User's Guide

XELTEK

Superpro®IS416

Series

Ultra-Fast, In-System, 16 Channels Programmer of the Future

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IMPORTANT!

1. This manual applies to SuperPro/IS416.
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 an error

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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 IS416 programmers. SUPERPRO IS416 retains all the good features of SUPERPRO IS03, but in addition, it is designed to program today's large capacity devices efficiently and effectively.

Feature Highlights

- The SUPERPRO includes ultra high speed programming via 32bit RISC MCU device.

- Very fast programming speed, which is selectable to adapt to cable length and load feature of user board. Supports most ISP protocols, e.g. I2C, SPI, UART, BDM, MW, JTAG, CAN, RS232 etc.

- The SUPERPRO operates with a PC or in stand- alone mode without a PC. This provides seamless migration from engineering to production. Have standard ATE interface to facilitate operation and control of external ATE device.

- In order to embed IS416 into the system of customer, IS416 offers DLL, command line tool. Customer may use DLL or command line tool to control IS416.

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

- The programmer and software support Windows XP, Windows Vista, Windows 7, Windows 8, Windows 10, etc.

- 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® IS416

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, Windows 8, Windows 10, etc.
- 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.
- 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
- A CD drive

1.5 Package content

A standard SUPERPRO programmer package includes:

- A Programming host module
- A Power supply unit
- A USB 2.0 connection cable
- A CD contains driver software
- A user's registration form

Chapter2 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**.

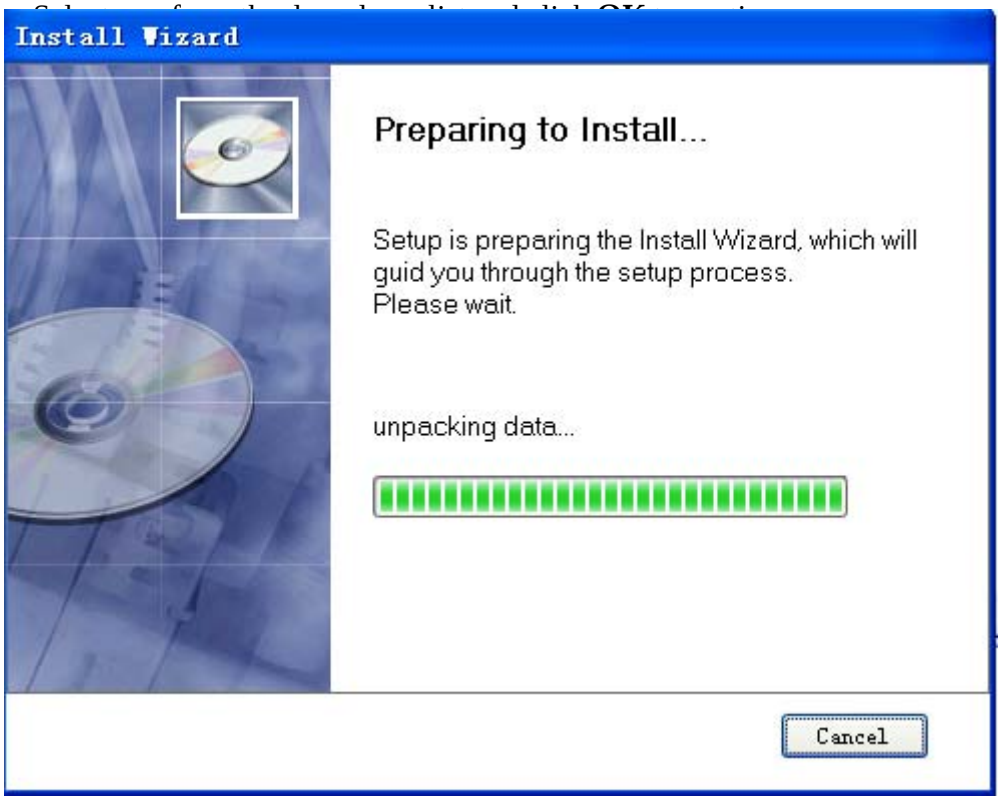
NOTE: Each model has its own software and they are NOT compatible.

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.

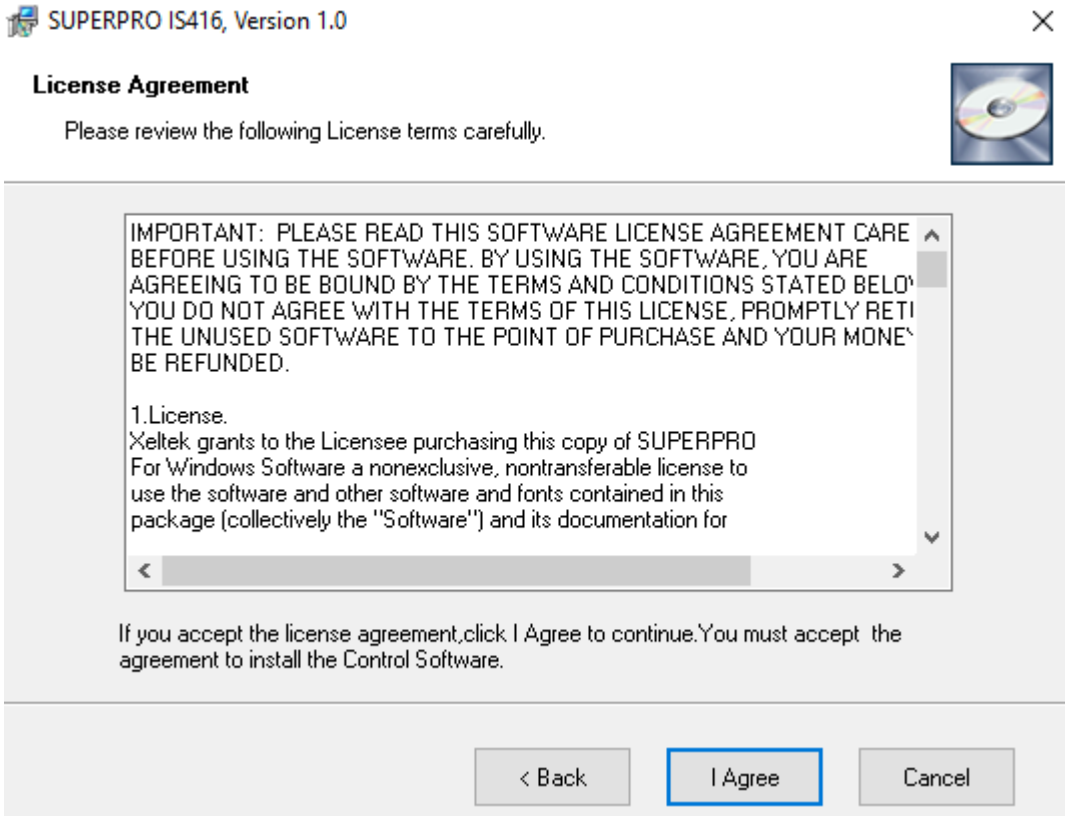
1. Once the setup program is running, a dialog box displays to allow the user choosing a preferred language.

2.

