User's Guide

XELTEK

Superpro®7504 Series

Ultra-Fast, Stand-Alone, 144pin Programmer of the Future

IMPORTANT!
1. This manual applies to SuperPro/7504.
2. Make sure the software installation is completed before connecting the programmer to PC.
3. Please read the manual carefully before using programmers.
4. Please use Xeltek Adapters. Non-Xeltek adapters will cause error

Welcome

Welcome to the world of Xeltek SUPERPRO programmers. Xeltek has produced the SUPERPRO line of IC programmers since 1985. Our motto is to provide high value products at affordable prices. In the past 27 years, Xeltek has produced a string of highly popular and successful programmers including SUPERPRO, SUPERPRO II, SUPERPRO III, SUPERPRO V, SUPERPRO 680, SUPERPRO 8000, SUPERPRO 3000U, and SUPERPRO 9000 models.

SUPERPRO 3000U is the first model to incorporate both PC connected and stand-alone modes operations combined into one programmer. It is also the first programmer to break the barrier of 40,000 devices supported in the industry. SUPERPRO 3000U is by far the most popular IC programmer in the industry today.

Pushing the barrier further, Xeltek is proud to announce the family of SUPERPRO 7504 programmers. SUPERPRO 7504 retains all the good features of SUPERPRO 3000U, but, in addition, it is designed to program today's large size devices efficiently and effectively.

Feature Highlights

- The SUPERPRO includes ultra high speed programming via 32bit RISC MCU device. This is especially suitable for programming high capacity NAND Flash devices

- A 144 pin driver support is built-in to provide efficient programming of large pin count devices, an additional pin expander module is not necessary to program large pin-count devices.

- The SUPERPRO operates with a PC for engineering purpose or in stand-alone mode, without a PC, for repeat production mode programming. This provides seamless migration from engineering to production.

- The SUPERPRO communicates through a USB 2.0 port and operates on most Pentium-based, IBM compatible desktop/notebook computers.

- The SUPERPRO comes with a standard 48-pin DIP ZIF socket and supports optional socket adapters to accommodate PLCC, TSOP, SOIC, SOP, QFP, TSSOP and BGA package types.

- The programmer and software supports Windows XP, Windows Vista, Windows 7 and Windows 10.

- For authorized users, the SUPERPRO can provide for automatic generation of electronic serial numbers.

User Manual Organization

This manual includes the following major chapters,
- An introduction to the SUPERPRO series, including the system requirements and the software and hardware installation

- Detailed explanations on the commands and the programming procedures

- Information about error messages and common problems

- An Appendix that includes the customer support information

Note: The software prevails in any discrepancy between it and the user manual, due to any upgrades of the software. The information in this document may be subject to change without notice.

Chapter 1 Overview of SUPERPRO® 7504

This section provides a brief introduction of SUPERPRO (1.1), software features (1.2), structure of the handbook (1.3), system requirement for the installation (1.4), and package content (1.5).

1.1 Introduction to SUPERPRO

The SUPERPRO is a menu-driven software that operates a series of cost-effective, reliable, and high-speed universal programmers. SUPERPRO communicates through a USB 2.0 port and operates with most IBM-compatible desktop and notebook computers that based on Pentium. Menu-driven software interface makes all the operations quite user-friendly.

1.2 Software feature

The USB 2.0 Series supports:

- Windows XP, Windows Vista, Windows 7 and Windows 10.
- More than 43,000 types of devices, including E/EPROM, PLD, MCU, FLASH, etc.
- Compatible with many types of file formats, such as Binary, Intel (linear & segmented) Hex, Motorola S, Tektronix (linear & segmented), Jed, pof, etc.
- It supports a plug-in test (48 pins or less) to detect defective chips, improper insertion and pins that are poorly contacted.
- SUPERPRO has an integral full-screen buffer editorial environment with commands such as fill, copy, move, swap, etc.

- Electronic serial numbers are generated automatically.

1.3 Structure of this User's Guide

The content of this User's Guide is structured into three major sections,

Chapter 1 is an overview and introduction of the SUPERPRO, describing the

system requirement, installation of the hardware and software.

Chapter 2 - Chapter 5 are detailed specification and explanation of all the features, commands, and function modules.

In Appendices, there are supportive information and guide for trouble-shooting

1.4 System requirements

The minimum system configuration requires:

- A desktop or laptop computer with Intel Pentium or an equivalent processor
- Windows XP, Windows Vista, and/or Windows 7 operating system
- 1 GB free space on the hard drive
- Standard (USB 2.0) compliant socket
- A CD drive

1.5 Package content

A standard SUPERPRO programmer package includes:

- A Programming host module
- A DIP48 socket (SUPERPRO/7504 is accompanied with DIP48 GX0001)
- A Power supply unit
- A USB 2.0 connection cable
- A CD contains driver software
- A user's registration form

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Chapter 2 System Installation

This chapter provides a brief guidance on how to install the SUPERPRO software and connect the programmer hardware properly.

NOTE: To avoid complications during the installation process, you must setup the software before connecting the programming hardware (the USB device) to your computer. That is, installation through the "Add New Hardware Wizard" of Windows system is NOT recommended (this might lead to wrong drivers with a different compatible device ID).

2.1 Software Setup

Select the software to setup your SUPERPRO programmer either from the CD-ROM or by downloading the program from the Xeltek website. Instructions for both methods are described below.

2.1.1 Software setup from CD

1. Insert the CD into the CD-ROM drive.
2. If the setup program does not start automatically, run SETUP.EXE located in the root directory.
3. Select the appropriate programmer model.
4. Click **Setup**.

