Digital Storage Oscilloscope

Communication&Control Software

User Manual and Installation Instructions

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Chapter 1   Installation of the oscilloscope communication and control software

1.1 Hardware requirements

Equipment requirements	Minimal.
Oscilloscope	UTD2025_3025 Series Digital Storage Oscilloscope.
Computer	Windows 2000/XP/Vista, 128 MB RAM, 16x CD-ROM or better (Vista users please refer to its individual hardware requirements), SVGA display or better.
Connection cable	USB A-B cable or RJ45 net cable or GPIB communication cable.

1.2 Installing the software

Your UTD2025_3025 Series Digital Storage Oscilloscope ("Oscilloscope") comes with an oscilloscope communication and control software (contained in the CD-Rom supplied with your oscilloscope). Alternatively, you can download the software online :

File name : UTD2025_3025 oscilloscope communication and control software.

Installation :

Step one :   Insert the CD-rom supplied with your oscilloscope into the CD-Rom drive of the computer. Wait for the system to read and find the oscilloscope communication and control software contents (Fig. 1-1).
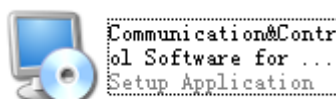
Fig 1-1

Note :   1. The installation pack downloaded online must be unzipped before application.
2. The software supports Windows 2000, Windows XP and Vista operating systems. On Vista only USB2.0 communication protocol is supported.

Step two :   Double left click the mouse to run the oscilloscope communication and control software installation as shown in Fig 1-1.
The installation wizard for the oscilloscope communication and control software will pop up, as shown in Fig. 1-2.

Fig 1-2

Step three : Read the prompt in Fig 1-2 then click the [NEXT (N)] button to enter the next step, as shown in Fig 1-3.
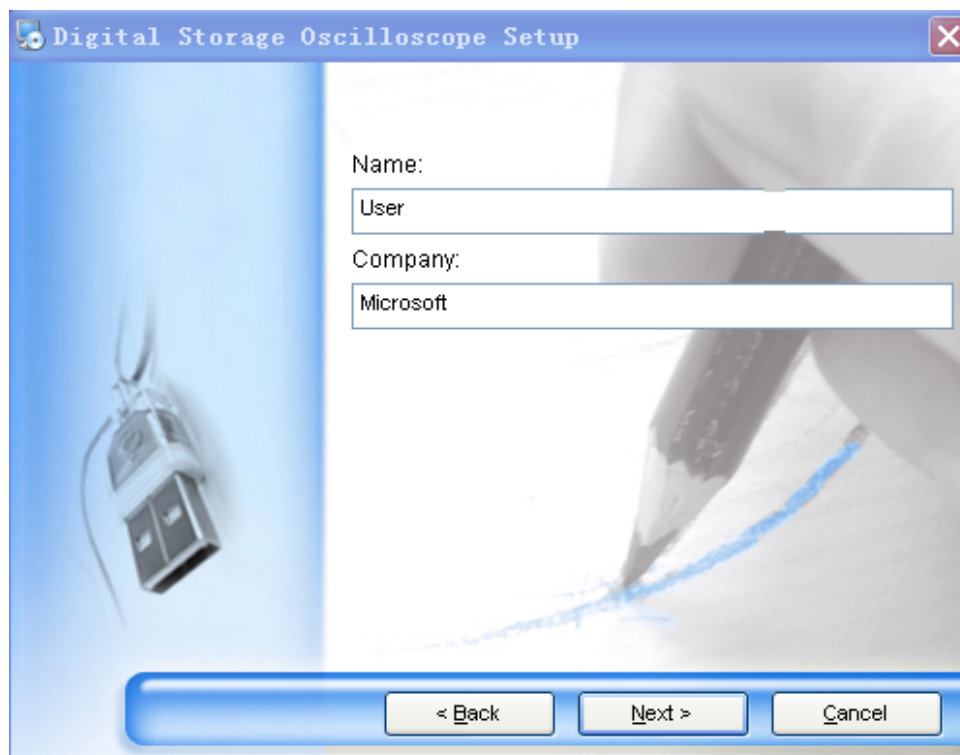
Fig 1-3

Step four : In Fig 1-3, enter your user name and company name, then click the [NEXT (N)] button to enter the next step, as shown in Fig 1-4.

Communication & Control Software for UTD2025_3025 Series Oscilloscopes User Manual
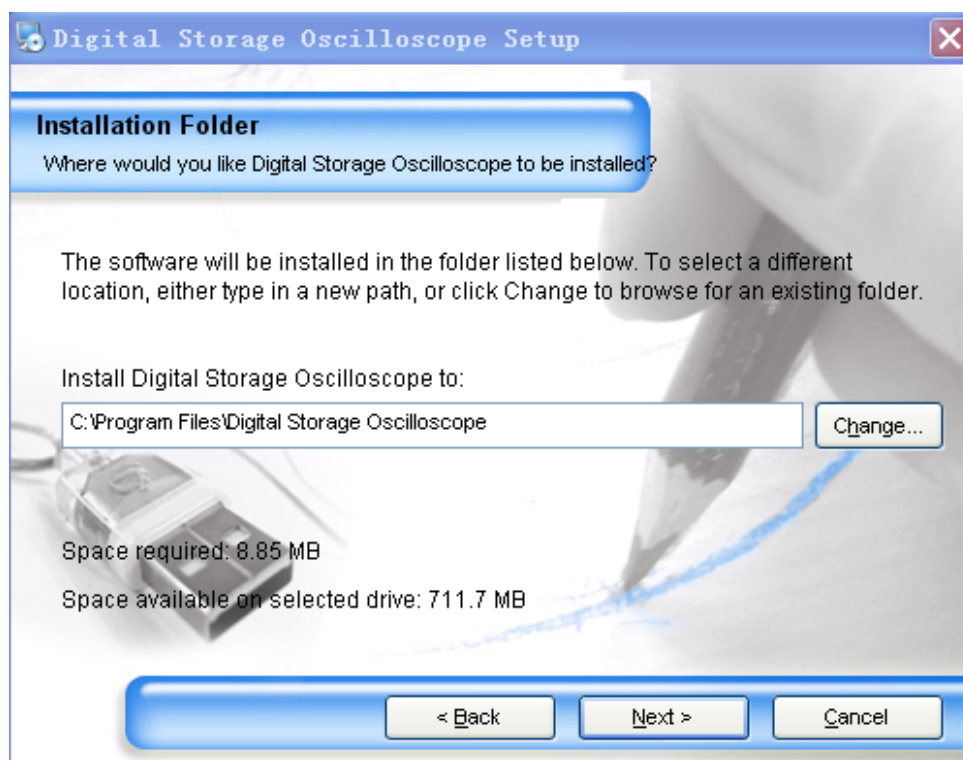
Fig 1-4

Step five : In Fig 1-4, click the [CHANGE (<u>H</u>) …] button to specify the installation path of the software, then click [NEXT (<u>N</u>)]. You can also click [NEXT (<u>N</u>)] directly to use the default path. Enter the screen shown in Fig 1-5.
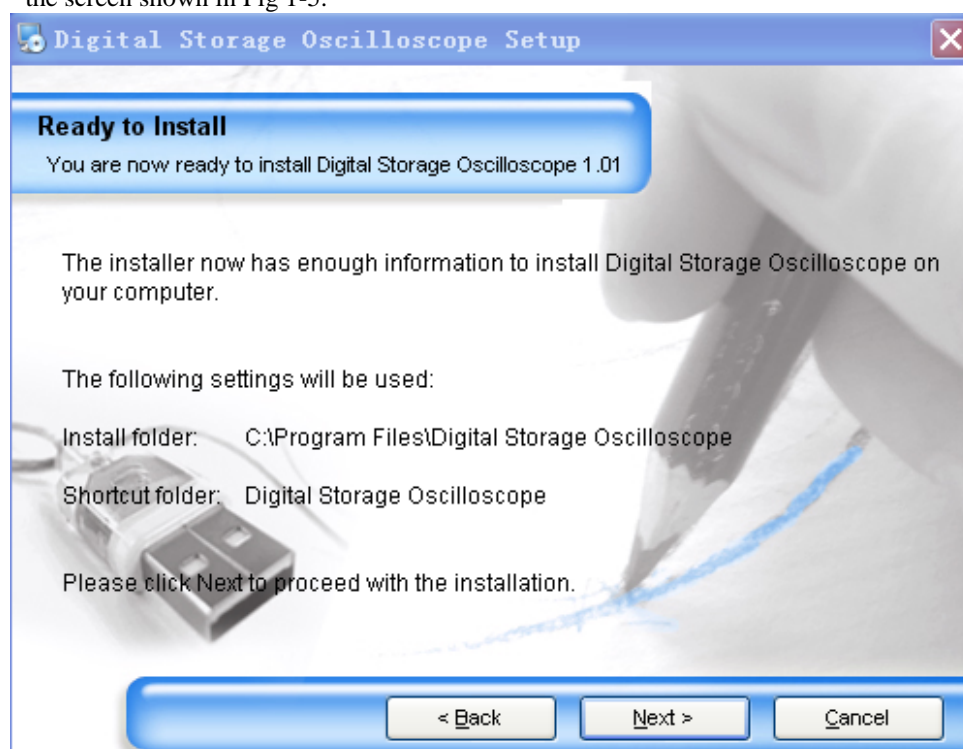
Fig 1-5

Step six : In Fig 1-5, after confirming the message is correct, click [NEXT (<u>N</u>)] to enter the front page for automatic installation, as shown in Fig 1-6.

