



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

SPECIFICATION

MODEL: B09021-LAP-OPENTHERM 2.2-M

PART NO: _____

VERSION: **V1.01**

| Approver | | Check | Design |
|----------|----|-------|--------|
| GM | PM | | |
| | | | |

| Customer Confirm |
|------------------|
| |

*Please fax the file to Zeroplus Technology after signing.

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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.

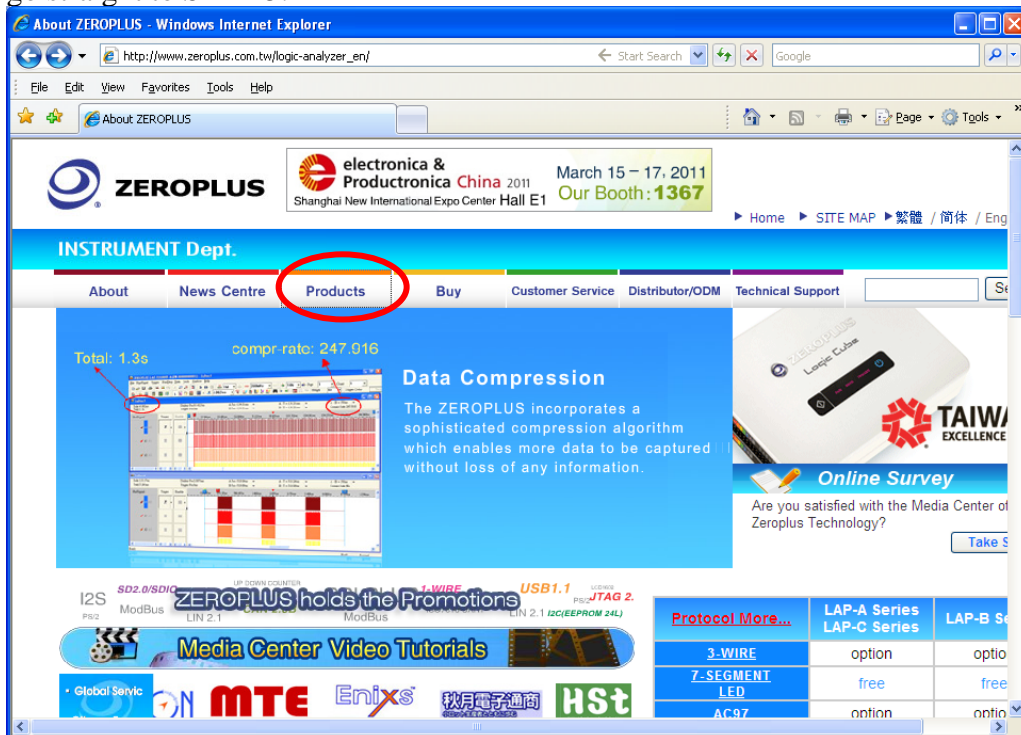
STEP 1. Visit the website of ZeroPlus: <http://www.zeroplus.com.tw>.

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

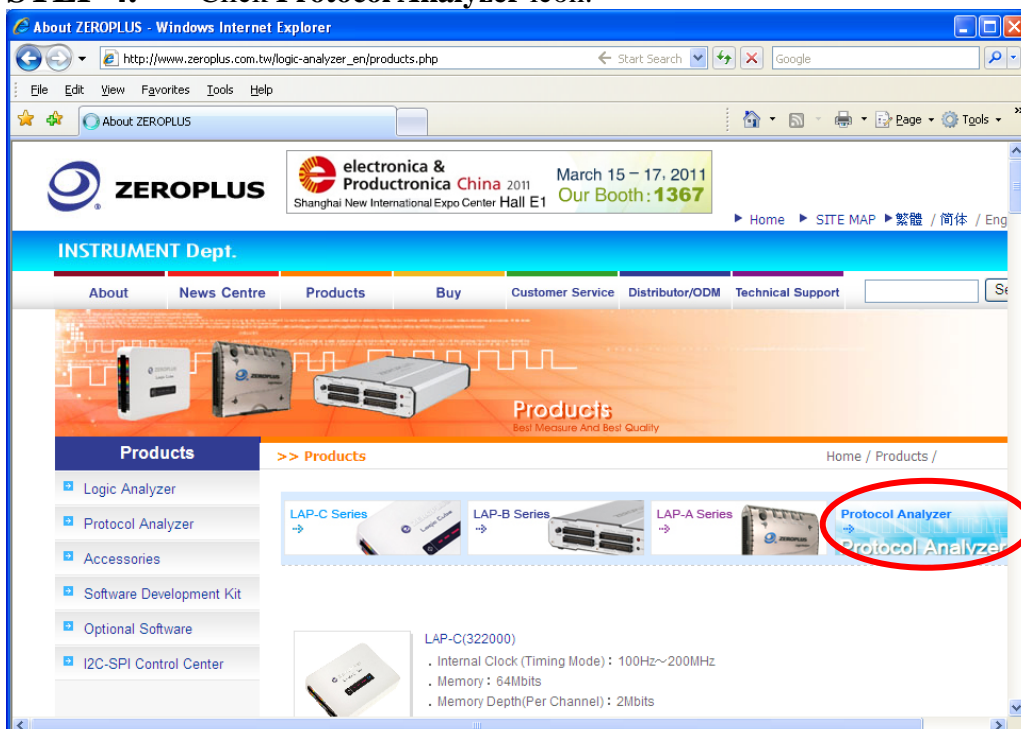




STEP 3. Click **Products** menu or select **Protocol Analyzer** item from its pull-down menu to go straight to STEP 5.