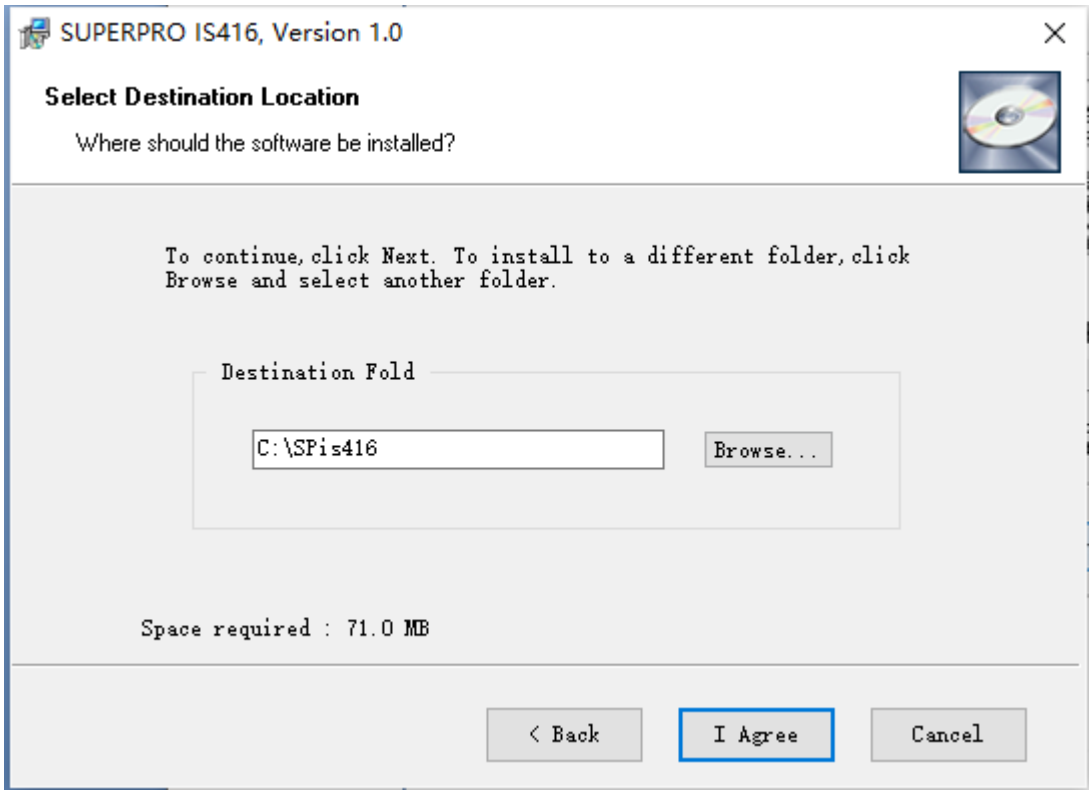


3. An installation wizard will be displayed (as illustrated below). Click **Next** to continue.

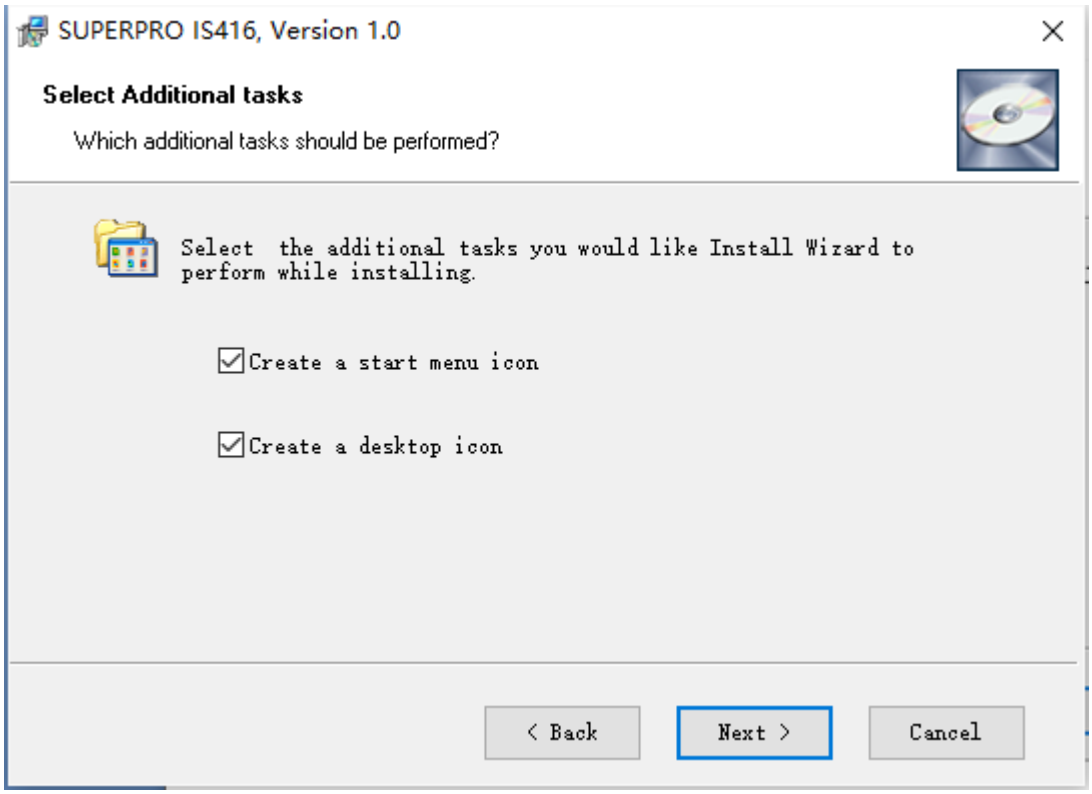
4. A License Agreement will be displayed. Click **I Agree** to continue.



