principal computer software installation program by double clicking the left key, it will pop out the installation guidance welcome interface automatically. Software installation guidance is shown in the picture 1-2:



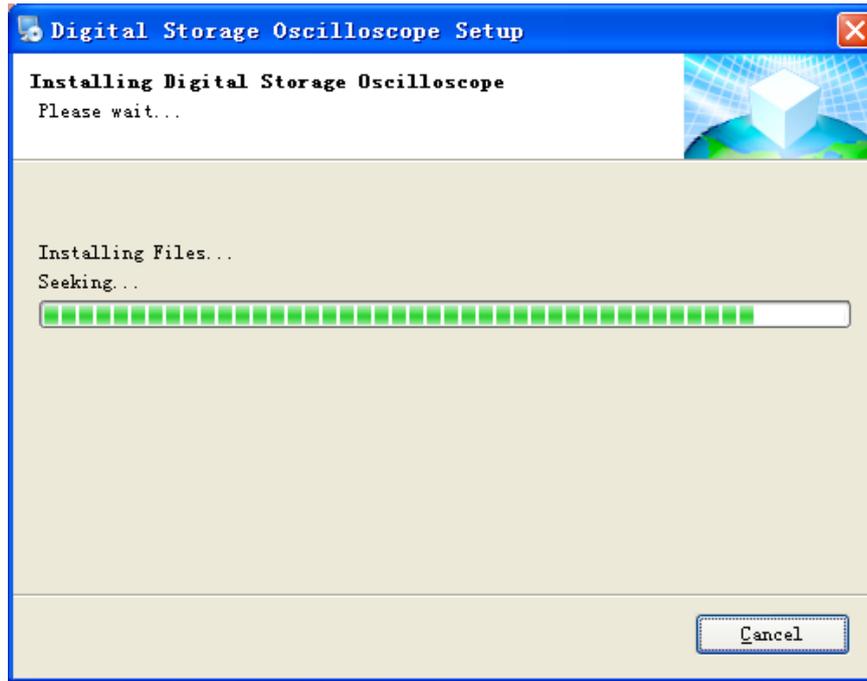
Picture 1-2

Step 3: after reading indicative contents in picture 1-2, please click key Next (N) to enter the next step, as shown in picture 1-2:



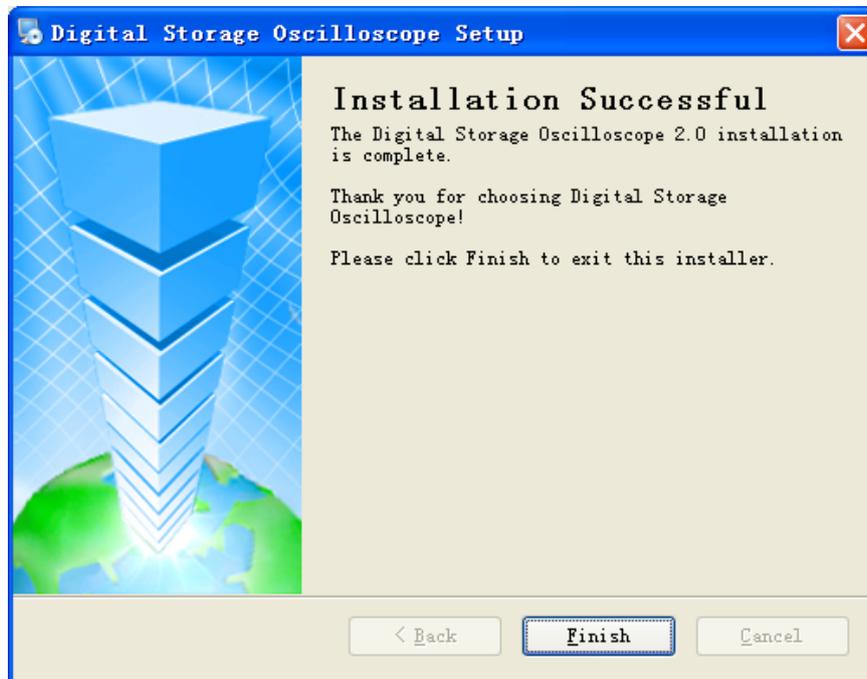
Picture 1-3

Step 4: as shown in picture 1-3, confirm the installation route of principal computer by click the key Modify (H), then click Next (N) or directly click Next (N) to use the fault route. Enter into the interface shown in picture 1-4.



Picture 1-4

Step 5: after completion of automatic installation and as shown in picture 1-5, click Complete, then you principal computer software have been successfully installed onto the computer.



Picture 1-5

1.3 Installation of the Oscilloscope Communication Control Software Drive Program

After completion of the oscilloscope communication control software installation, you have to install the USB drive program if you realize communication control over oscilloscope communication control software via oscilloscope's USB.

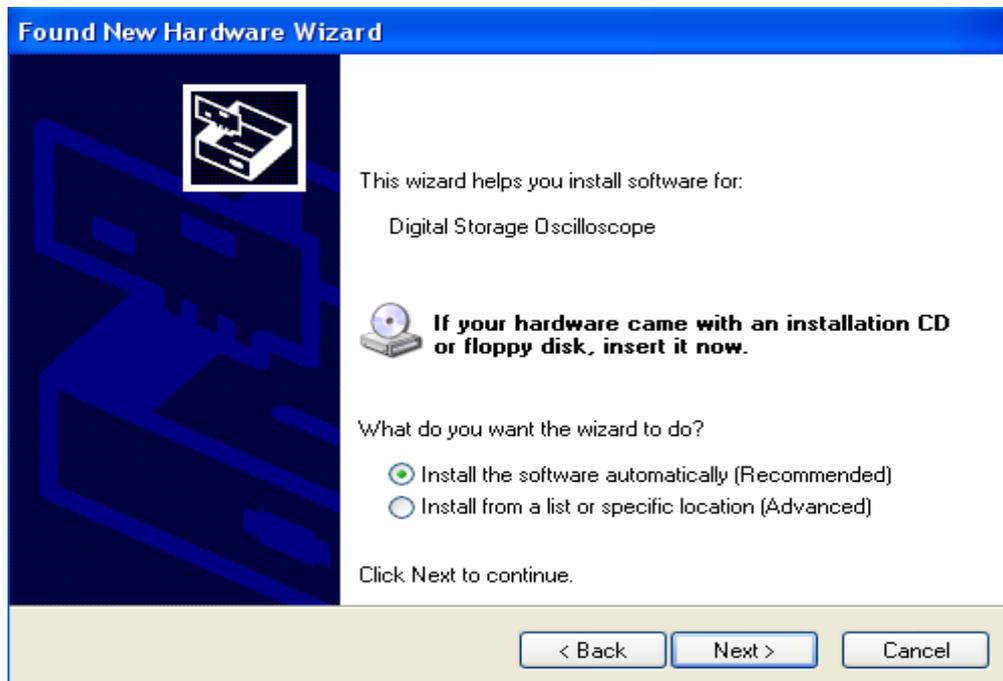
Automatic installation of drive program:

1. You can connect the MINI-USB port on the side of UTD1000L oscilloscope with computer's USB/HOST port by the attached data access.
2. After confirming the correct connection, power on the oscilloscope. It will enter into operation status interface, and a indicative information Find New Hardware will pop out at the right bottom corner of computer screen, as shown in the next picture:



Picture 1-6

Next, a dialogue box-Hardware Update Guidance will automatically pop out on the desktop, as shown in the picture 1-7:



Picture 1-7

3. Find the new hardware guidance dialogue box in the picture 1-17, select the option **Automatically Install Software(Recommended) (I)** ,as shown in the picture, and click **Next(N)** to find and install the drive program as shown in picture 1-8.



Picture 1-8

4. As shown in picture 1-8, the installation guidance of oscilloscope's hardware will automatically find and install the USB drive program of oscilloscope communication control software, after installation, a dialogue box as shown in picture 1-9 will automatically pop out.