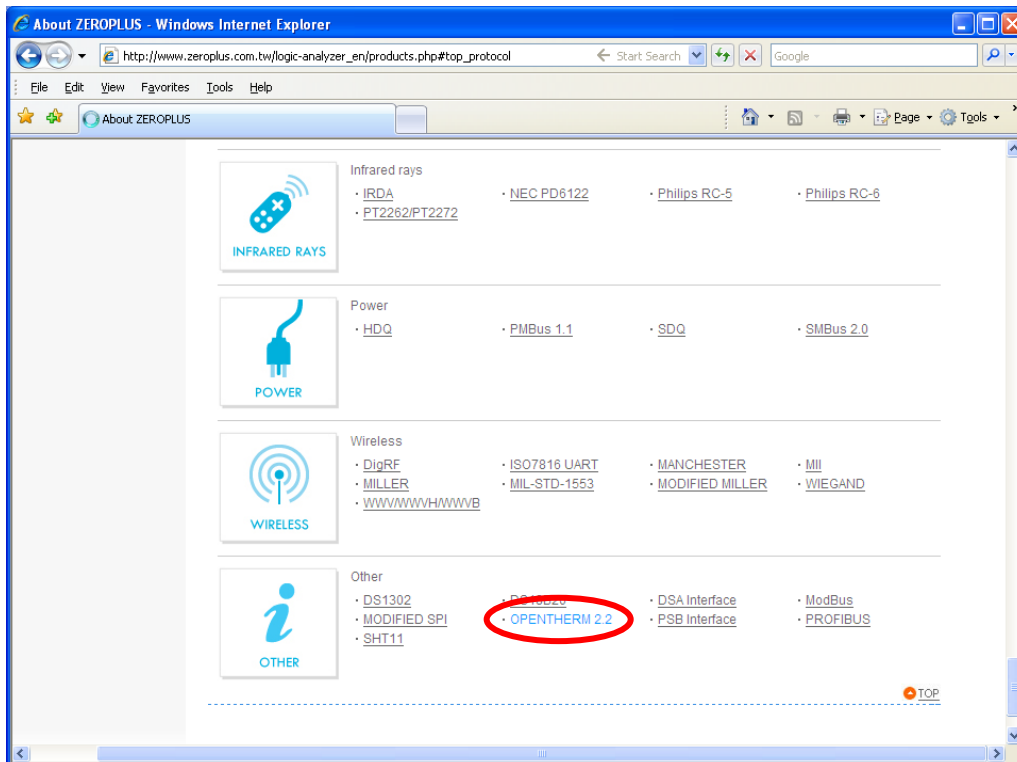


STEP 4. Click **Protocol Analyzer** icon.

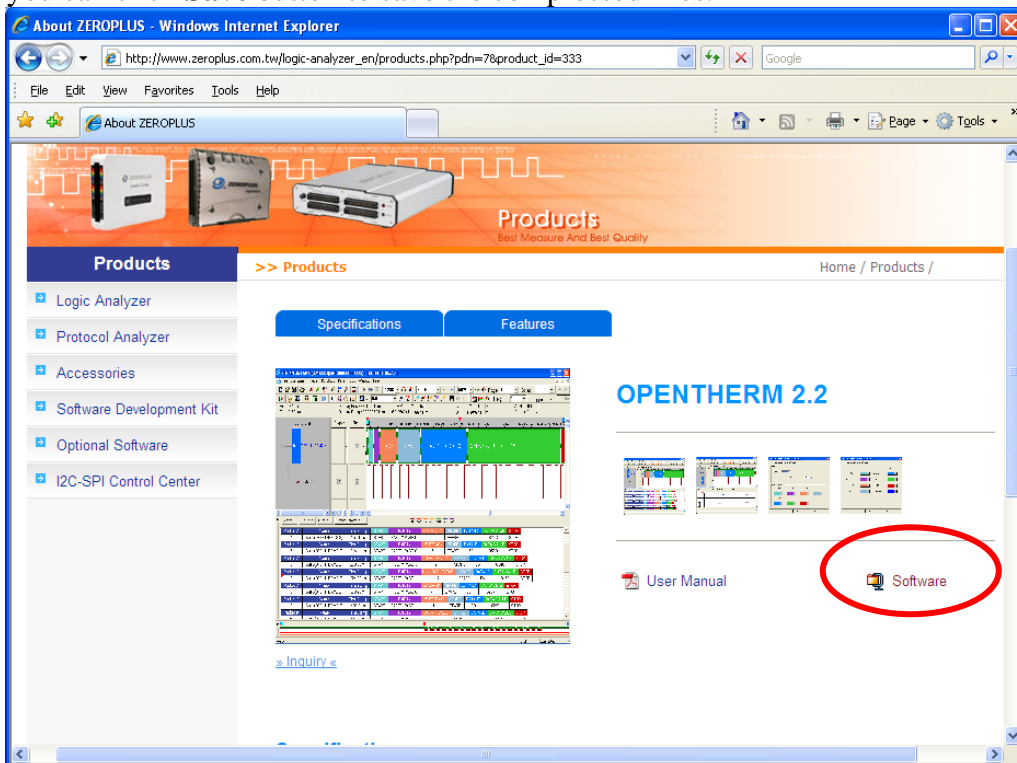




STEP 5. Click **OPENTHERM 2.2** in the Other.