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Fig 1-6

Step seven : When automatic installation is complete and the box shown in Fig 1-7 pops up, click the [FINISH (F)] button. Your oscilloscope communication and control software is now successfully installed on your computer and ready for use.
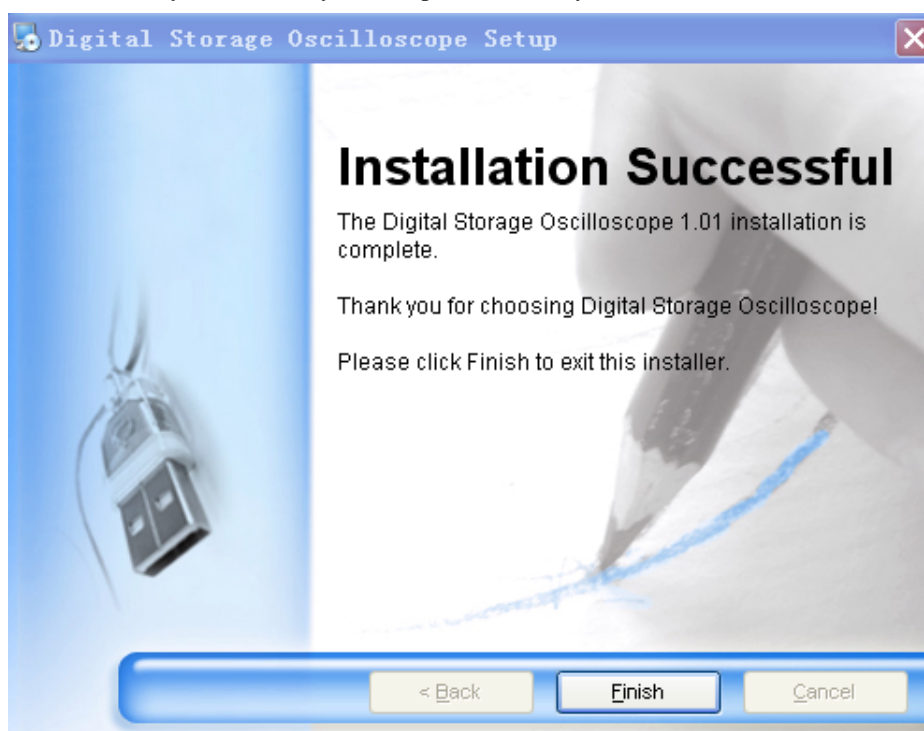
Fig 1-7

To return to the previous installation guide interface, click [BACK (B)] on any installation guide page.
To stop installation, press [CANCEL (C)] on any installation guide page.

1.3 Running the software

When installation of the oscilloscope communication and control software is complete, you can run it on your computer in two ways.

1. When installation of the oscilloscope communication and control software is complete, an short-cut icon is automatically created on the computer desktop, as shown in Fig 1-8. To run the software, simply double left click the icon in Fig 1-8 with your mouse.

Fig 1-8

2. Alternatively, you can run the software by going through START → Programme → Digital storage oscilloscope → DSO, as shown in Fig 1-9.

Fig 1-9

Communication & Control Software for UTD2025_3025 Series Oscilloscopes User Manual
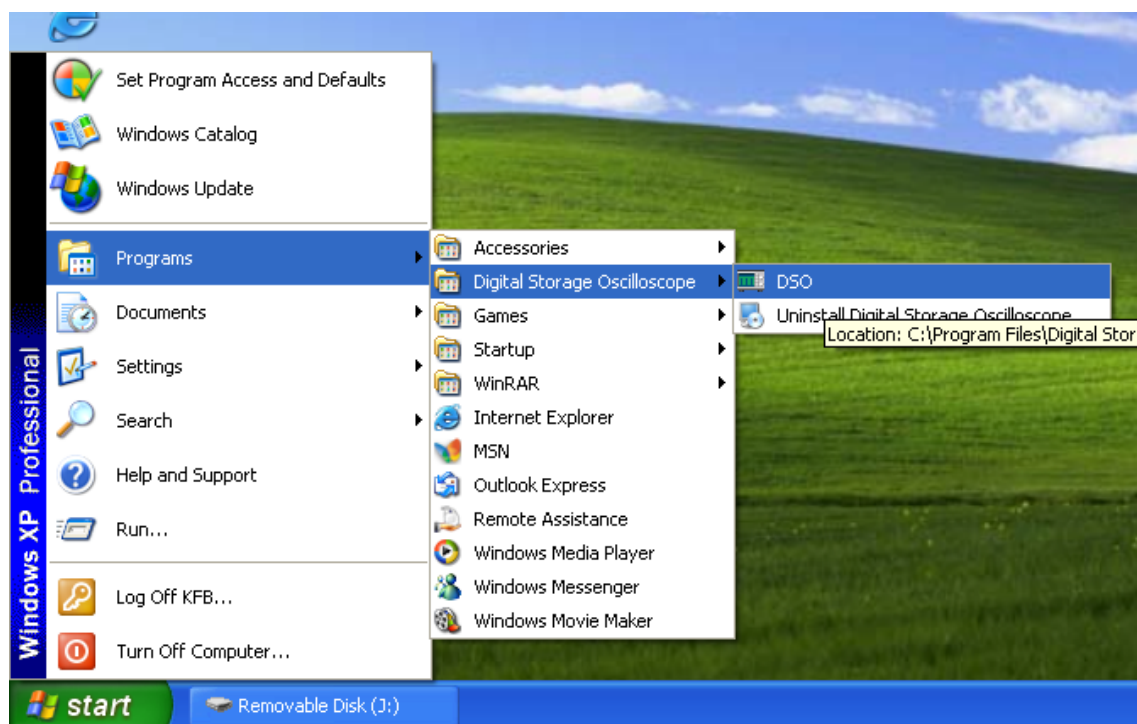
1.4   Installing the USB driver

If you are using the oscilloscope's USB device port for software communication and control, the USB driver must be installed after installation of the oscilloscope communication and control software is complete. Follow the steps below :

1. There is a USB device port on the rear panel of your UTD2025_3025 Series Digital Storage Oscilloscope. With the supplied USB A-B cable, you can connect the USB device port to the USB Host port of the computer and obtain power supply for the oscilloscope.
2. After checking that connection and power supply are normal, power on the digital storage oscilloscope. When the operation status screen appears, a prompt will appear at the right bottom corner to indicate "New hardware DSO detected", as shown in Fig 1-10.

Fig 1-10

Next, an icon will be created for the "New hardware DSO detected", as shown in Fig 1-11.

Fig 1-11

Then a "hardware update wizard" dialog box will pop up on the desktop, as shown in Fig 1-12.
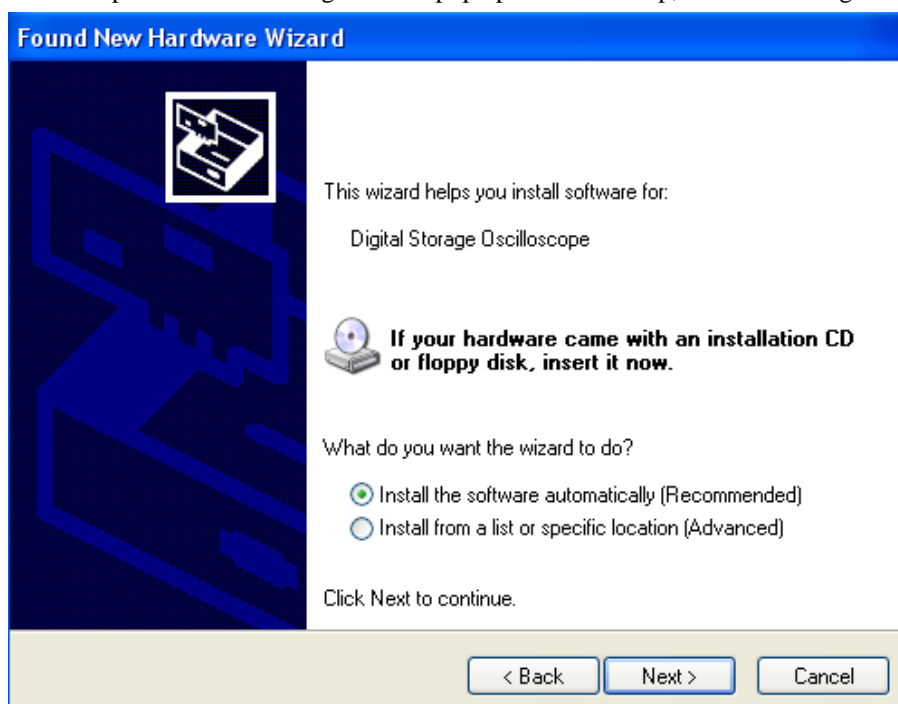
Fig 1-12