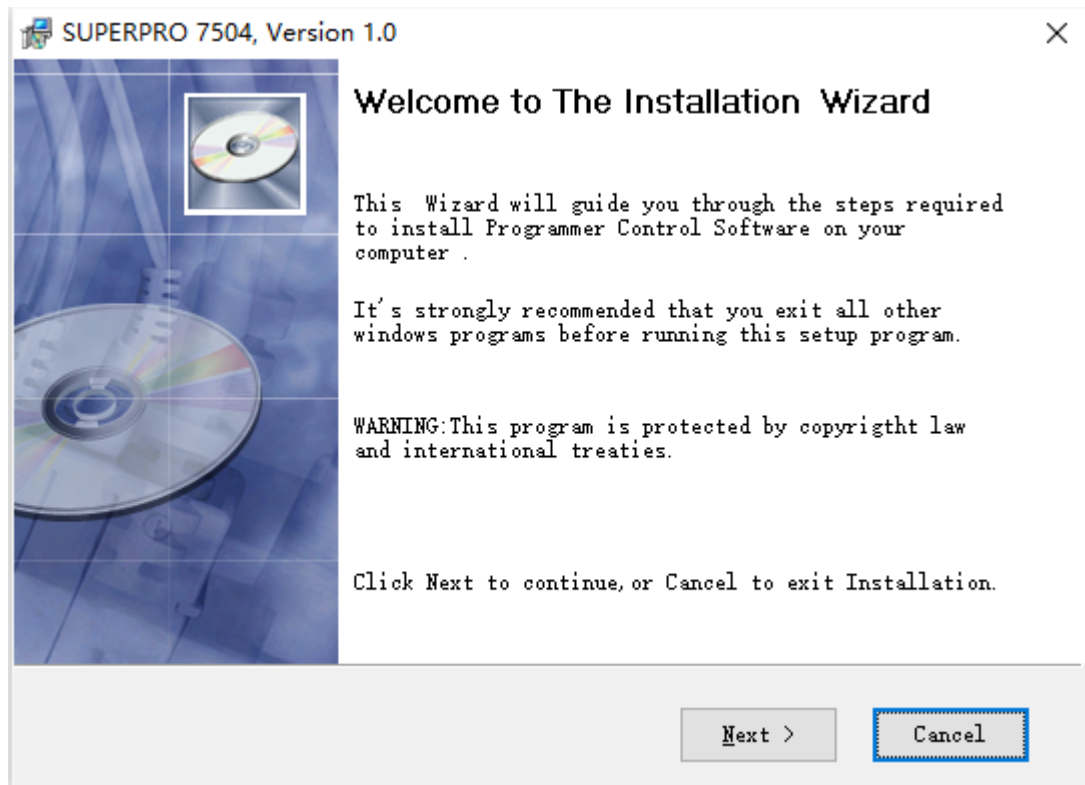   **NOTE:** Each model has its own software and they are NOT compatible.

2.1.2 Download the software from website and setup (recommended)

You can also download the specific software for a certain model at Xeltek website: http://www.xeltek.com. Select the icon to download the appropriate file for your programmer. Once you have saved the file to your computer, run it to setup the software. The following procedure describes the setup process step by step.

1. Once the setup program is running, a dialog box displays to allow the user choosing a preferred language. Select one from the drop down list and click **OK** to continue
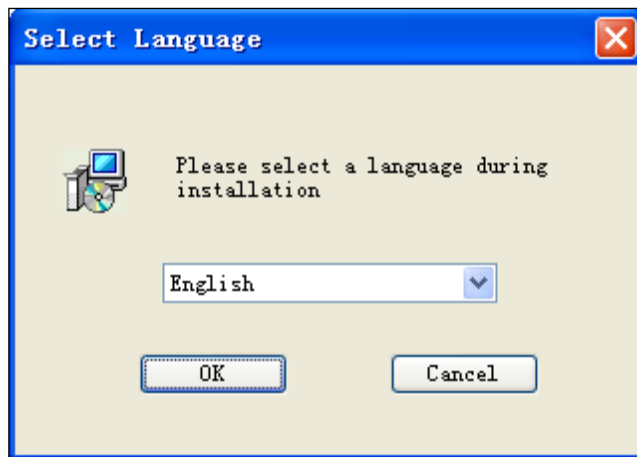
2. An installation wizard will be displayed (as illustrated below). Click **Next** to
   continue.

SUPERPRO 7504, Version 1.0

Welcome to The Installation Wizard

This Wizard will guide you through the steps required to install Programmer Control Software on your computer .

It's strongly recommended that you exit all other windows programs before running this setup program.

WARNING:This program is protected by copyrigtht law and international treaties.

Click Next to continue, or Cancel to exit Installation.

