



**孕龍科技股份有限公司**  
**ZeroPlus Technology Co., Ltd.**

# SPECIFICATION

**MODEL: B08011-LAP-AC97-M**

**PART NO:** \_\_\_\_\_

**VERSION:** V1.02

Approver		Check	Design
GM	PM		

Customer Confirm

\*Please fax the file to ZeroPlus Technology after signing.

2F, NO.123, Jian Ba Rd,  
Chung Ho City, Taipei Hsian, R.O.C.

Tel:+886-2-66202225  
Fax:+886-2-22234362



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## 1 Software Download

Please install the software as the following steps:

**Remark:** We won't have additional notice for you, when there is any modification of the module specification. If there is some unconformity caused by the module version upgrade, users should take the module software as the standard.

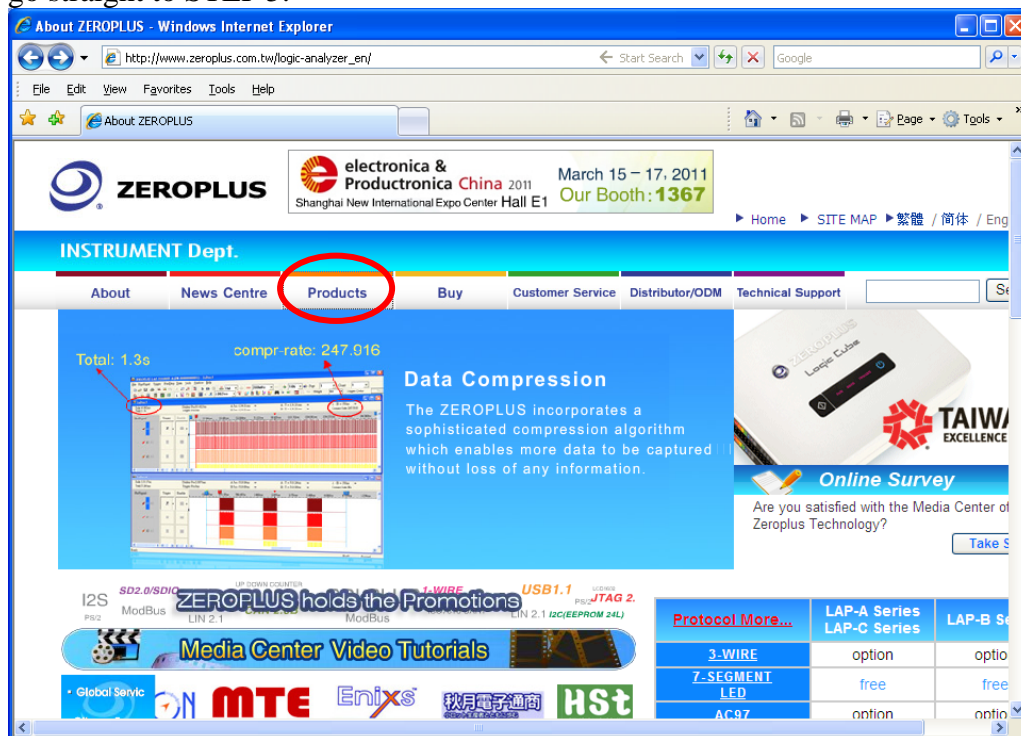
**STEP 1.** Visit the website of ZeroPlus: <http://www.zeroplus.com.tw>.

**STEP 2.** Click the **English** in the Instrument Division part on the Homepage.

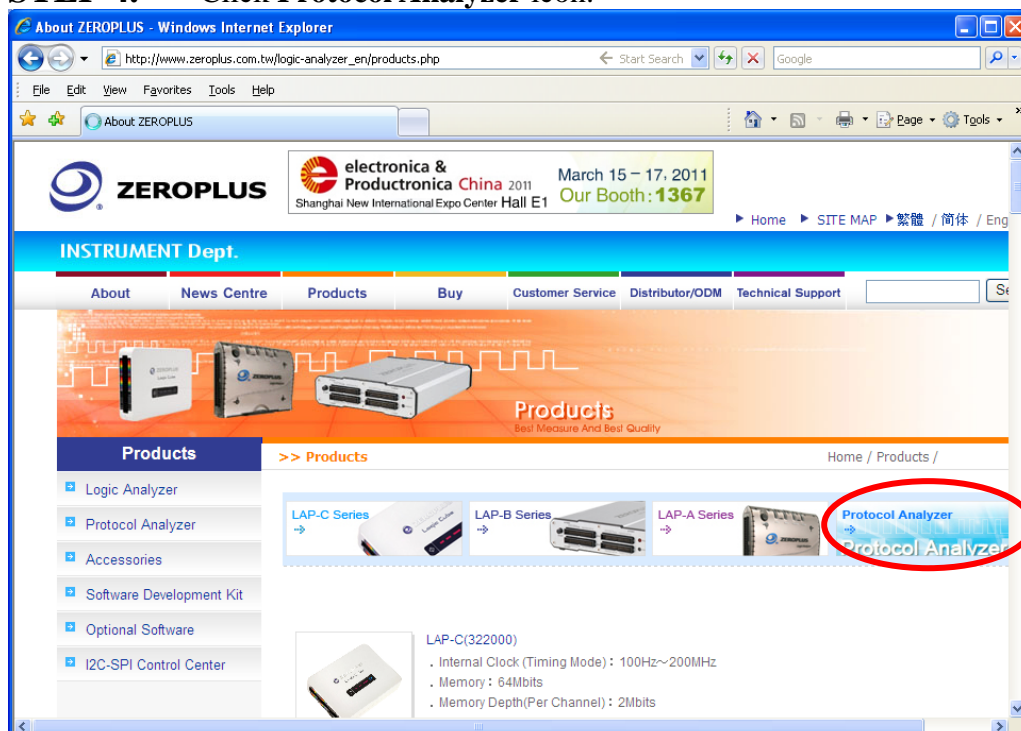




**STEP 3.** Click **Products** menu or select **Protocol Analyzer** item from its pull-down menu to go straight to STEP 5.