3.   In the new hardware wizard dialog box in Fig 1-12, select the "automatic software installation (recommended) (I) option, then click [NEXT (N)] to enter the automatic driver search and installation page, as shown in Fig 1-13.
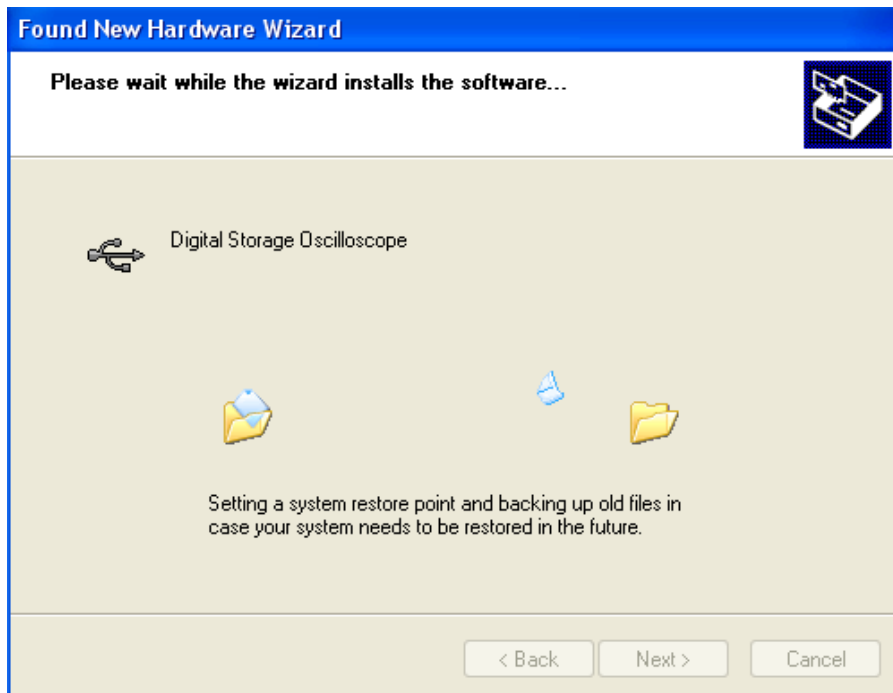
Fig 1-13

4.   As shown in Fig 1-13, the hardware installation wizard of your digital storage oscilloscope begins automatic searching and installing the USB driver for the oscilloscope communication and control software. When installation is complete the dialog box shown in Fig 1-14 pops up.

Fig 1-14

Communication & Control Software for UTD2025_3025 Series Oscilloscopes User Manual
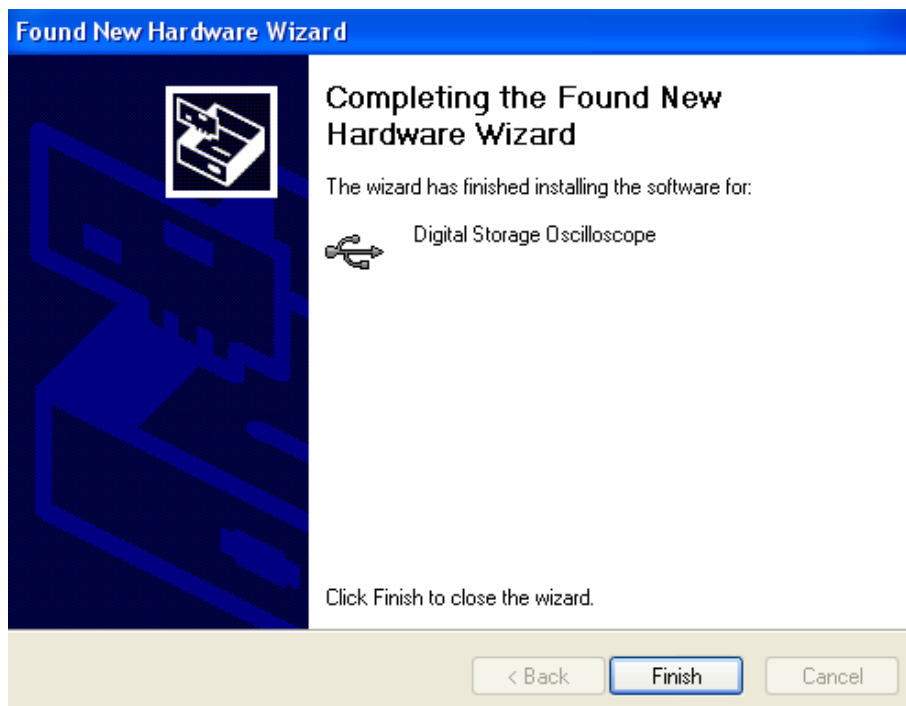
5.   In Fig 1-14, click the [FINISH (F)] button. Your USB driver is now installed, and instant communication and control are enabled between the oscilloscope and the software. Please read "3.1 USB Interface Controls" in "Chapter 3 : Operation guide for the oscilloscope communication and control software" of this booklet prior to operation.

Chapter 2   Getting to know your oscilloscope communication and control software

2.1   The control panel

After the oscilloscope communication and control software is activated, a display panel similar to the digital storage oscilloscope operation interface will pop up. This is the virtual oscilloscope control panel. When transmitting data, you can observe the current waveform displayed by the oscilloscope on the virtual control panel. This interface also features menus, controls and knobs for accessing waveform and channel parameters (please disable the "data transmission" function before using the menus to access information). Please see below for detailed operation instructions.

Fig 2-1

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2.2 Main menu

Fig 2-1 shows four menus under the main menu on the top left corner : document, function, waveform refresh and help. Their operation instructions are as follows :
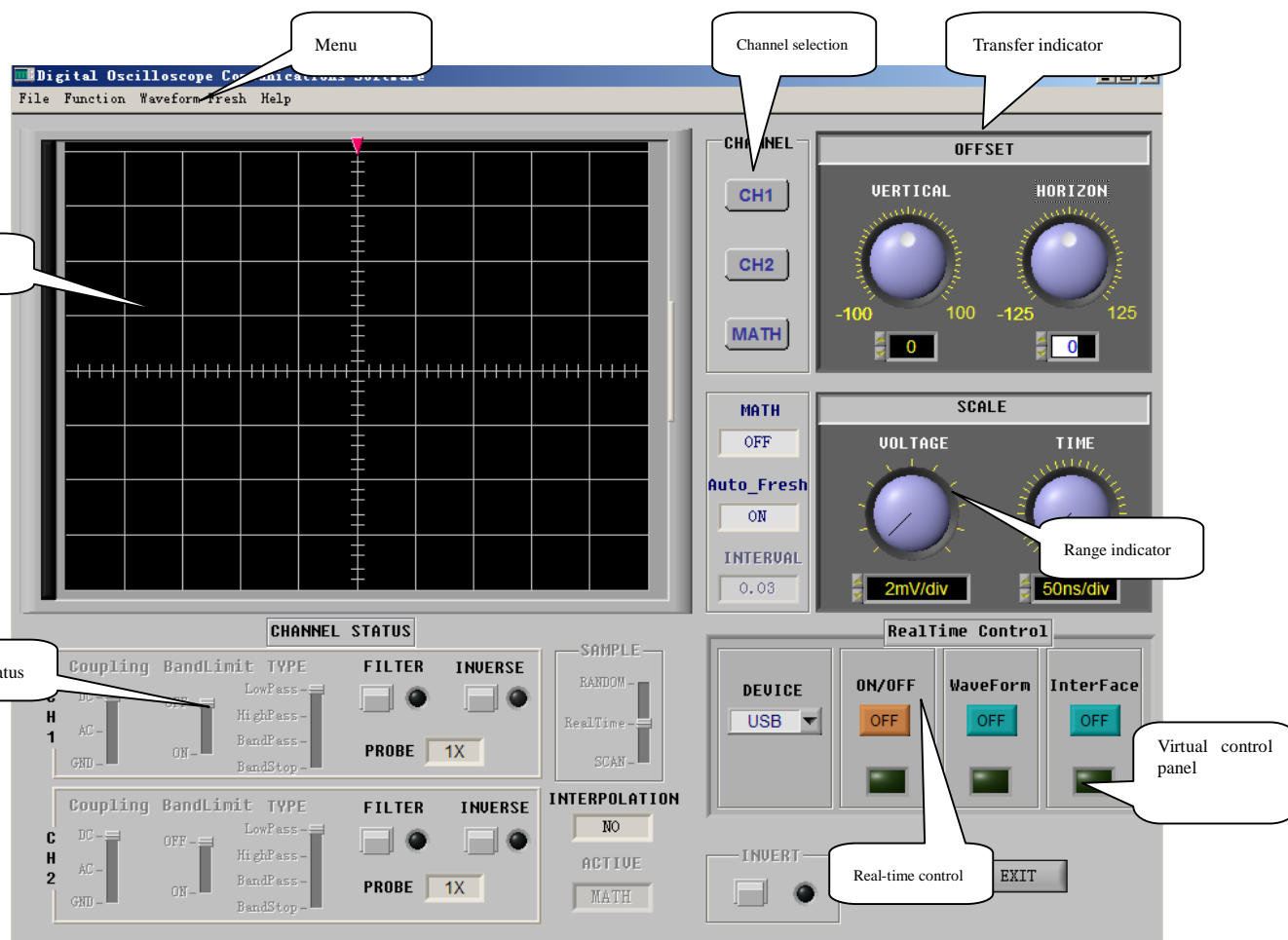
1. Document

Load : This means saving the oscilloscope communication and control software to the computer hard disk or other storage media, or save it in a waveform file on any mobile storage media by using the long save function of the oscilloscope save menu, and then open the saved waveform on the virtual display panel with the "Load" feature.