Next > Cancel

3. A License Agreement will be displayed. Click **I Agree** to continue.
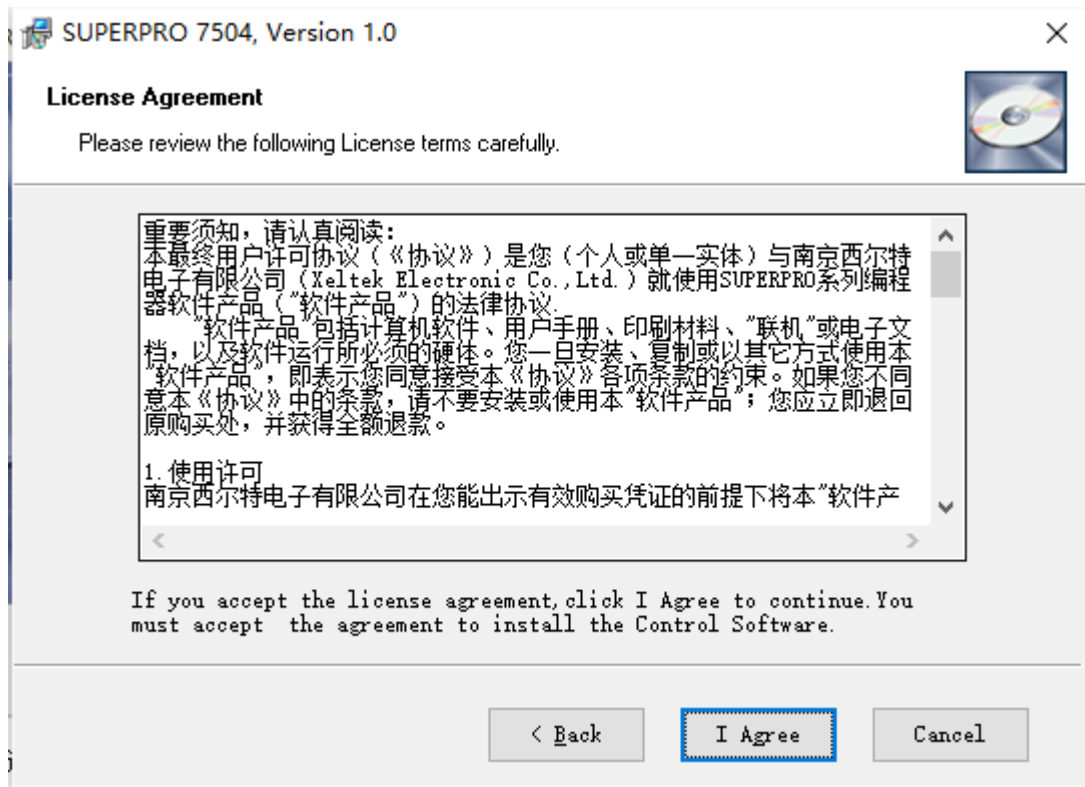
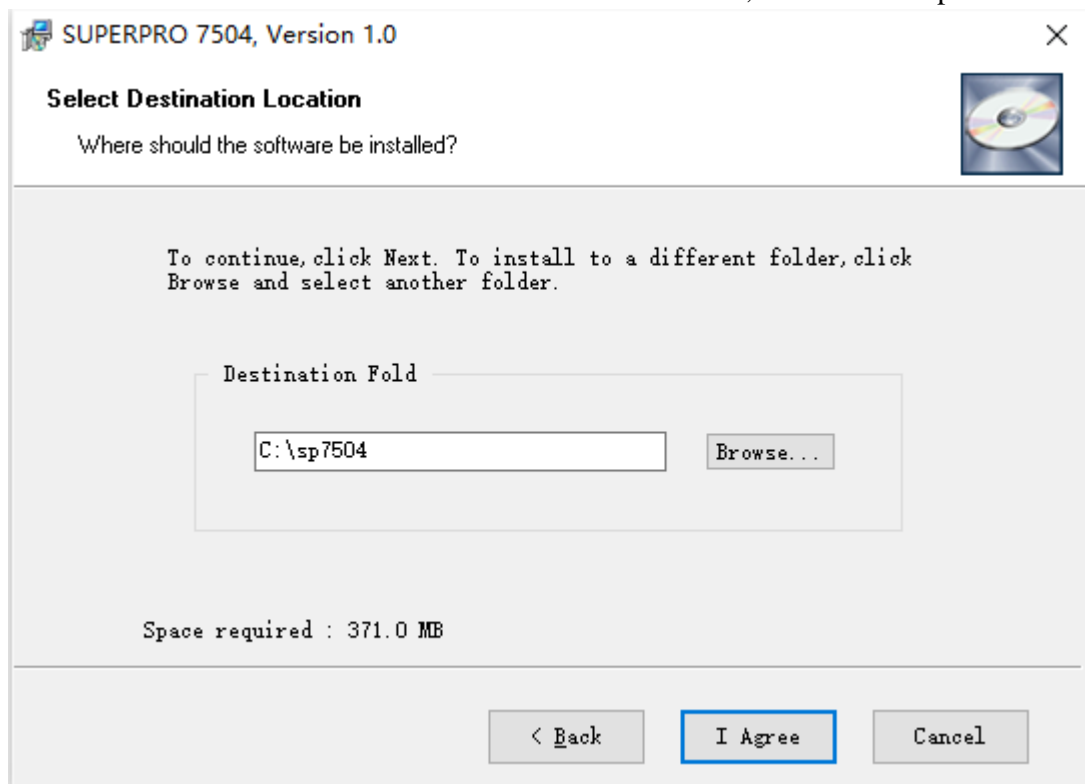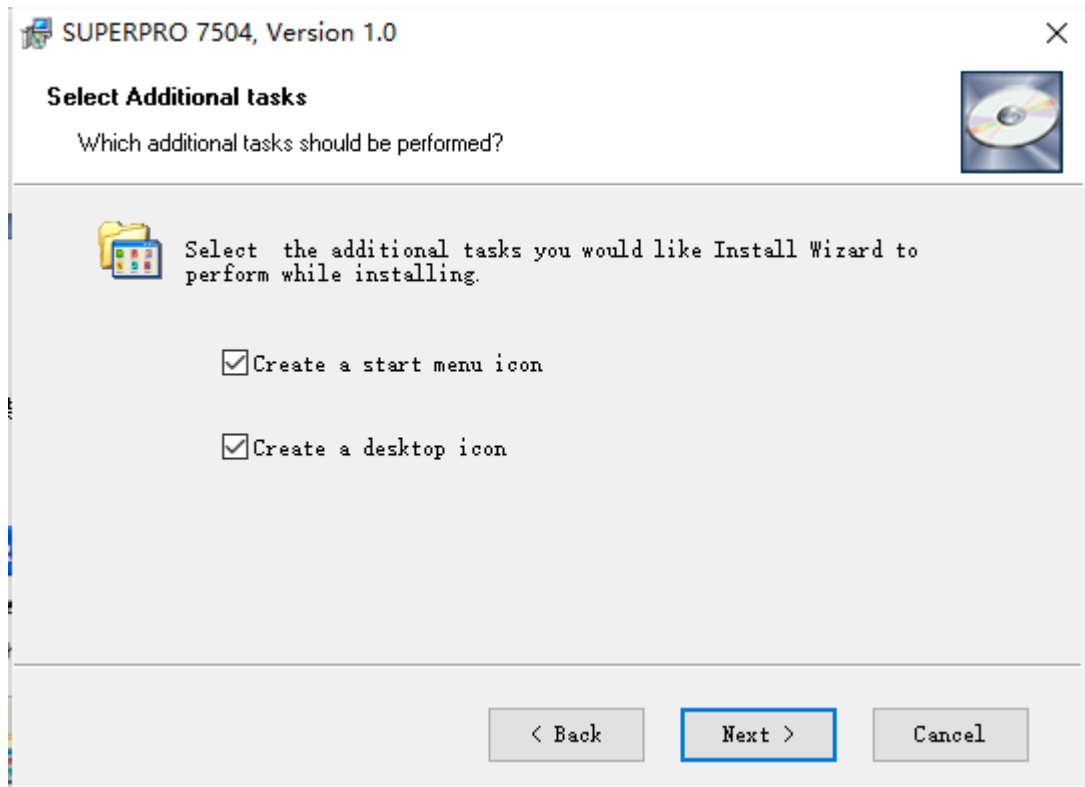4. Choose the Destination Location in which the driver software will be installed. Once the destination file folder is selected, click **Next** to proceed.