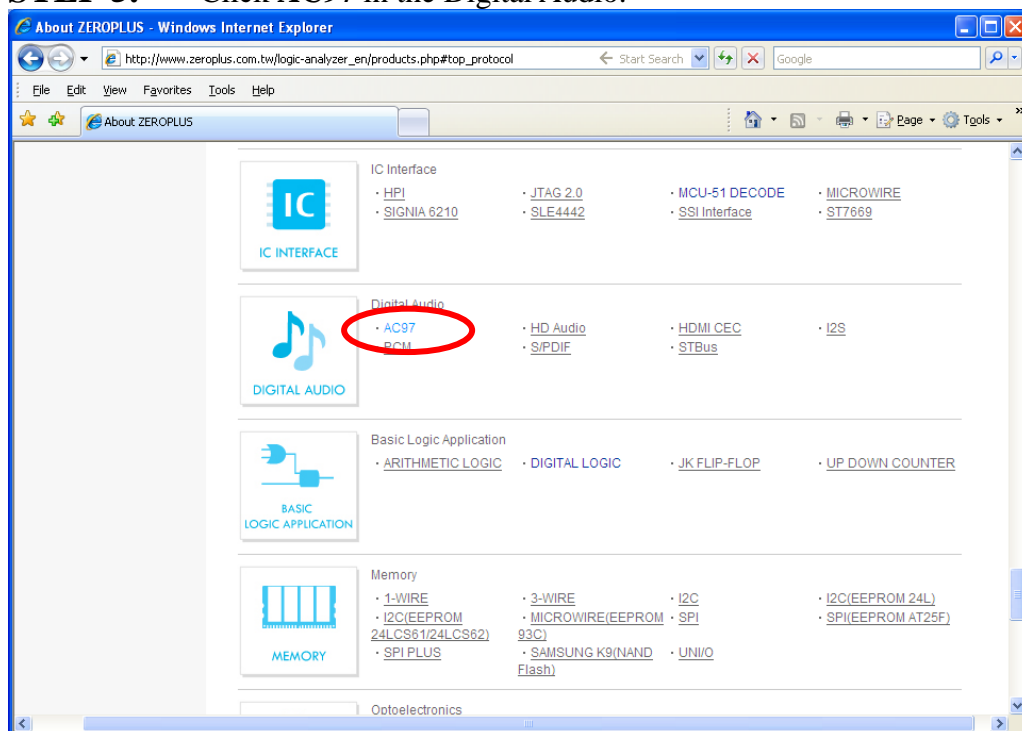


**STEP 4.** Click **Protocol Analyzer** icon.

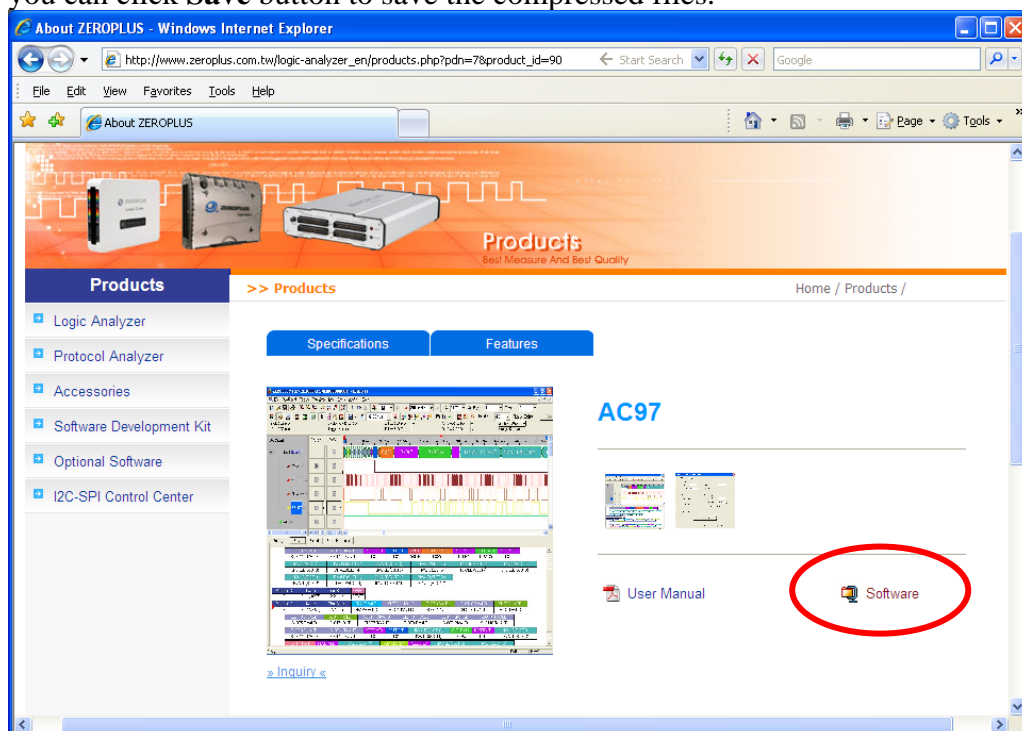




## STEP 5. Click AC97 in the Digital Audio.



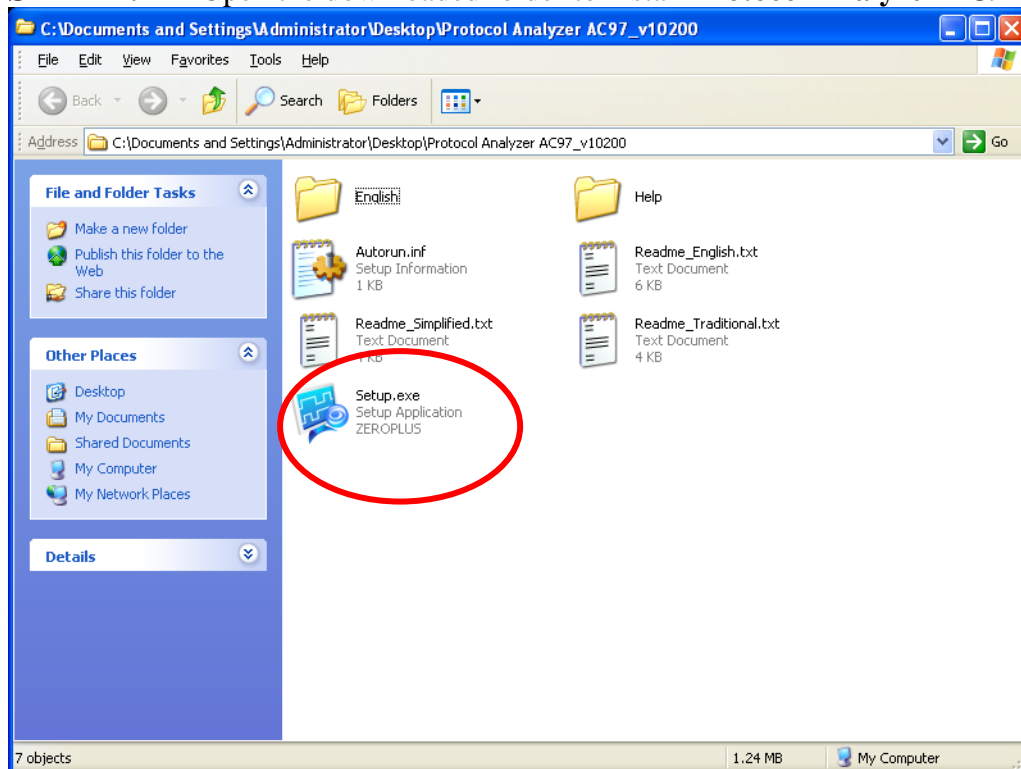
## STEP 6. Click **Software** in the Products page. When the File Download dialog box appears, you can click **Save** button to save the compressed files.