Picture 1-9

5. In picture 1-9, click Complete, which means the completion of USB drive program of the oscilloscope, then the oscilloscope will realize real-time communication and control with its communication control software. Before using it, please read carefully the introduction of USB port communication control method in Chapter III Detailed Use of Oscilloscope Communication Control Software in the manual.

1.4 Start Oscilloscope Communication Control Software

After installation of oscilloscope communication control software, you have two ways to start the software on your computer.

1. After installation of oscilloscope communication control software, a quick start icon of oscilloscope communication software will automatically generated on your computer, as shown in picture 1-10. Double click with left mouse button picture 1-10 icon to start the software.



Picture 1-10

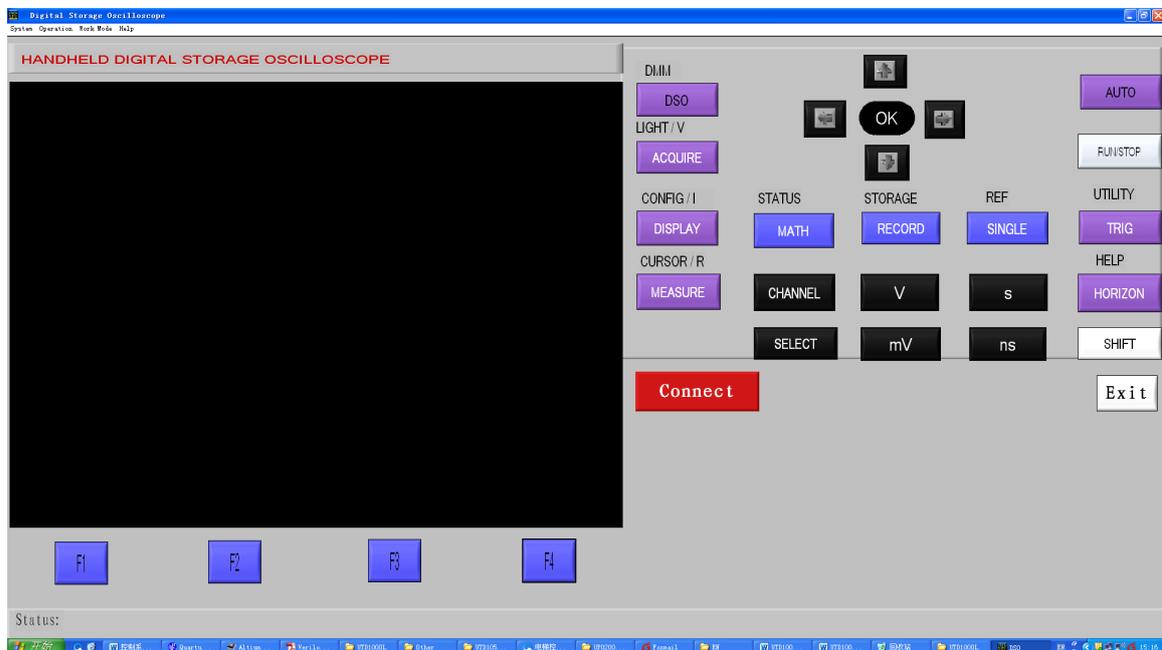
Chapter II Initial Knowledge about Oscilloscope Communication Control Software

2.1 About the Chapter

Interface and main menu of the principal computer software as well as the brief introduction of menu are included and specified in the chapter.

2.2 About the Oscilloscope Communication Control Software Panel

After starting principal computer, a display panel similar to oscilloscope operation interface, called as virtual oscilloscope panel, will pop out. In data transmission you can observe the present oscilloscope-displayed waveform through the virtual display of oscilloscope panel, and find parameters of waveform and channel by the menu and control in the interface, details will be explained in the next chapter:



Picture 2-1 Software Interface

As the control keyboard of principal computer software, fully identical to oscilloscope keyboard, can be used as keyboard to operate oscilloscope, the detailed introduction will not be provided in the

chapter (as regards keyboard operation, please see UTD 1000L User Manual. You can acquire different function by selecting function menus on the upper part of the software. Menu introduction are as follows:

2.3 Menu Introduction

As shown in the above picture 2-1, there are main menus on the left upper part of display: System, Operation, Working Mode and Help, introduction about them are as follows:

1. System

Interface Saving: after connecting with oscilloscope, you can save the presently oscilloscope-displayed interface into computer with the function.

Waveform Saving: after connecting with oscilloscope, you can save the channel waveform data of oscilloscope into computer with the function.

Exit: exit the principal computer software.

2. Operation

Program Upgrade: after connecting with oscilloscope, you can upgrade the program of oscilloscope with the function.

Bitmap Export: after connecting with oscilloscope, you can export the bitmap saved in oscilloscope to computer with the function.

Waveform Export: after connecting with oscilloscope, you can export the waveform data saved in oscilloscope to save into and be analyzed in the computer.

Recorded Waveform Export: after connecting with oscilloscope, you can export the recorded waveform data saved in oscilloscope to save into and be analyzed in the computer.

3. Working Mode

Interface Display: after connecting with oscilloscope, the principal computer software virtual display will display oscilloscope interface by selecting the function.

Waveform Display: after connecting with oscilloscope, the principal computer software virtual display will display the channel waveform by selecting the function.

Recorded Waveform Display: you can export the recorded waveform data saved into computer to the principal computer software to be played and analyzed.

Waveform Analysis: you can export the waveform data saved into computer to the principal computer software to be played and analyzed.

4. Help

Contact: if any doubt, please contact with us.

About: principal computer software version

Detailed introduction about the above functions will be described in the following chapters.

Chapter III Detailed Information about Using Oscilloscope Communication Control Software

3.1 About the Chapter

We discuss the principal computer software as we progress through the chapter, and make detailed introduction about main menu's function and provide some basic examples of menu using and operating.

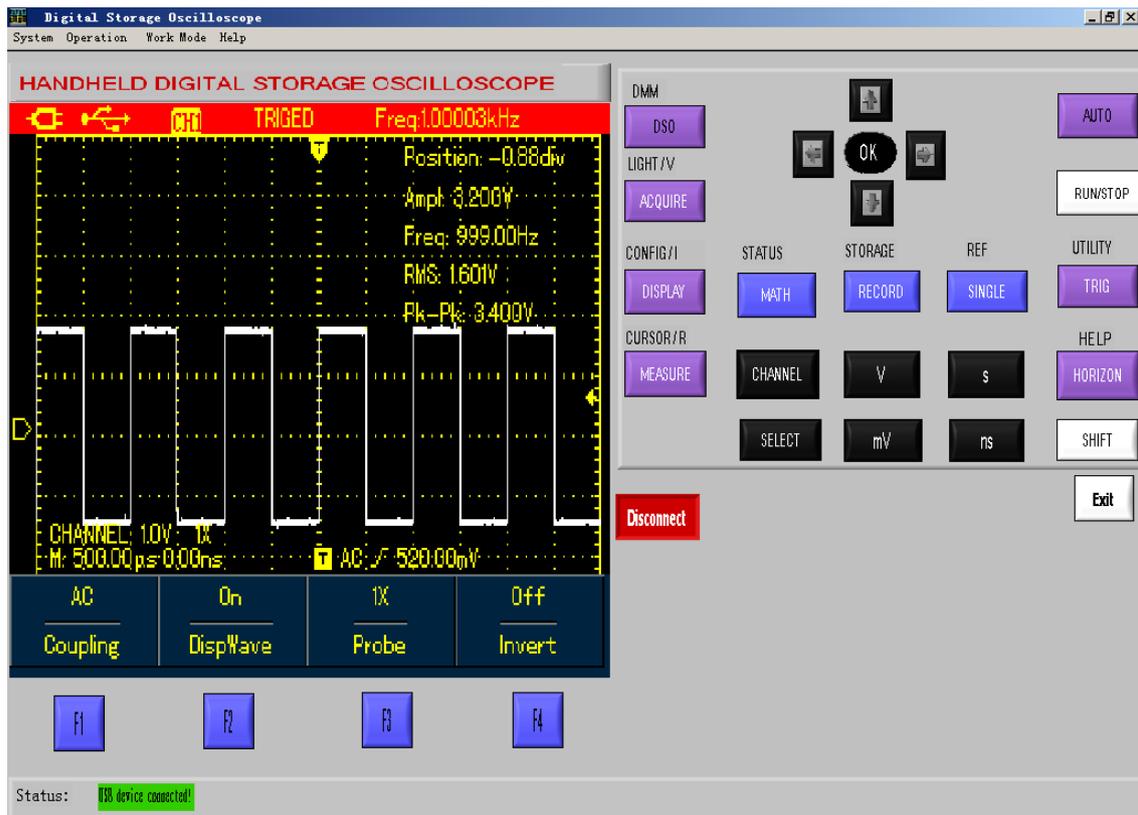
3.2 Connect Software

Connect oscilloscope with principal computer software under the following steps:

1. Power on oscilloscope, connect it with computer with the USB connection wire of standard configuration;
2. Run Oscilloscope Communication Control Software in computer;
3. Click the button **Connect** in the principal computer software, you'll see the port status

changing into **USB device connected!**, indicating that oscilloscope has successfully connected with principal computer software.