5. Another dialog box will be presented and allow the user to choose whether creating a start menu icon and/or a desktop icon. Once correctly check the tick box(es), click **Next** to continue.

6. Check the previous selections and click **Install** to start the installation
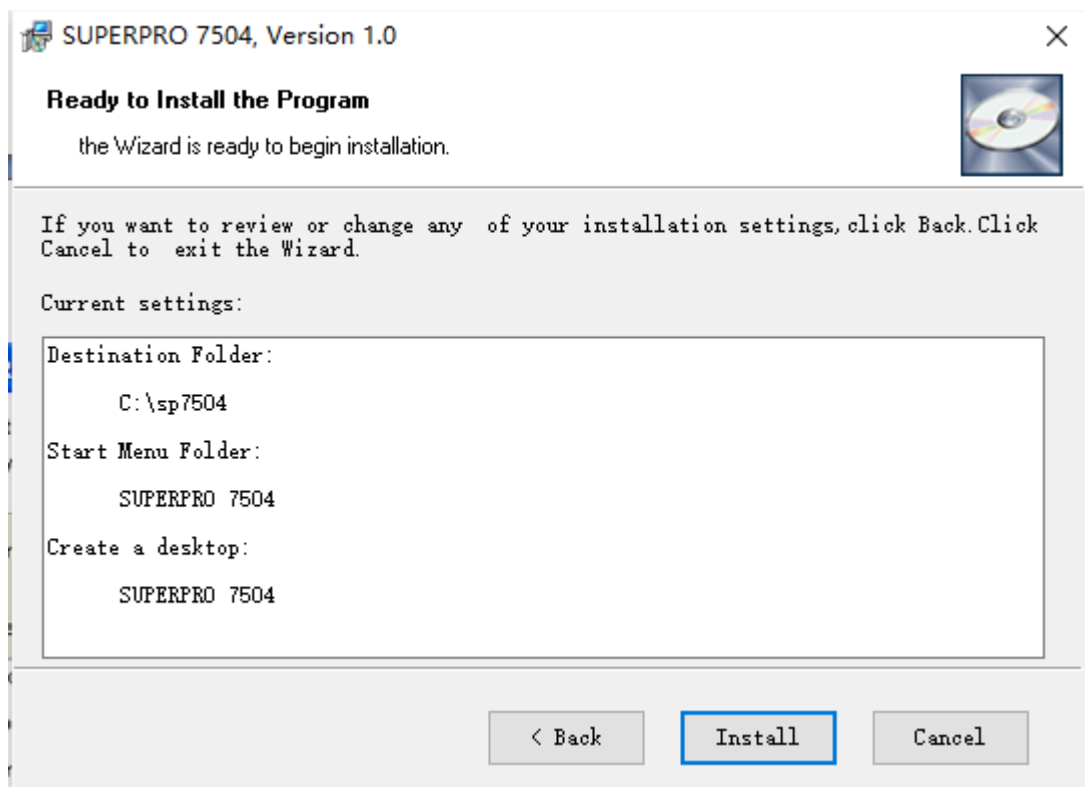
   NOTE: If you are using the Windows Vista system, the operation system may

   display the following dialog box to ask you whether to install the software. Select

Install this driver software anyway.