Note : When storing a waveform from the digital storage oscilloscope to a mobile USB device, storage mode of the oscilloscope must be set to "long storage" to load the waveform onto the computer software. To set "long storage", use the STORAGE button on the front panel of the oscilloscope : STORAGE → Type : WAVEFORM → NEXT → Disk (USB) → Storage depth (Long storage).

Save : This means saving the waveform currently on the virtual display panel to a computer or other storage equipment. Select "Document" → "Save" and save it on the hard disk or mobile external hard disk in *.dat format. Assign any file name you like.

Record : Enable the "data transmission" function and select "Document" → "Record". A prompt box shown in Fig 2-2 will pop up on the virtual display panel and recording of the virtual display waveform begins. The recording prompt box shows the current waveform recording progress. To pause recording, simply click the "pause" button. To resume, click the "continue" button and recording will resume from the point where it was paused.

The dialog box in Fig 2-3 appears when you close the waveform recording function or recording has reached the maximum number of data screens. Click "YES" in Fig 2-3 to save it in *.dat format on the computer hard disk or other storage device. If you wish to abandon recording, press "NO" as shown in Fig 2-3. The waveform recording function can record up to 2000 screens of data.
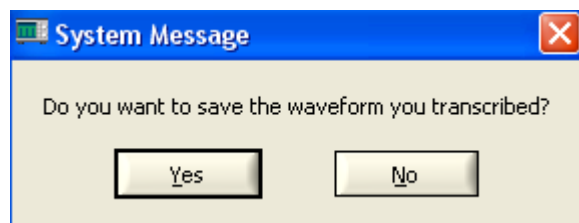

| Fig 2-2 | Fig 2-3 |

Playback : After stopping "data transmission", you can play back the waveform recorded and saved on the computer hard disk or other mobile storage media. Simply select "Document" → "Playback". You can play back a waveform in dynamic or static mode.

Dynamic playback : Select "Document" → "Playback" → "Dynamic playback". The waveform playback loading interface in Fig 2-4 will pop up. Specify the search area to locate the storage path of the recorded waveform, select the recorded waveform document you require, then click the [Load] button. The recorded waveform will be played continuously on the virtual display with the current playback progress.

Static playback : Select "Document" → "Playback" → "Static playback". The waveform playback loading interface in Fig 2-4 will pop up. Specify the search area to locate the storage path of the recorded waveform, select the recorded waveform document you require, then click the [Load] button. Fig 2-5 will now appear. By using the "manual playback" button, you can play back the recorded waveform screen by screen. Alternatively, enter the required screen number in the screen number display field and press "ENTER". Your specified screen will be displayed. To close the static playback function, click the "close static playback" button.
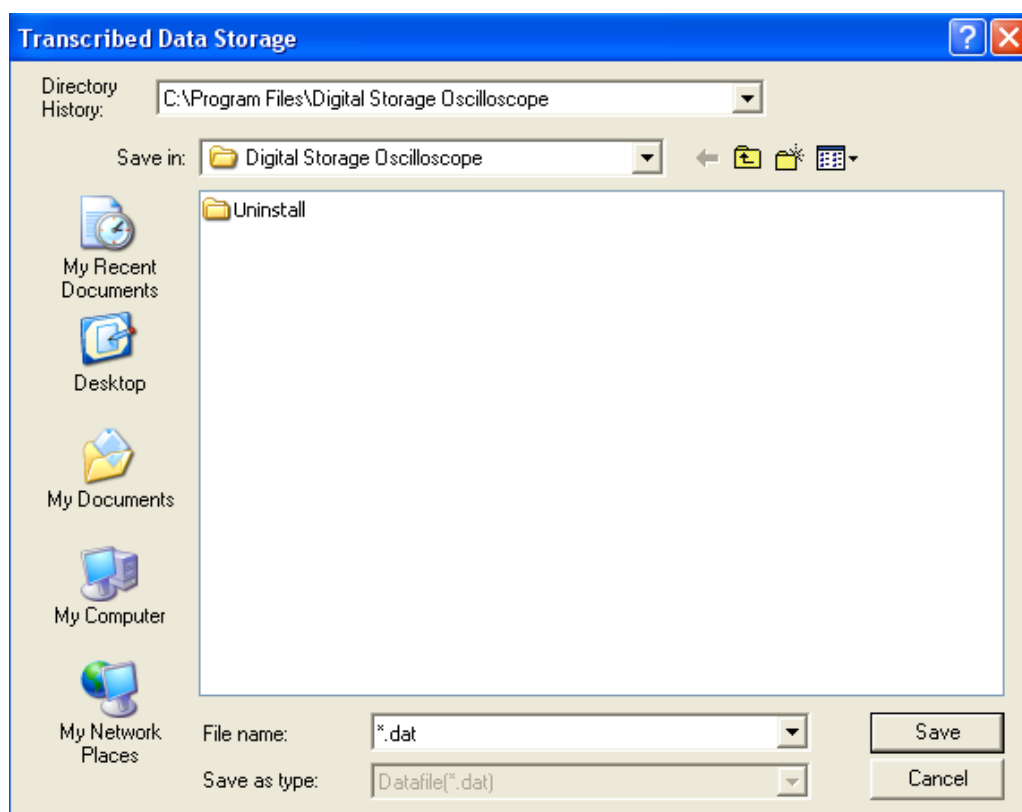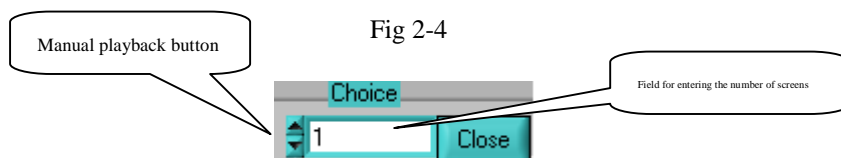
Fig 2-4

Fig 2-5

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Print preview : After completing the "data transmission" or "transmission interface" task, select "Document" → "print preview" to preview the waveform or interface (as the case may be) before printing.

Waveform : The preview waveform is the last screen of waveform data uploaded from the oscilloscope to the communication and control software after "data transmission" is completed, or the waveform on the computer hard disk or mobile USB device which is downloaded to the software with the "load" function.

Depending on the number of channels working at the time of data transmission, you can select the channel mode on the waveform preview interface with the selection function of the menu. When uploading with two channels, you can select "single channel" (CH1, CH2), "two channels" (CH1 & CH2, CH1 & Math, CH2 & Math) or "all" to preview the waveform. To quit the preview screen, click the exit button.

Interface : The preview interface is the last screen uploaded by the oscilloscope to the computer after the "transmission interface" is closed.

Printing : When "data transmission" is complete, select "Document" → "Print" to print the waveform or the interface.

Waveform : The printed waveform is the last screen of waveform data uploaded from the oscilloscope to the communication and control software after "data transmission" is completed, or the waveform on the computer hard disk or mobile USB device which is downloaded to the software with the "load" function.

Interface : The print interface is the last screen uploaded by the oscilloscope to the computer after the "transmission interface" is closed.

Exit : After the "data transmission" or "transmission interface" task is complete, select "Document" → "exit" to quit the oscilloscope communication and control software.

2. Functions

All sub-menus under the FUNCTION menu can be operated only when the "data transmission" or "transmission interface" task is complete.

◆ Mathematics functions : When this menu is clicked, a mathematics function dialog box will pop up to enable "mathematics selection" or "FFT mathematics", as shown in Fig 2-6.
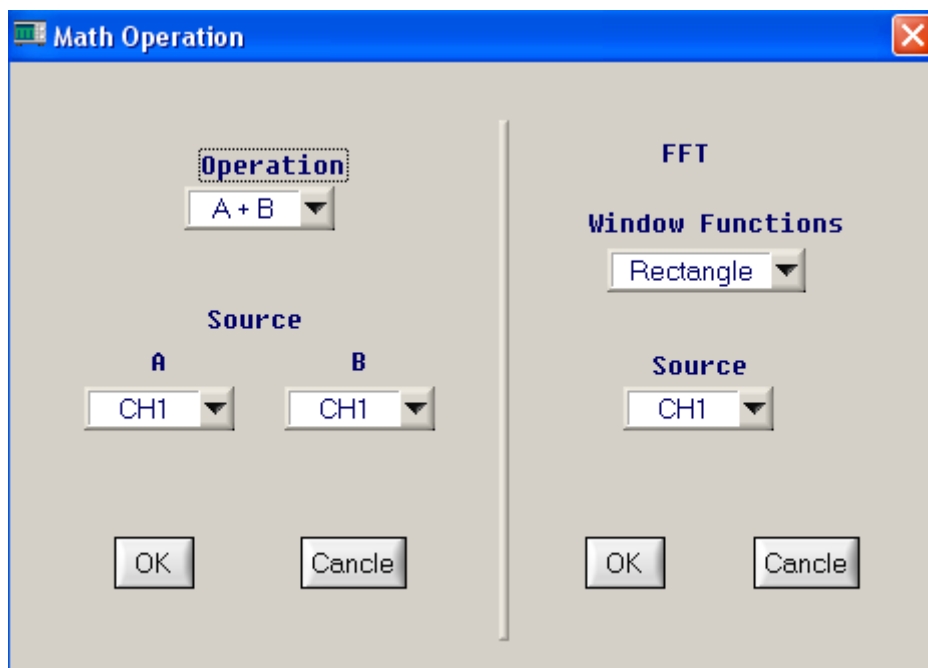
Fig 2-6

Mathematics selection :	You can select the mathematical relation between signal sources A and B. There are four mathematical relations : +, -, x, ÷.
Signal source selection :	There are A and B signal sources. You can set them up as CH1 or CH2 channel signals respectively.
FFT function selection :	You can switch between "Rectangle", "Hanning", "Hamming" and "Blackman".
FFT signal source selection :	You can select CH1 or CH2.