After the correct connection, the principal computer software will display as follows:

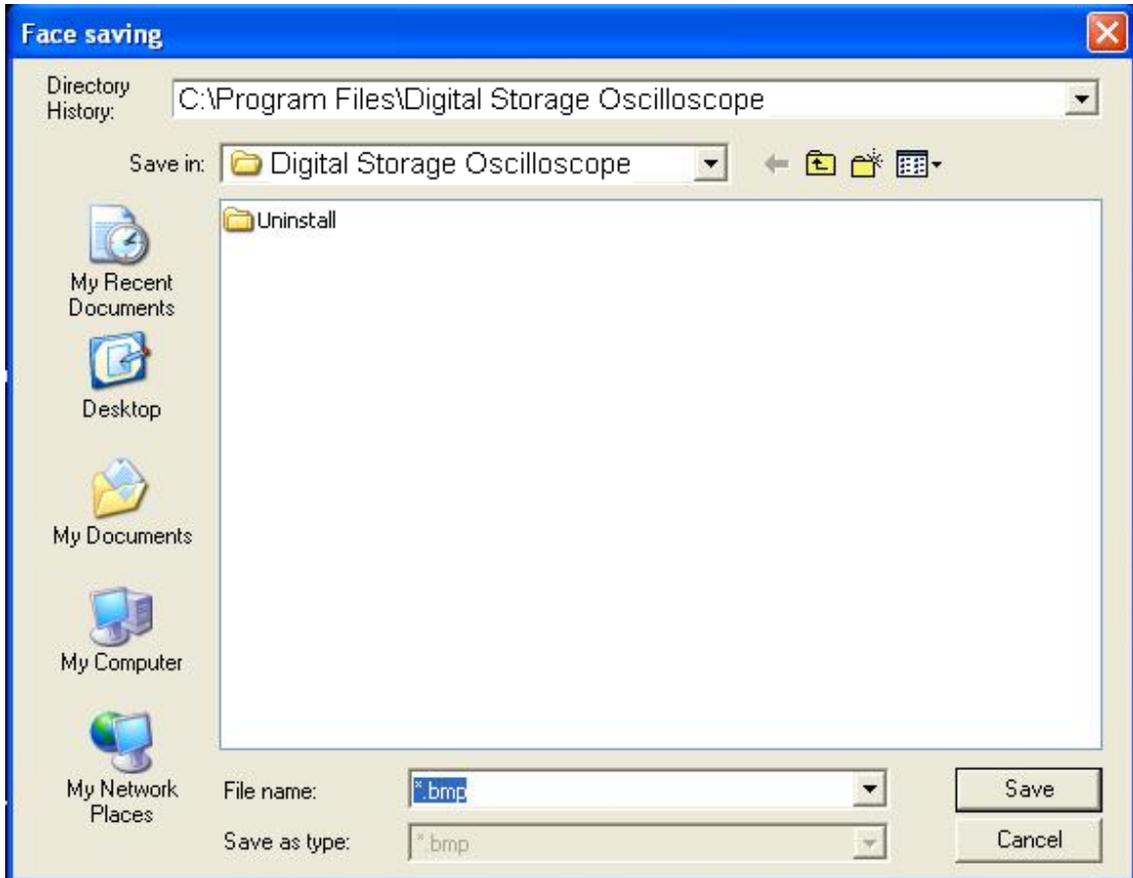


Picture 3-1 Principal Computer Connection

3.3 Save Display Interface

Save oscilloscope's display interface into computer via principal computer under the following steps:

1. Select **System** menu, and select option **Save Interface** in the pull-down options of system menu;
2. The software will pop out a dialogue box **Interface Saving**, as shown in picture 3-2;
3. After selecting save route and file name you need in the pop-up dialogue box, select key **Save(s)**, the interface will be saved into computer with fault save way: **Bitmap (BMP)**.

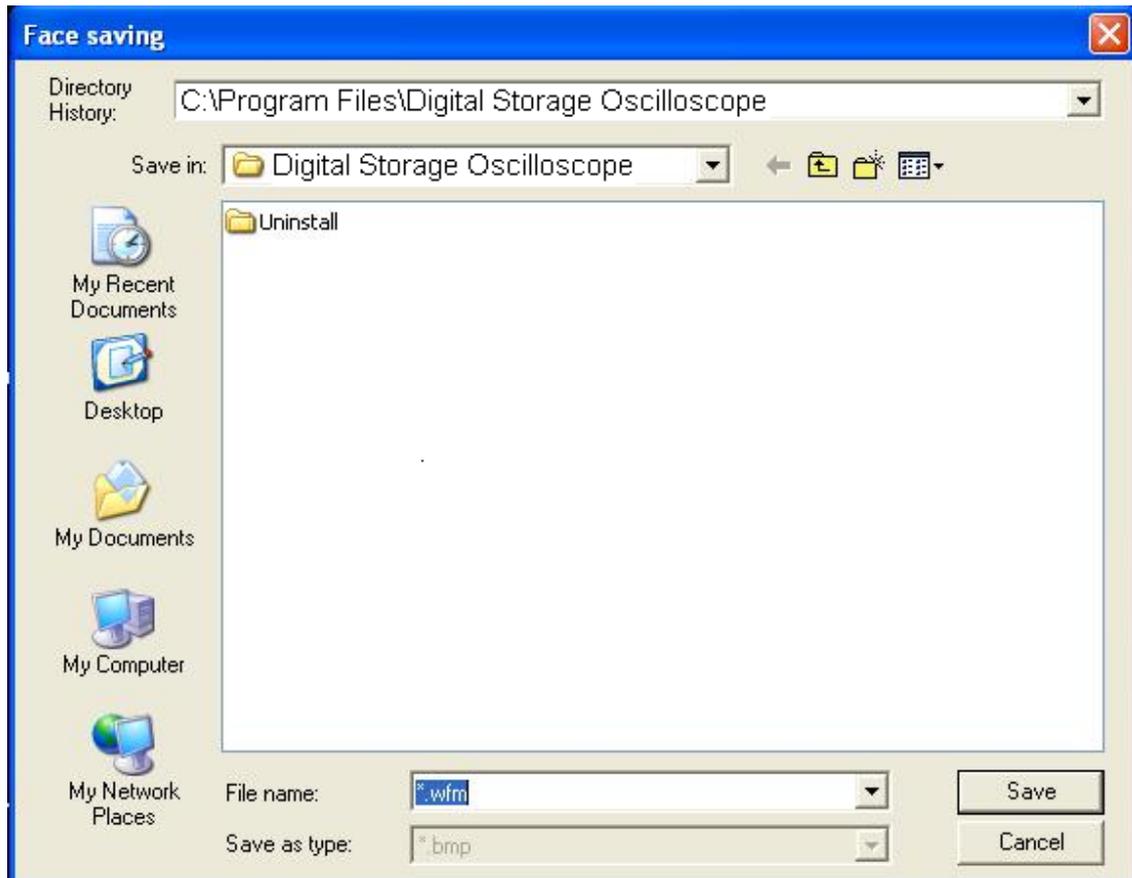


Picture 3-2 Interface Saving

3.4 Save Channel Waveform

Save oscilloscope's channel waveform into computer via principal computer under the following steps:

1. Select **System** menu, and select option **Save Waveform** in the pull-down options of system menu;
2. The software will pop out a dialogue box **Save Waveform**, as shown in picture 3-2;
3. After selecting save route and file name you need in the pop-up dialogue box, select key **Save(s)**, the interface will be saved into computer with fault save way: **.wfm**.

