



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

SPECIFICATION

MODEL: B09018-LAP-LPT-M

PART NO: _____

VERSION: V1.01

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.

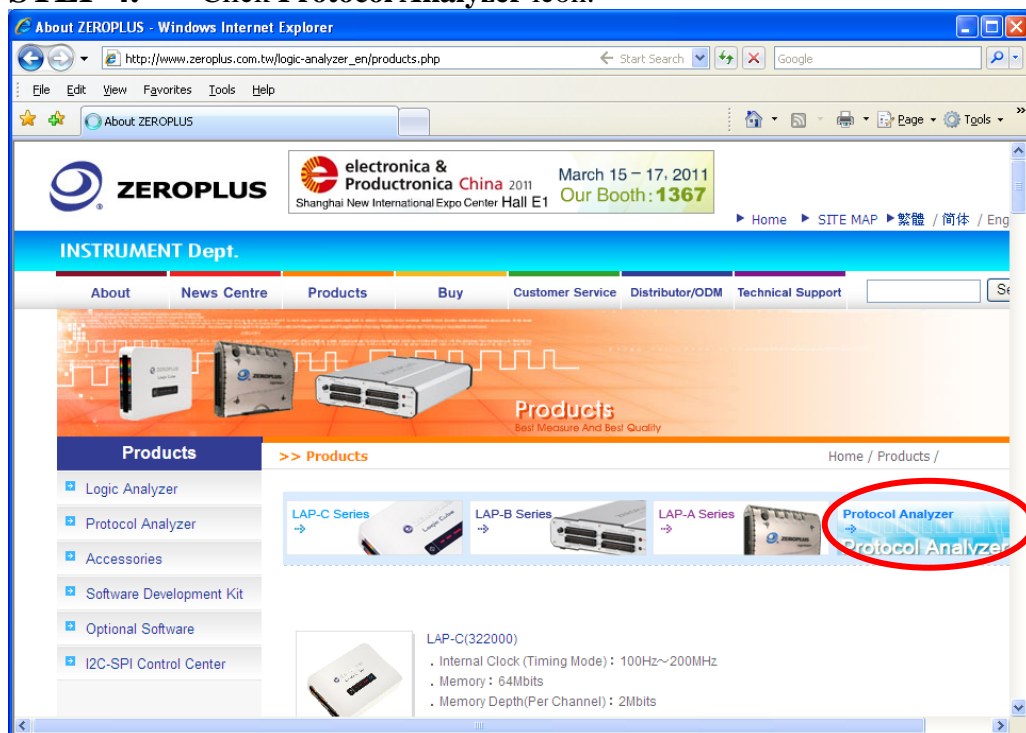




STEP 3. Click **Products** menu or select **Protocol Analyzer** item from its pull-down menu to go straight to STEP 5.

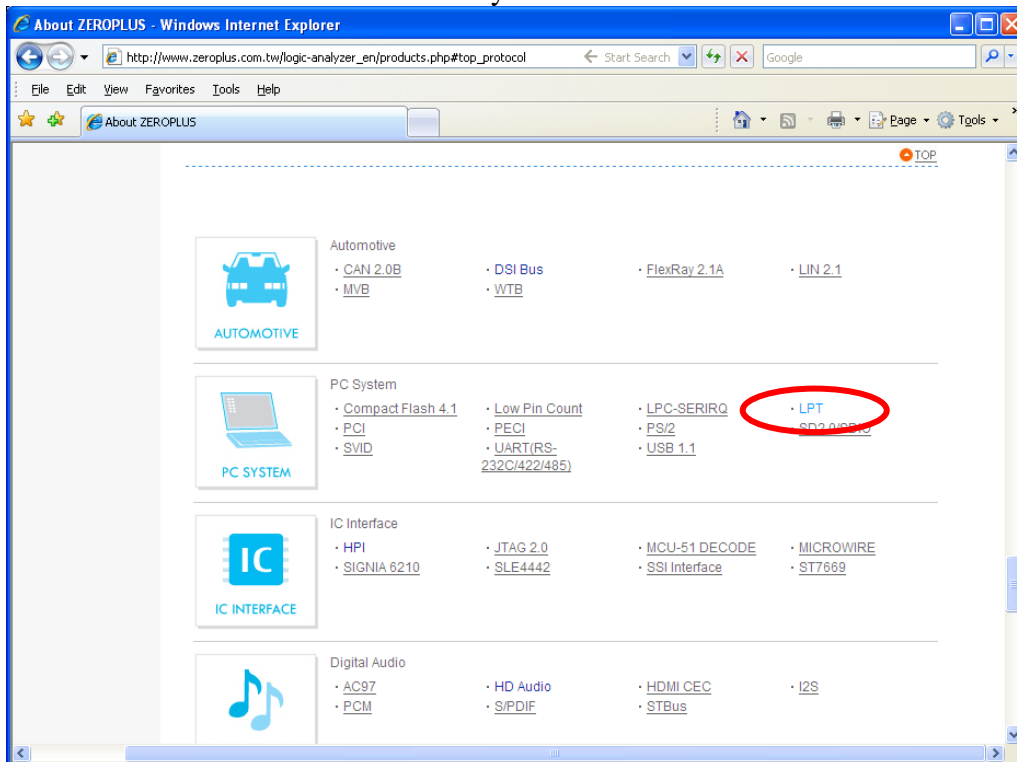


STEP 4. Click **Protocol Analyzer** icon.

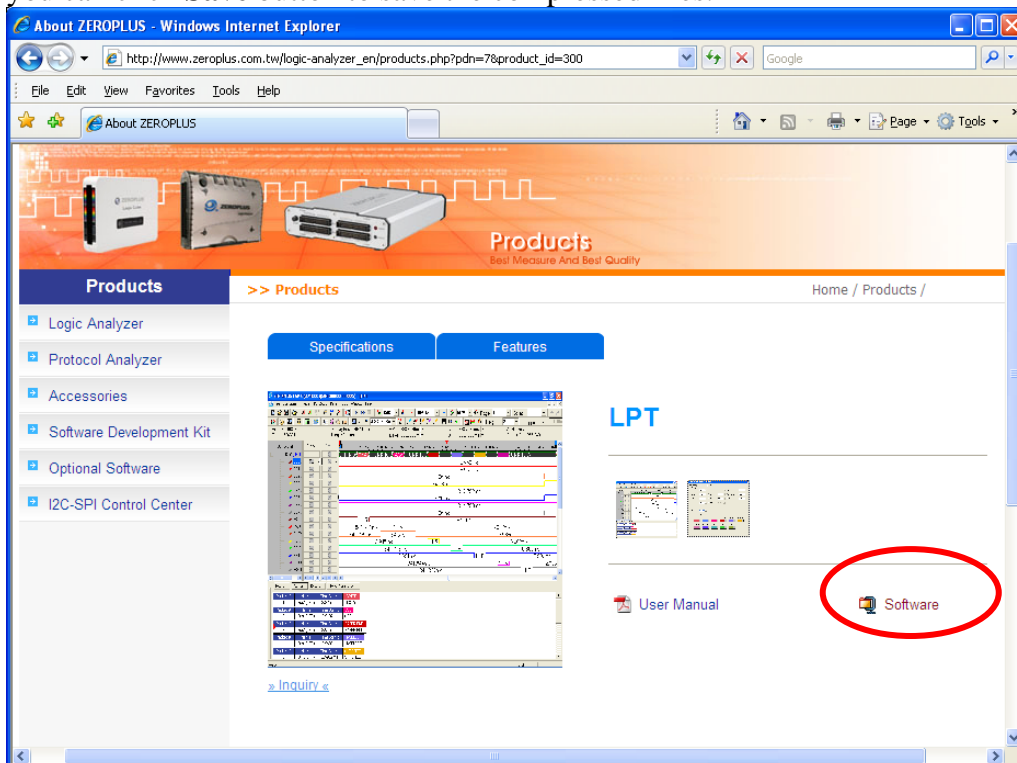




STEP 5. Click **LPT** in the PC System.