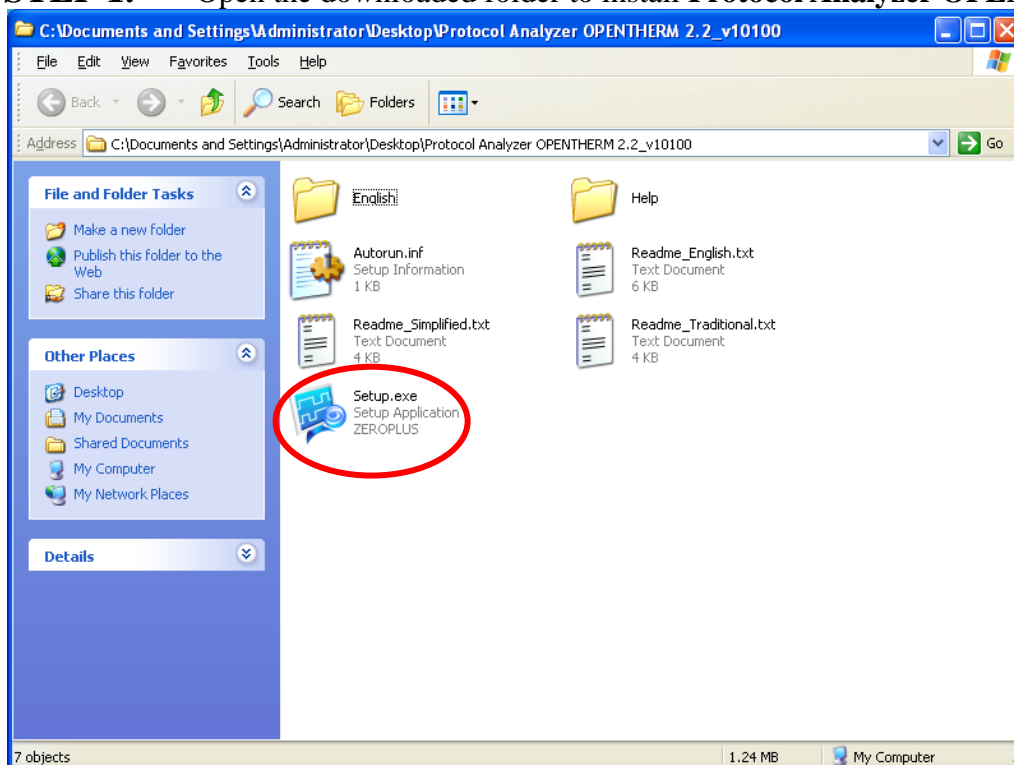
STEP 6. Click **Software** in the Products page. When the File Download dialog box appears, you can click **Save** button to save the compressed files.



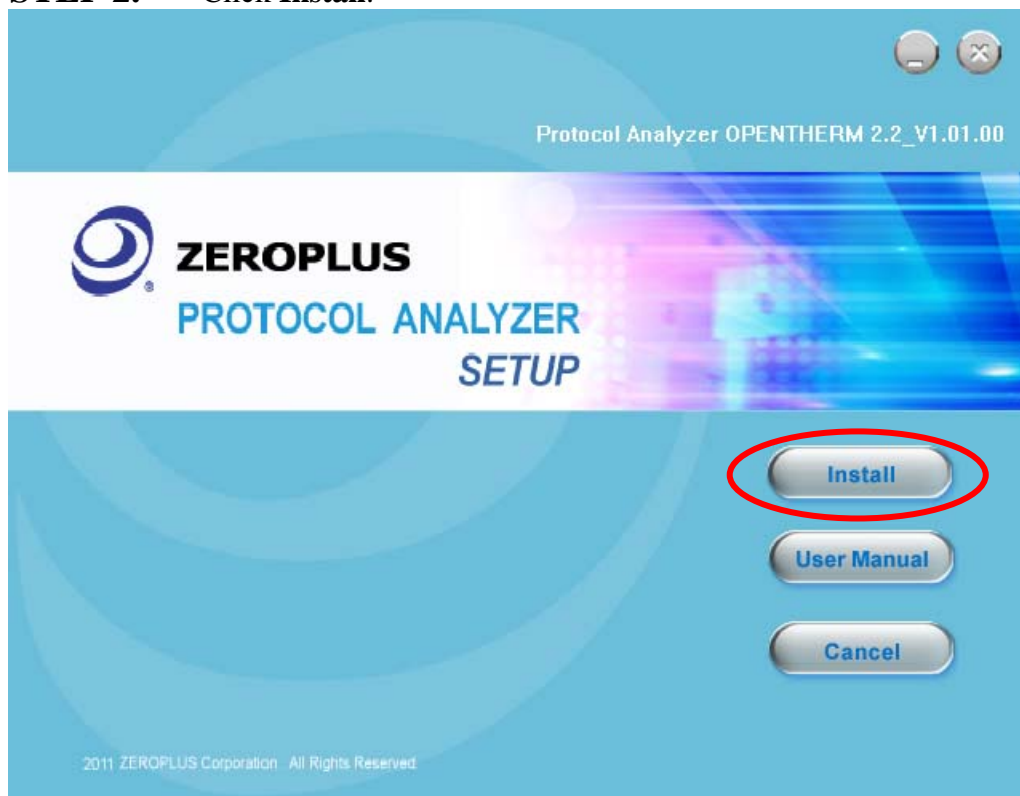


2 Software Installation

STEP 1. Open the downloaded folder to install **Protocol Analyzer OPENTHERM 2.2.**