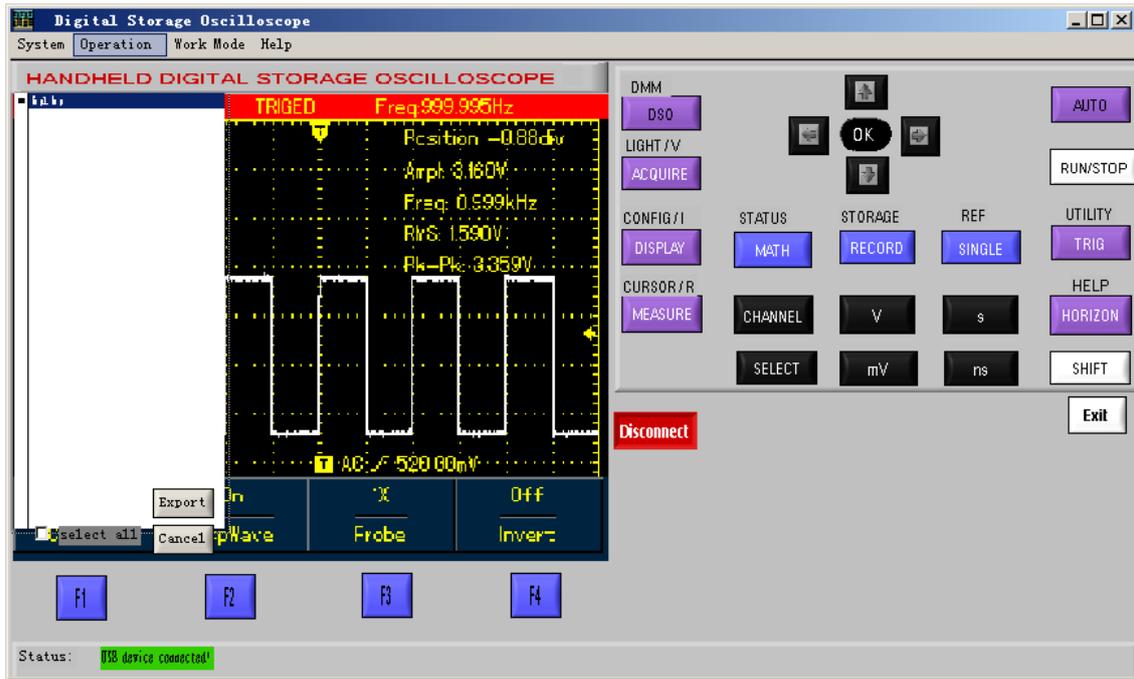


Picture 3-3 Save Waveform

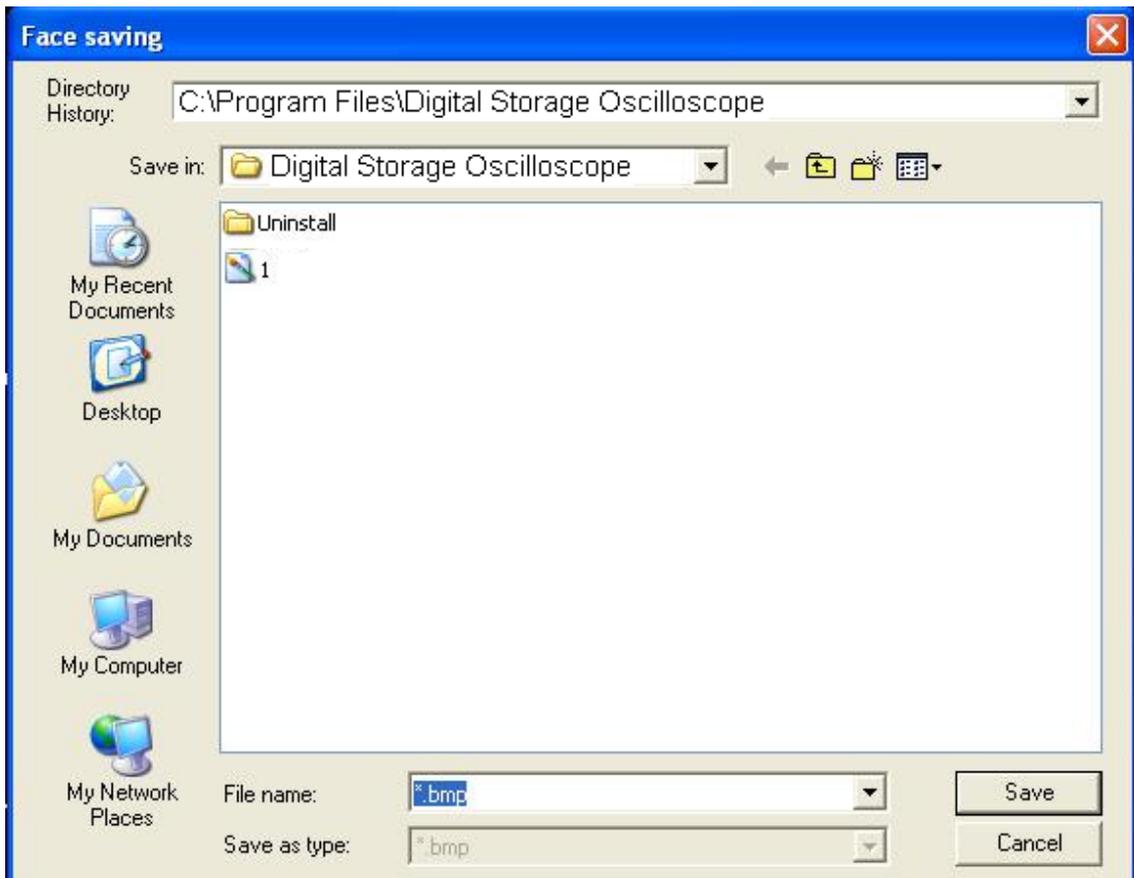
3.5 Export Interface Files Saved In Oscilloscope

Export oscilloscope's interface files to computer via principal computer under the following steps:

1. Select **operation** menu, and select option **Export Bitmap** in the pull-down options of system menu;
2. If no interface files in oscilloscope, software indicates: no bitmap file; if any, it will pop out an export bar Bitmap File, as shown in picture 3-4, select the option **Select All** to export all bitmap files saved in oscilloscope, then click **Export**;
3. select save route you need in the pop-up dialogue box File Export, as shown in picture 3-5, and select key **Done** to export bitmap files saved in oscilloscope to computer and be saved with filename Bmp*.bmp(* represents number 1-10).