7. Once the installation is completed, click **Finish**.
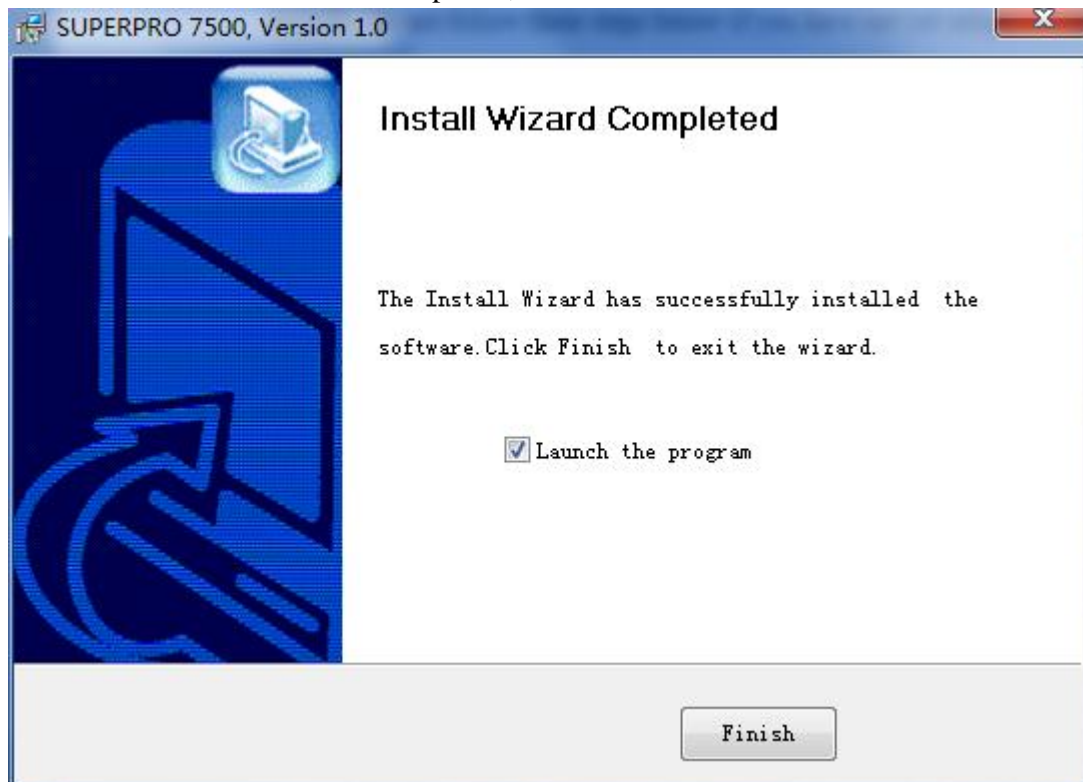
2.2 Hardware and Driver Installation

After you set up the software, you can install the hardware and driver. The following procedure explains the installation process.

NOTE: Do not follow these steps below if you have not yet setup the software (see section 2.1).

1. Make sure all other programs are closed during the installation process.

2. Connect the programmer module to the computer through the USB port.

3. Turn on the power switch of the programmer module.

When you connect the new hardware, the system initiates the New Hardware Wizard, which locates the driver from the software you have just installed.

The system displays alerts one at a time, illustrated below. The alerts on your system may be slightly different.

4. After you open the application software for the programmer, the system automatically starts the initialization. If it does not, make sure the programmer is securely connected to the computer and that the power switch is on.

Chapter 3 Quick Guidance of the Software Features

This chapter is a quick guidance of the SUPERPRO$_®$ software. It describes the functions and features of the programmer that are most frequently used. The SUPERPRO 7504 provides two programmers in one, they are: PC mode for engineering and Stand-alone mode for production.

- Under PC hosted mode, a PC controls the programmer via a high-speed USB connection to program a chip.
- Under stand-alone mode, the user controls the programmer via 20-characters, 4-line LCD display with 6-KEY keypad.

In this chapter, all the features being described are in PC mode, while the stand-alone mode is described elsewhere.

3.1 The User's Interface (main screen)

The main SUPERPRO screen is illustrated below. Each part of the user interface is labeled with a number and described below.
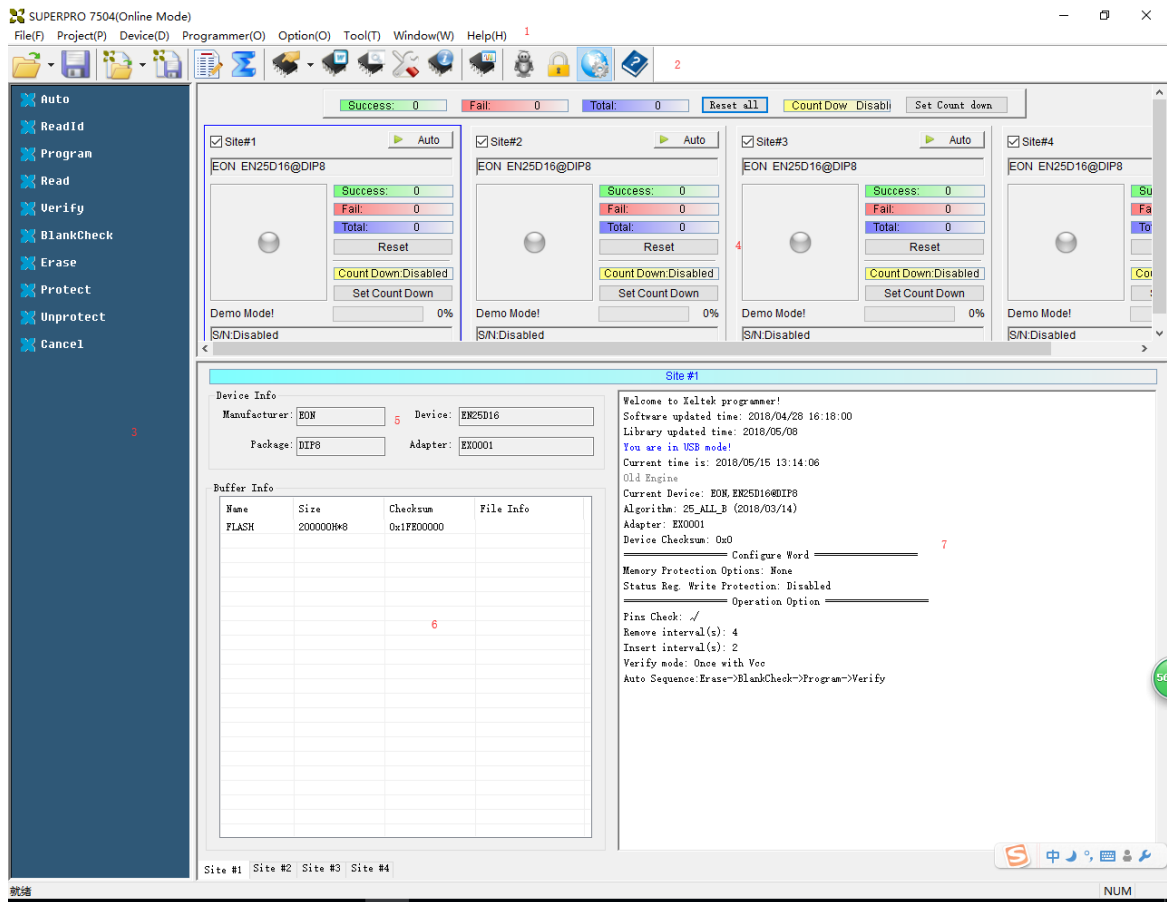
1. The *Menu Bar* provides access to the **File**, **Buffer**, **Device**, **Option**, **Project**, and **Help** menus.