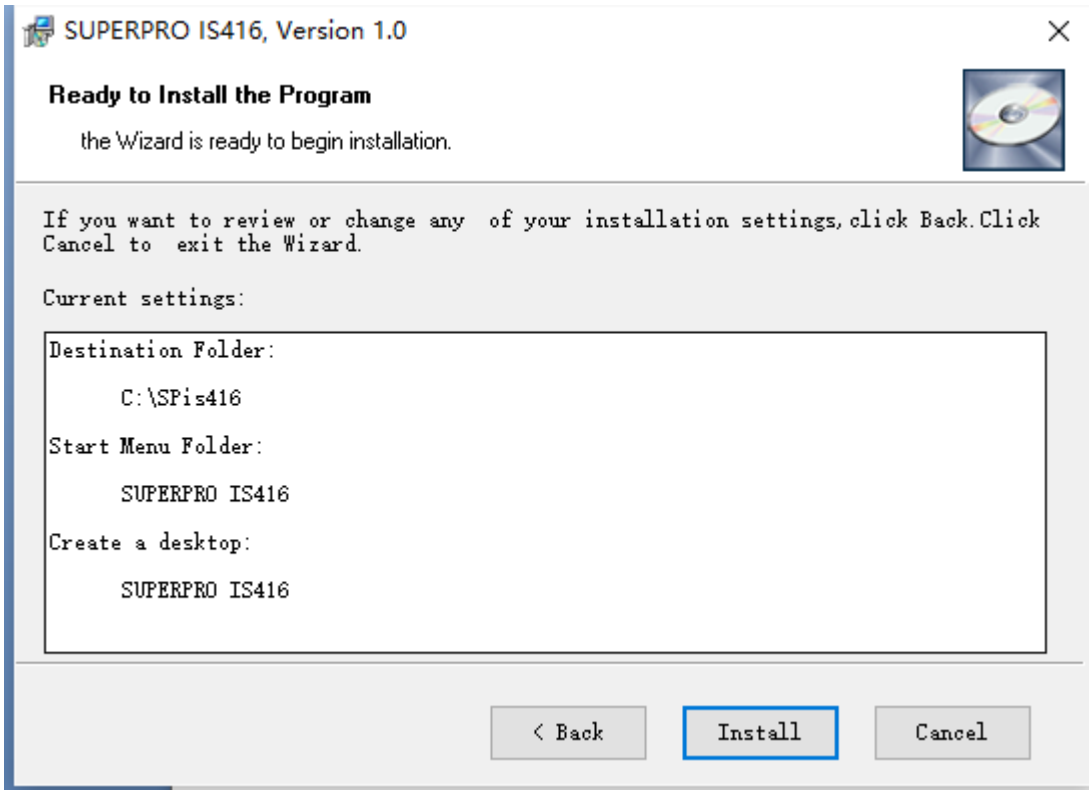
5. Choose the Destination Location in which the driver software will be installed. Once the destination file folder is selected, click **Next** to proceed.



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.

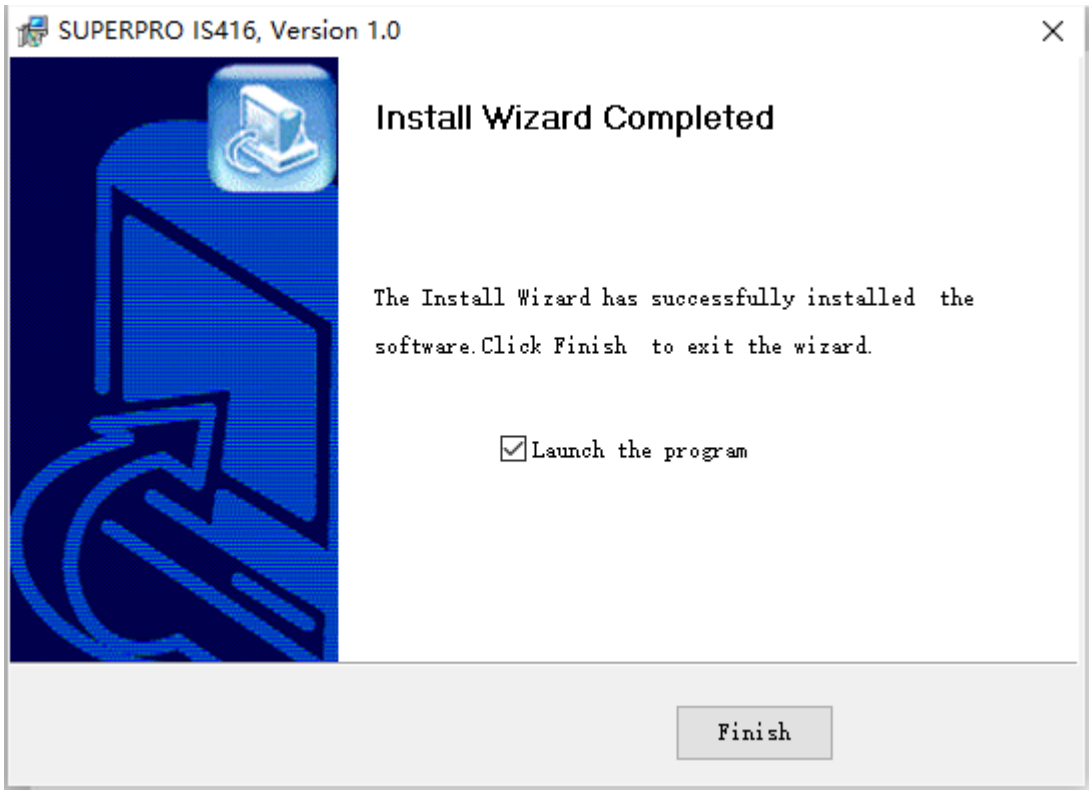


6. Check the previous selections and click **Install** to start the installation



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

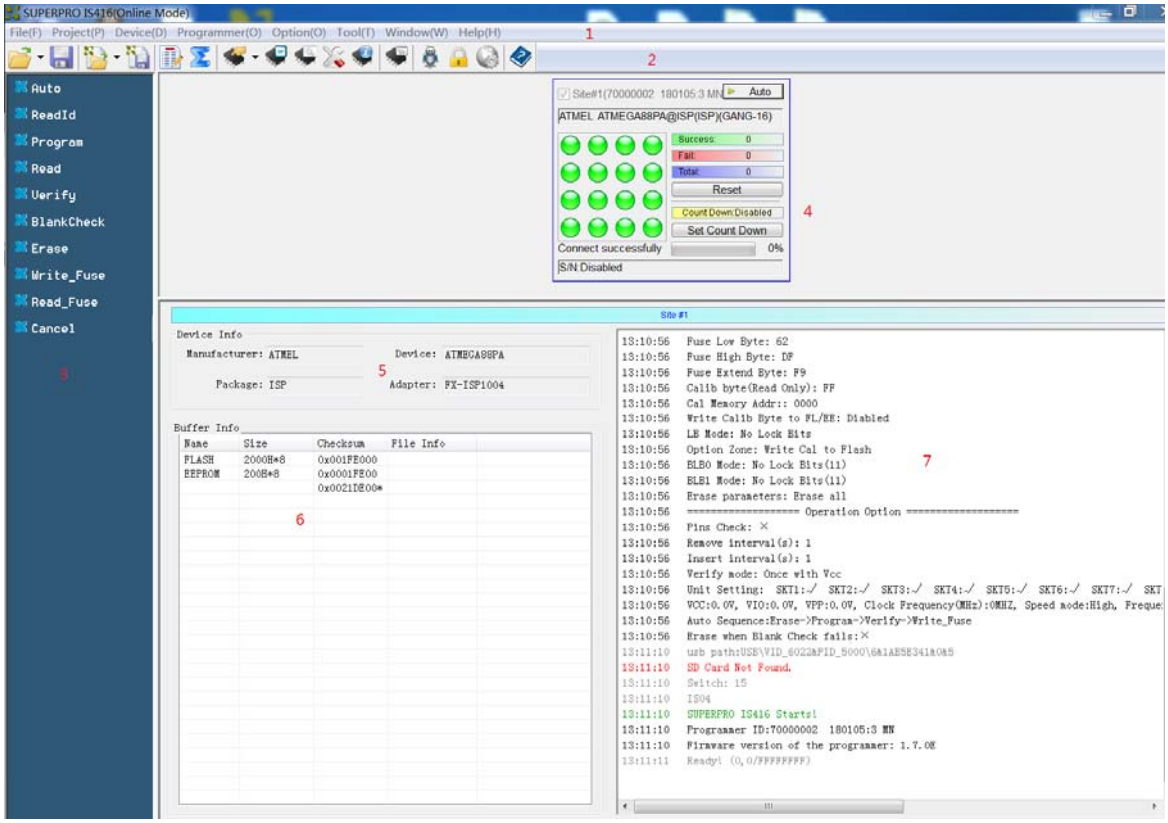
This chapter is a quick guidance of the SUPERPRO® software. It describes the functions and features of the programmer that are most frequently used. The SUPERPRO IS416 provides two program modes in one, they are: PC host mode and Stand-alone mode for production.