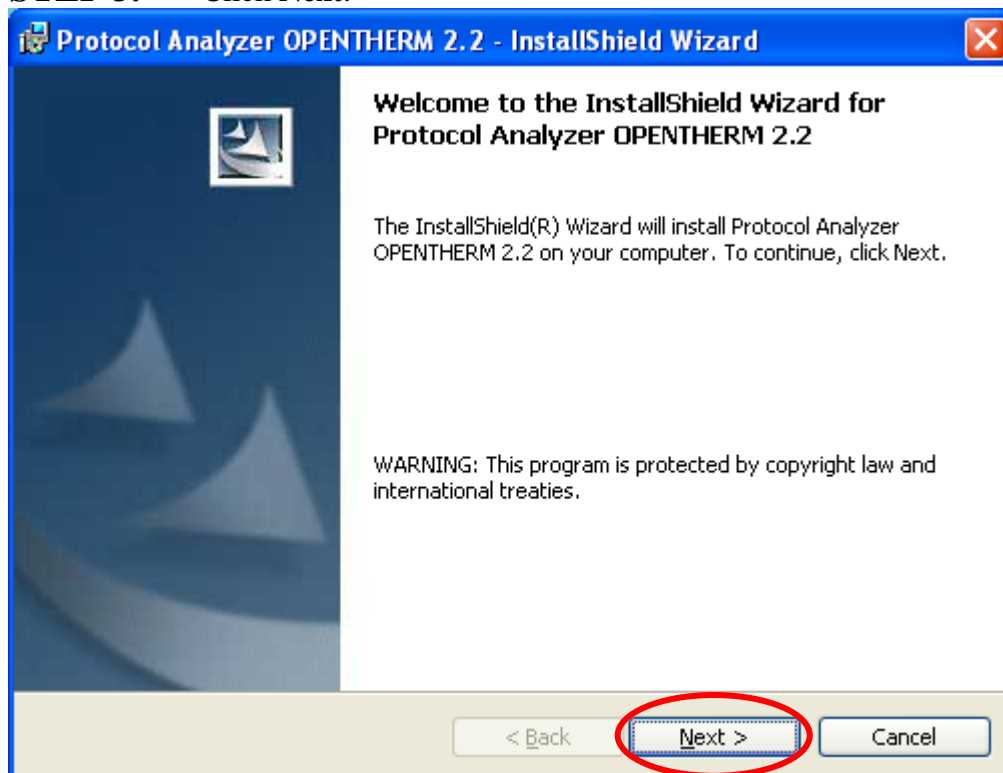


STEP 2. Click **Install**.

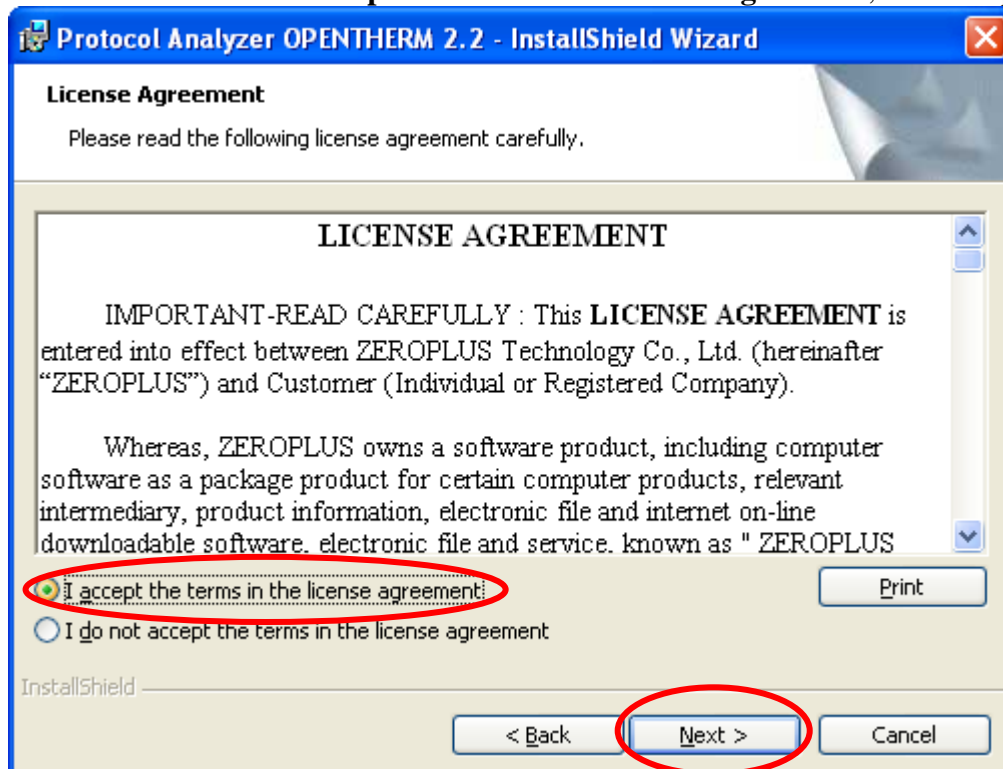




STEP 3. Click Next.



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**.