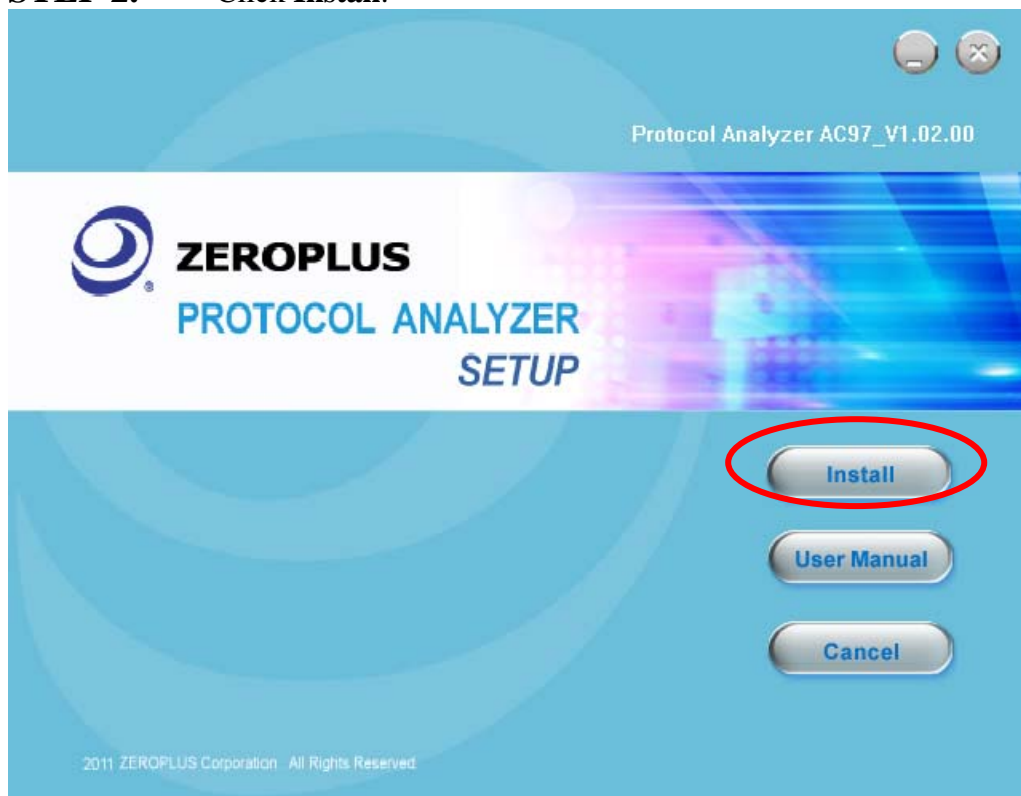


## 2 Software Installation

**STEP 1.** Open the downloaded folder to install **Protocol Analyzer AC97**.



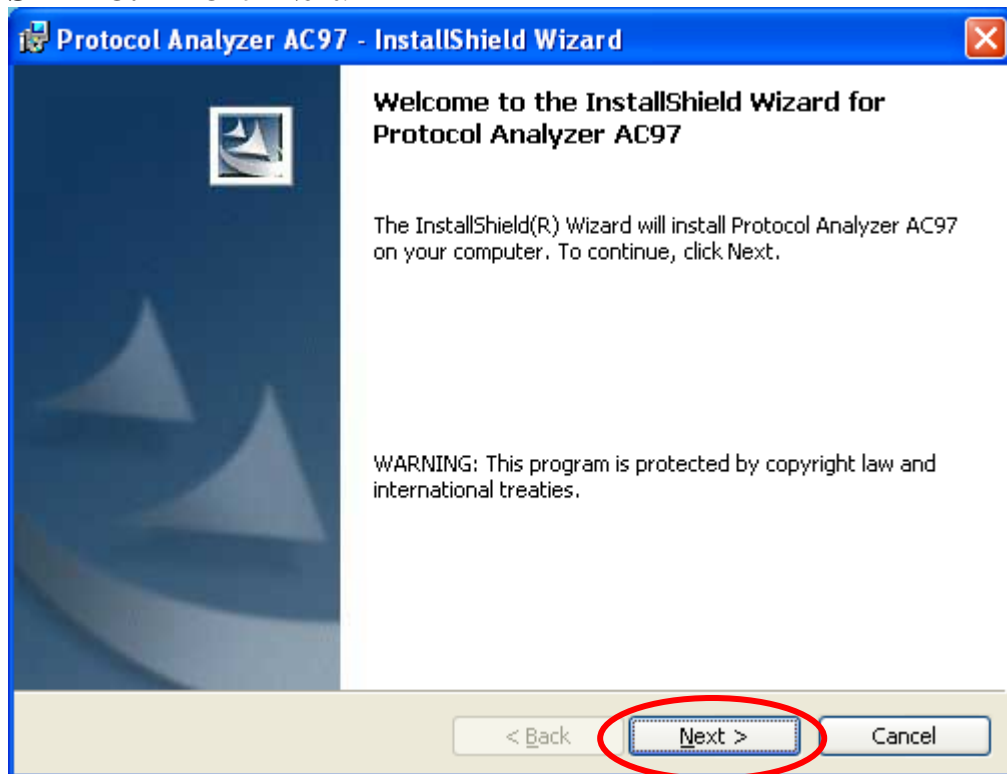
**STEP 2.** Click **Install**.



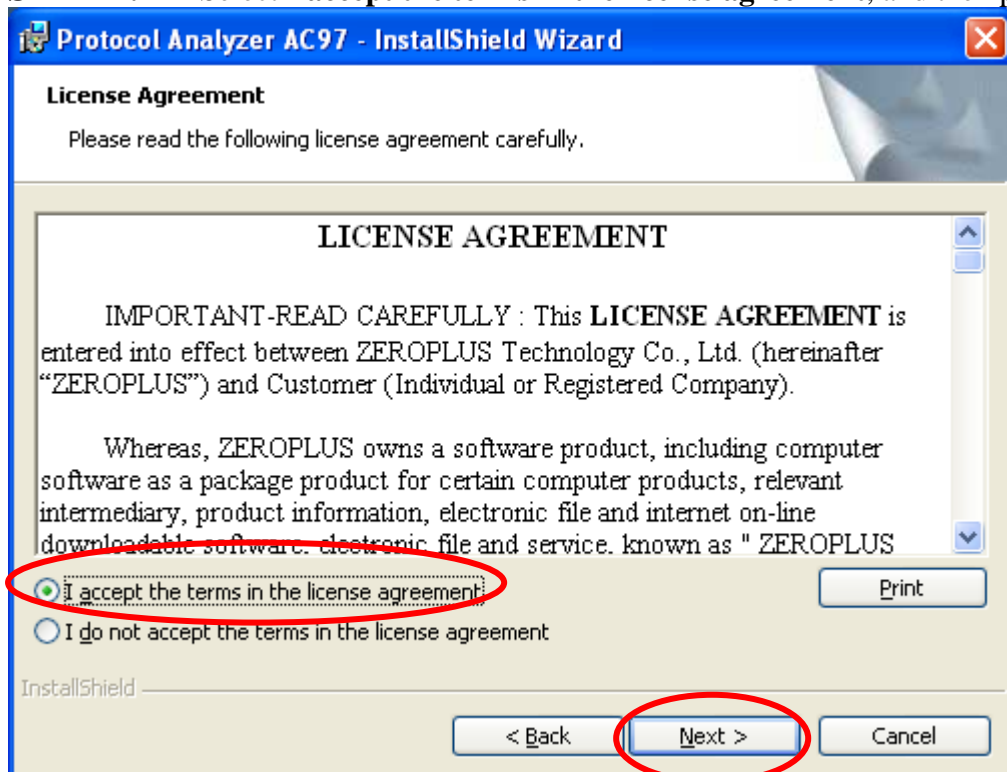




**STEP 3.** Click Next.



**STEP 4.** Select **I accept the terms in the license agreement**, and then press Next.





**STEP 5.** Fill in users' information in the below dialog box and click **Next**.

The dialog box is titled "Protocol Analyzer AC97 - InstallShield Wizard". It has a blue header bar with a close button (X) in the top right corner. The main area is titled "Customer Information" and contains the text "Please enter your information." Below this, there are two text input fields: "User Name:" with "Microsoft" entered, and "Organization:" with "User" entered. Further down, there is a section titled "Install this application for:" with two radio button options: "Anyone who uses this computer (all users)" (which is selected) and "Only for me (Microsoft)". At the bottom, there is a progress bar labeled "InstallShield" and three buttons: "< Back", "Next >" (which is circled in red), and "Cancel".

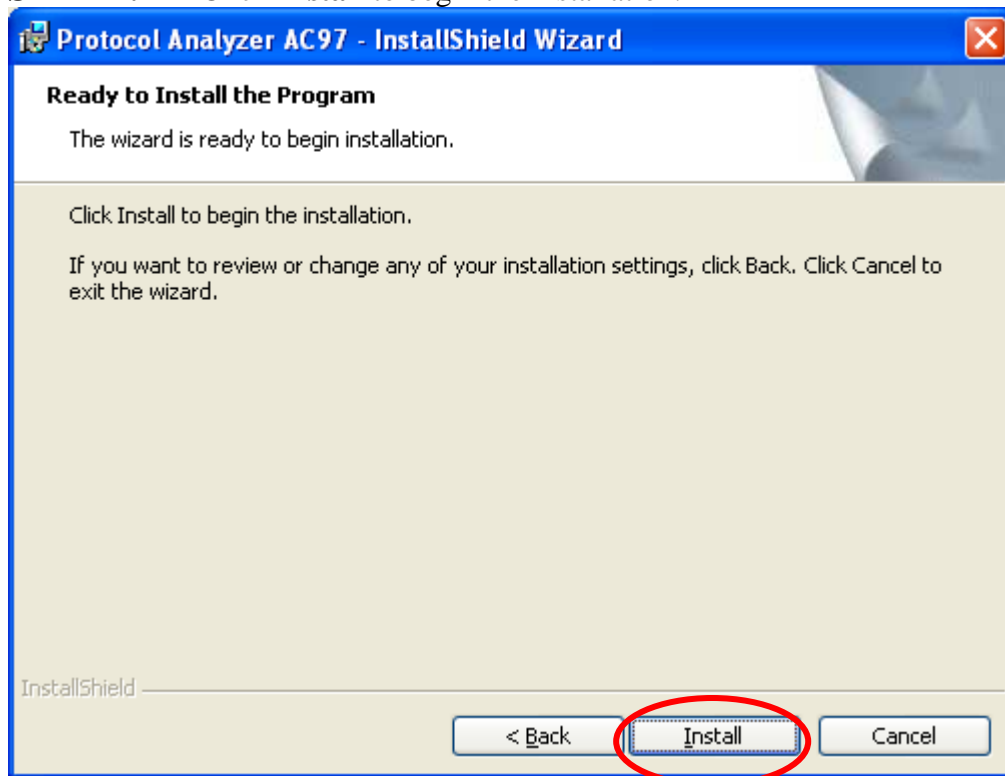
**STEP 6.** Select **Complete** and then click **Next**.

The dialog box is titled "Protocol Analyzer AC97 - InstallShield Wizard". It has a blue header bar with a close button (X) in the top right corner. The main area is titled "Setup Type" and contains the text "Choose the setup type that best suits your needs." Below this, there is a section titled "Please select a setup type." with two radio button options: "Complete" (which is selected) and "Custom". Each option has a small icon of a computer with a red X and a description: "Complete" says "All program features will be installed. (Requires the most disk space.)" and "Custom" says "Choose which program features you want installed and where they will be installed. Recommended for advanced users." At the bottom, there is a progress bar labeled "InstallShield" and three buttons: "< Back", "Next >" (which is circled in red), and "Cancel".