- 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 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.

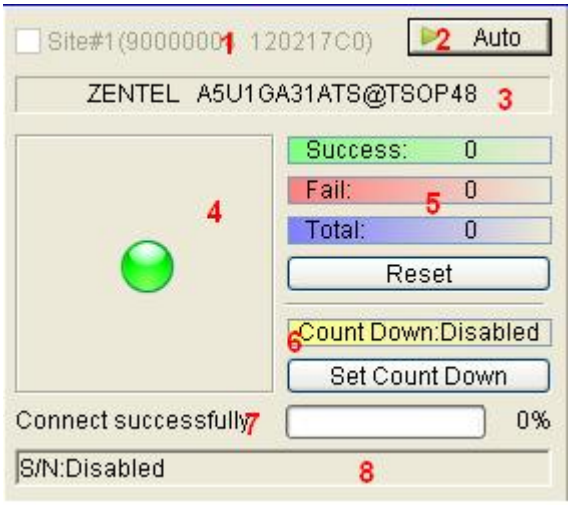
3.1 The User's Interface (main screen)

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 program devices using SUPERPRO IS416.

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. Connect the signals with cables according to the device info of IS416.

3.2.1 Hardware preparation

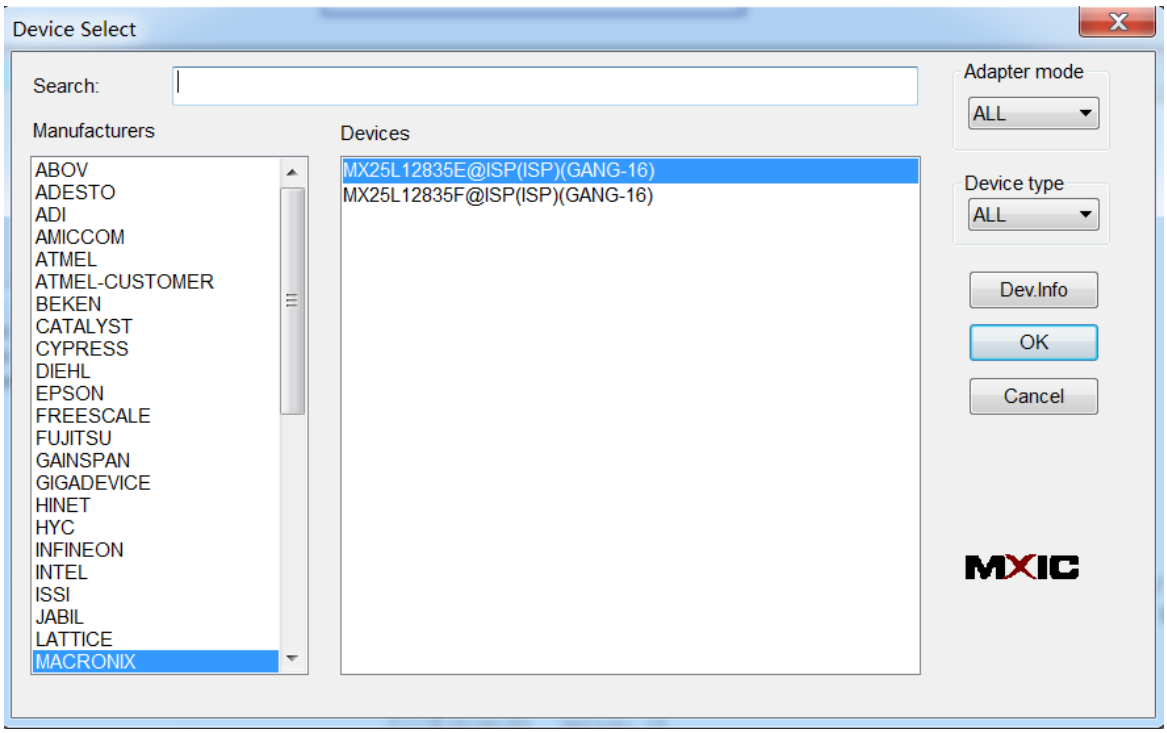
Before operating programmer, please install the software first, and connect programmer with PC as follows.

3.2.2 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.

3.2.3 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:
  - Insert the master chip in the socket.
  - Select **Read** on the **Device Operation** window in the main screen. The data will be copied from the master chip to the buffer memory.
  - To make sure the loaded data is correct one can review the information in the **Buffer** window.
  - 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.

3.2.4 Set options

- Click **Operation Option** from the Option menu to open the Operation Option screen. Set each of the following options:
    - **Insertion Test** indicates whether to check the pin contact.
    - **Device ID Check** indicates whether to check the ID of the device.
    - **Beeper** indicates whether the beeper alarms a sound when the operation succeeds/fails.
    - **Auto Increment Function** indicates an automatic increase in the label number written to each chip.
    - **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.

3.2.5 Execute programming

Connect the signals with cables according to the device info of IS416 at first. 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.