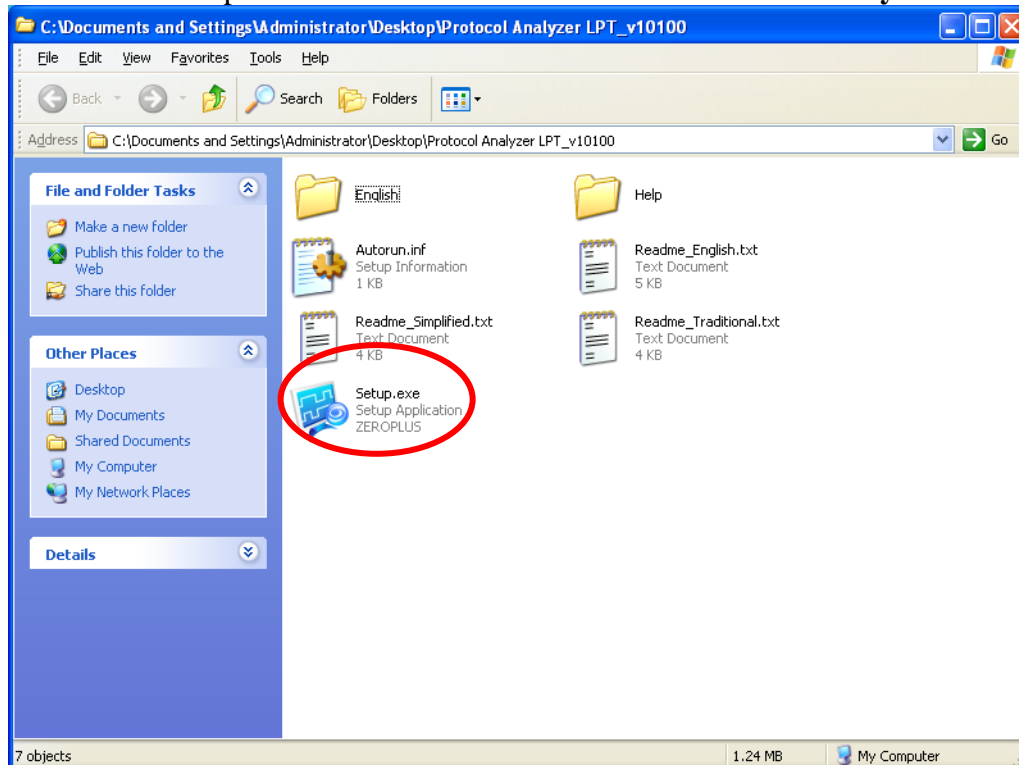
STEP 6. Click **Software** in the Products page. When the File Download dialog box appears, you can click **Save** button to save the compressed files.