◆ **Remote control :** You can operate the digital storage oscilloscope on remote control with the communication and control software. In the remote control mode, the computer screen will display a virtual instrument control panel which is fundamentally the same as the oscilloscope control panel, as shown in Fig 2-7.
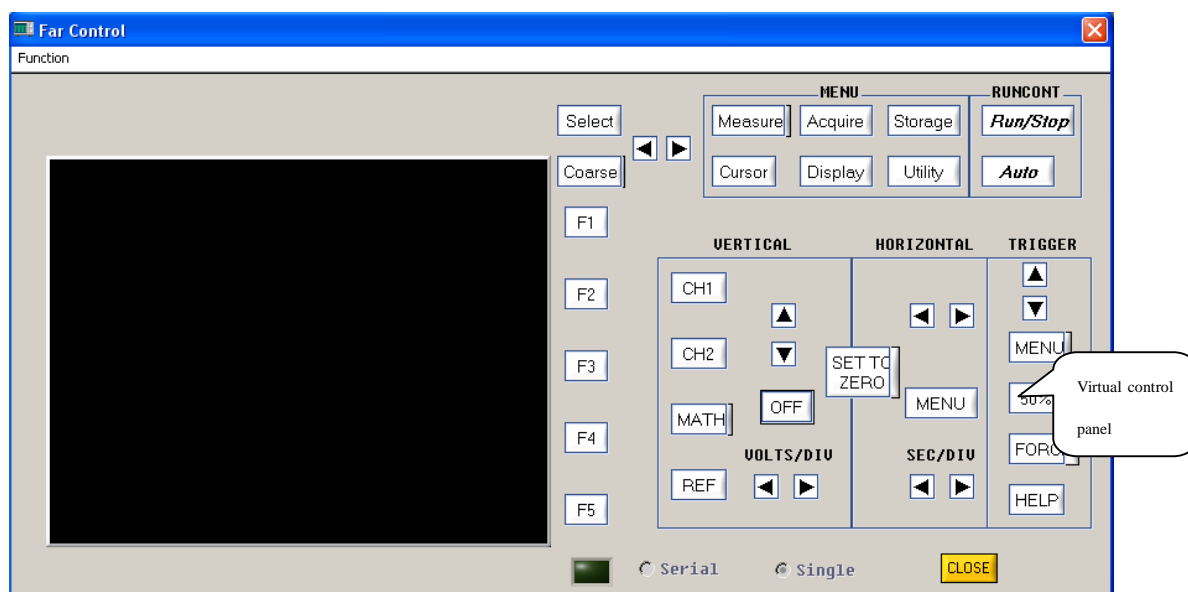
Fig 2-7

The sign of every button or knob on the virtual control panel is identical to that on the oscilloscope control panel. You can click the same buttons to operate the corresponding functions. To use the virtual control panel efficiently, you must be familiar with all function menus as well as the current status of the oscilloscope.

Note : You can only operate the digital storage oscilloscope with the virtual control panel. Waveform observation or screen display function is not available. You cannot operate the "remote control" and "transmission interface" tasks simultaneously.

◆ **Data table :** This shows the function relation between the voltage and time of the sampling point of the waveform currently on display, i.e. V=F(t).
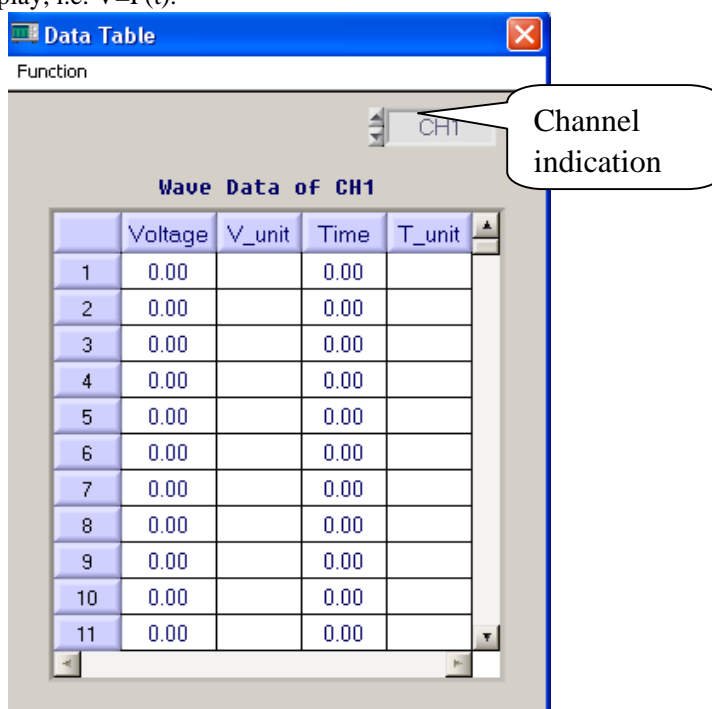

Fig 2-8

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When you click the "save data" option under "function selection" on this screen, a data table storage interface will pop up, as shown in Fig 2-9. Select the data saving path in the "save to" path selection field, enter the document name in the name field, then click to save. Current data in the table can be saved locally as an EXCEL file. To quit the data table test, click "exit".
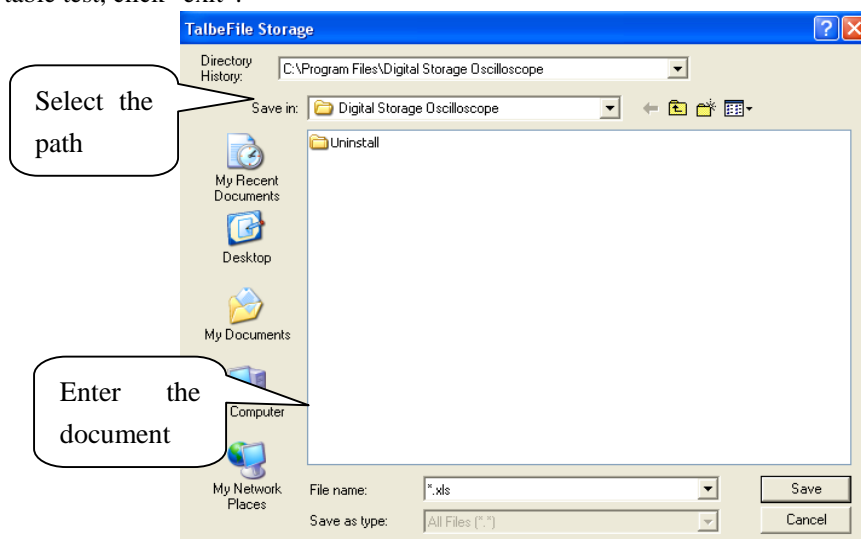

Fig 2-9

◆ **Parameter measurement :** This shows all the parameter values of the waveform currently on display in the selected channel.

Select channel : You can select CH1 or CH2.

Start/pause transmission : "Start transmission" means beginning to transmit data. "Pause transmission" means stopping transmission.
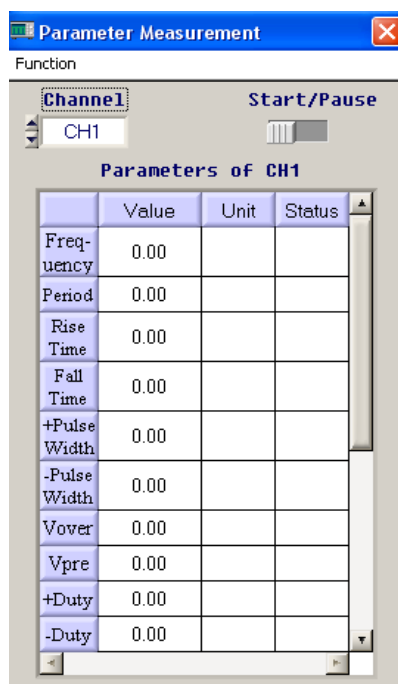

Fig 2-10

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3. Waveform refresh

Single refresh : This is a single waveform trigger. The acquired waveform display is stored on the display panel of the virtual control panel.