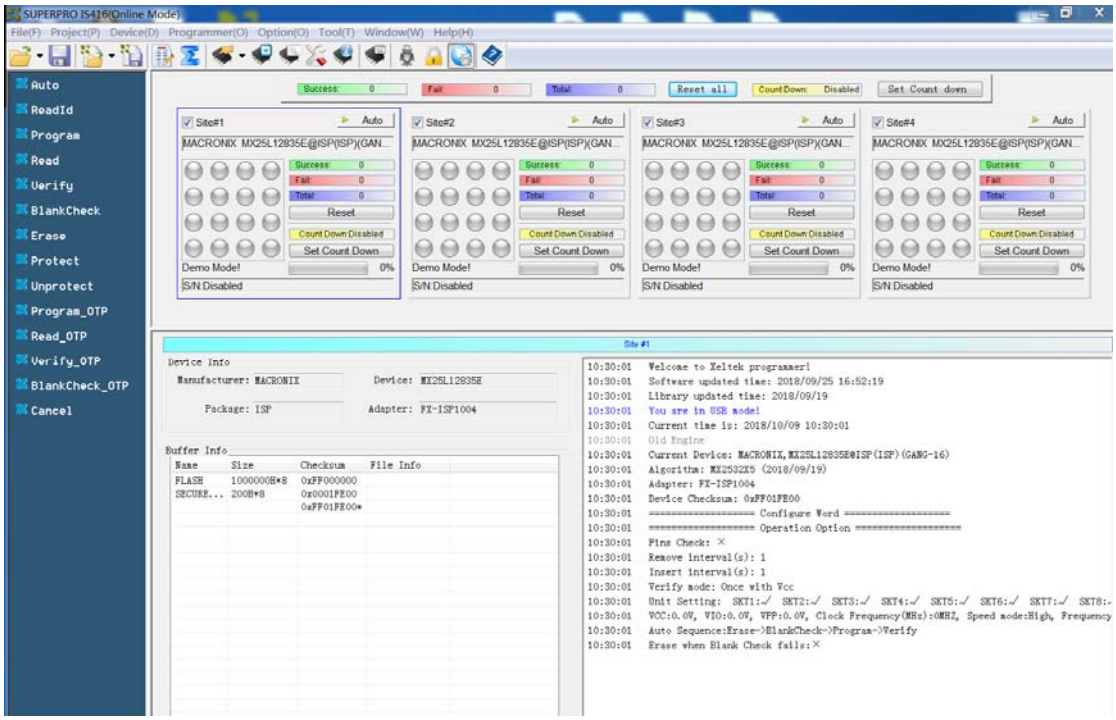
3.3 Programming When Connected by Hub

Xeltek provides a connection hub and user can simultaneously operate multiple programmers by using the hub.

Click menu **Programmer -> Module Management** and select the number of the programmers you want to operate. Picture below shows the interface when

simultaneously operating four programmers.

Every programmer has a unique number. The programmer's first line of the LCD display will show the number of this programmer. The module that is selected at the time will be highlighted. The device that is going to be programmed can be different type(s) in each of the module that is connected through the hub.



- In normal mode, all operations (i.e. selecting devices, loading documents and programming) are carried out in the programmer that is selected and highlighted at the time being.
- In global configuration mode, all the operations are carried out in the programmer(s) that is selected with the check in tick-box(es).

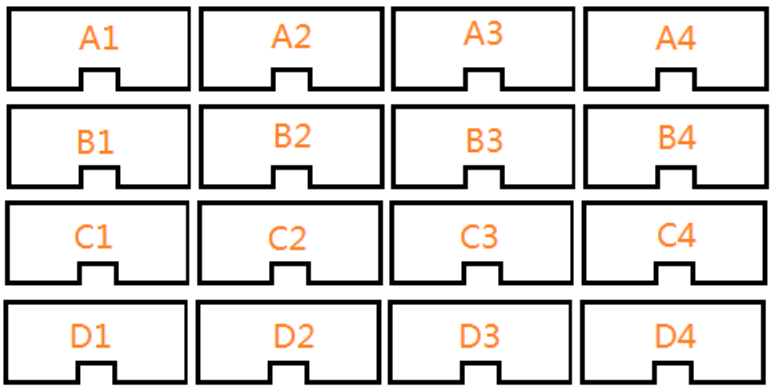
NOTE: Choose specified hub for XELTEK to connect programmer, and currently up to 8 programmers can be operated simultaneously.

3.4 Introduction of Interface and Channel of programmer

Instruction of IS416's Channel

IS416 supports programming multiple channels. And this depends on IC that to be programmed. Some IC support 16 channels, and some only support 4 channels. But Most ICs supports 16 channels.

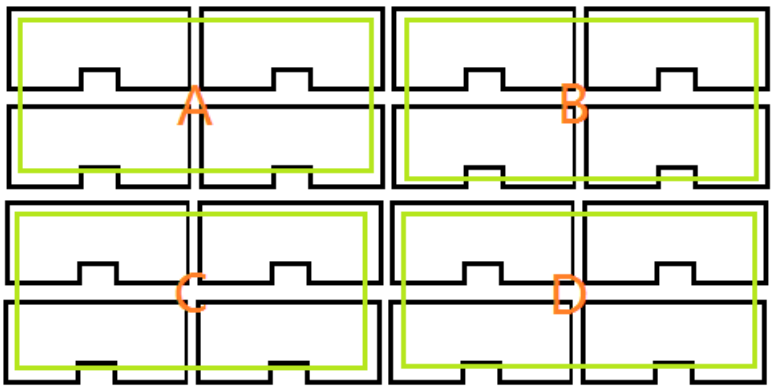
16-channel mode:



Each channel has two names, such as A1 and 1, B2 and 5 and so on.

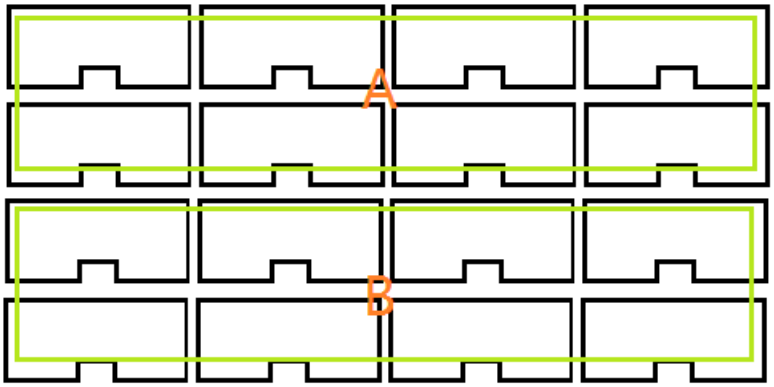
A1:1	A2:2	A3:3	A4:4	B1:5	B2:6	B3:7	B4:8
C1:9	C2:10	C3:11	C4:12	D1:13	D2:14	D3:15	D4:16

4-channelmode



A: 1 B:2 C:3 D:4

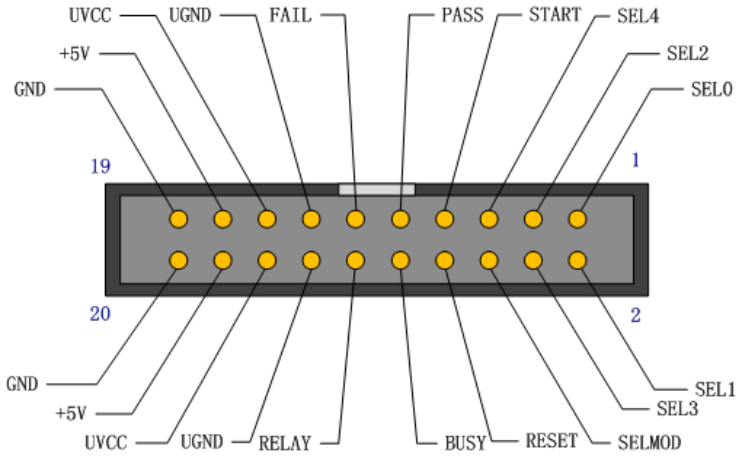
2-channel mode



A:1 B:2

ATE port

User can trigger ATE signals to program automatically, it’s easy for customer to control IS416 by electrical signals. And get operation result by IO state of “PASS”,”Fail” in ATE port .