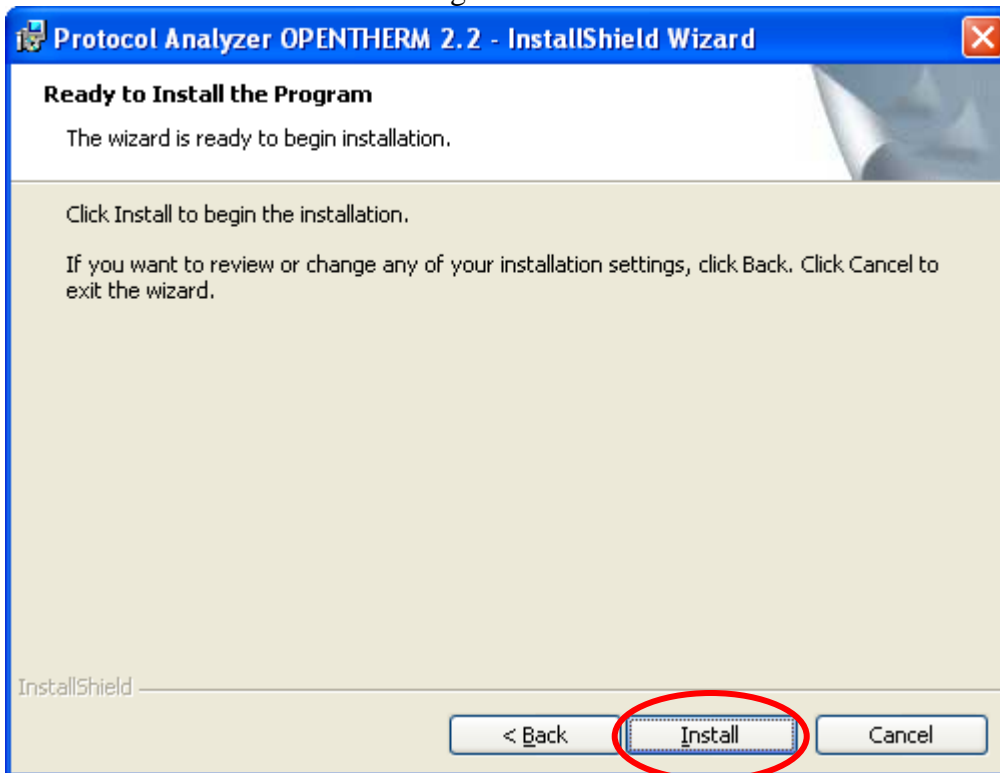
The dialog box is titled "Protocol Analyzer OPENTHERM 2.2 - InstallShield Wizard". It has a "Customer Information" section with the instruction "Please enter your information." Below this, there are two text input fields: "User Name:" with "Microsoft" entered, and "Organization:" with "User" entered. Underneath, it says "Install this application for:" followed by two radio button options: "Anyone who uses this computer (all users)" (which is selected) and "Only for me (Microsoft)". At the bottom, 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**.

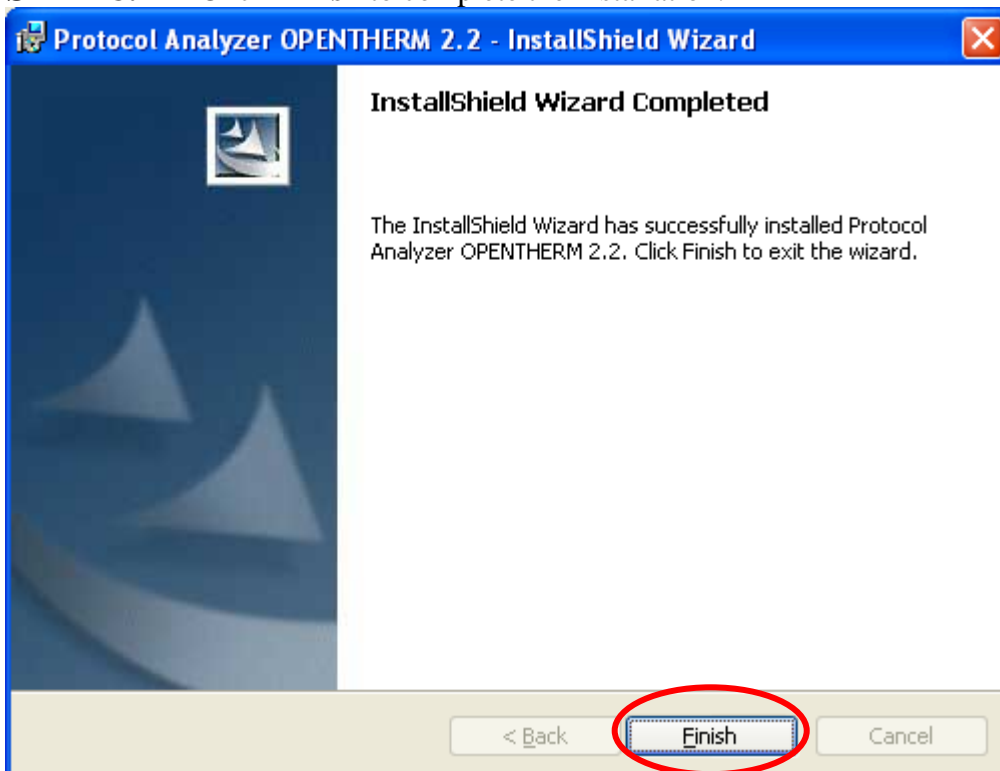
The dialog box is titled "Protocol Analyzer OPENTHERM 2.2 - InstallShield Wizard". It has a "Setup Type" section with the instruction "Choose the setup type that best suits your needs." Below this, it says "Please select a setup type." There are two radio button options: "Complete" (which is selected) and "Custom". Each option has a small icon and a description. The "Complete" option's description is "All program features will be installed. (Requires the most disk space.)". The "Custom" option's description is "Choose which program features you want installed and where they will be installed. Recommended for advanced users." At the bottom, 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 OPENTHERM 2.2 module.