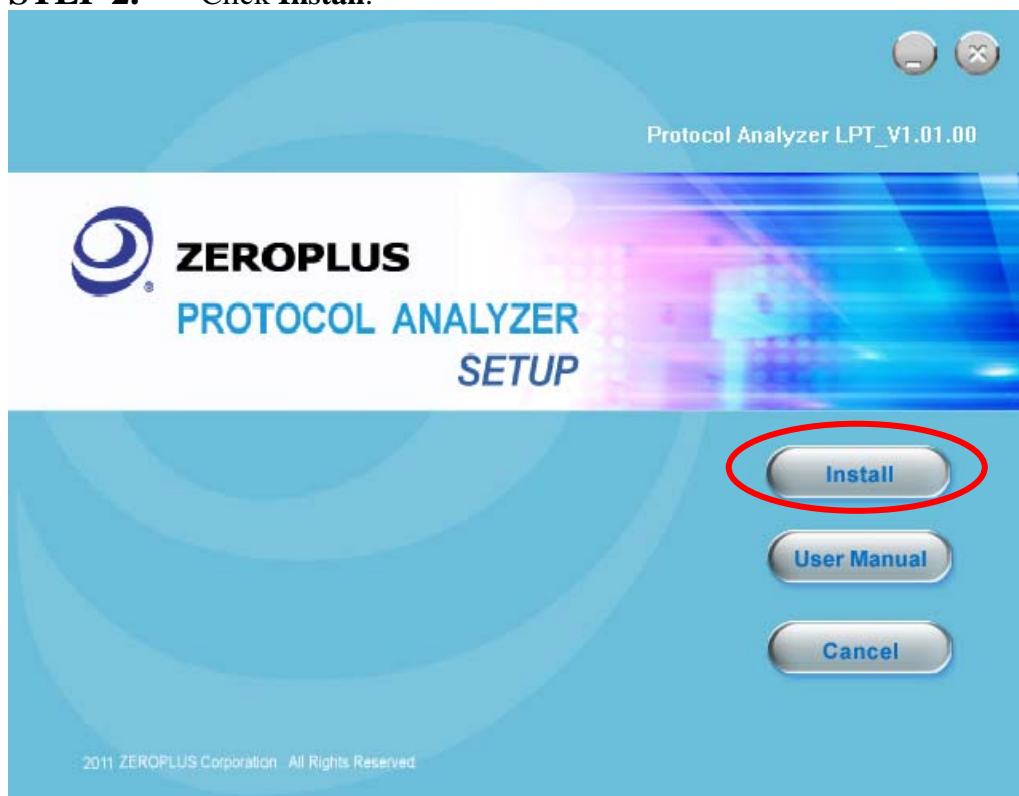


2 Software Installation

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

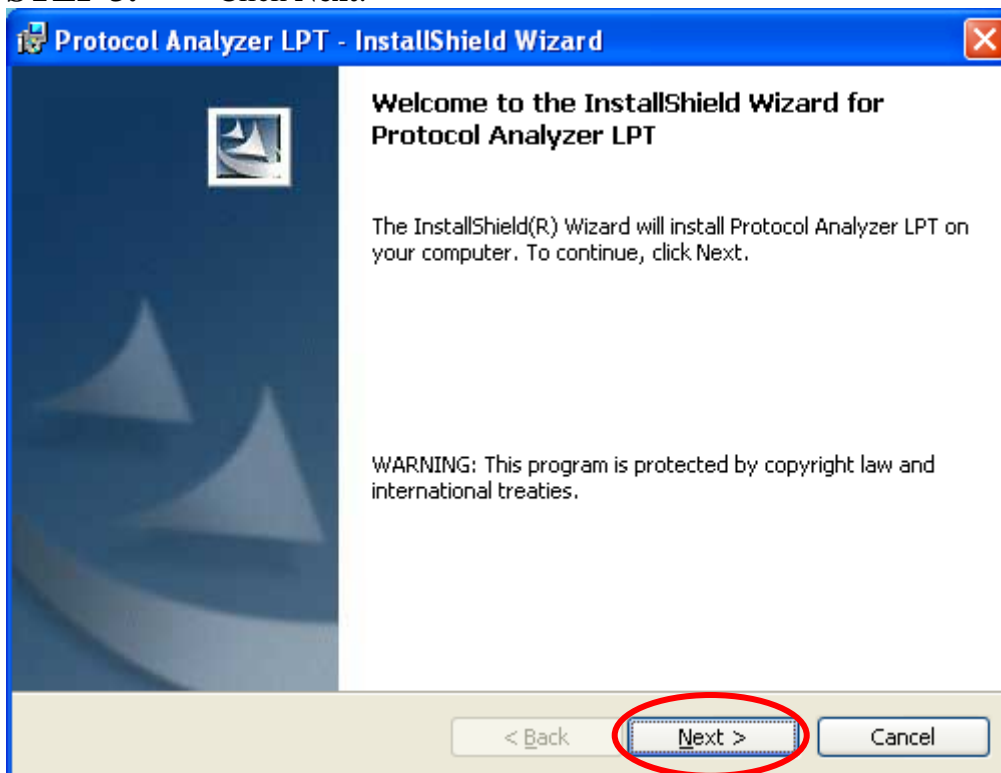


STEP 2. Click **Install**.

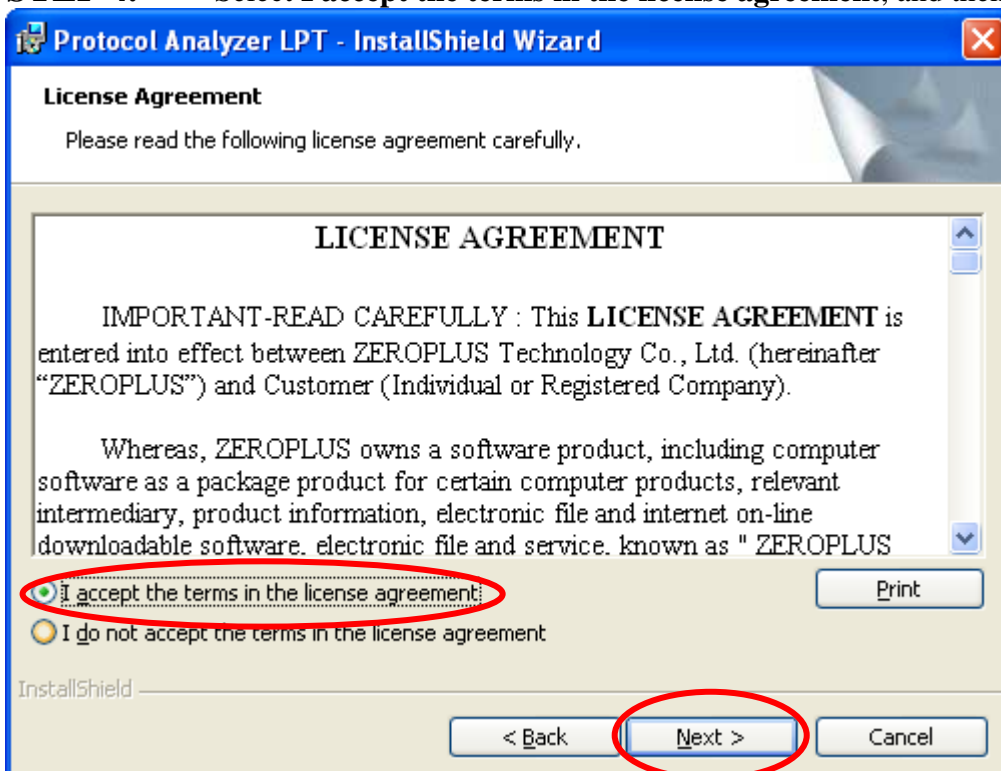




STEP 3. Click Next.



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**.

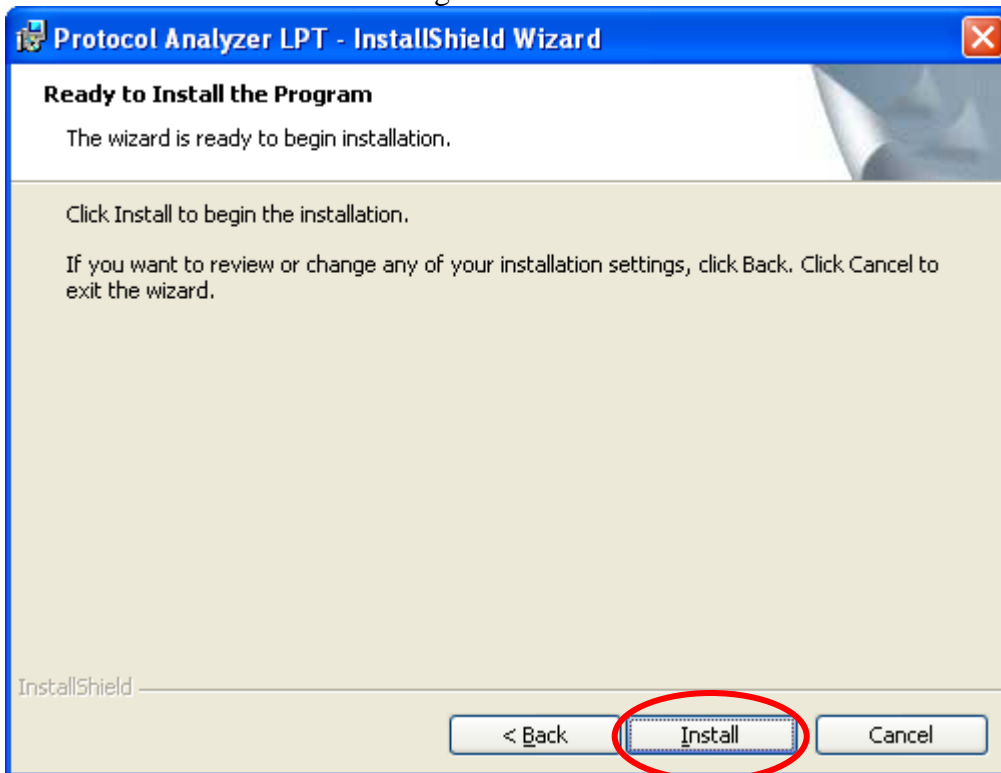
The dialog box is titled "Protocol Analyzer LPT - InstallShield Wizard". It has a blue header bar with a close button (X) in the top right corner. The main area is titled "Customer Information" and contains the text "Please enter your information." Below this, there are two text input fields: "User Name:" with the text "Microsoft" entered, and "Organization:" with the text "User" entered. Below these fields, 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 of the dialog, there are three buttons: "< Back", "Next >" (which is circled in red), and "Cancel". The "InstallShield" logo is visible in the bottom left corner.