Signals Definition of ATE

Pin#	Pin Name	Pin Type	Description
1	SEL0	Input	Isolated，Flow select input Bit0, 2.5-24 VDC, 20 mA max.
2	SEL1	Input	Isolated，Flow select input Bit1, 2.5-24 VDC, 20 mA max.
3	SEL2	Input	Isolated，Flow select input Bit2, 2.5-24 VDC, 20 mA max.
4	SEL3	Input	Isolated，Flow select input Bit3, 2.5-24 VDC, 20 mA max.
5	SEL4	Input	Isolated，Flow select input Bit4, 2.5-24 VDC, 20 mA max.
6	SELMOD	Input	Isolated，ATE mode select input, 2.5-24 VDC, 20 mA max.
7	START	Input	Isolated Input Ground
8	RESET	Input	Isolated Input Ground
9	PASS	Output	Isolated, Flow PASS, 25 mA max
10	BUSY	Output	Isolated, Flow BUSY, 25 mA max
11	FAIL	Output	Isolated, Flow FAIL, 25 mA max
12	RELAY	Output	Isolated, Flow RELAY, 25 mA max
13	UGND	Input GND	Isolated Output Ground
14	UGND	Input GND	Isolated Output Ground
15	UVCC	Input GND	Isolated Output V+(24V max)

16	UVCC	Input GND	Isolated Output V+(24V max)
17	+5V	IS416 system +5V	Non-isolated ISP Sys. +5V
18	+5V	IS416 system +5V	Non-isolated ISP Sys. +5V
19	GND	IS416 system GND	Non-isolated ISP GND.
20	GND	IS416 system GND	Non-isolated ISP GND.

Usage of ATE steps:

- 1 ATE work in standalone mode. Please gen one or more projects and save them in SD, then insert SD to IS416.
- 2 Set "SELMOD" IO high, and IS416 will enter into ATE mode.
- 3 Set IO states of SEL0 …SEL4 to select project that wanted to be operated. LCD will display what's selected.

For example: assuming there are 4 projects in SD: a.prj b.prj c.prj d.prj

If SEL0 =High, SEL1=Low, SEL2=Low, SEL3=Low,SEL4=low

The select value is b00001, and a.prj selected.

If SEL0 =Low, SEL1=High, SEL2=Low, SEL3=Low,SEL4=low

The select value is b00010, and b.prj selected

If SEL0 =High, SEL1=High, SEL2=Low, SEL3=Low,SEL4=low

The select value is b00011, and c.prj selected

If SEL0 =Low, SEL1=Low, SEL2=High, SEL3=Low,SEL4=low

The select value is b00100, and d.prj selected

If SEL0 =High, SEL1=Low, SEL2=High, SEL3=Low,SEL4=low

The select value is b00101, and no project will be selected, because the select value is out of range, and there are only 4 projects in this case.

- 4 After select project, then to set IO state of “START”, and remain high level above 200ms to 500ms, IS416 will be triggered to start work. The IO state of “BUSY” will be high. States of “PASS” and “FAIL” will be low.
- 5 After completion of operation, the IO state of “BUSY” will be low to indicate work over, and one of “PASS” or “FAIL” will be high to indicate result.
- 6 And then may go to step4 in loop to work continually or go to step3 to select another project to work, or break.

Chapter 4 Functions and Commands

This chapter provides a detailed specification and explanation of the SUPERPRO®IS416

software. It includes the description of the functions and commands that is listed as below,

- File Menu and Tool Bar (4.1)
- Project Menu (4.2)
- Device Menu (4.3)
- Option Menu (4.4)
- Tool Bar (4.5)
- Log History Window (4.6)

4.1 File Menu and Tool Bar

The **File** menu provides access to the commands of **Load**, **Save**, **Recent Projects**, and **Exit**. Each function is described in the following sections.

4.1.1 Load File

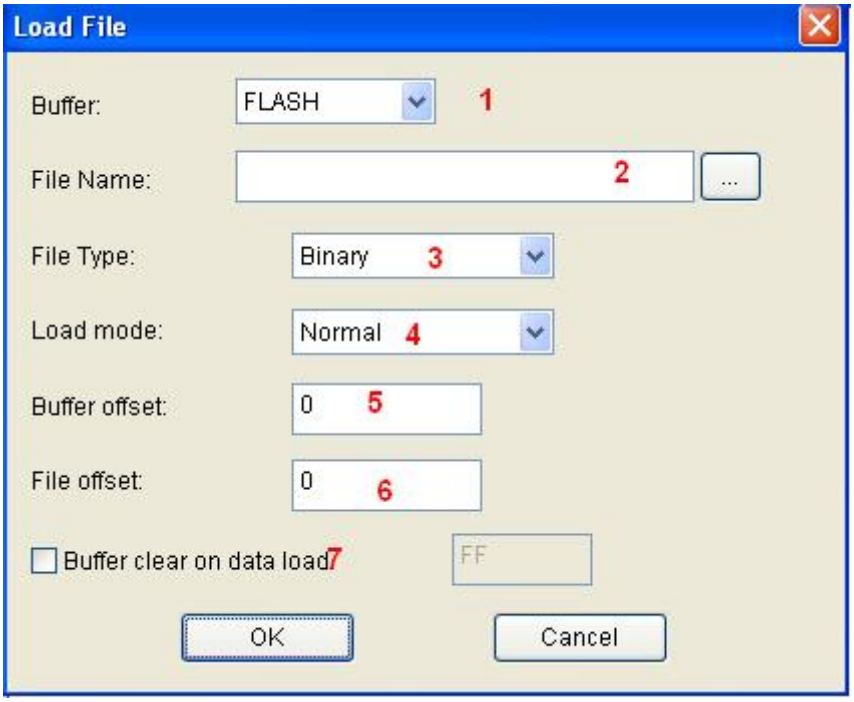
There may be one or more data buffers in the device. If several data buffers are displayed after you have selected the device, refer to the name and the data manual for the meanings of the buffers. The two data types of the device are **Data (HEX/ASCII)** and **Fuse**.

- For most **EPROM** and **SCM**, the data type is **Data (HEX/ASCII)**.
- The data type for **PLD** device is **Fuse**.

After you select the device, the software automatically will identify the data buffer type. You can review the buffer data types if you open the **Edit** dialog box for the data buffer. When some file data are loaded into the data buffer, the following rules apply:

- With a **HEX/ASCII** data buffer (**EPROM**, **MCU** etc.), the system assumes that 8 bits of the data are valid.
- With a **JEDEC** buffer (**PLD/PAL**), the system considers the lowest bit (1 bit) of the file data valid.

Select **Load** from the **File** menu to open the **Load File dialog box**, as illustrated below. The red labels refer to the numbered notations follow this figure.