2. The *Tool Bar* offers quick access to many commonly used functions.

3. The *Command Window* enables shortcut to many commands and operations.

4. The *Programmer Statue Panel* shows the state of the current project and programmer.

5. The *Device Panel* shows the connected device.

6. The *Buffer Panel* shows the state of the buffer.

7. The *Log Window* displays the operation history.

A detailed specification of the *Programmer Statue Panel* is shown in the picture below and described accordingly to the numbered notation.

1. Module number and the ID of the programmer

2. Auto/Cancel button

3. Device name and the manufacturer information

4. Statue bar shows the success/failure of the programmer

5. Statistic information panel

6. Count down settings and information

7. Connectivity and progression of the programmer/project

8. Serial number

3.2 Programming Procedures

This section provides information on steps for common procedures to programme devices using SUPERPRO 7504.

Before using the programmer to program a device, make sure that the programmer is installed properly and that the computer and programmer are communicating successfully. Make sure that you have the appropriate adapter for your SMD devices, if applicable. Insert the chip correctly. Follow the guidelines of the standard chip insertion markings near the pin-driver socket. However, if you select SMD or a device that requires non-standard insertion, the system prompts you with the appropriate chip insertion.

3.2.1   Select the device

To open the Device Selection window, choose one of the following options:

- Select the **Device Selection** icon

- Select the **Device** menu and select the **Select Device (Device)** option.

The system then displays the Device Selection screen as shown below.
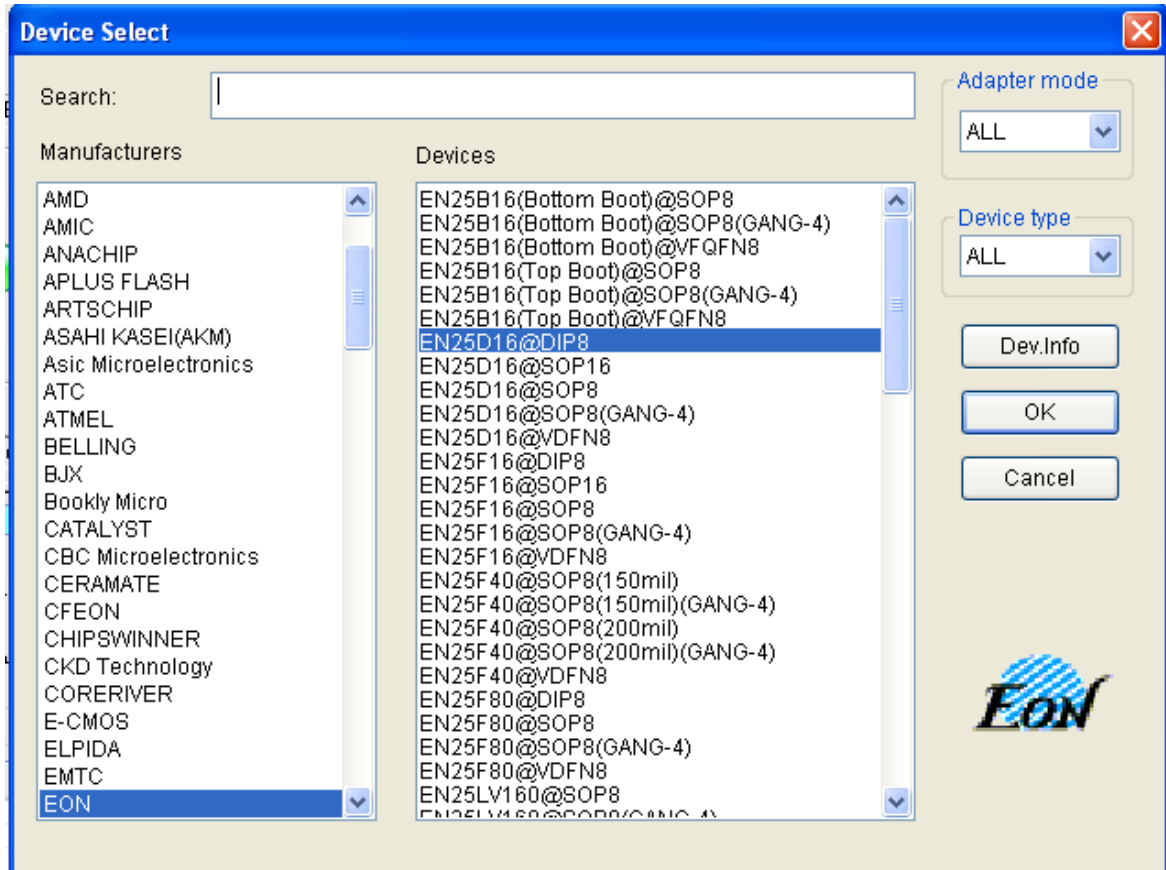
NOTE: The red device name means that such device(s) need authorization to use.