Picture 3-4 “Bitmap File” Export Bar



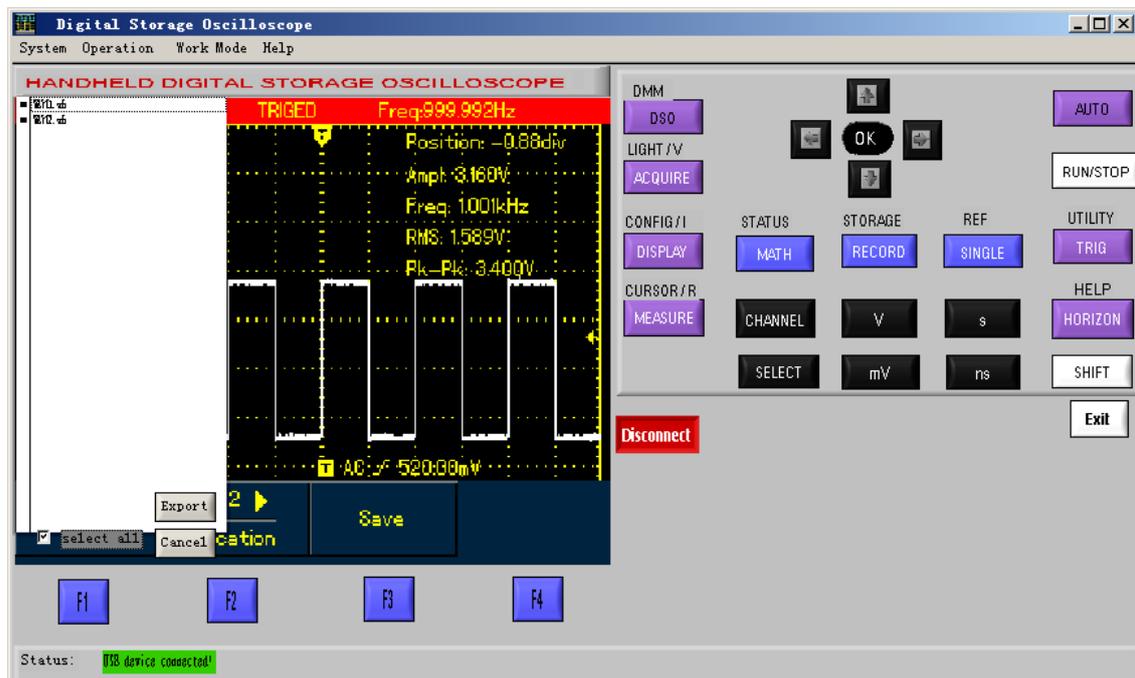
Picture3-5 Export Bitmap File

3.6 Export Waveform Files Saved In Oscilloscope

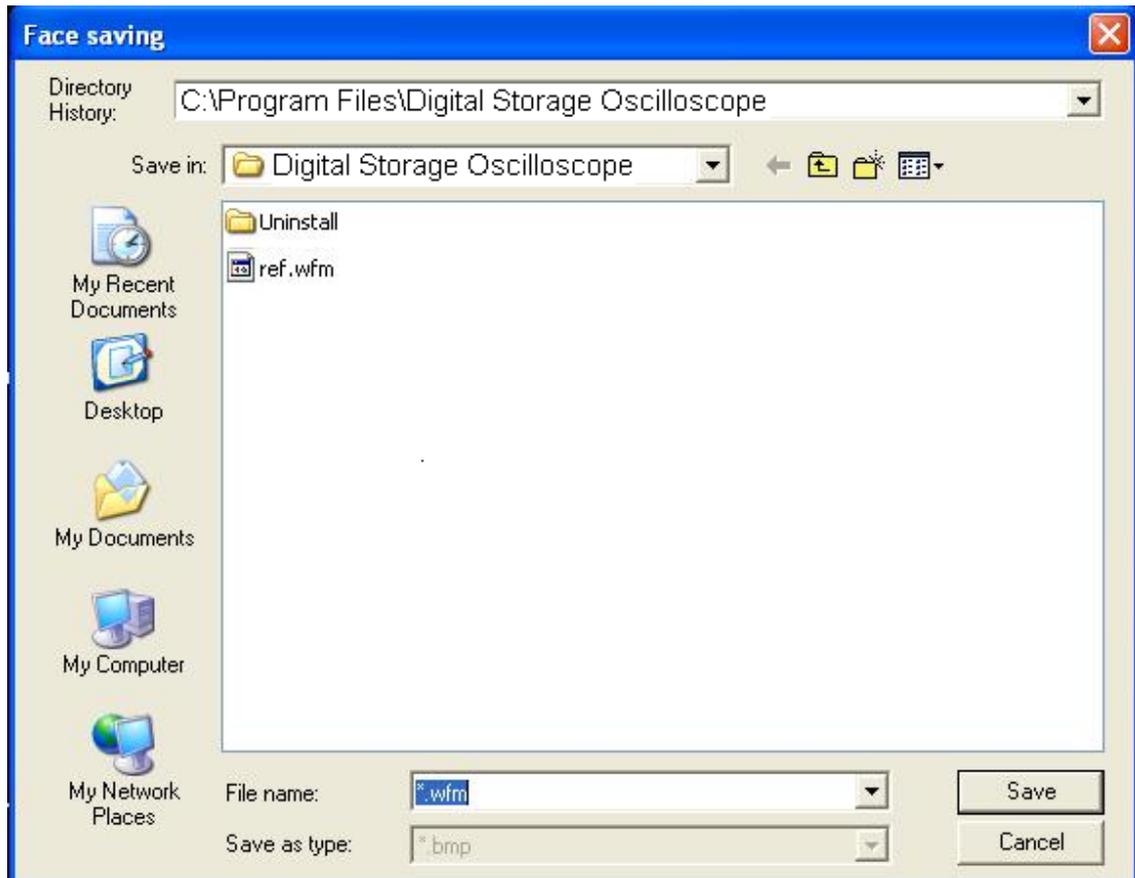
Export waveform files saved in oscilloscope to computer via principal computer under the following

steps:

1. Select **operation** menu, and select option **Export Waveform** in the pull-down options of system menu;
2. If no interface files in oscilloscope, software indicates: no waveform file; if any, it will pop out an export bar Waveform File, as shown in picture 3-6,select relevant file (Wave1.wfm-Wave20.wfm)based on the save location of waveform in oscilloscope. Select the option **Select All** to export all waveform files saved in oscilloscope, then click **Export**;
3. Select save route you need in the pop-up dialogue box File Export, as shown in picture 3-7, and select key **Done** to export bitmap files saved in oscilloscope to computer and be saved with filename Wave*.wfm (* represents number 1-20).