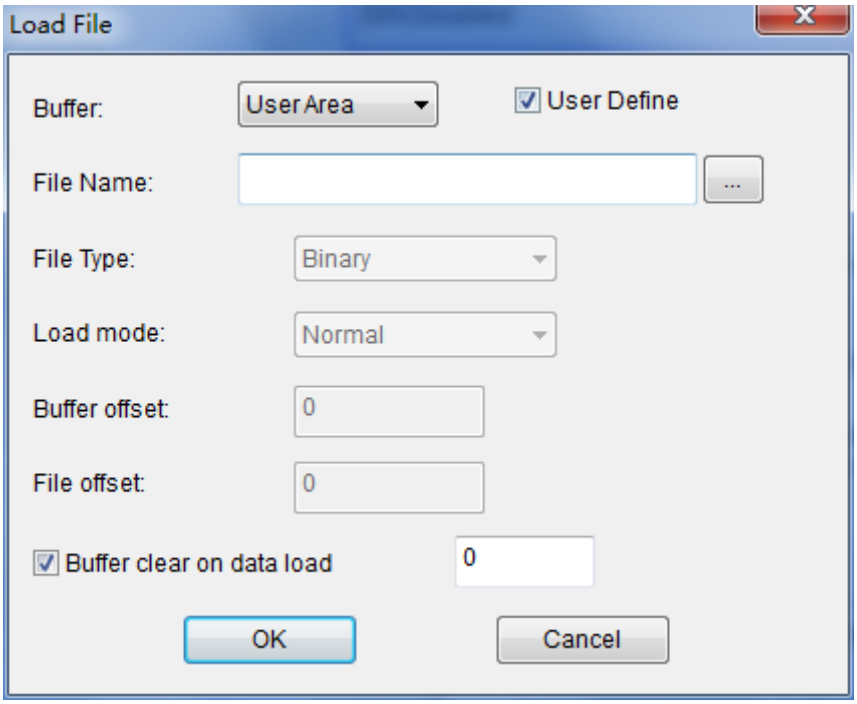


1. **Buffer**. To select the **Buffer** name from the drop down list. The system loads the file data into the buffer accordingly.
2. **File Name**. To enter the name of the data file to load it, or you can select **Browse** and choose the file using the **Select File box**.
3. **File Type**. To select the type of the file from a drop down list. Different file types are included here, e.g. Binary, Intel Hex, Motorola S record, JEDEC, POF, TI, etc.
4. **File Mode**. To select one of the following File Modes from the drop down list:

- **Normal** to load the whole file
- **Even** to load the first byte and discard the second byte out of every two bytes
- **Odd** to discard the first byte and load the second byte out of every two bytes
- **1st byte of 4** to load first byte and discard the other three bytes out of every four bytes
- **2nd byte of 4** to load the second byte and discard the other three bytes out of every four bytes
- **3rd byte of 4** to load the third byte and discard the other three bytes out of every four bytes
- **4th byte of 4** to load the fourth byte and discard the other three bytes out of every four bytes
- **1st 2_byte of 4** to load the first two bytes and discard the other two bytes out of every four bytes
- **2nd 2_byte of 4** to load the last two bytes and discard the other two bytes out of every four bytes

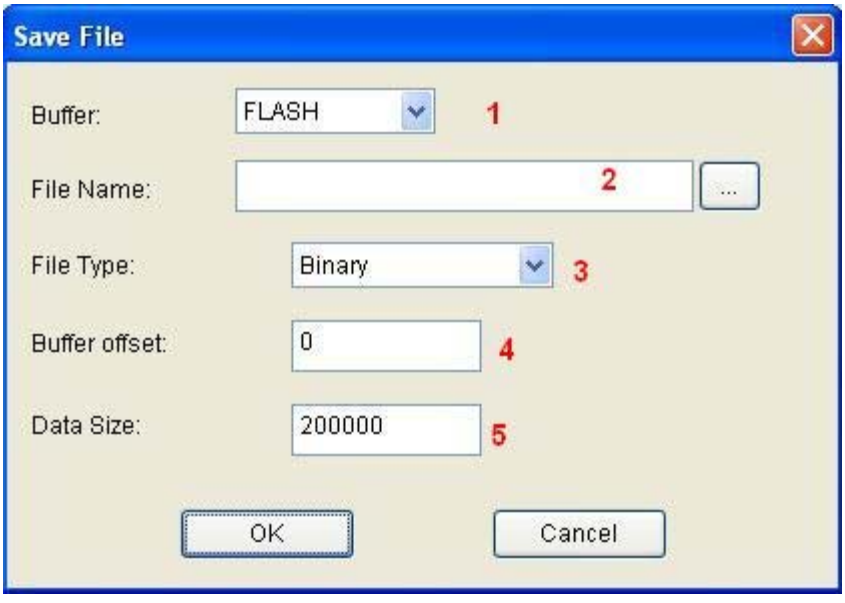
5. **Buffer Address**. To indicate a different initial address of the data being loaded into the buffer.
6. **File Address**. In case the file type has a non-zero start address, enter the data offset address in the **File Address** field. Make sure to enter the correct address, because an incorrect file offset address causes part of the buffer to be filled with FF (or incorrect data).
7. **Buffer clear on data load**. Tick this checkbox will enable the user to fill the data buffers with the specified data.

NOTE: Ticking the checkbox of Custom File will disable most loading option.



4.1.2 Save File

Select **Save** from the **File** menu to save data in the current buffer to a disk file. A dialog box titled as **Save File** will be displayed and the saving options are similar to those in section ***4.1.1 Load File***.



1. **Buffer**.
2. **File Name**

3. **File Type**

4. **Buffer Address**

5. **Data Size.** To enter the save data size in number of bytes.

4.2 Project Menu

The project file contains all the information and preparations before programming. It can also be used to restore the working environment that has been saved previously. The project file includes:

- The current device's information, such as:
    - Manufacturer
    - Device type
    - Pin size
    - Data file name
    - Current buffer data

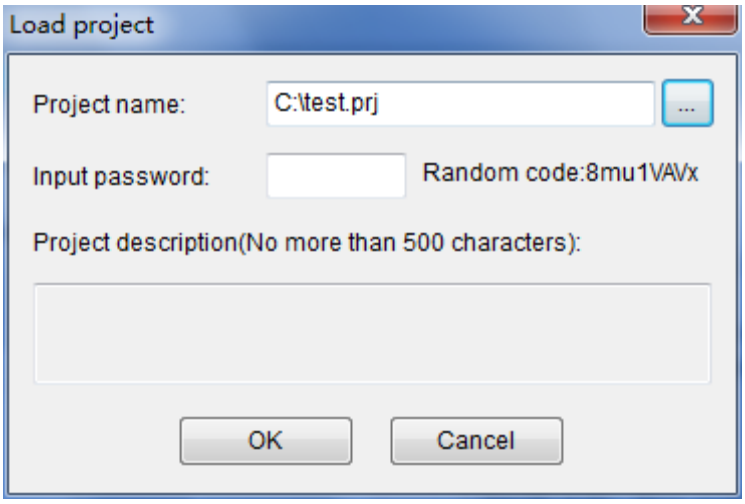
    NOTE: The buffer data may differ from the data file due to revisions.
- All Operation Option settings
- The content of the Auto mode
- Software module related to the project

NOTE: The project content is related to the programmer software. If the software has upgraded or has been re-installed to another folder, the saved project files become ineffective