3.2.2   Load data into buffer

One can load data into the buffer by reading data either from a file or a master chip.

- To read data from a file, select **Load File** from the **File** menu. The system displays the **Load File** dialog box. To make sure the loaded data is correct one can review the information in the **Buffer** window.
  NOTE: Some **Hex** or **S record** files contain non-zero file initial address. In this case, enter the start address in the File Address box.

- To read the data from a master chip, complete the following steps:

  o Insert the master chip in the socket.

  o Select **Read** on the **Device Operation** window in the main screen. The

     data will be copied from the master chip to the buffer memory.

o To make sure the loaded data is correct one can review the information in the **Buffer** window.

o If desired, you can save the data to a disk for later use.

NOTE: The read function is not available for some devices, including those have been encrypted.

3.2.3 Set options

- Click **Operation Option** from the Option menu to open the Operation Option screen. Set each of the following options:

  o **Insertion Test** indicates whether to check the pin contact.

  o **Device ID Check** indicates whether to check the ID of the device.

  o **Beeper** indicates whether the beeper alarms a sound when the operation succeeds/fails.

  o **Auto Increment Function** indicates an automatic increase in the label number written to each chip.

  o **Address Change** indicates whether a different start and end address shall be applied for the programming zone of the device.

- To set the order of the batch processing functions, select **Edit Auto** from the Options menu. The system displays the Edit Auto screen.

- For devices that include the configuration word, you must set the configuration word before programming to ensure that the chip can be used on the target system. The configuration words for some devices are contained in the data file. Therefore, the system automatically loads the configuration word into the configuration word buffer when loading the data file. For some devices, you must manually make the selection. Select **Device Configuration Word** from the Device menu to open the ConfigWord screen.

- Many devices must meet some special requirements for the programming of a chip, including special algorithms conventions. Read the device manual or instructions carefully and adjust the operation steps or buffer data as needed. If an adapter is required for programming, the system displays information

about the adapter in the device information screen.

3.2.4 Execute programming

Insert the chip properly into the socket. If the prompt information indicates a need for an adaptor, you may purchase the adapter. The operation procedure for the programming of a chip is described as the following steps:

- Blank Check

  NOTE: You can skip this step if the chip is brand new.

  The Blank Check fails on electrically erasable chips containing some information. In this case, perform the Erase operation first. You do not need to erase EPROM chips for which the data can be overwritten.

- **Program**

- **Verify**

  NOTE: This step is necessary. The chip must pass Verification before the programming can be implemented. Some chips provide only the accumulation check function, such as VerifyCRC instead of a unit-to-unit check function. Very few chips do not provide the accumulation check function.

- **Security or Protect if encryption is required**

  NOTE: You may need to set the configuration word before performing encryption. Refer to Device Configuration Word on page 37 for more information. Select Auto to finish all the operations in one step.

- **Execute Production Mode to Program Chips in Batches**

  Select Production Mode from the Option menu to program devices in large quantities. This function facilitates the job of the user who programs chips in batches. In order to program chips in batches, the programmer always conducts the insertion test. The programmer waits for the chip insertion to initiate while the system displays the following prompt: Please, insert a device into the socket. Once you have properly inserted the chip, the auto batch-processing command starts automatically.

Chapter 5 Frequently Asked Questions (FAQ)

You can monitor the programmer operations through the Operation Information Window and message window. This chapter helps define common problems related to programmer actions and errors.

5.1 Dealing with Data Files

This section explains common problems involving the **File Type** dialog box.

5.1.1 Solve Invalid File Type or File Data Overflow Error

The data for programming is usually stored in the data file. Commonly used formats are Intel Hex, Motorola and Tektronix. The files of these formats keep data in text mode, which include data and address information. Because the offset address is not always zero, you may incur errors when loading the file directly.

For example, the location of data in buffer (as viewed in the Edit Buffer window) may be incorrect or you may receive an error message when loading the file, such as **Invalid file type, or all file data overflow**. Select one of the following options to solve this problem.

- Confirm the file type and ensure the buffer can load all the files.
- Find the offset address of the file. When loading the file, select the Show Offset Address (Minimize) After Loading option to display the start address of the file after the file is loaded.

5.1.2 Separate File Data for Programming

By using the File Mode selection in the File Type dialog box, you can select the data of a file and write it to several chips of the same type. This allows you to load the file several times according to your needs. There are three methods for separating the file data:

- Based on byte (8bit), divide the file into two parts by the odd and even

address. Program the two parts into two chips respectively. When loading the file, select **Even** as the File Mode to write the data in the addresses 0,2,4,6, etc. to one chip. Select **Odd** as the File mode to write the data at the address 1,3,5,7, etc. to the other chip.

- Based on the byte (8-bit), divide the file into four parts by address of the first byte, the second byte, the third byte and the fourth byte out of every four bytes. Program the four parts to four chips respectively. When loading the file, select the 1st byte of 4 as the File Mode to write the data in the addresses 0, 4, 8, 12 (or C if HEX), etc. to one chip. Then select 2nd byte of 4, 3rd byte of 4, and finally 4th byte of 4 to write the remaining data to the other three chips.