Picture 3-6 “Waveform File” Export Bar

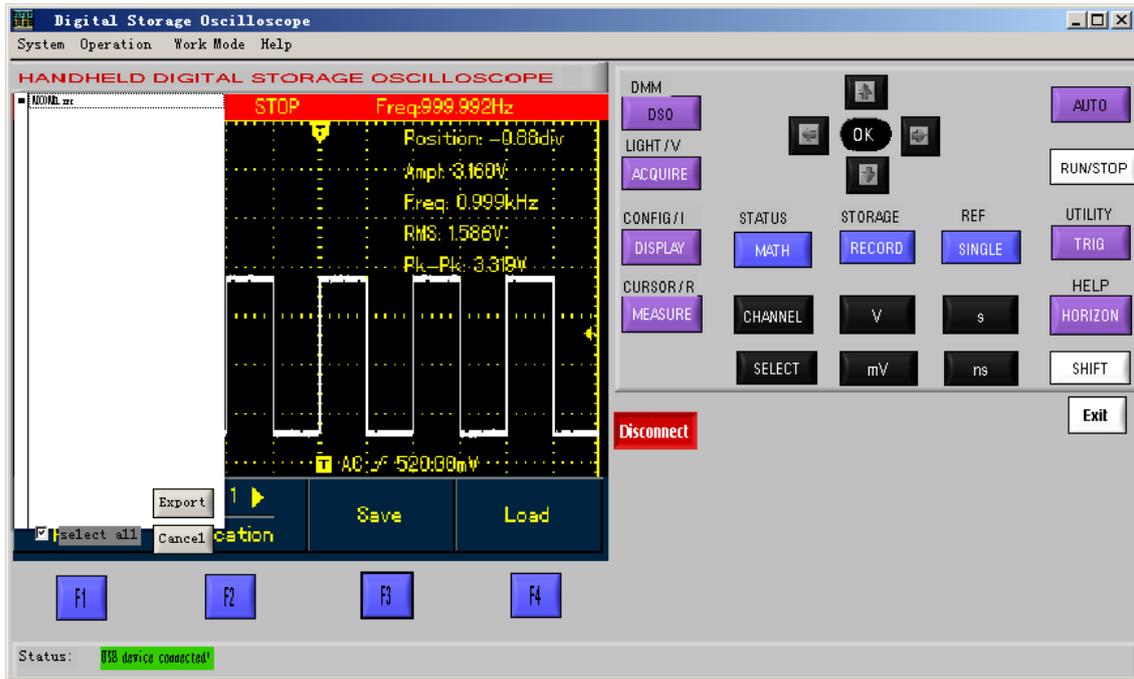


Picture 3-7 Export Waveform File

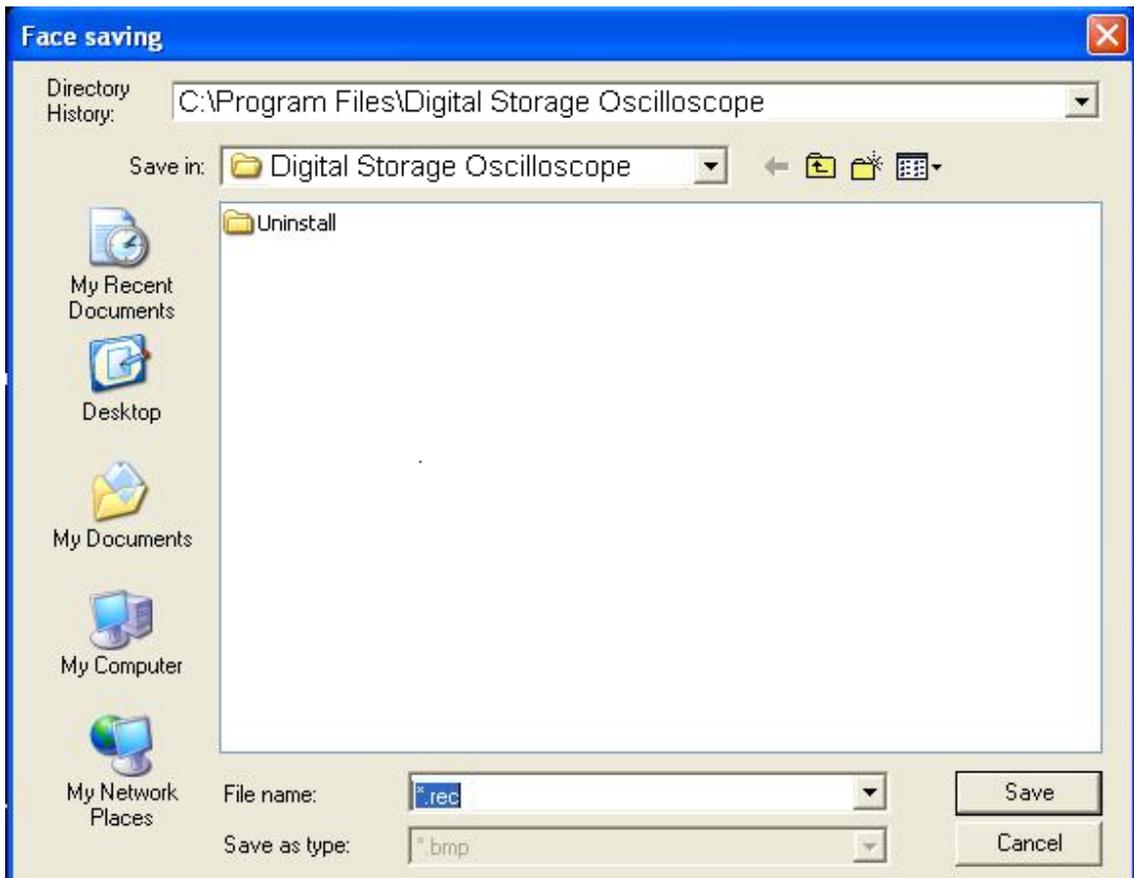
3.7 Export Recorded Waveform Files Saved In Oscilloscope

Export recorded waveform files saved in oscilloscope to computer via principal computer under the following steps:

1. Select **operation** menu, and select option **Export Recorded Waveform** in the pull-down options of system menu;
2. If no interface files in oscilloscope, software indicates: no recorded waveform file; if any, it will pop out an export bar Recorded Waveform File, as shown in picture 3-8, select relevant file (RECORD1.rec – RECORD5.rec) based on the save location (1-5) of waveform in oscilloscope. Select the option **Select All** to export all recorded waveform files saved in oscilloscope, then click **Export**;
3. Select save route you need in the pop-up dialogue box Export Recorded Waveform File, as shown in picture 3-9, and select key **Done** to export recorded waveform files saved in oscilloscope to computer and be saved with filename RECORD*.rec (* represents number 1-5).



Picture 3-8 “Recorded Waveform File” Export Bar



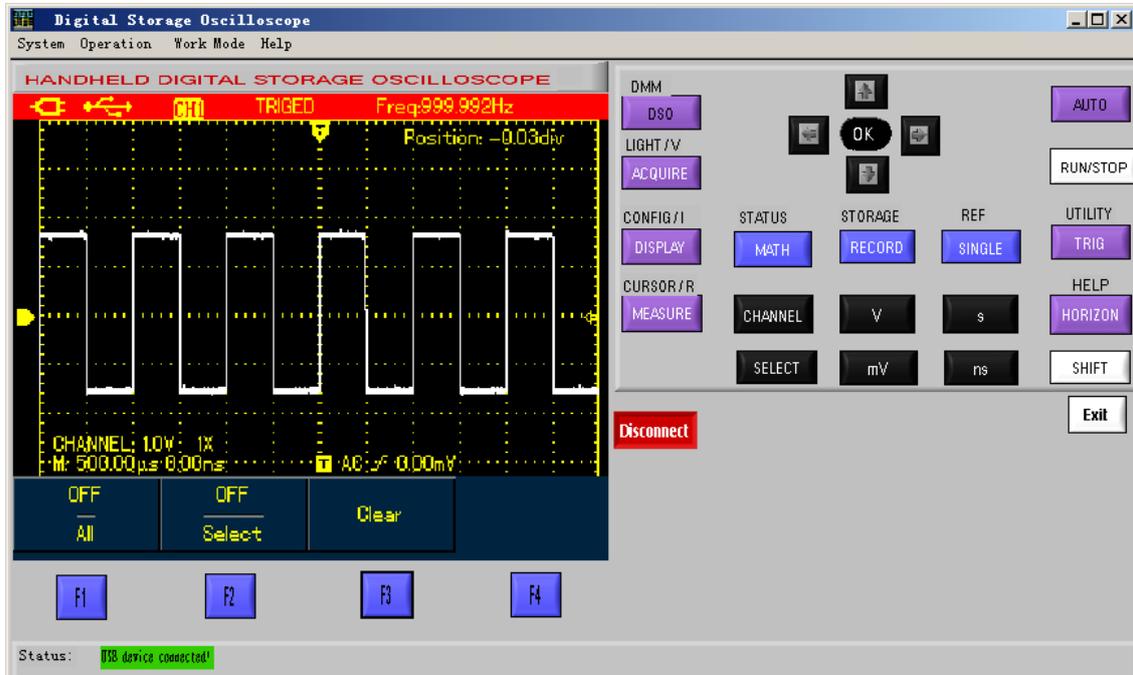
Picture 3-9 Export Recorded Waveform File

3.8 Real-Time Display of Oscilloscope Interface

After normal connection with principal computer software, the oscilloscope will display the real-time interface. If the software is under other working status, it is required to back to real-time

display interface under the following steps:

1. Select **operation** menu, and select option **Interface Display** in the pull-down options of system menu;
2. The software will display the real-time oscilloscope interface, as shown in picture 3-10, then you can update interface by using virtual keyboard to operate oscilloscope.