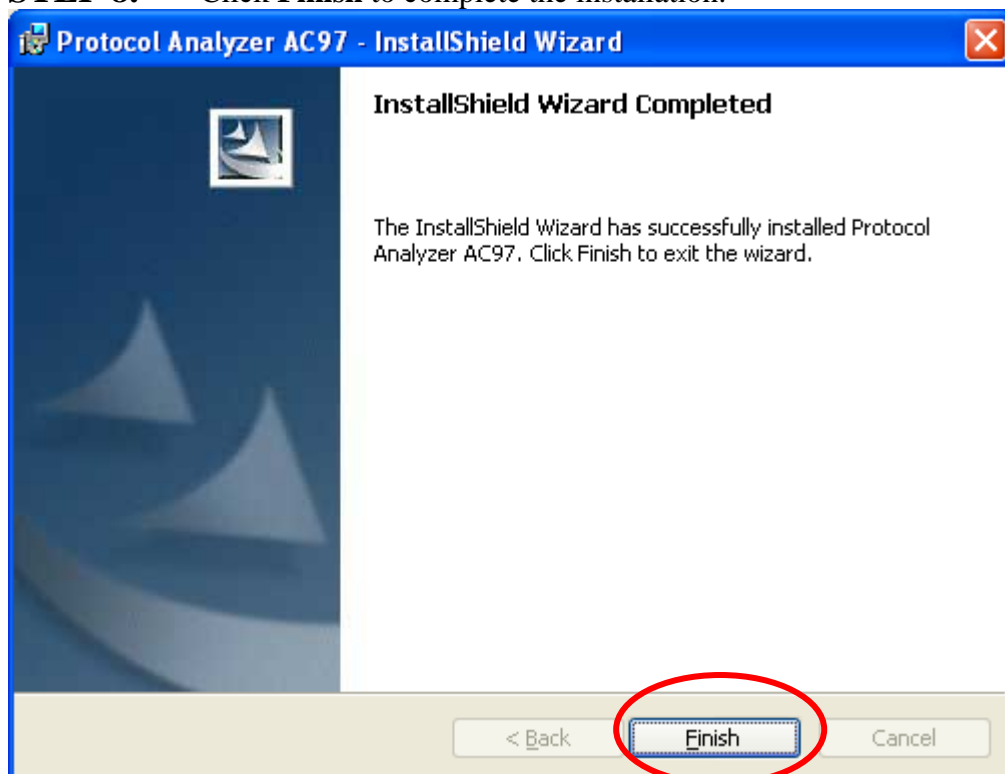




**STEP 7.** Click **Install** to begin the installation.



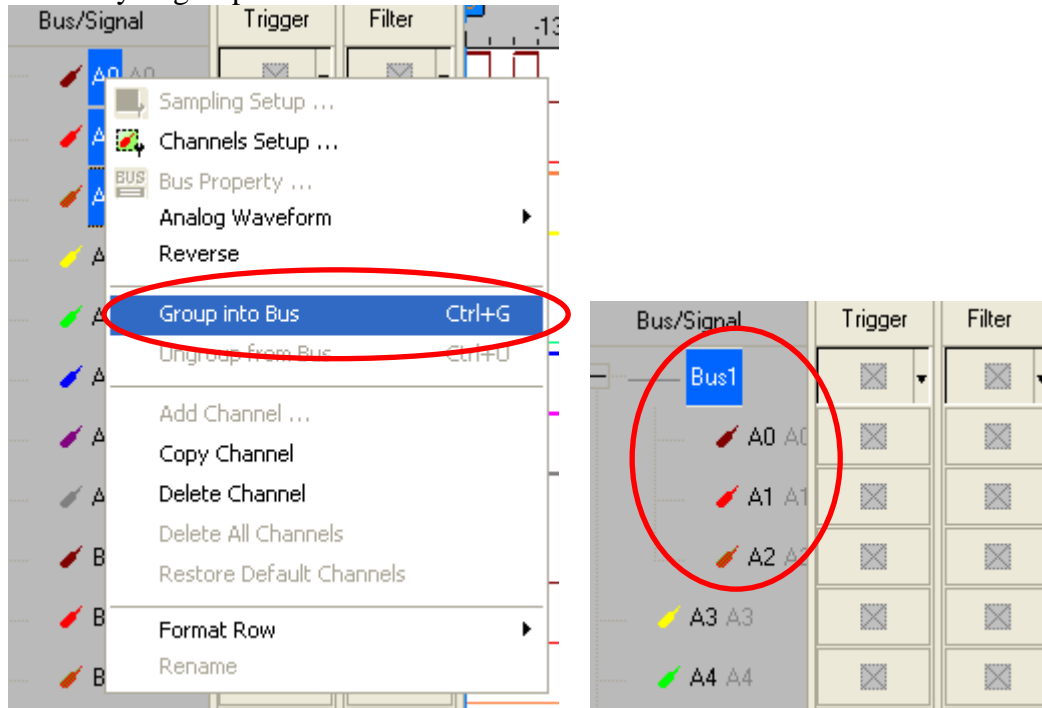
**STEP 8.** Click **Finish** to complete the installation.



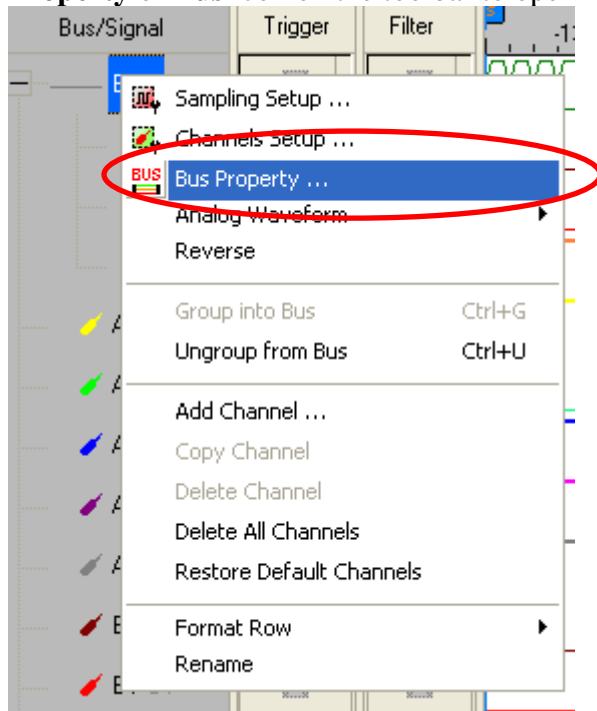


### 3 Software Register

**STEP 1.** Open the Logic Analyzer and group the unanalyzed channels into **Bus1** by pressing the **Right Key** on the mouse. **AC97** needs three or more channels to decode signals, so it is necessary to group three or more channels into a Bus.

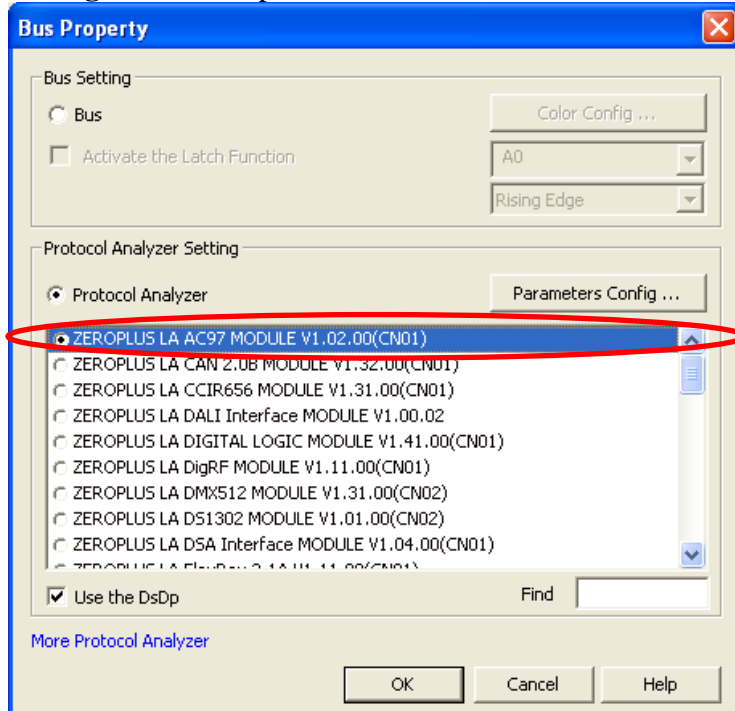


**STEP 2.** Select **Bus1**, and press **Right Key** on the mouse to list the menu, then press **Bus Property** or **Bus** icon on the toolbar to open **Bus Property** dialog box.