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

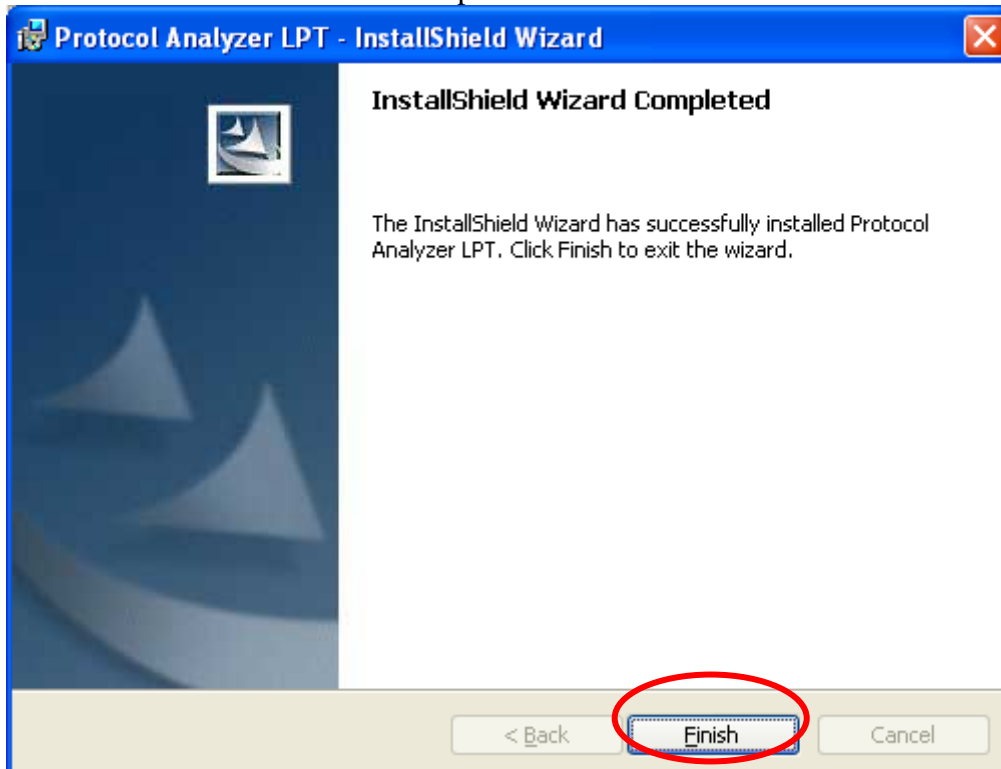
The dialog box is titled "Protocol Analyzer LPT - InstallShield Wizard". It has a blue header bar with a close button (X) in the top right corner. The main area is titled "Setup Type" and contains the text "Choose the setup type that best suits your needs." Below this, there is a section titled "Please select a setup type." with two radio button options: "Complete" (which is selected) and "Custom". Each option has a small icon of a computer tower 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 of the dialog, there are three buttons: "< Back", "Next >" (which is circled in red), and "Cancel". The "InstallShield" logo is visible in the bottom left corner.



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



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

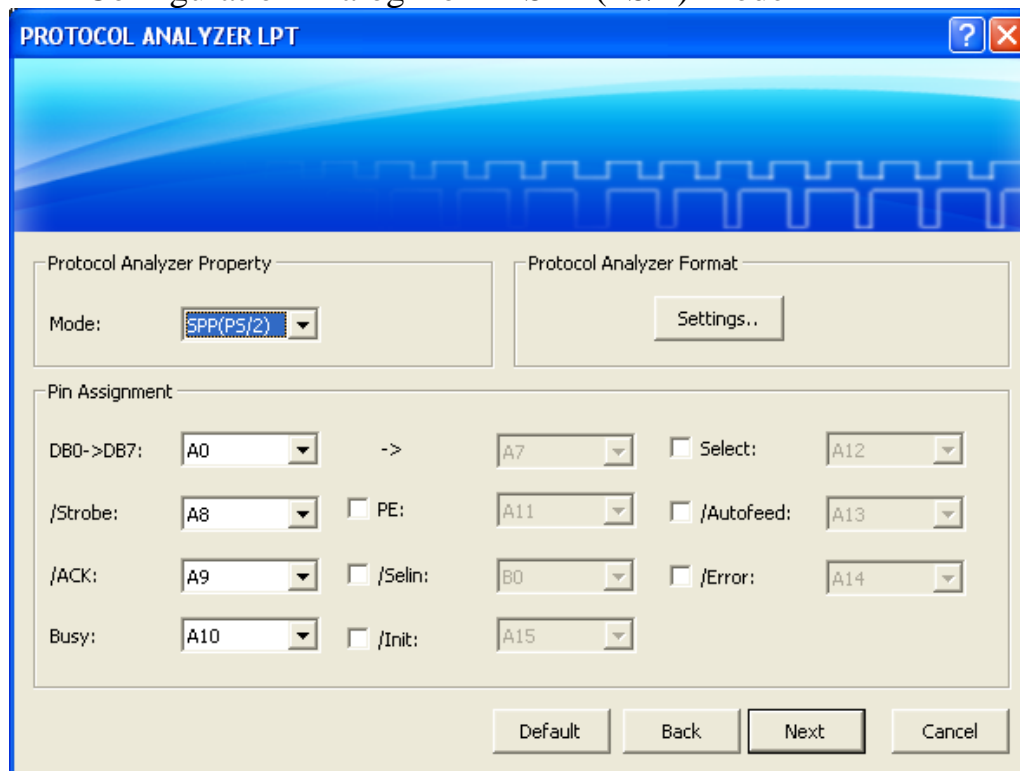




3 User Interface

In the configuration, please refer to the below images to select options of setting LPT module.

LPT Configuration Dialog Box in SPP (PS/2) Mode



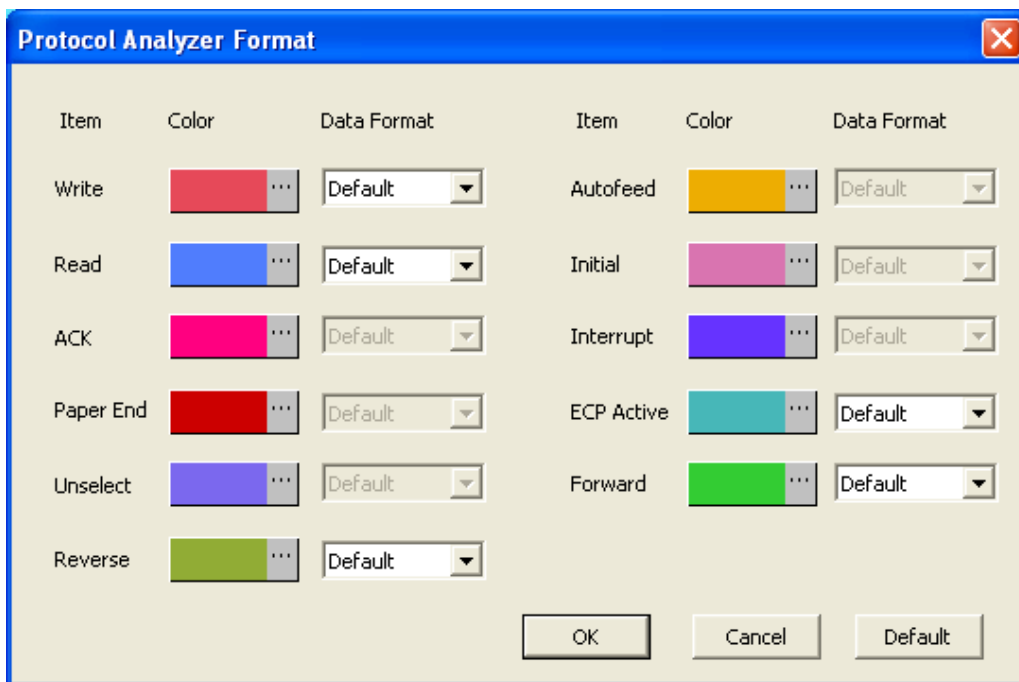
Protocol Analyzer Property:

Mode: There are three modes for LPT, which are the SPP(PS/2), EPP and ECP.