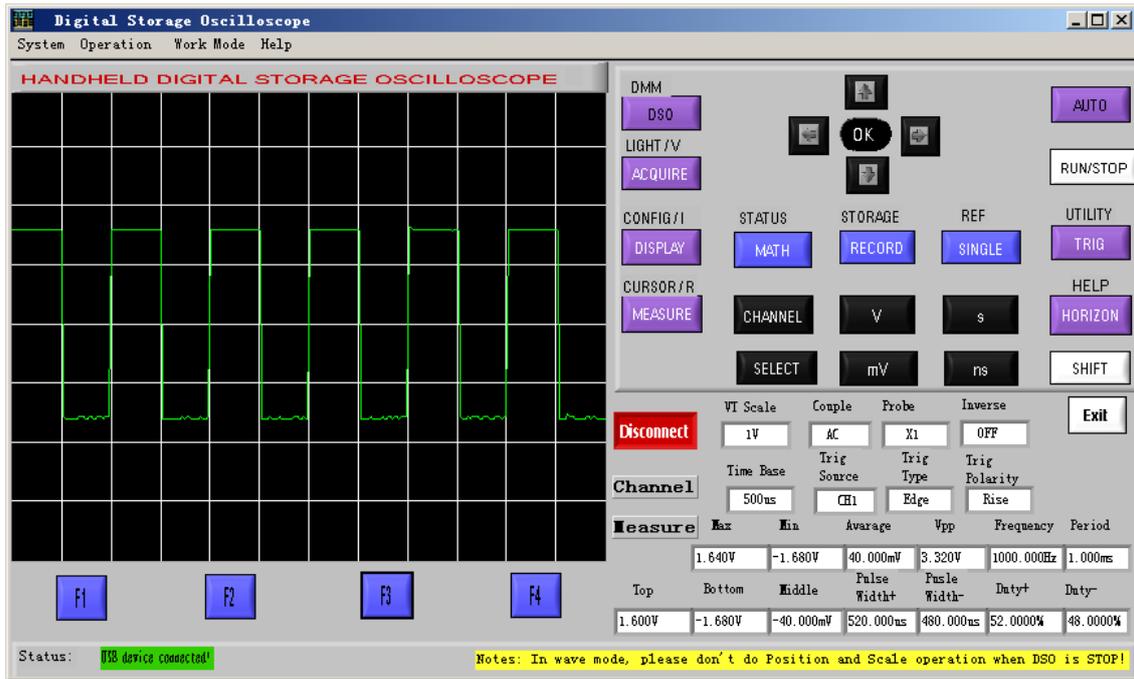
Picture 3-10 Interface Display Mode

3.9 Real-time Display of Channel Waveform

After normal connection with principal computer software, if need to observe channel waveform only, you can enter Waveform Display mode with the relevant under the following steps:

1. Select **operation** menu, and select option **Waveform Display** in the pull-down options of system menu;
2. The real-time oscilloscope channel waveform displayed by software is as shown in picture 3-11. Through the channel status display box below virtual keyboard, we can observe the present set state of oscilloscope, including: vertical gear, coupling types, probe multiple, opposite phase, scanning time base, trigger source, trigger types and trigger polarity.

You can know clearly present state of signal by parameter measurement display.



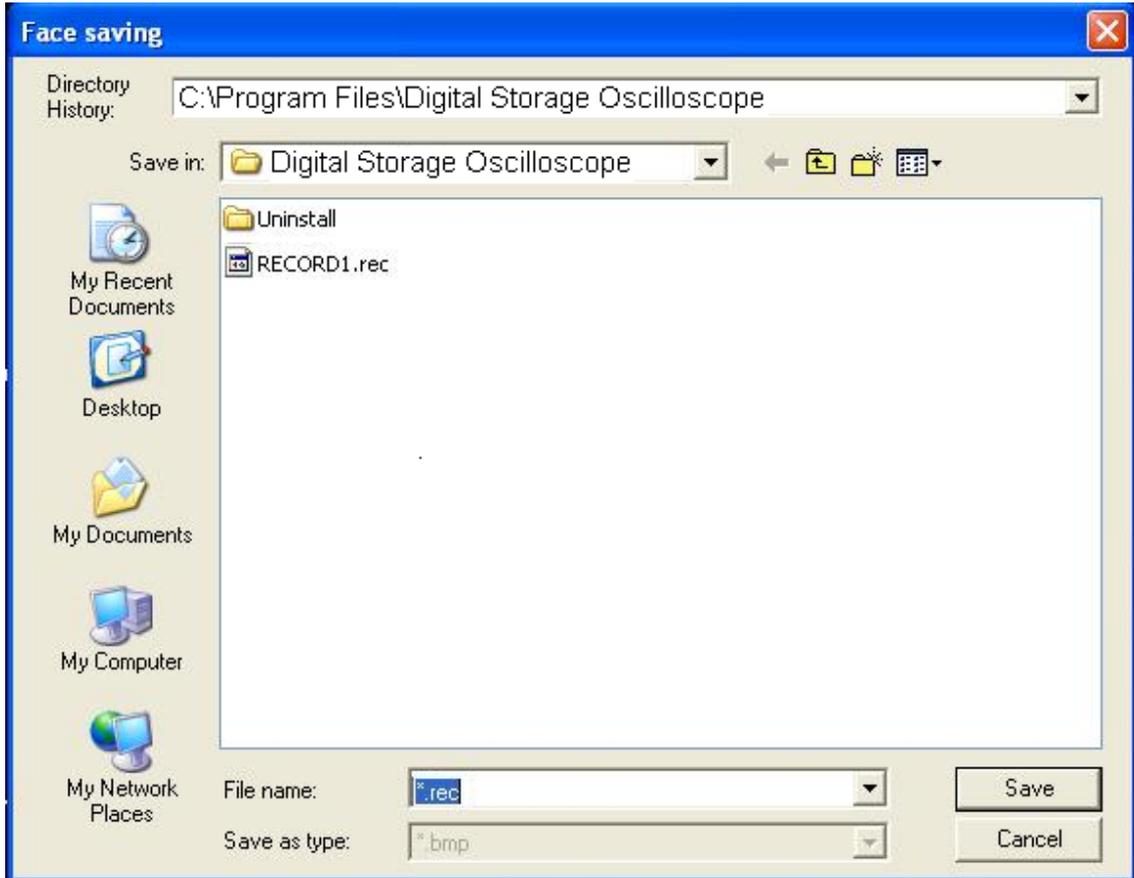
Picture 3-11 Picture Interface Display Mode

3.10 Display and Analysis of Recorded Waveform

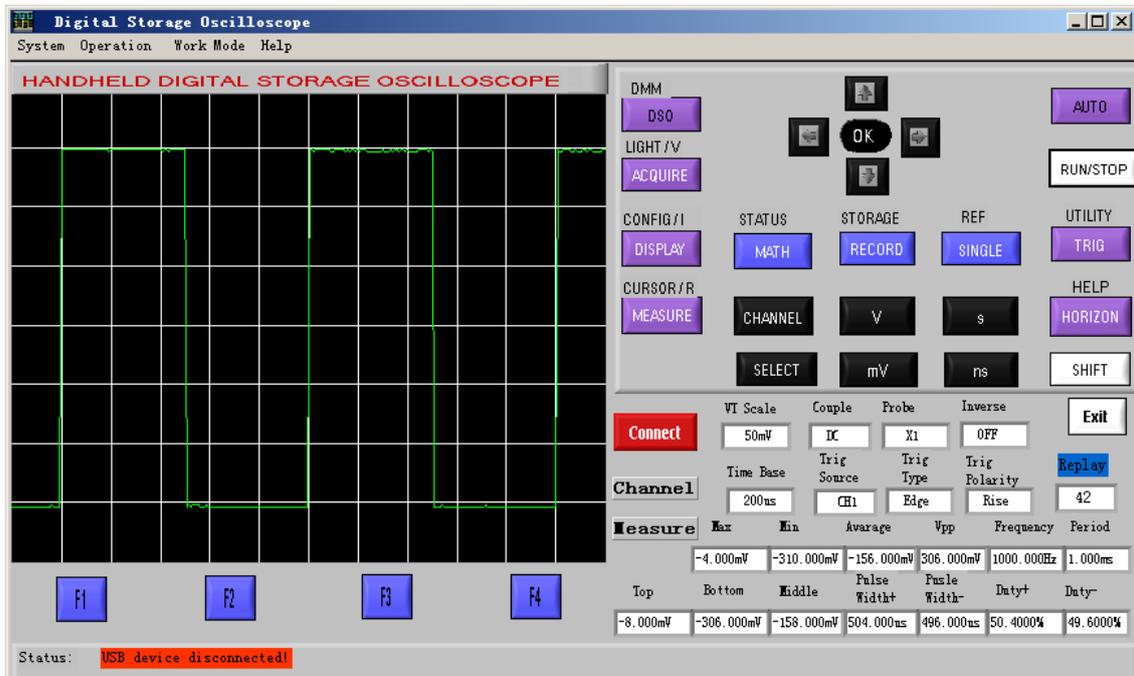
Display and analyze recorded waveform files saved in computer via principal computer under the following steps:

1. Select **operation** menu and select option **Recorded Waveform Display** in the pull-down options of working mode menu;
2. Select call-back route in the pop-up dialogue box **Read Recorded Waveform** by key **Select**, the Recorded Waveform Files saved in computer will be called back to principal computer software and the recorded waveform played back automatically. Click the key **RUN/STOP** in principal computer to realize pause of playback, and single step playback of recorded waveform by selecting left/right arrow key.