OPENTHERM 2.2 Configuration Dialog Box

Pin Assignment:

Data: It is the Data Signal Line, and it needs only one channel.

Protocol Analyzer Property:

Inaccuracy Rate: It is the allowable tolerance value for the time width of one bit; the default is 10%. The standard Bit Width of the OPENTHERM 2.2 is 1ms, and the 10% tolerance means that the Bit Width can be among 0.9ms-1.1ms. Otherwise, there are other two options, 5% and 15%, which can be selected from the pull-down menu.

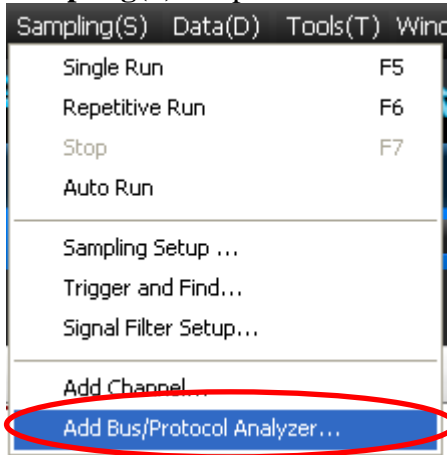
Protocol Analyzer Format:

The Color of each Item can be varied as the users' requirements. The Items (MSG Type, Data ID and Data Value) can be set as Binary, Decimal, Hexadecimal, ASCII or Default. And the Data Format of these Items (MSG Type, Data ID and Data Value) 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 (MSG Type, Data ID and Data Value) is the Default.

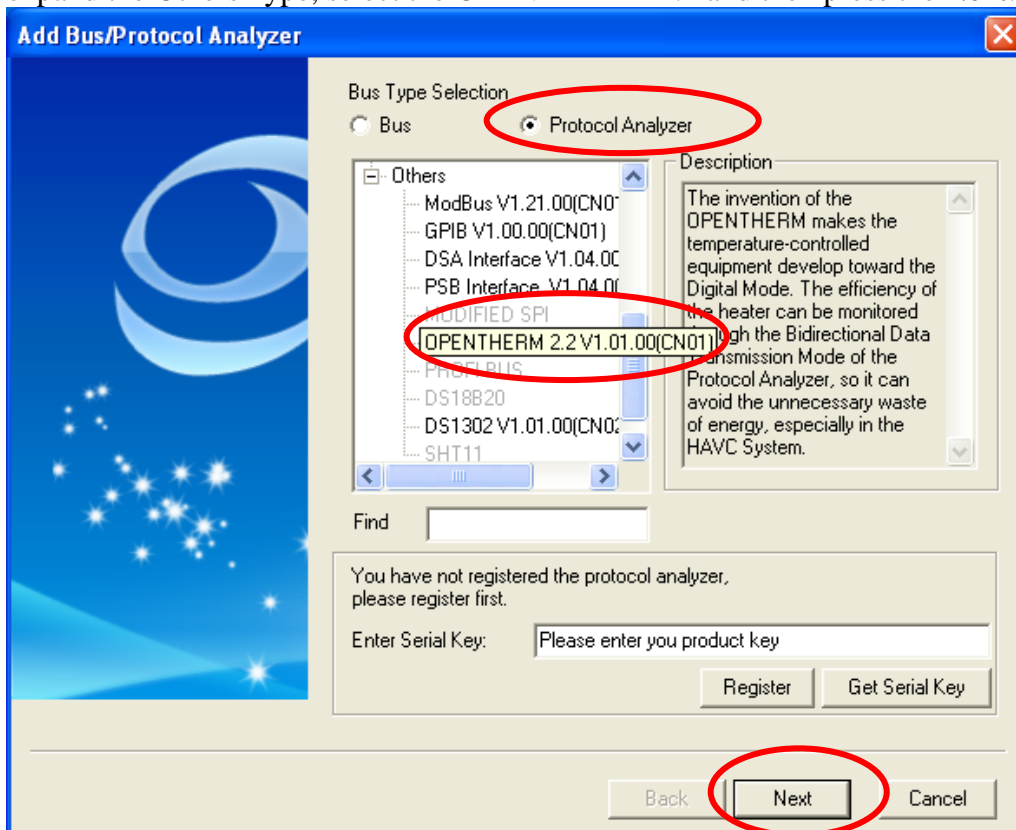


4 Operating Instructions

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.