Waveform time interval setup : To set up the time interval for waveform refresh.

4. Help

This menu shows the version of the oscilloscope communication and control software.

2.3 Control panel instructions

Keys on the control panel of the oscilloscope communication and control software (Fig 2-1) function as follows :

Channel status : This indicated the current control status of the digital storage oscilloscope.

During "data transmission", this status bar indicates the current control status of the oscilloscope. This bar changes with the actual control status of the oscilloscope but you cannot control the current status of the oscilloscope with this bar.

CH1 : Coupling method (DC, AC, GND); Bandwidth suppression (On, Off); Filter type (low-pass, high-pass, band-pass, band-stop); Digital filter (when the indicator light comes on the function is ON, when the indicator light goes off the function is OFF); Reverse (when the indicator comes on the function is ON, when the indicator light goes off the function is OFF); Probe (1X, 10X, 100X, 1000X).

CH2 : Coupling method (DC, AC, GND); Bandwidth suppression (On, Off); Filter type (low-pass, high-pass, band-pass, band-stop); Digital filter (when the indicator light comes on the function is ON, when the indicator light goes off the function is OFF); Reverse (when the indicator light comes on the function is ON, when the indicator light goes off the function is OFF); Probe (1X, 10X, 100X, 1000X).

Sampling method : Random; Real-time; SCAN

Interpolation : Yes; No

Current activated channel : MATH; CH1; CH2

Channel selection : CH1; CH2; MATH

Bias adjustment : Vertical; Horizontal

Range adjustment : Voltage range; Time base range

Real-time Control : Equipment selection (USB, LAN, GPIB); ON/OFF (when the indicator light comes on the function is ON, when the indicator light goes off the function is OFF); Data transmission (when the indicator light comes on the function is ON, when the indicator light goes off the function is OFF); Transmission interface (when the indicator light comes on the function is ON, when the indicator light goes off the function is OFF).

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Reverse mathematics function : Indicator on means reverse mathematics function is in process. Indicator off means reverse mathematics function is not in process.

Mathematics function : Select mathematics functions with the function menu in the menu bar.

Auto Refresh : Set up the refresh time interval with the waveform refresh menu in the menu bar.

Refresh time : Set up refresh time while performing auto refresh.

2.4   Transmission interface and explanatory notes

To select USB or LAN to control communication, click the "transmission interface" button on the virtual control panel of the communication and control software to enter the "transmission interface" operation screen. Here, you can enable remote interface transmission as shown in Fig 2-11. The virtual display panel shows the waveform and interface of the oscilloscope. The virtual control panel is a virtual operation panel of your digital storage oscilloscope. You can control and operate the unit from here.
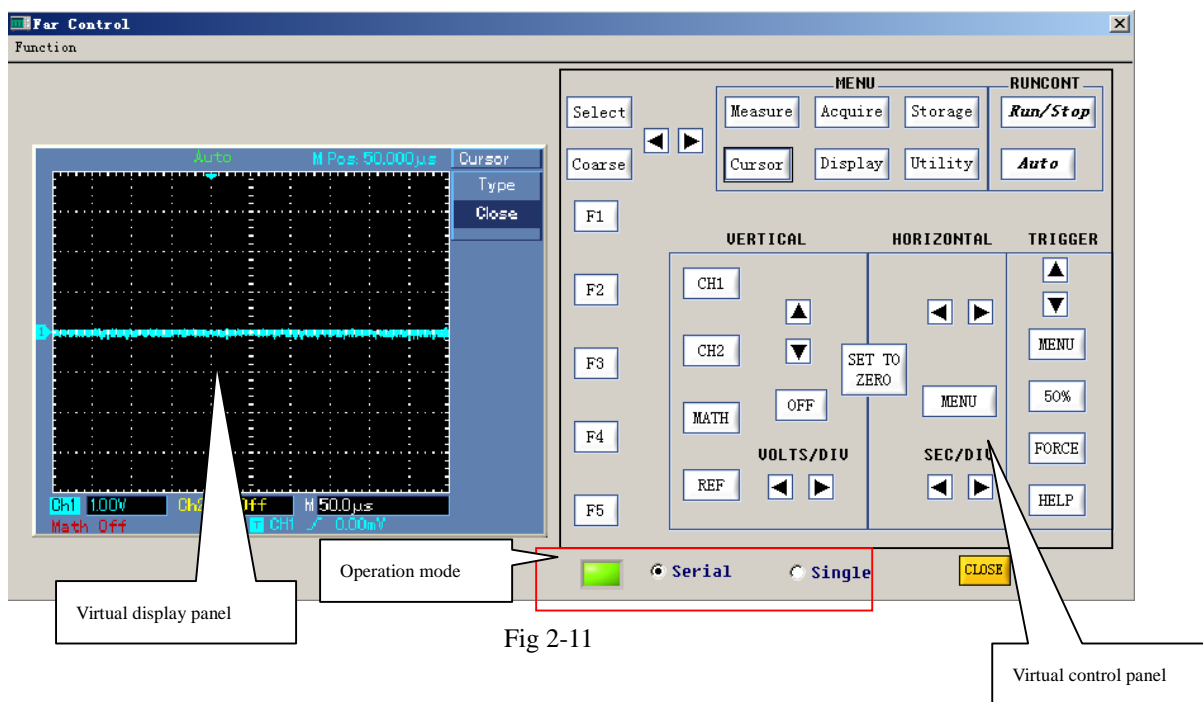

Fig 2-11

Menu :
Function selection : Saving and exiting screen
           Save :   Select "Single" as in Fig 2-11 to save the waveform and screen on the virtual display panel in *.bmp format on the computer hard disk or mobile USB device.
           Exit :   Quit the remote control transmission interface mode.

Serial :   When "serial" is selected, the waveform on the virtual display panel will be updated in real time and in synchronization with the waveform stored by the oscilloscope. In this mode, data volume is sizeable and control response is slower.

Single :   When "single" is selected, the waveform on the waveform display screen is not displayed in synchronization with the waveform stored by the oscilloscope. In this mode, data volume is limited and control response is faster.

Close :   Close the transmission interface and return to the main control panel (Fig 2-1).

Chapter 3　Operation guide for the oscilloscope communication and control software

By now you should have grasped the basic structure, menu options and functions of the oscilloscope communication and control software. In the following pages you will find more detailed instructions on how to operate the software. In this chapter, we will give guidance on USB, LAN and GPIB control modes.

To enjoy optimal software performance, we recommend you to read the oscilloscope user manual and this chapter to familiar with application.

After installing the software and driver properly, connect the cable to the USB A-B communication port. Power on the oscilloscope and activate the software. The software control panel shown in Fig 3-1 will appear on your computer screen.
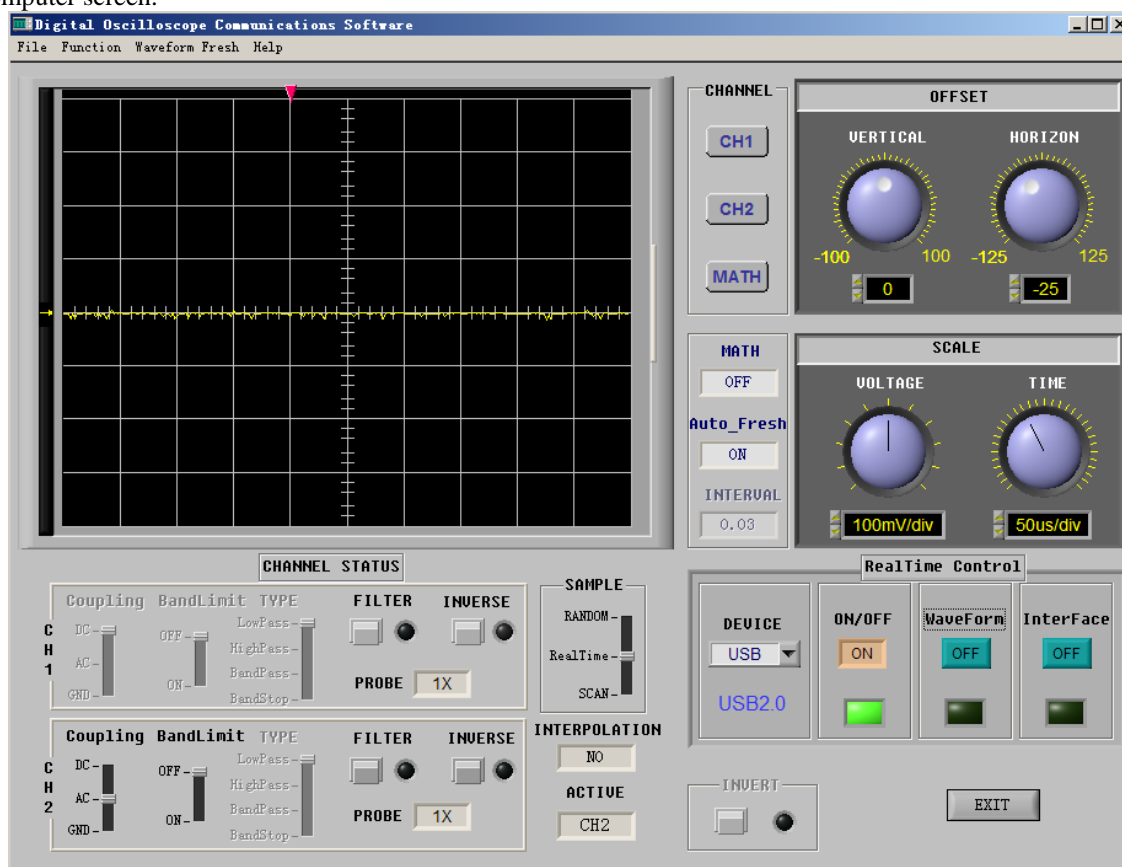

Fig 3-1

3.1   USB interface controls

After installing your communication and control software, please install the driver before using the USB communication mode for the first time. For instructions please refer to "Chapter 1.4 : Installing the USB driver". When installation is complete, run the software and enter the screen shown in Fig 3-1.