Pin Assignment in the SPP (PS/2) Mode: There are 17 Signal Lines for the SPP (PS/2) Mode in total, which include 8 Data Lines, 5 Status Lines and 4 Control Lines. DB0->DB7 are the Data ports. When the Busy line is in the Low Level, it indicates “Busy”. When the data is transmitted, the /ACK line is in the Low Level at first and then in the High Level. When there is not a piece of paper for the printer, PE line is in the High Level. When the printer is effective, the Select line is the High Level. When there is an error for the printer, the /Error line is in the Low Level. The /Selin line is usually in the High Level in the SPP Mode; when it is in the Low Level, it indicates the selection of input. When the /Init line is in the Low Level, the printer starts initializing. When the /Autofeed line is in the Low Level, it indicates that the printer formfeeds automatically. The /Strobe line represents the Strobe Signal. Thereinto, the Read or the Write Operation of the decoding data mainly uses eleven channels in total, which are DB0->DB7, /Strobe, Busy, /ACK. The other channels are selectable decoding lines.

Protocol Analyzer Format:

Press the **Settings** button to open the Protocol Analyzer Format dialog box. The Color of each Item can be varied as the users' requirements. The Items (Write, Read, ECP Active, Forward and Reverse) can be set as Binary, Decimal, Hexadecimal, ASCII or Default. And the Data Format of these Items (Write, Read, ECP Active, Forward and Reverse) in the Waveform Display Area and Packet List is controlled by the Protocol Analyzer. The default Data Format is controlled by the main program and the Data Format of these items (Write, Read, ECP Active, Forward and Reverse) is the Default.

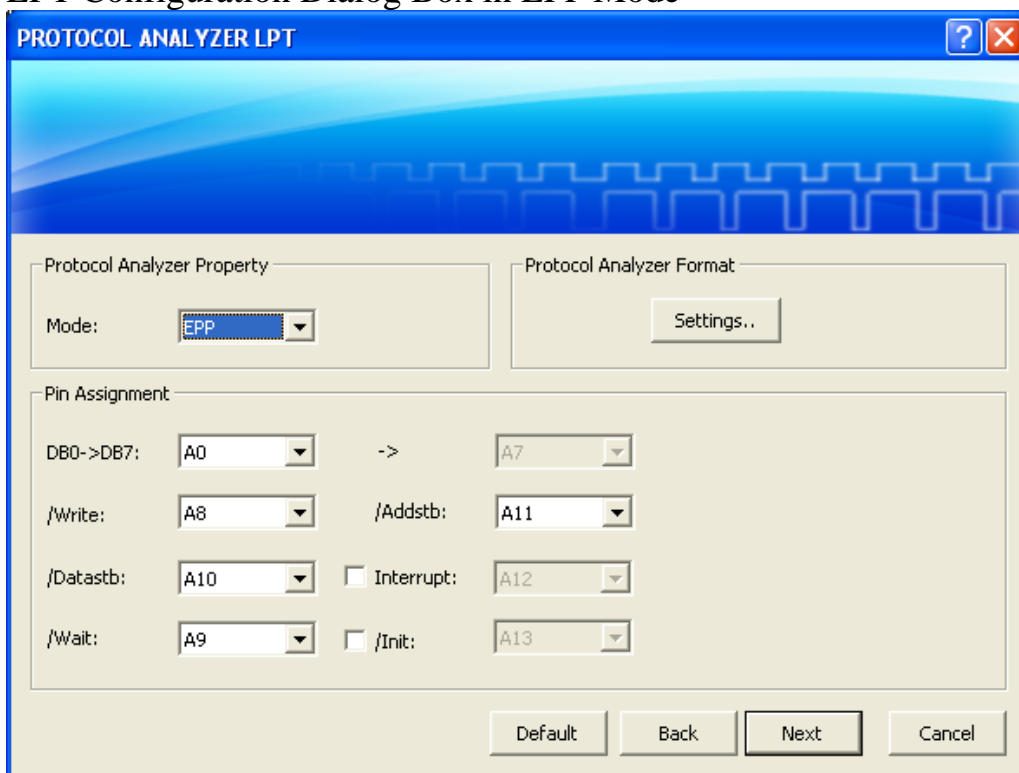


The Protocol Analyzer Format dialog box contains two columns of settings. Each setting includes a color selection box (with a small '...' button), a 'Data Format' dropdown menu, and a 'Default' button. The settings are as follows:

Item	Color	Data Format	Item	Color	Data Format
Write	Red	Default	Autofeed	Yellow	Default
Read	Blue	Default	Initial	Pink	Default
ACK	Magenta	Default	Interrupt	Purple	Default
Paper End	Red	Default	ECP Active	Cyan	Default
Unselect	Purple	Default	Forward	Green	Default
Reverse	Green	Default			

Buttons: OK, Cancel, Default

LPT Configuration Dialog Box in EPP Mode



The Protocol Analyzer LPT dialog box is divided into two main sections: 'Protocol Analyzer Property' and 'Protocol Analyzer Format'.

Protocol Analyzer Property:

- Mode: EPP (selected from a dropdown menu)

Protocol Analyzer Format:

- Settings.. button

Pin Assignment:

DB0->DB7:	->	
A0		A7
/Write: A8		/Addstb: A11
/Datastb: A10	<input type="checkbox"/> Interrupt:	A12
/Wait: A9	<input type="checkbox"/> /Init:	A13

Buttons: Default, Back, Next, Cancel

Protocol Analyzer Property:

Mode: There are three modes for LPT, which are the SPP (PS/2), EPP and ECP.

Pin Assignment in the EEP Mode: It needs 12 channels for EPP decoding, which are the DB0->DB7, /Write, /Wait, /Datastb and /Addstb. The Interrupt and the /Init are selectable decoding lines.

Protocol Analyzer Format:

Press the **Settings** button to open the Protocol Analyzer Format dialog box. The Color of each Item



can be varied as the users' requirements. The Items (Write, Read, ECP Active, Forward and Reverse) can be set as Binary, Decimal, Hexadecimal, ASCII or Default. And the Data Format of these Items (Write, Read, ECP Active, Forward and Reverse) in the Waveform Display Area and Packet List is controlled by the Protocol Analyzer. The default Data Format is controlled by the main program and the Data Format of these items (Write, Read, ECP Active, Forward and Reverse) is the Default.