Then, through the channel status display box below virtual keyboard, we can observe the present set state of oscilloscope, including: vertical gear, coupling types, probe multiple, opposite phase, scanning time base, trigger source, trigger types and trigger polarity.



Picture 3-12 “Read Recorded Waveform” Dialogue Box



Picture 3-13 Playback of Recorded Waveform

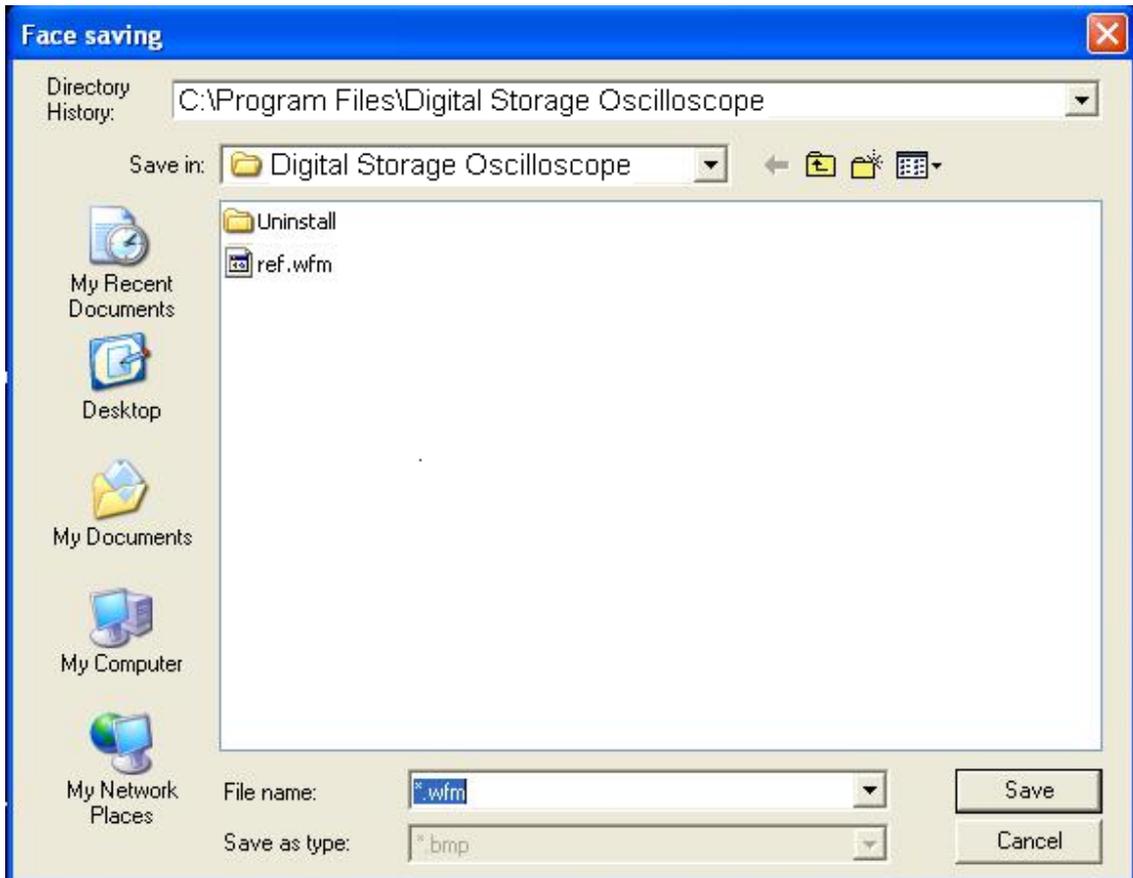
3.11 Display and Analysis of Waveform

Display and analyze waveform files saved in computer via principal computer under the following

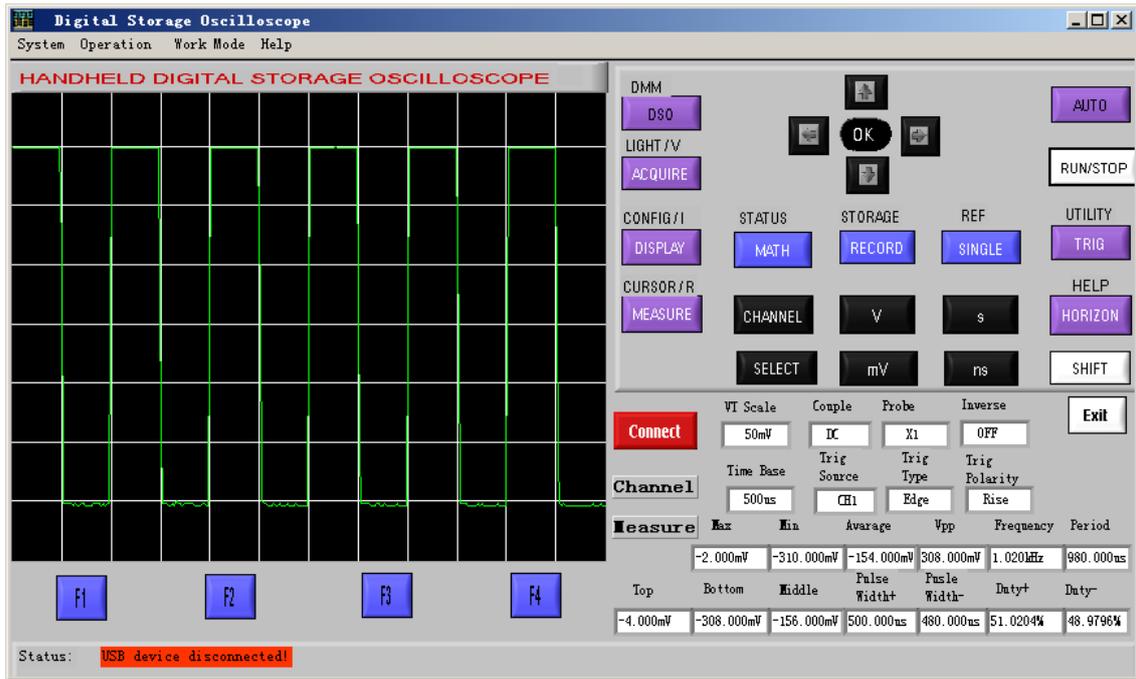
steps:

1. Select **operation** menu and select option **Waveform Display** in the pull-down options of working mode menu;
2. Select call-back route in the pop-up dialogue box **Read Waveform** by key **Select**, the Waveform Files saved in computer will be called back to principal computer software. Click **V/mV**, **s/ns** and **up/down**, **left/right** arrow keys in the principal computer software to change waveform's amplitude gear, time base, vertical position and horizontal position etc.

Then, through the channel status display box below virtual keyboard, we can observe the present set state of oscilloscope, including: vertical gear, coupling types, probe multiple, opposite phase, scanning time base, trigger source, trigger types and trigger polarity as well as parameter value of the recorded waveform.



Picture 3-14 "Read Waveform" Dialogue Box



Picture 3-15 Waveform Analysis

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