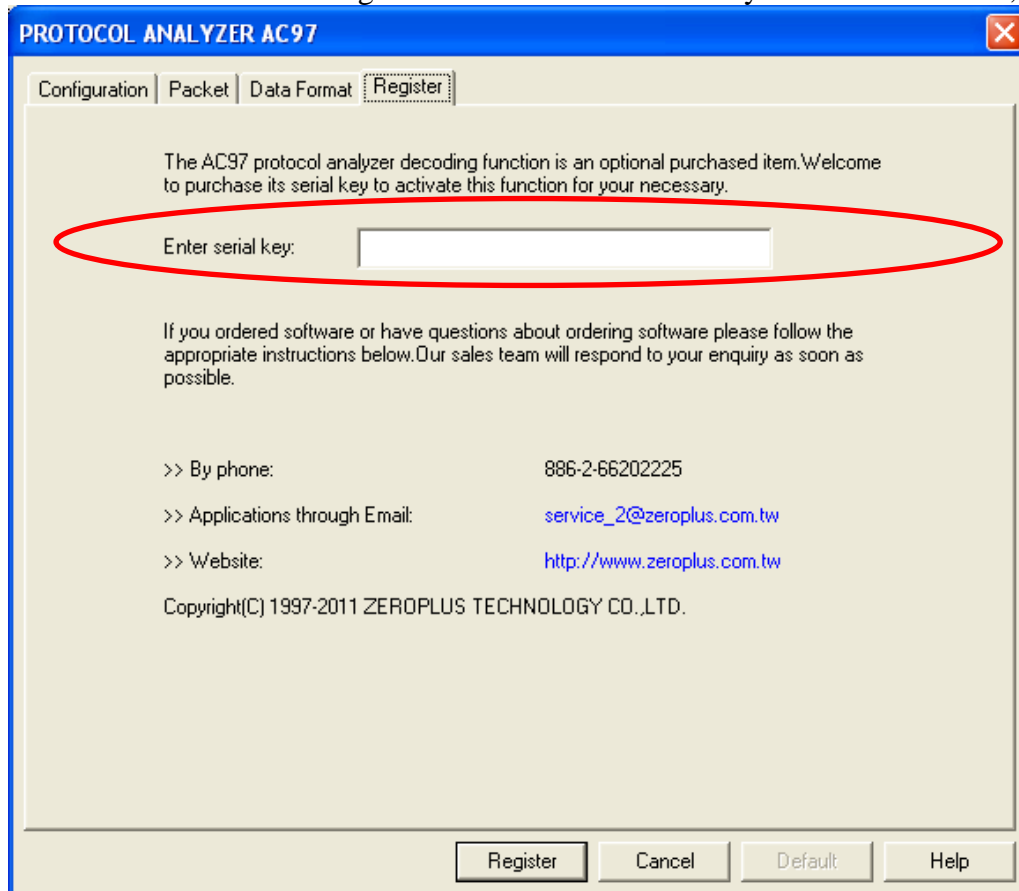




**STEP 3.** For Protocol Analyzer AC97 Parameters Configuration, select Protocol Analyzer, and then choose **ZEROPLUS LA AC97 MODULE V1.02.00(CN01)**. Next click **Parameters Configuration** to open the **PROTOCOL ANALYZER AC97** dialog box.

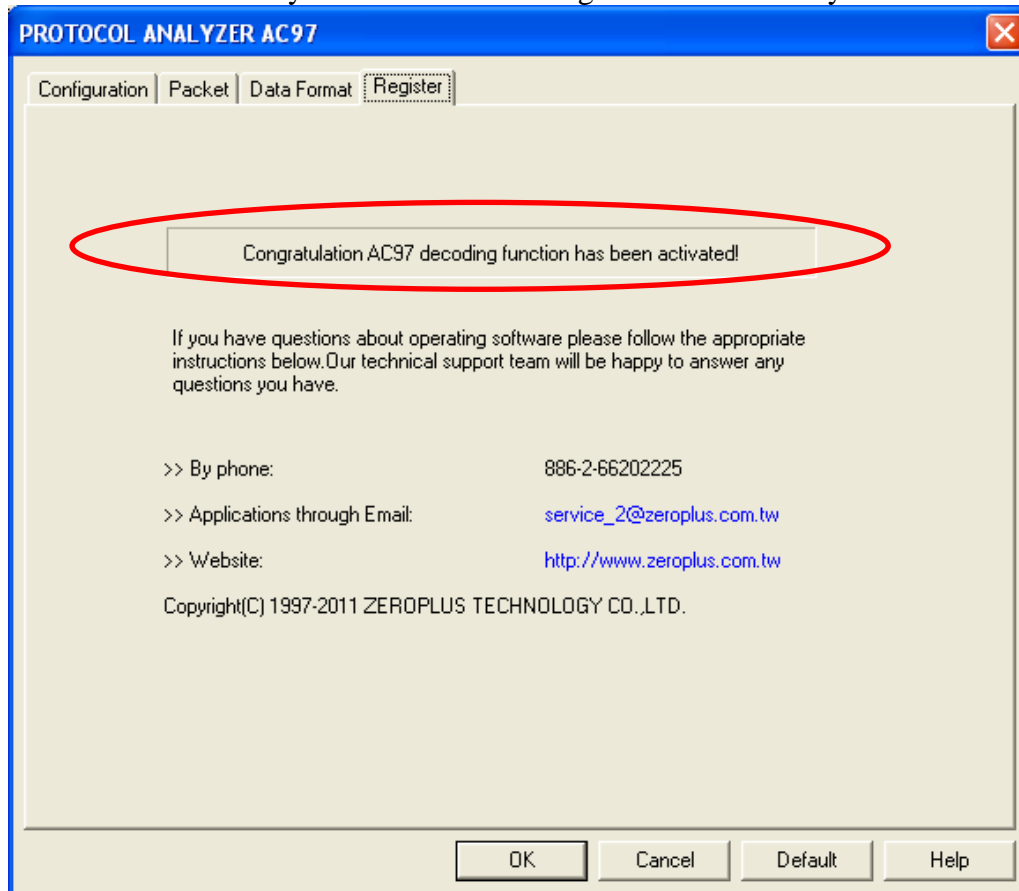


**STEP 4.** Press the Register tab to enter the serial key of the AC97. Then, press **Register**.





**STEP 5.** After pressing the Register button, the following dialog box will appear; it denotes that the Protocol Analyzer AC97 has been registered successfully.





## 4 User Interface

In the configuration dialog box, please refer to the below images to select options of setting **AC97 Module**.

AC97 Configuration Dialog Box

### Pin Assignment:

**SYNC:** It is the Synchronous Signal channel, and the default is A0.

**BITCLK:** It is the Clock Signal channel, and the default is A1.

**SDI/SDO:** It is the Data Transmission channel, and the default is A2.

**RESET:** It is the Reset channel, and the default is A3.

### Protocol Analyzer Property:

**Decoding I/O:** Set the Decoding Mode to SDI or SDO.

**PCM Bit Width:** Set the Bit Width to 16, 18 or 20.

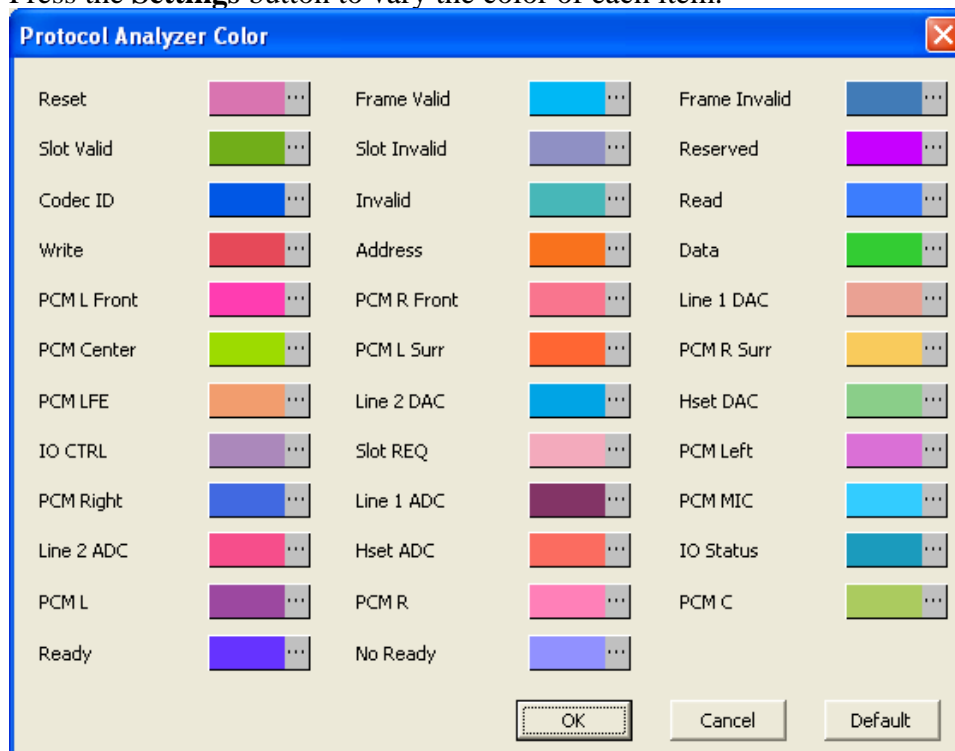
**Sampling Mode:** Set the Mode to Rising or Falling.