LPT Configuration Dialog Box in ECP Mode

Protocol Analyzer Property:

Mode: There are three modes for LPT, which are the SPP (PS/2), EPP and ECP.

Pin Assignment in the ECP Mode: There are 8 Data Lines and 9 Control Lines, thereinto it needs 13 channels for decoding, which are the DB0~BD7, Hostack, Periphclk, /Periphack, AckReverse and Hostclk. The X-Flag, 1284 Active, PeriphRequest and ReverseRequest are selectable decoding lines.

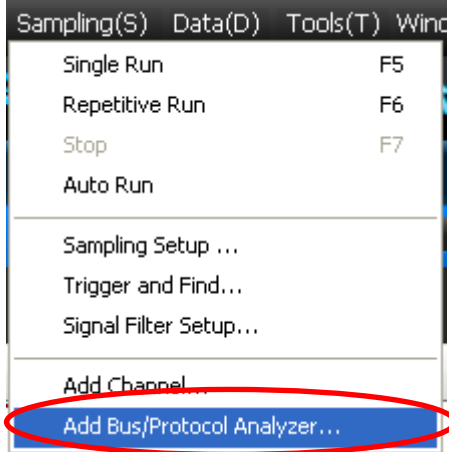
Protocol Analyzer Format:

Press the **Settings** button to open the Protocol Analyzer Format dialog box. The Color of each Item can be varied as the users' requirements. The Items (Write, Read, ECP Active, Forward and Reverse) can be set as Binary, Decimal, Hexadecimal, ASCII or Default. And the Data Format of these Items (Write, Read, ECP Active, Forward and Reverse) in the Waveform Display Area and Packet List is controlled by the Protocol Analyzer. The default Data Format is controlled by the main program and the Data Format of these items (Write, Read, ECP Active, Forward and Reverse) is the Default.

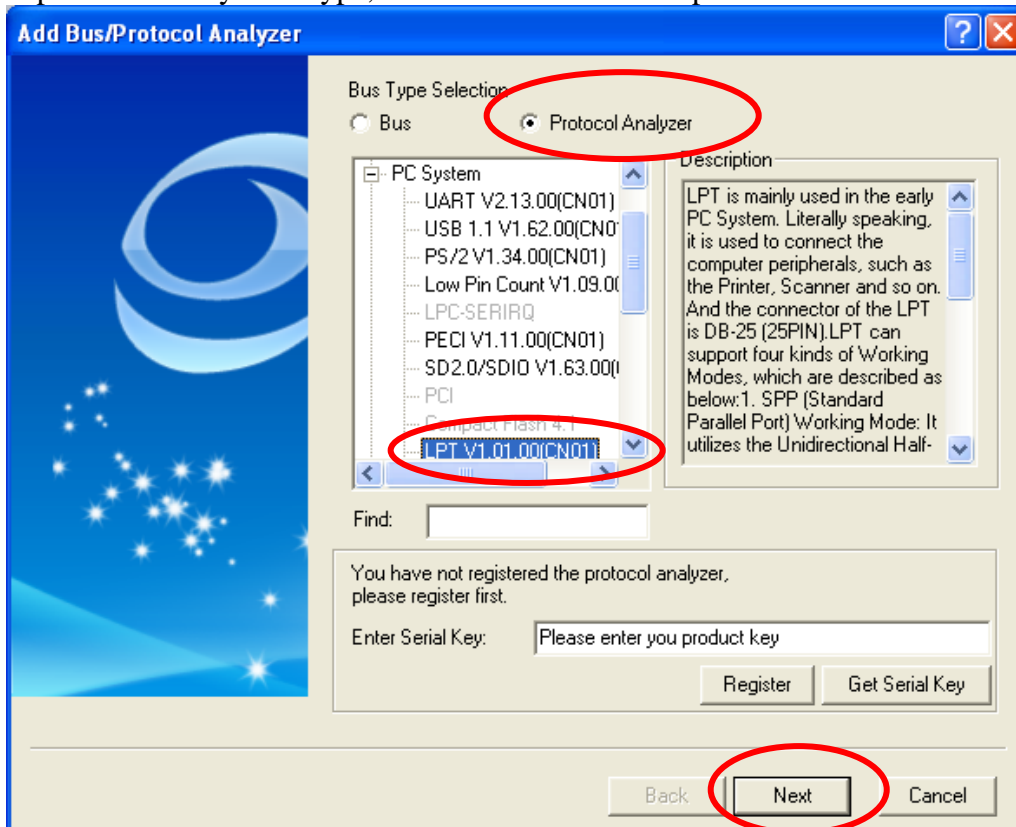


4 Operating Instructions

STEP 1. Select the **Add Bus/Protocol Analyzer** item on the pull-down menu of the **Sampling(S)** to open the **Add Bus/Protocol Analyzer** dialog box.

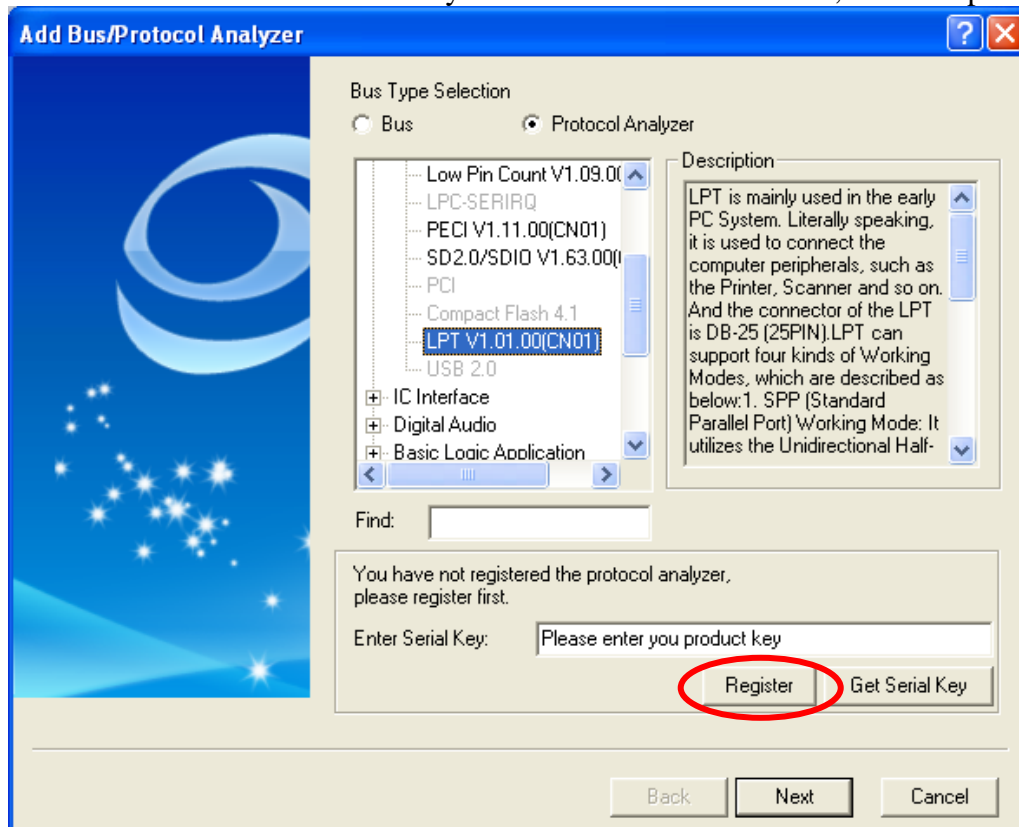


STEP 2. Select the Protocol Analyzer item in the Add Bus/Protocol Analyzer dialog box, expand the PC System Type, select the LPT and then press the **Next**.