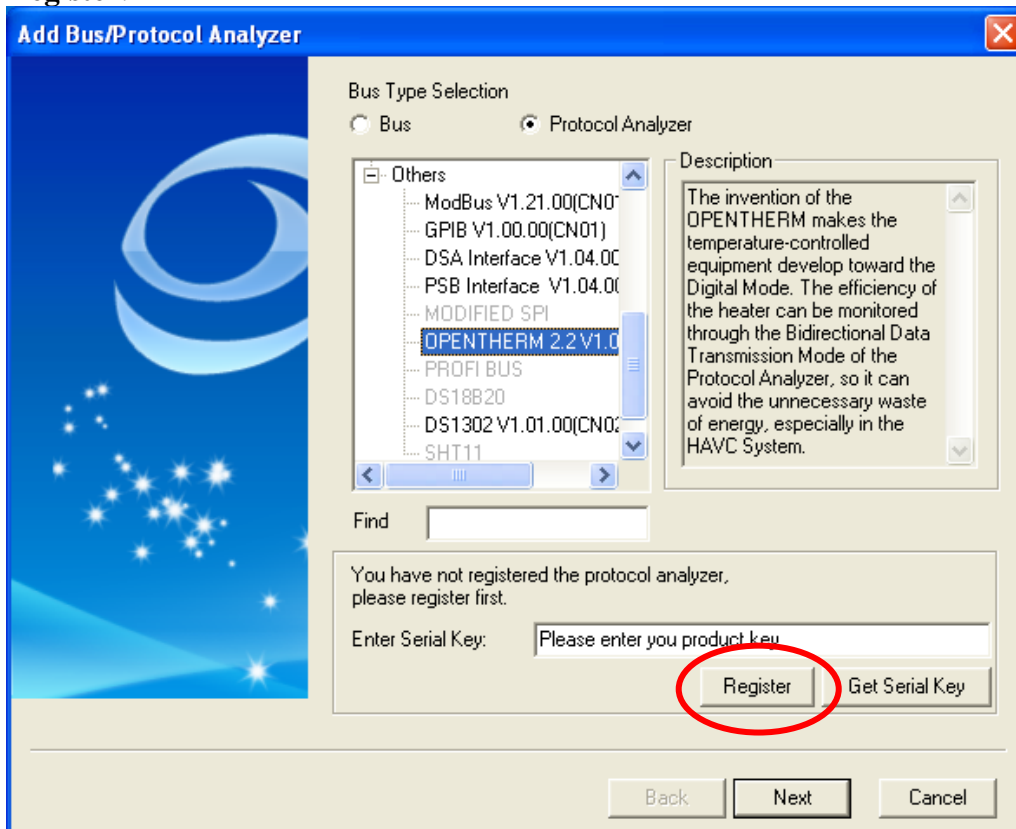


STEP 2. Select the Protocol Analyzer item in the Add Bus/Protocol Analyzer dialog box, expand the Others Type, select the OPENTHERM 2.2 and then press the **Next**.

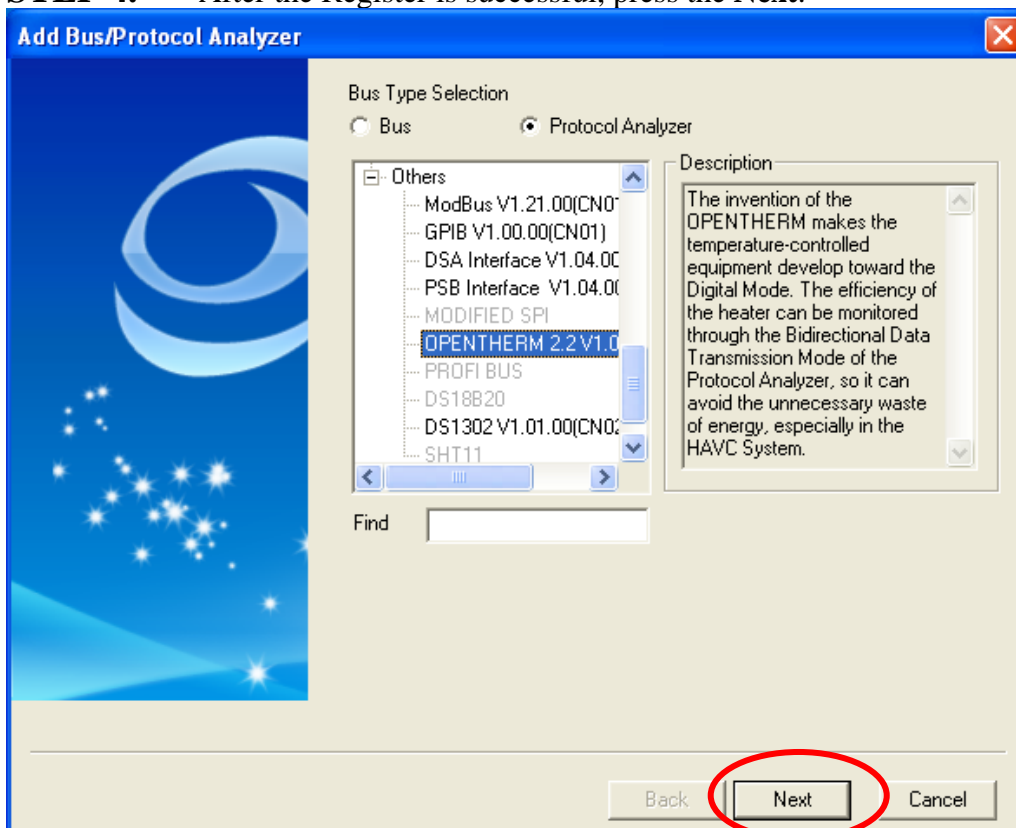




STEP 3. Enter the Serial Key of the OPENTHERM 2.2 under this Model, and then press the **Register**.



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





STEP 5. Set the **Data** in the Pin Assignment.

PROTOCOL ANALYZER OPENTHERM 2.2

Pin Assignment

Data: A0

Protocol Analyzer Property

Inaccuracy Rate: 10%

Protocol Analyzer Format

| Item | Color | Data Format |
|----------|---------------|----------------------|
| Start | | Default |
| Parity | | Default |
| MSG Type | | Default |
| Space | | Default |

| Item | Color | Data Format |
|------------|---------------|----------------------|
| Data ID | | Default |
| Data Value | | Default |
| Stop | | Default |

Default Back Next Cancel

STEP 6. Set the **Inaccuracy Rate** to 5%, 10% or 15%, and the default is 10%.