After selecting USB in the equipment selection option, operate as follows :

1.   Select "USB" in the equipment selection option on the virtual control panel.

2.   Click the [Equipment ON/OFF] button to turn it "ON". The indicator light is green. When the button is turned "OFF", the indicator light will go off, as shown in Fig 3-2.
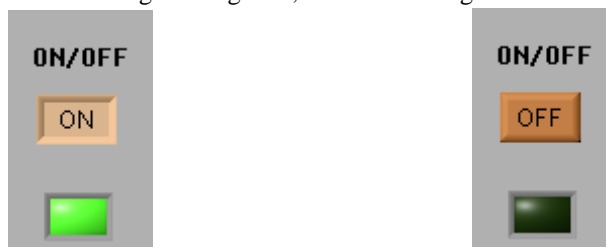

Fig 3-2 ON/OFF status display of the equipment selection button

3.   Click the [Data Transmission] button to turn it on. When the indicator light comes on the function is ON. When the indicator light goes off the function is OFF, as shown in Fig 3-3. When data transmission is on, you can operate the digital storage oscilloscope with the buttons and knobs on the control panel. The parameters and setups of the virtual control panel will change accordingly.
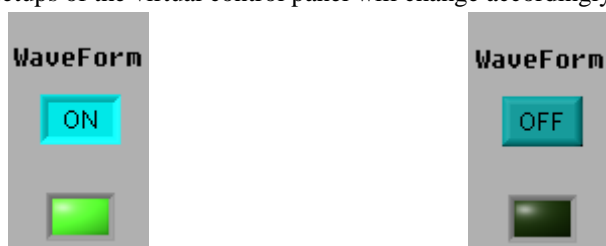

Fig 3-3 ON/OFF status display of the data transmission button

4.   When data transmission is complete, Click the [Data Transmission] button again to turn it off.

During data transmission, you cannot operate the oscilloscope with the software. The function keys on the virtual control panel are disabled but they continue to indicate the current status of the oscilloscope.

5. Enter the "transmission interface" and click the [Transmission Interface] button. The indicator light comes ON. Transmission interface mode is now enabled, as shows in Fig 3-4.
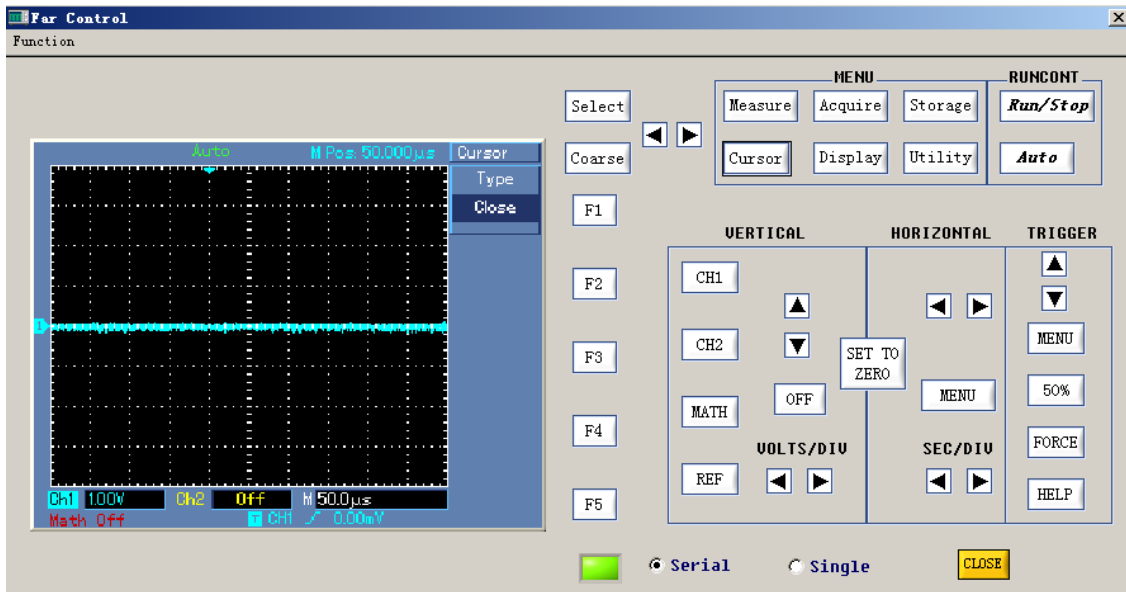

Fig 3-4

6. On the virtual control panel in Fig 3-4, you can operate your oscilloscope with different buttons as instructed by the oscilloscope user manual. Select "Serial" on the above screen so the oscilloscope can transmit the oscilloscope screen to the virtual display panel in real time. When "Single" is selected, the virtual display panel will only show the first transmission interface.

    Note : In serial mode when transmission volume is high, response of the software is relatively slow. In single mode, however, response is quick as there is only one transmission and data volume is low.

7. When operation is complete press [CLOSE] to close this screen.

    Note : The "data transmission", "remote control" and "transmission interface" functions cannot be operated simultaneously.

3.2   Ethernet (LAN) interface controls

The Ethernet port is a dedicated interface module of UTD2025_3025 Digital Storage Oscilloscopes. This TCP/IP protocol embedded module can provide direct Ethernet connection to a UTD2025_3025 series oscilloscope. After installing the communication and control software, you can operate your oscilloscope on remote control through LAN or the Internet. As it supports concurrent visit by multiple users, there are no geographical and users restraints and you can carry out network and remote testing as well as measuring.

With the optional UT-M01 (for UTD2025   models) or UT-M05 (for UTD3025 models) Ethernet module, you can operate the oscilloscope through the LAN interface as follows :

1.   Select "LAN" in the equipment selection option on the real-time control panel.
2.   When "LAN" is selected, the dialog box in Fig 3-5 will pop up.
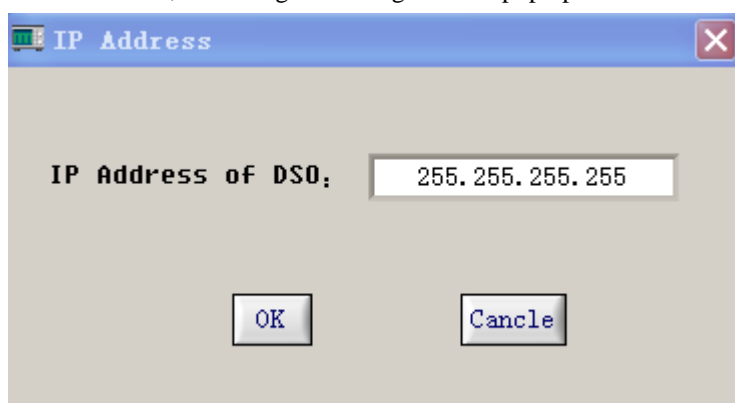

Fig 3-5

Enter the DSO IP address in this box. The IP addresses set in the software and the communicated oscilloscope must be the same, otherwise communication between the oscilloscope and the software cannot be established.

Please refer to the oscilloscope user manual for operation instructions. Access sub-menu page 3 by pressing [UTILITY] → LAN on the oscilloscope control panel for TCP/IP protocol setup. You should set up the IP address, netmask and default gateway in LAN. In the same network, the IP address of every individual digital storage oscilloscope is unique and must not conflict with the IP address of any other equipment (in-network IP addresses).

3.   For other operation instructions refer to steps 2, 3, 4, 5, 6 and 7 for "USB interface controls" in this chapter.

Note : When using the LAN interface, you can operate the oscilloscope by remote control via LAN or the Internet. Mapping feature of the router must be enabled and the public network address of your company should provided.

3.3   GPIB interface controls

The GPIB port is a dedicated interface module of UTD3025 Series Digital Storage Oscilloscopes. After installing the communication and control software, you can carry out system operation and control your oscilloscope through the GPIB interface. You can create an automatic testing system simply, quickly and efficiently, and carry out testing and measuring.