- Based on the word (16-bit), divide the file into two parts by address of the first two bytes and the last two bytes out of every four bytes. Program the two parts to two chips respectively. When loading the file, select the 1st two bytes of 4 as the File Mode to write the data in the addresses 0, 1, 5, 6, etc. to one chip. Then select 2nd two bytes of 4 to write the remaining data to the other chip.

5.1.3 Program Two or More Files to One Chip

User can load several files into the buffer and write them to the chip. The following explanation gives an example of programming three files (Sample1, Sample2, and Sample3) to one chip. The example assumes the following:

- Write the data from the address 200 (Hex) of the file Sample1 to the address 0 of the chip.

- Write the data from the address 0 (Hex) of the file Sample2 to the address 3000 (Hex) of the chip.

- Write the data from the address 4000 (Hex) of the file Sample3 to the address 4000 (Hex) of the chip.

1. Select **Edit** from the Buffer menu. Make sure that the Buffer clear on data load option is not checked.

2. Select **Load** from the **File** menu to load the Sample1 file.

   o In the Buffer Address field, enter 0.

   o In the File Address field, enter 200.

3. Select **Load** from the File menu to load the Sample2 file.

   o In the Buffer Address field, enter 3000.

   o In the File Address field, enter 0.

4. Select **Load** from the **File** menu to load the Sample3 file.

   o In the Buffer Address field, enter 4000.

   o In the File Address field, enter 4000.

5. Continue with programming.

If there are no changes in the file requirements or content of the three files (Sample1, Sample2, and Sample3), you can save the data in buffer to a new file, such as Sample4, for easy loading and programming next time.

5.1.4 POF Format Files

When programming ALTERA PLD devices the system saves the data in POF format files. When loading a POF Format file, the system displays a File Type dialog box. Select one of the following:

1. POF file: The system transforms the data into the Fuse data and checks the data when you load it to the buffer. You may receive one of the following errors:

   o **Unmatched file to this chip**: This POF file does not match this chip. The POF file is related to the device when it is compiled. The error indicates that this POF file is not for this device. Replace the chip with a matched one.

   o **The POF file has errors.**

   o **Load POF file dll error (not found)**: An auxiliary file has errors. Contact technical support for assistance.

2. Files of other formats are mainly the JED files. The system saves data in the

buffer in a JED file after reading the chip. You can use this format the next time you load the file.

5.2 Adapter Selection

The standard programmer configuration supports the DIP devices with 48 or less pins. If you want your programmer to support a device with more than 48 pins, you will need an adapter. There are two types of adapters: universal and specific.

- Universal adapters are applicable for all devices of the same encapsulation and the same number of pins.

- Specific adapters are applicable for certain devices only. For example, if the number of the pins for economical programmer hardware is not enough, specific adapters may solve the ‚insufficient number of the pins' problem. This way, the programmer can also support devices with more than 48 pins

To use devices with pins between 48 and 144, you can choose either the universal adapter or the specific adapter. To use devices with pins more than 144, you must use the specific adapter. The Device Information screen displays adapter information.

5.3 Other Messages

Other error messages are explained below.

- **Please edit 'Auto' first**: The Auto consequence is blank. Edit Auto and try again.

- **Enter a string to search for**: The Hex Edit Search dialog box is blank. Make sure to enter a specified string or ASCII codes to search for in the Buffer Edit dialog box.

- **The string for search is blank**. Input it in Search dialog: Enter a string in the Buffer Edit dialog box. Then you can use **The first time search**, **Continue to search**, or **Search Next** functions.

- **Search pattern not found!**: The system did not find a matched string or

ASCII code.

- **User chip is MfgID = 0089, DeviID = 0051**: This display on the Operation Information window indicates that the chip's ID detection function detected a different ID than specified in the manual.
- **ID check error. Ignore**: You can ignore the detected ID error and continue the operation.
- **ID check error**: The operation stops because of the ID check error. If you have good knowledge of this chip, you may ignore the ID error and continue the operation. Exercise caution to avoid damaging the chip.
- **Pin check error. Ignore**: The system indicates an error during the pin check. Ignore it and continue.
- **Pin check error**: An error occurred during the pin check, and the operation ceased.
- **Programmer not found**: The programmer is not connected to the PC or it is connected improperly. Check the connection.
- **Programmer not ready**: Turn off the programmer power switch and turn it on again after a few seconds.
- **Programmer is running**: The programmer hardware is operating. Wait until the operation is finished.
- **File open error**: The open file operation failed.
- **Out of Memory**: The memory overflows.
- **Production mode isn't available for this chip**: Since the production mode is dependent on the pin check, the chips without pin check function are not applicable for production mode.
- **Cancel production mode**: Cancel the production mode.
- **Too long file name**: The file name is too long.
- **User cancel**: The system displays this message after you select Cancel on the Status bar.
- **Can't cancel!**: The Cancel operation has failed.
- **Not a project file**: The file selected is not a project file. After the software is

updated, the software may not be able to identify a previously created file. You will need to create the file again.

Appendix

XELTEK periodically publishes upgrade software on the XELTEK website. You can download and upgrade your software from the website. Non-users may download the software for evaluation.

Troubleshooting

If the User Manual does not answer your questions, first contact your sales agent or the distributor. If you still need technical assistance you can call XELTEK between Mon-Fri 7:30AM-12:00PM & 1:00PM - 4:30PM (PST). Make sure you have your product serial number before calling. Before contacting XELTEK, check the following to ensure you get the best service.

- Read the User Manual.
- If you receive an error message that is not explained:
  - o Make sure you can repeat the circumstances that created the error.
  - o Write down the error message.
- Make sure you have your product serial number.
- Check your computer configuration, including computer brand, free memory size before starting the software, the video adapter brand, and the operating system.
- Make sure you are at your computer when you call so the engineer can guide you through the solution.

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3. Decompile or disassemble any program modules or encrypted devices.