**Double Rate Audio:** When it is enabled, the PCM L, PCM R and PCM C can be decoded.

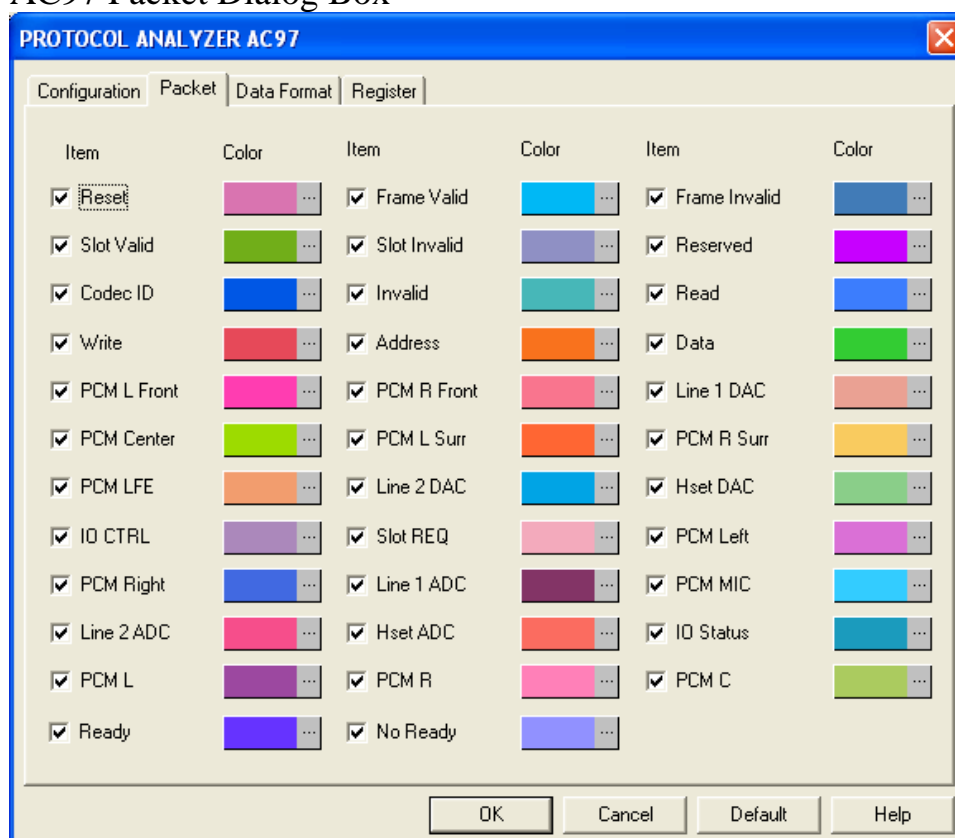


## Protocol Analyzer Color:

Press the **Settings** button to vary the color of each item.



## AC97 Packet Dialog Box



In the Packet dialog box, users can vary the color of items and set the item to be displayed.



## AC97 Data Format Dialog Box

PROTOCOL ANALYZER AC97

Configuration | Packet | Data Format | Register

☒ Activate

Codec ID:	<input type="radio"/> Binary	<input type="radio"/> Decimal	<input checked="" type="radio"/> Hexadecimal	<input type="radio"/> ASCII
CMD Address:	<input type="radio"/> Binary	<input type="radio"/> Decimal	<input checked="" type="radio"/> Hexadecimal	<input type="radio"/> ASCII
Status Address:	<input type="radio"/> Binary	<input type="radio"/> Decimal	<input checked="" type="radio"/> Hexadecimal	<input type="radio"/> ASCII
Reserved:	<input type="radio"/> Binary	<input type="radio"/> Decimal	<input checked="" type="radio"/> Hexadecimal	<input type="radio"/> ASCII
CMD Data:	<input type="radio"/> Binary	<input type="radio"/> Decimal	<input checked="" type="radio"/> Hexadecimal	<input type="radio"/> ASCII
Status Data:	<input type="radio"/> Binary	<input type="radio"/> Decimal	<input checked="" type="radio"/> Hexadecimal	<input type="radio"/> ASCII
IO CTRL:	<input type="radio"/> Binary	<input type="radio"/> Decimal	<input checked="" type="radio"/> Hexadecimal	<input type="radio"/> ASCII
PCM L Front:	<input type="radio"/> Binary	<input type="radio"/> Decimal	<input checked="" type="radio"/> Hexadecimal	<input type="radio"/> ASCII
PCM R Front:	<input type="radio"/> Binary	<input type="radio"/> Decimal	<input checked="" type="radio"/> Hexadecimal	<input type="radio"/> ASCII
PCM Center:	<input type="radio"/> Binary	<input type="radio"/> Decimal	<input checked="" type="radio"/> Hexadecimal	<input type="radio"/> ASCII
PCM L Surr:	<input type="radio"/> Binary	<input type="radio"/> Decimal	<input checked="" type="radio"/> Hexadecimal	<input type="radio"/> ASCII
PCM LFE:	<input type="radio"/> Binary	<input type="radio"/> Decimal	<input checked="" type="radio"/> Hexadecimal	<input type="radio"/> ASCII
Line 2 ADC:	<input type="radio"/> Binary	<input type="radio"/> Decimal	<input checked="" type="radio"/> Hexadecimal	<input type="radio"/> ASCII

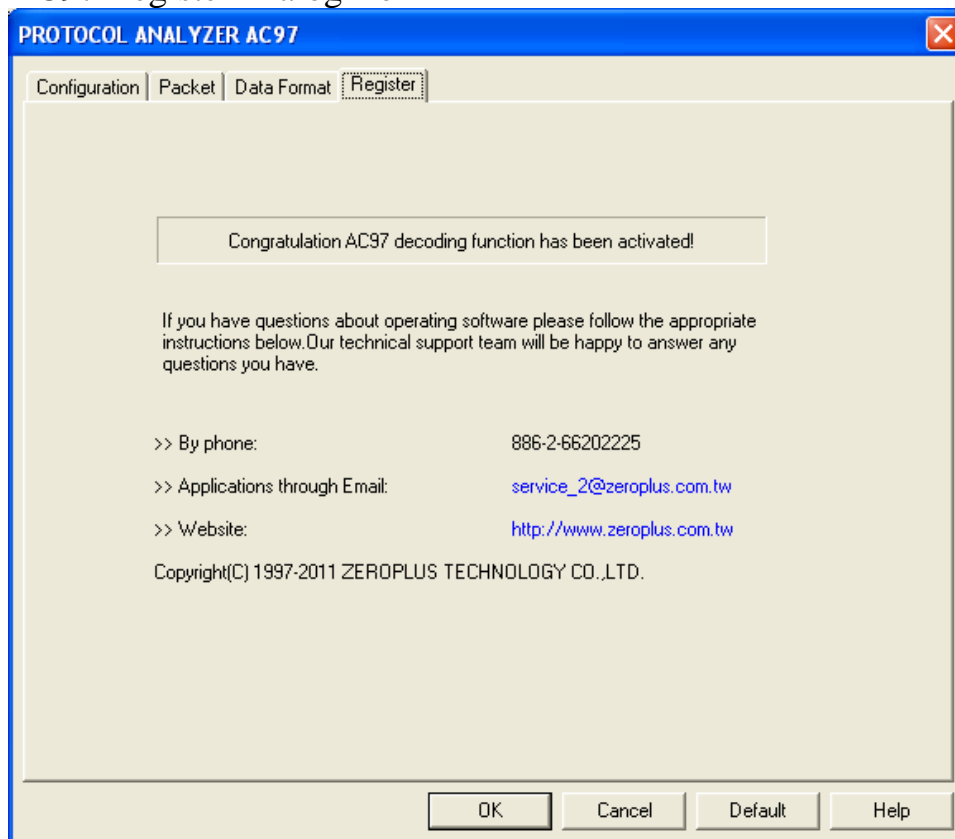
OK Cancel Default Help

Users can set the Data Format of the items (Codec ID, CMD Address, Status Address, Reserved, CMD Data, Status Data, IO CTRL, PCM L Front, PCM R Front, PCM Center, PCM L Surr, PCM LFE, Line 2 ADC, Hset ADC, PCM Right, Line 1 ADC, PCM L, PCM Left, PCM R, Line 1 DAC, PCM C, PCM R Surr, Hset DAC, PCM MIC and IO Status) as their requirements. When selecting the option, Activate, the data format is decided by the settings in the Protocol Analyzer; when not selecting the option, Activate, the data format is decided by the settings in the main program.