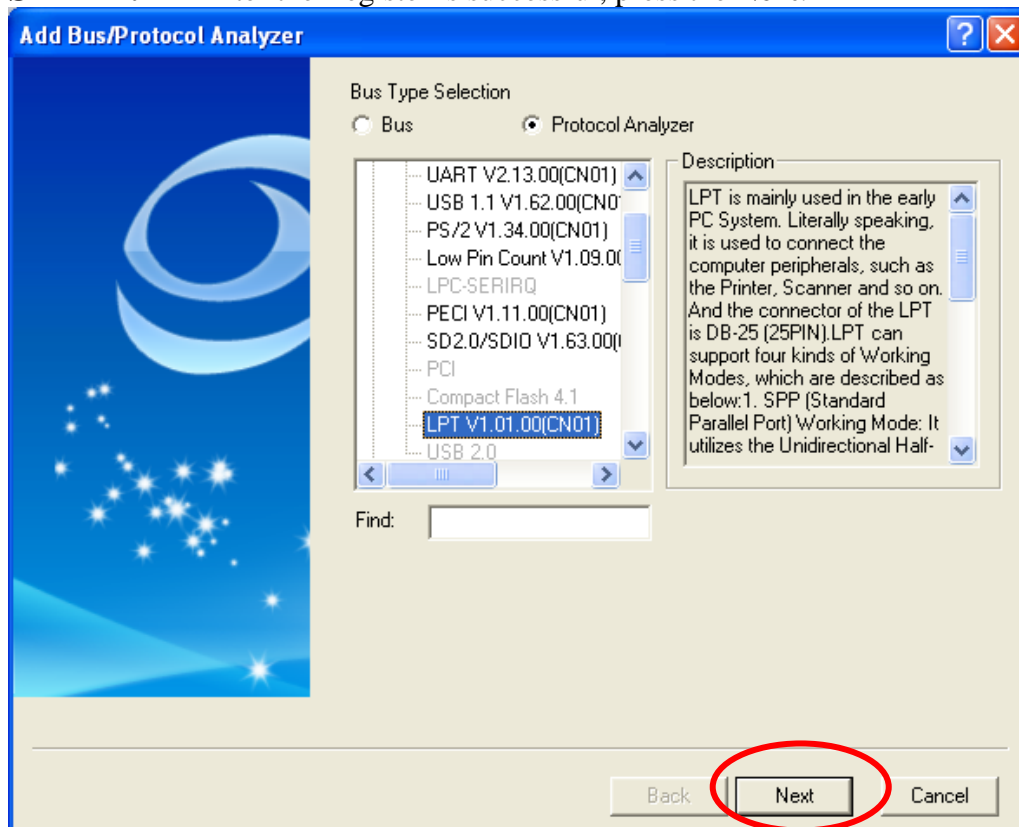




STEP 3. Enter the Serial Key of the LPT under this Model, and then press the **Register**.



STEP 4. After the Register is successful, press the **Next**.





STEP 5. Open the PROTOCOL ANALYZER LPT dialog box and set the **Mode** to SPP (PS/2), EPP or ECP. And the default is SPP (PS/2).

PROTOCOL ANALYZER LPT

Protocol Analyzer Property

Mode: SPP(PS/2)

Protocol Analyzer Format

Settings..

Pin Assignment

DB0->DB7: A0 -> A7 ☐ Select: A12

/Strobe: A8 ☐ PE: A11 ☐ /Autofeed: A13

/ACK: A9 ☐ /Selin: B0 ☐ /Error: A14

Busy: A10 ☐ /Init: A15

Default Back Next Cancel

STEP 6. Set the **Pin Assignment**.

PROTOCOL ANALYZER LPT

Protocol Analyzer Property

Mode: SPP(PS/2)

Protocol Analyzer Format

Settings..

Pin Assignment

DB0->DB7: A0 -> A7 ☐ Select: A12

/Strobe: A8 ☐ PE: A11 ☐ /Autofeed: A13

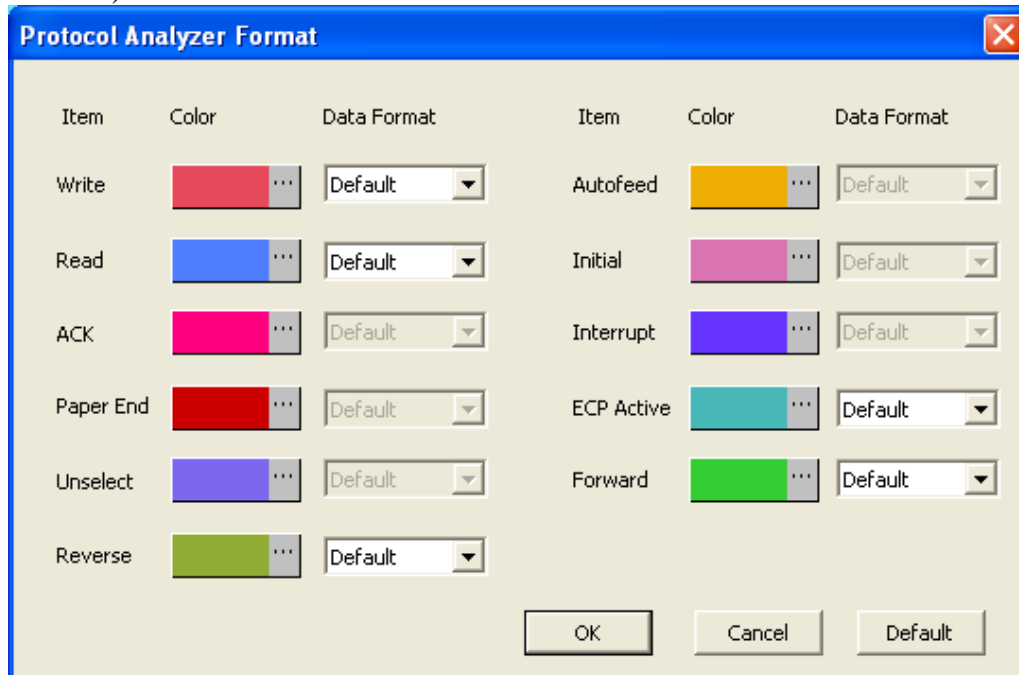
/ACK: A9 ☐ /Selin: B0 ☐ /Error: A14

Busy: A10 ☐ /Init: A15

Default Back Next Cancel



STEP 7. Press the **Settings** button to open the Protocol Analyzer Format dialog box, and then set the Color of each Item and the Data Format of the Items (Write, Read, ECP Active, Forward and Reverse).