PROTOCOL ANALYZER OPENTHERM 2.2

Pin Assignment

Data: A0

Protocol Analyzer Property

Inaccuracy Rate: 10%

Protocol Analyzer Format

| Item | Color | Data Format |
|----------|---------------|----------------------|
| Start | | Default |
| Parity | | Default |
| MSG Type | | Default |
| Space | | Default |

| Item | Color | Data Format |
|------------|---------------|----------------------|
| Data ID | | Default |
| Data Value | | Default |
| Stop | | Default |

Default Back Next Cancel



STEP 7. Set the Color of each Item and the Data Format of the Items (Data ID, MSG Type and Data Value).

PROTOCOL ANALYZER OPENTHERM 2.2

Pin Assignment: Data: A0

Protocol Analyzer Property: Inaccuracy Rate: 10%

Protocol Analyzer Format:

| Item | Color | Data Format | Item | Color | Data Format |
|----------|-------|-------------|------------|-------|-------------|
| Start | | Default | Data ID | | Default |
| Parity | | Default | Data Value | | Default |
| MSG Type | | Default | Stop | | Default |
| Space | | Default | | | |

Default Back Next Cancel

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

PROTOCOL ANALYZER OPENTHERM 2.2

Pin Assignment: Data: A0

Protocol Analyzer Property: Inaccuracy Rate: 10%

Protocol Analyzer Format:

| Item | Color | Data Format | Item | Color | Data Format |
|----------|-------|-------------|------------|-------|-------------|
| Start | | Default | Data ID | | Default |
| Parity | | Default | Data Value | | Default |
| MSG Type | | Default | Stop | | Default |
| Space | | Default | | | |

Default Back Next 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

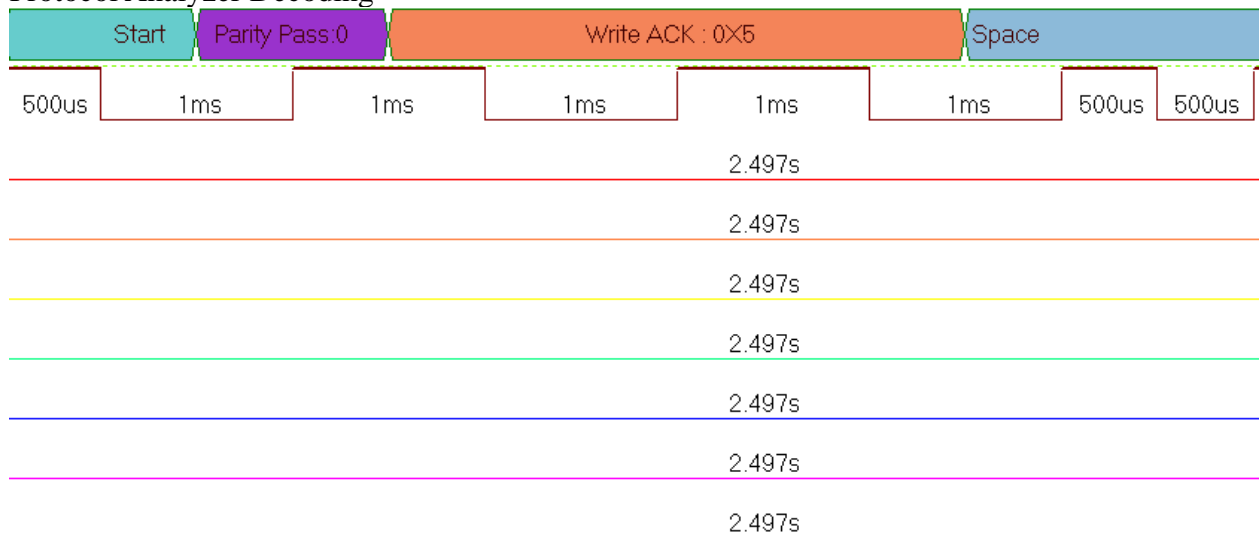
☒ No, please reserve

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 128K; the sampling frequency is 50 KHz (the sampling frequency should be more than eight times higher than the signal to be tested).

Protocol Analyzer Decoding



Packet List

| Packet # | Name | TimeStamp | Start | Parity | Write ACK | Space | Data ID | Data Value | Stop | DESCRIBE |
|----------|---------------------|-----------|-------|---------------|-----------|-------|---------|------------|------|------------------------|
| 1 | Bus1(OPENTHERM 2.2) | 0ms | Start | Parity Pass:0 | 5 | Space | B9 | DF5A | Stop | Write ACK Format |
| 2 | Bus1(OPENTHERM 2.2) | 54.04ms | Start | Parity Pass:1 | 2 | Space | 1E | 1274 | Stop | |
| | DESCRIBE | | | | | | | | | Invalid Data Format |
| 3 | Bus1(OPENTHERM 2.2) | 108.08ms | Start | Parity Pass:1 | 7 | Space | 8E | 9636 | Stop | |
| | DESCRIBE | | | | | | | | | Unknown Data ID Format |
| 4 | Bus1(OPENTHERM 2.2) | 162.1ms | Start | Parity Pass:0 | 4 | Space | 8D | 862E | Stop | Read ACK Format |
| 5 | Bus1(OPENTHERM 2.2) | 216.14ms | Start | Parity Pass:1 | 1 | Space | 6D | 852D | Stop | |
| | DESCRIBE | | | | | | | | | Write Data Format |