## AC97 Register Dialog Box

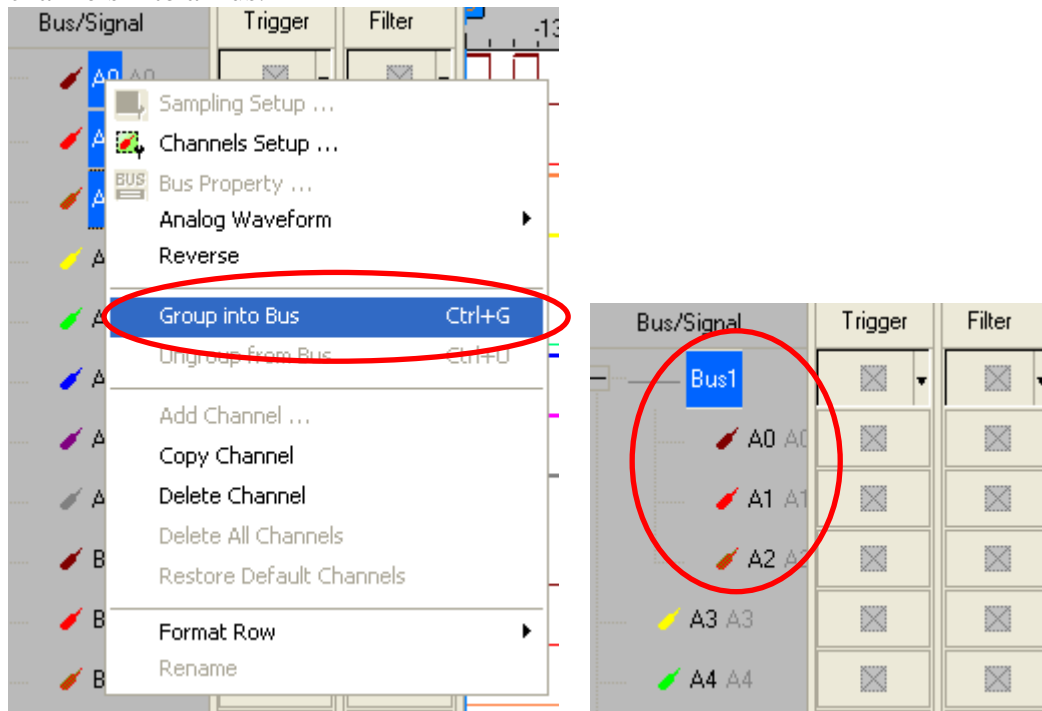


There is written ZeroPlus company information. If you have any questions about software operations, you can contact ZeroPlus by Telephone or Email.

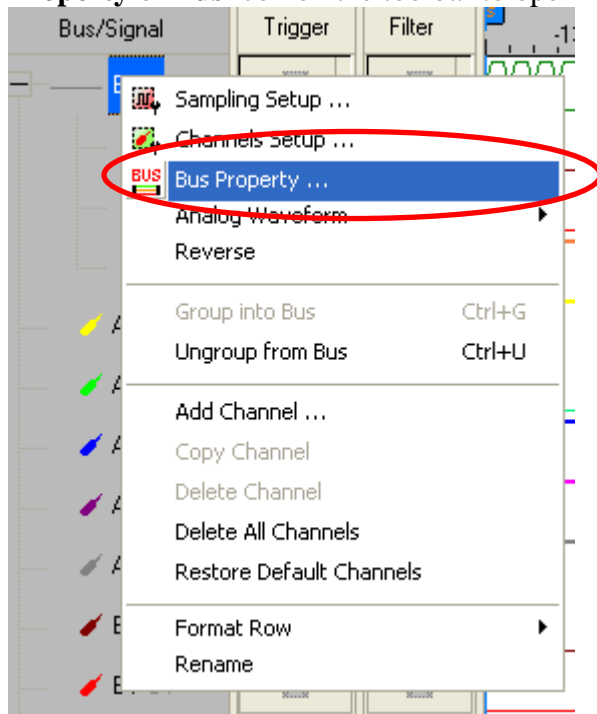


## 5 Operating Instructions

**STEP 1.** Group the unanalyzed channels into **Bus1** by pressing the **Right Key** on the mouse. **AC97** needs three or more channels to decode signals, so it is necessary to group three or more channels into a Bus.

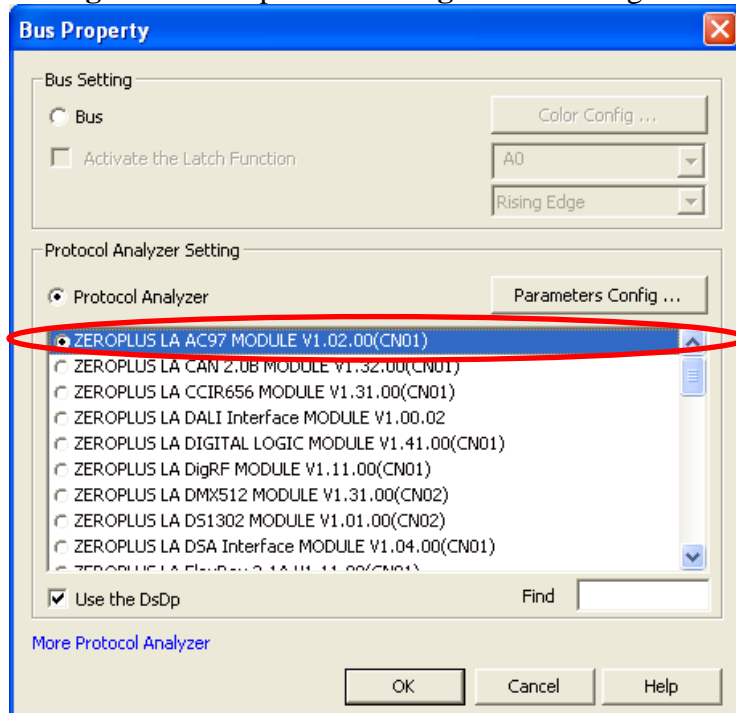


**STEP 2.** Select **Bus1**, and press **Right Key** on the mouse to list the menu, then press **Bus Property** or **Bus** icon on the toolbar to open **Bus Property** dialog box.

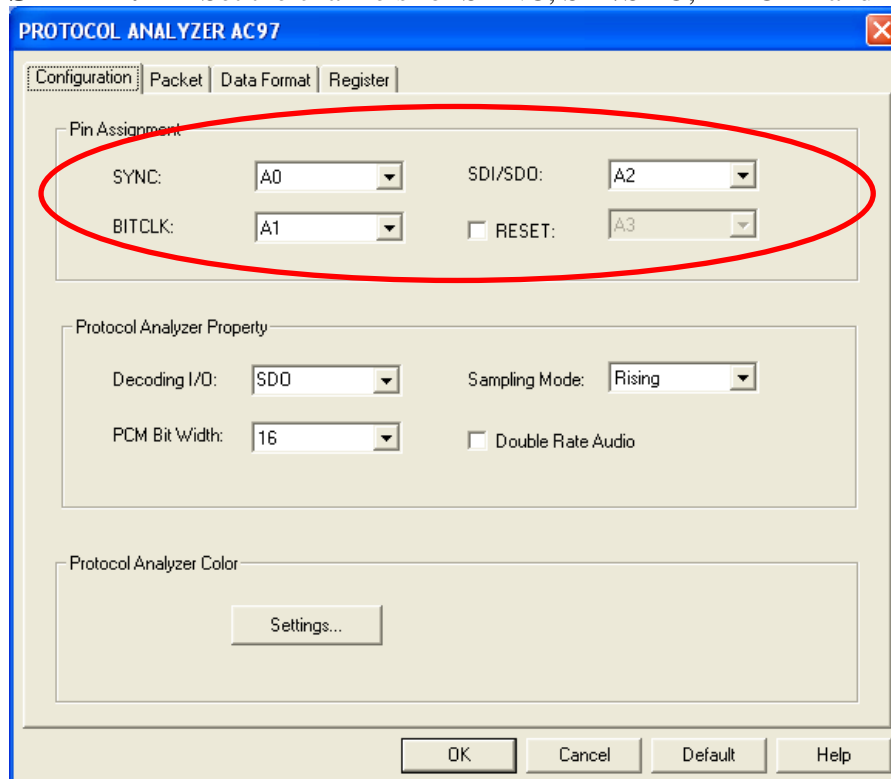




**STEP 3.** For Protocol Analyzer AC97 Parameters Configuration, select Protocol Analyzer, and then choose **ZEROPLUS LA AC97 MODULE V1.02.00(CN01)**. Next click **Parameters Configuration** to open the **Configuration** dialog box.