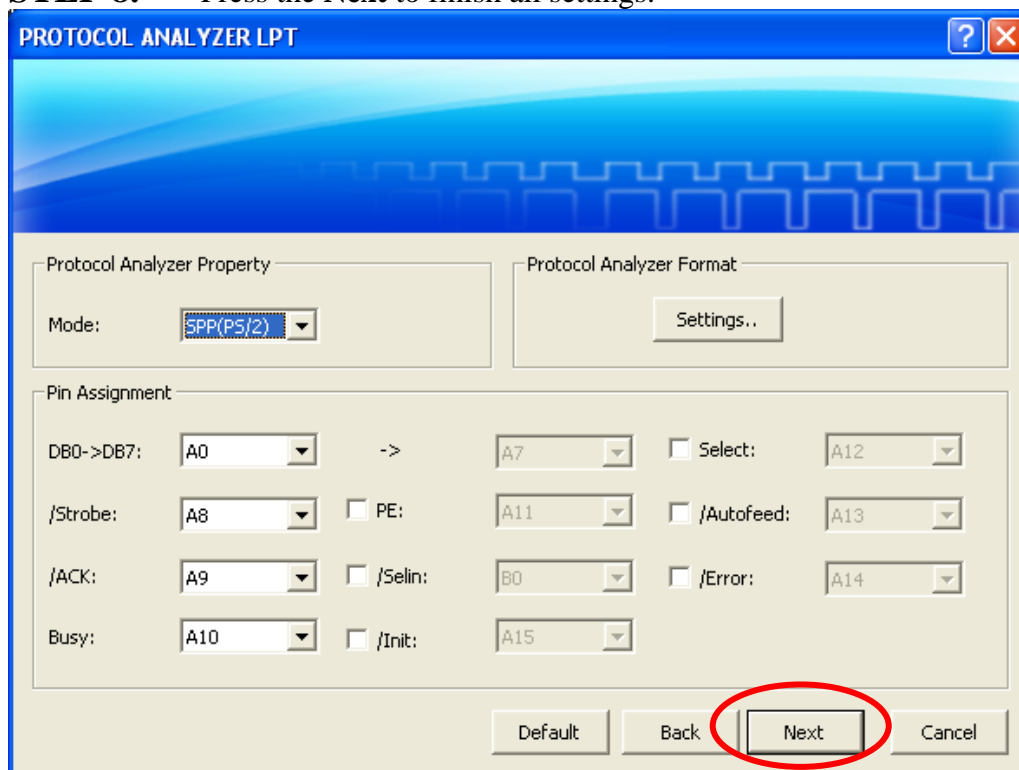


The dialog box titled "Protocol Analyzer Format" contains two columns of settings. Each column has a header row with "Item", "Color", and "Data Format".

Item	Color	Data Format	Item	Color	Data Format
Write	[Red color swatch]	Default	Autofeed	[Yellow color swatch]	Default
Read	[Blue color swatch]	Default	Initial	[Pink color swatch]	Default
ACK	[Magenta color swatch]	Default	Interrupt	[Purple color swatch]	Default
Paper End	[Red color swatch]	Default	ECP Active	[Teal color swatch]	Default
Unselect	[Purple color swatch]	Default	Forward	[Green color swatch]	Default
Reverse	[Olive color swatch]	Default			

At the bottom right are three buttons: "OK", "Cancel", and "Default".

STEP 8. Press the **Next** to finish all settings.



The dialog box titled "PROTOCOL ANALYZER LPT" has a blue header with a question mark and close button. It contains two main sections: "Protocol Analyzer Property" and "Protocol Analyzer Format".

Protocol Analyzer Property: Mode: SPP(P5/2)

Protocol Analyzer Format: Settings..

Pin Assignment:

DB0->DB7:	A0	->	A7	Select:	A12
/Strobe:	A8	PE:	A11	/Autofeed:	A13
/ACK:	A9	/Selin:	B0	/Error:	A14
Busy:	A10	/Init:	A15		

At the bottom are four buttons: "Default", "Back", "Next" (circled in red), and "Cancel".



STEP 9. Please enter the Bus Name, select **Yes, please delete** or **No, please reserve** and then press **Finish**.

Add Bus/Protocol Analyzer

Please input the Bus name

BUS

Do you want to delete the other Buses and channels in the software?

☐ Yes, please delete

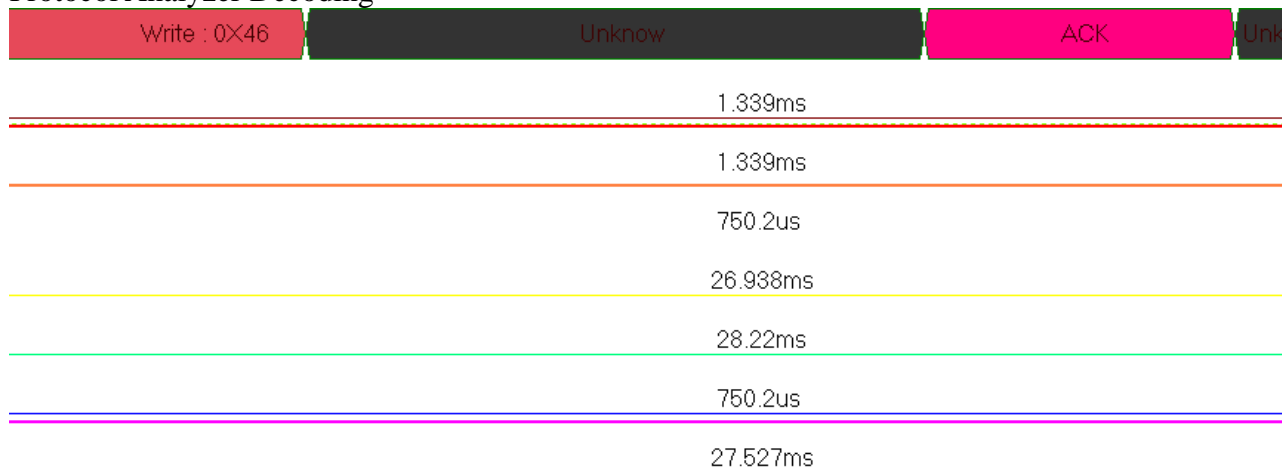
☒ No, please reserve

Back Finish Cancel



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 2K; the sampling frequency is 10MHz (the sampling frequency should be more than eight times higher than the signal to be tested).

Protocol Analyzer Decoding



Packet List

Navigator	Packet List	Statistics	Memory Analyzer
Packet #	Name	TimeStamp	Write
1	Bus1(LPT)	0.5662ms	46
Packet #	Name	TimeStamp	ACK
2	Bus1(LPT)	0.6007ms	ACK
Packet #	Name	TimeStamp	Paper End
3	Bus1(LPT)	0.6352ms	Paper End
Packet #	Name	TimeStamp	Unselect
4	Bus1(LPT)	0.6582ms	Unselect
Packet #	Name	TimeStamp	Autofeed
5	Bus1(LPT)	0.6812ms	Autofeed
Packet #	Name	TimeStamp	Error
6	Bus1(LPT)	0.7042ms	Error
Packet #	Name	TimeStamp	Initial
7	Bus1(LPT)	0.7272ms	Initial
Packet #	Name	TimeStamp	Read
8	Bus1(LPT)	0.7617ms	EA
Packet #	Name	TimeStamp	Error
9	Bus1(LPT)	1.3395ms	Error