With the optional UT-M02 extension module, you can operate your UTD3025 oscilloscope through the GPIB interface as follows :

1.   Select "GPIB" in the equipment selection option on the real-time control panel.

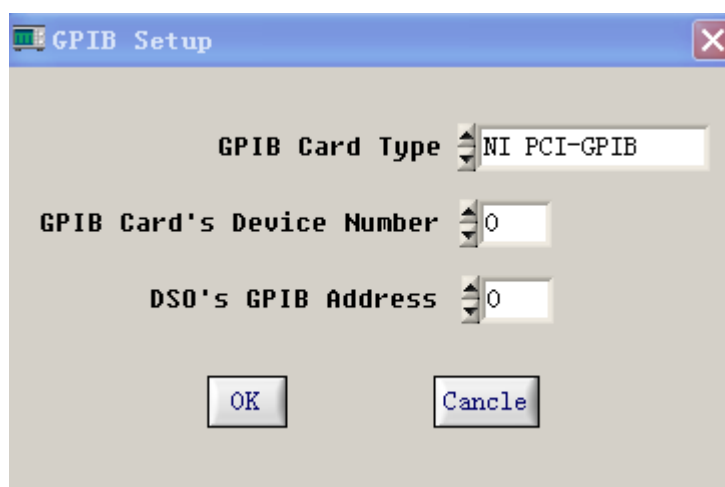2.   When "GPIB" is selected, the dialog box in Fig 3-6 will pop up.

Fig 3-6

Enter the GPIB device address in this box (range : 1-30). The GPIB device addresses set in the software and the communicated oscilloscope must be the same, otherwise communication between the oscilloscope and the software cannot be established.

Access sub-menu page 3 by pressing [UTILITY] $\rightarrow$ GPIB on the oscilloscope control panel for GPIB device address setup.

There must not be two identical GPIB device addresses on one GPIB main line.

3.   For other operation instructions refer to steps 2 and 3 for "USB interface controls" in this chapter.

Note : When using the GPIB interface, the "transmission interface" feature is disabled.

Chapter 4   System Prompts and Trouble-shooting

4.1   System prompts

Time out prompt : Check the communication interface configuration. See whether the equipment is properly connected and check software driver update.

SCAN prompt : SCAN will perform single transmission. Please carry out single refresh. Continue?

Are you sure you want to exit Virtual Instrument? A prompt to ask you if you wish to close the software.

4.2   Troubleshooting

1.   If the system prompts you to check serial or USB configuration when you enter [Equipment ON/OFF], take the following steps :

①   Check whether the oscilloscope power plug is properly connected.

②   Check whether oscilloscope ports match the communication and control software setups.

③   Check whether the cable connection between module and PC is in order.

④   Ensure the USB driver is properly installed.

⑤   After carrying out the above checks, restart the software and oscilloscope to continue operation.

2.   If you are unable to update the software driver, take the following steps :

①   Right click the box on your computer desk-top as shown in Fig 4-1 to activate the right-click menu in Fig 4-2.

Fig 4-1   Fig 4-2

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② In Fig 4-2, select "attribute" and right click to pop up Fig 4-3.
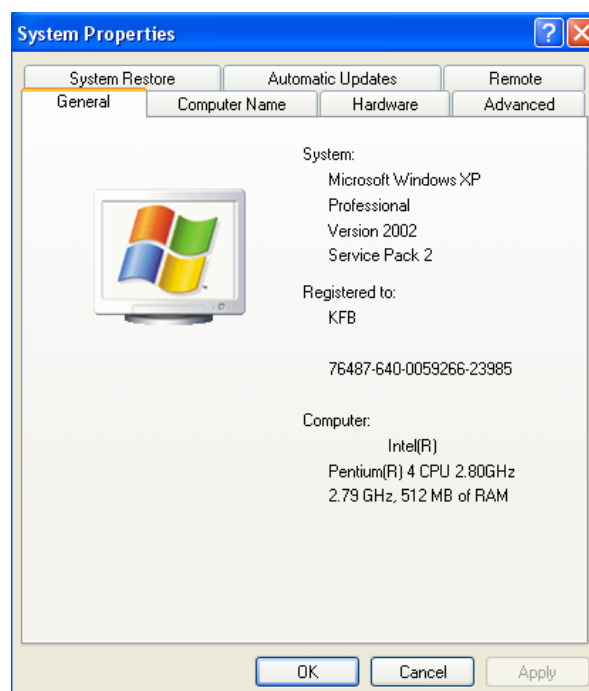
Fig 4-3

③ Select "hardware" in Fig 4-3. Fig 4-4 is displayed.

Fig 4-4

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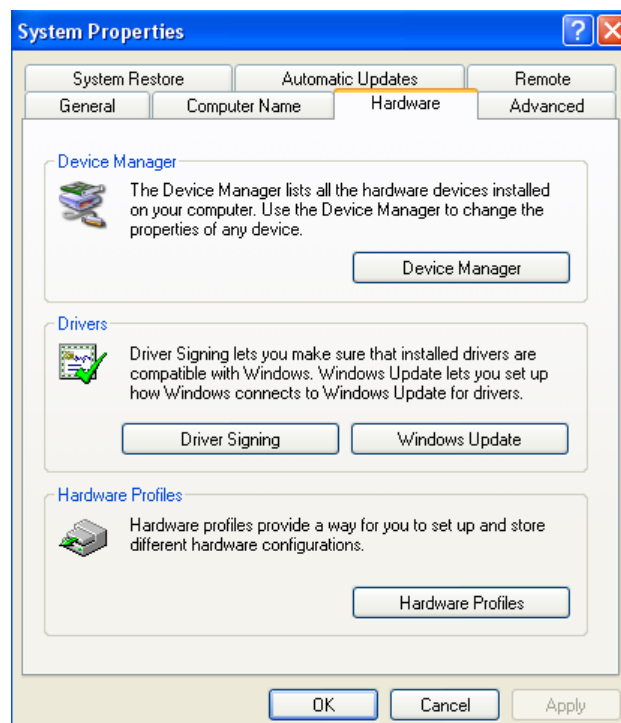
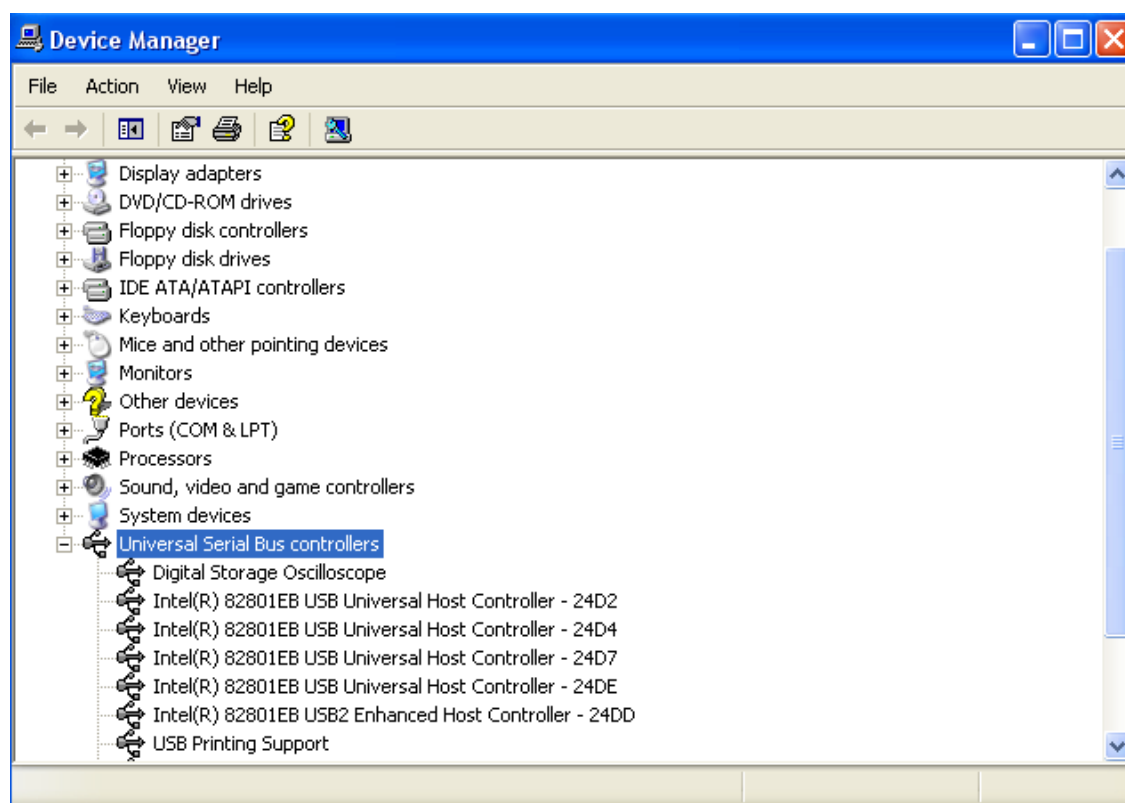④ Select "equipment manager D" in Fig 4-4. Fig 4-5 pops up.

Fig 4-5

⑤ In Fig 4-5, delete "digital storage oscilloscope" in "Universal serial main line controller" to restart the oscilloscope. Select automatic driver update to complete the update process.

Note : When the communication and control software is communicating with the digital storage oscilloscope, you cannot connect both the network cable and USB device cable to the oscilloscope ports, and do not remove the cable to disconnect during communication.

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