**STEP 4.** Set the channels for SYNC, SDI/SDO, BITCLK and RESET.





## STEP 5. Set Decoding I/O to SDO or SDI.

**PROTOCOL ANALYZER AC97**

Configuration | Packet | Data Format | Register

Pin Assignment

SYNC: A0 SDI/SDO: A2  
BITCLK: A1 ☐ RESET: A3

Protocol Analyzer Property

Decoding I/O: SDO Sampling Mode: Rising  
PCM Bit Width: 16 ☐ Double Rate Audio

Protocol Analyzer Color

Settings...

OK Cancel Default Help

## STEP 6. Set the PCM Bit Width to 16, 18 or 20.

**PROTOCOL ANALYZER AC97**

Configuration | Packet | Data Format | Register

Pin Assignment

SYNC: A0 SDI/SDO: A2  
BITCLK: A1 ☐ RESET: A3

Protocol Analyzer Property

Decoding I/O: SDO Sampling Mode: Rising  
PCM Bit Width: 16 ☐ Double Rate Audio

Protocol Analyzer Color

Settings...

OK Cancel Default Help



## STEP 7. Set the Sampling Mode to Rising or Falling.

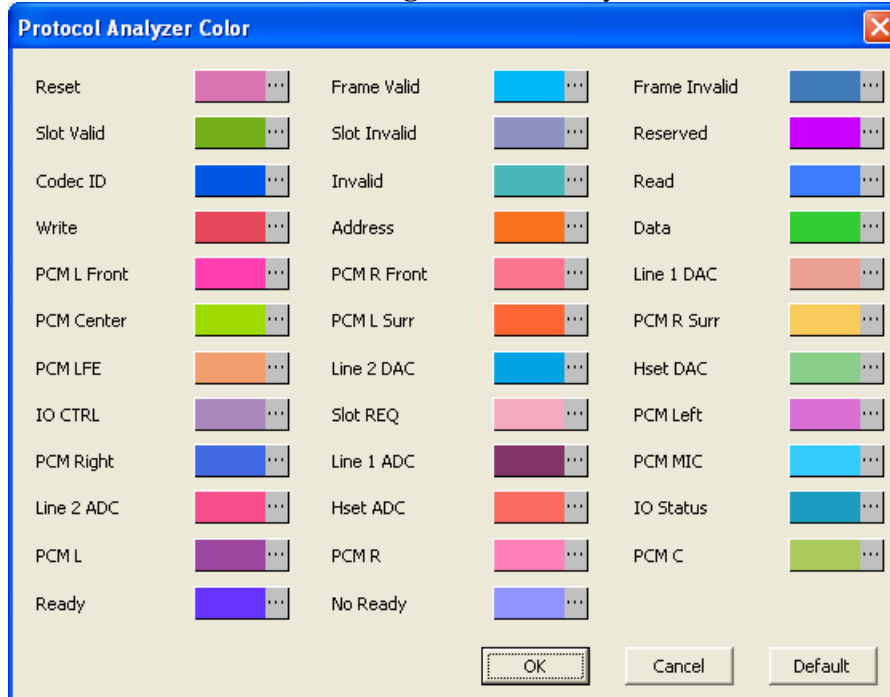
The screenshot shows the 'PROTOCOL ANALYZER AC97' configuration window. The 'Configuration' tab is selected. Under 'Pin Assignment', 'SYNC' is set to 'A0', 'SDI/SDO' is set to 'A2', 'BITCLK' is set to 'A1', and 'RESET' is set to 'A3'. Under 'Protocol Analyzer Property', 'Decoding I/O' is set to 'SDO', 'PCM Bit Width' is set to '16', and 'Sampling Mode' is set to 'Rising'. The 'Double Rate Audio' checkbox is unchecked. A red box highlights the 'Sampling Mode' dropdown. At the bottom, there are 'OK', 'Cancel', 'Default', and 'Help' buttons.

## STEP 8. Set the Double Rate Audio.

The screenshot shows the 'PROTOCOL ANALYZER AC97' configuration window. The 'Configuration' tab is selected. Under 'Pin Assignment', 'SYNC' is set to 'A0', 'SDI/SDO' is set to 'A2', 'BITCLK' is set to 'A1', and 'RESET' is set to 'A3'. Under 'Protocol Analyzer Property', 'Decoding I/O' is set to 'SDO', 'PCM Bit Width' is set to '16', 'Sampling Mode' is set to 'Rising', and the 'Double Rate Audio' checkbox is checked. A red box highlights the 'Double Rate Audio' checkbox. At the bottom, there are 'OK', 'Cancel', 'Default', and 'Help' buttons.

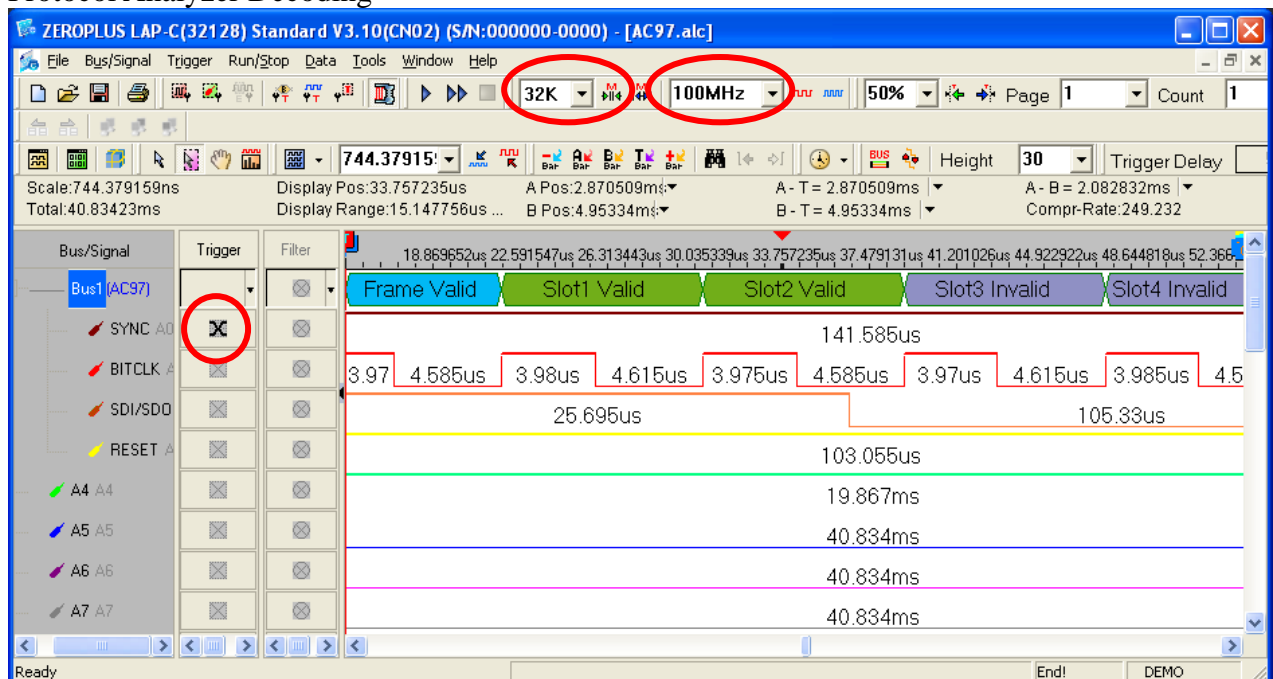


**STEP 9.** Press the **Settings** button to vary the color of each item.



**STEP 10.** Following pictures show the completion of the protocol analyzer decoding and the packet list. The trigger condition is set as Either Edge; the memory depth is 32K; the sampling frequency is 100MHz (the sampling frequency should be more than eight times higher than the signal to be tested).

### Protocol Analyzer Decoding





## Packet List