4.2.1 Load Project

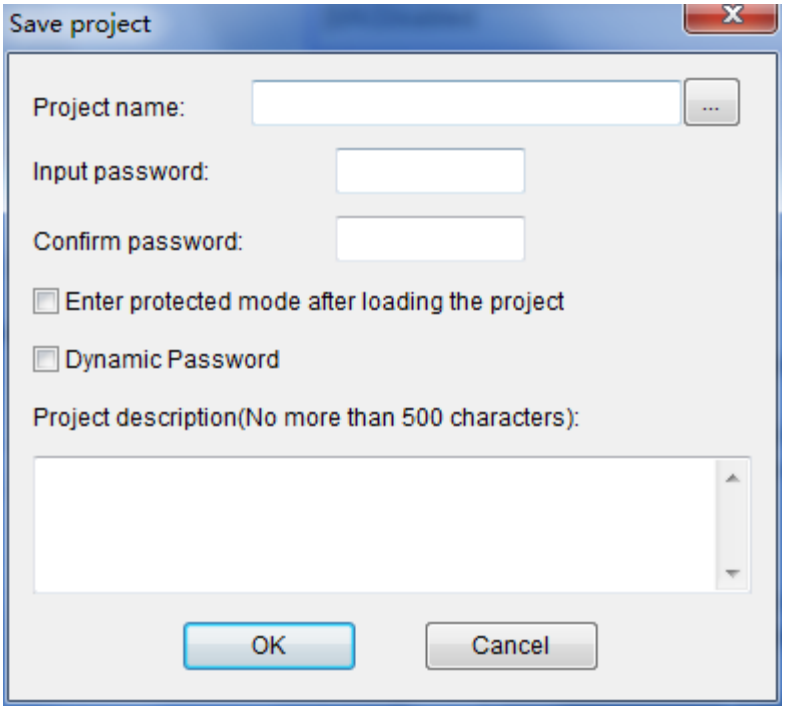
Select **Load Project** from the **Project** menu to load a project file. Select the file in the **File** dialog box. Following the information that is provided by the project file, user can change the device(s), data in buffer, and operation option accordingly.

If the project contains “dynamic password”, a random serial number will be displayed. User should offer the serial number to the project maker. The project maker generates password by the tool “Password Generator” (please refer to ““Password Generator” for details). Then User input the password and load the project.

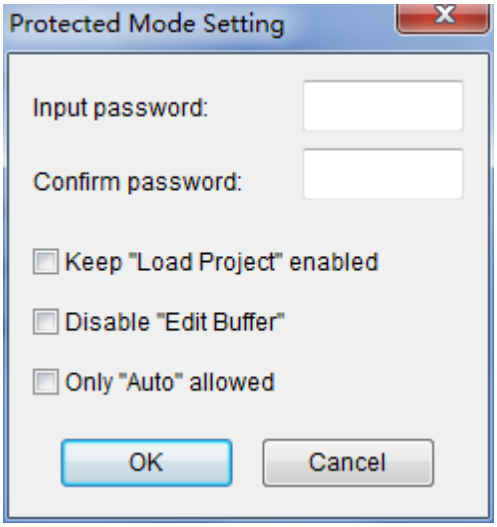


4.2.2 Save Project Files

Select **Save Project Files** from the **Project** menu to save the current working environment to a specified project file. To ensure the security of the data, you can encrypt the project file.



When the option “Enter protected mode after loading the project” is selected, Dialog “Protected mode Setting” pops up. Please refer to “Protected mode” for details.



Dynamic Password: Please refer to “Load project” and “Password Generator” for details.

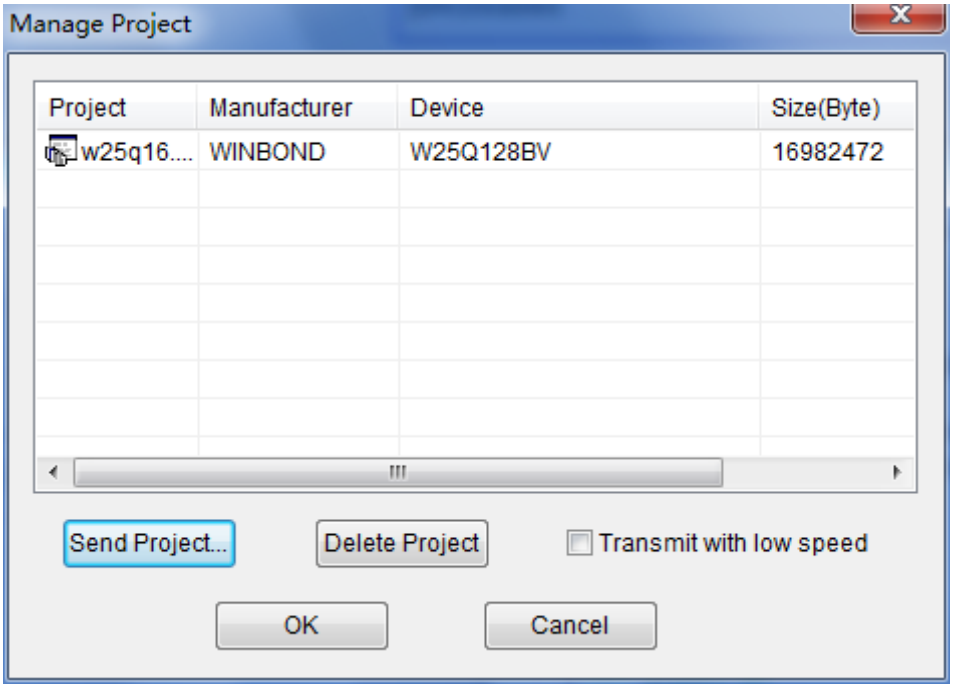
4.2.3 Manage Project Library

The stand-alone operation is when the programmer hardware is not connected to a computer, and uses information saved in its own module for volume production. The stand-alone file includes all the information needed for programming the device. This enable the user to prepare the project file(s) before starting the programmer's operation. The project file being saved in the stand-alone mode will be manageable using **Manage Project Library** function. This type of file can be stored in the SD card incorporated in the programmer.

NOTE: 1) Besides using **Manage Project Library** function, user can also copy the project file(s) by SD card replication;

2) SD card's file system must be FAT32.

The figure below shows a typical **Manage Project Library** window



Some basic commands related to the project file operation are:

- **Send Project**. This will send the existing project file(s) to the SD card. One can also encrypt the SD card to protect the data.
- **Delete Project**. To delete the project being selected.

There are many SD card manufacturers in the market and the quality varies a lot across different brands. The ones from Kingston$_{TM}$, and Sandisk$_{TM}$ is recommended. The default operation speed is high transfer rate, where **low transfer rate** (tick the check-box) is preferable when the sending project operation fails. If there are many large project files need to be sent, then replication of SD card is recommended.

4.2.4 SD card encryption

SUPERPRO$_{®}$ 7500 enables the encryption of SD card. Some SD card encryption operations are,

- **Set password**. To set a 6-character password for a SD card. Once a SD card is protected by a password, it becomes encrypted and needs the password for any operation.
- **Unlock**. To enter the correct password, enable operation on the SD card when it

is connected on-line. However, if the SD card is off-line/disconnected, the user has to unlock it again for any other operation.

- **Erase Password**. This operation actually wipes all the information that is stored in the SD card and removes the password. After this, the SD card needs to be format using FAT32 file system, so as to be compatible to SUPERPRO® IS416. One does not have to unlock the SD card to carry out the **Erase Password** operation.

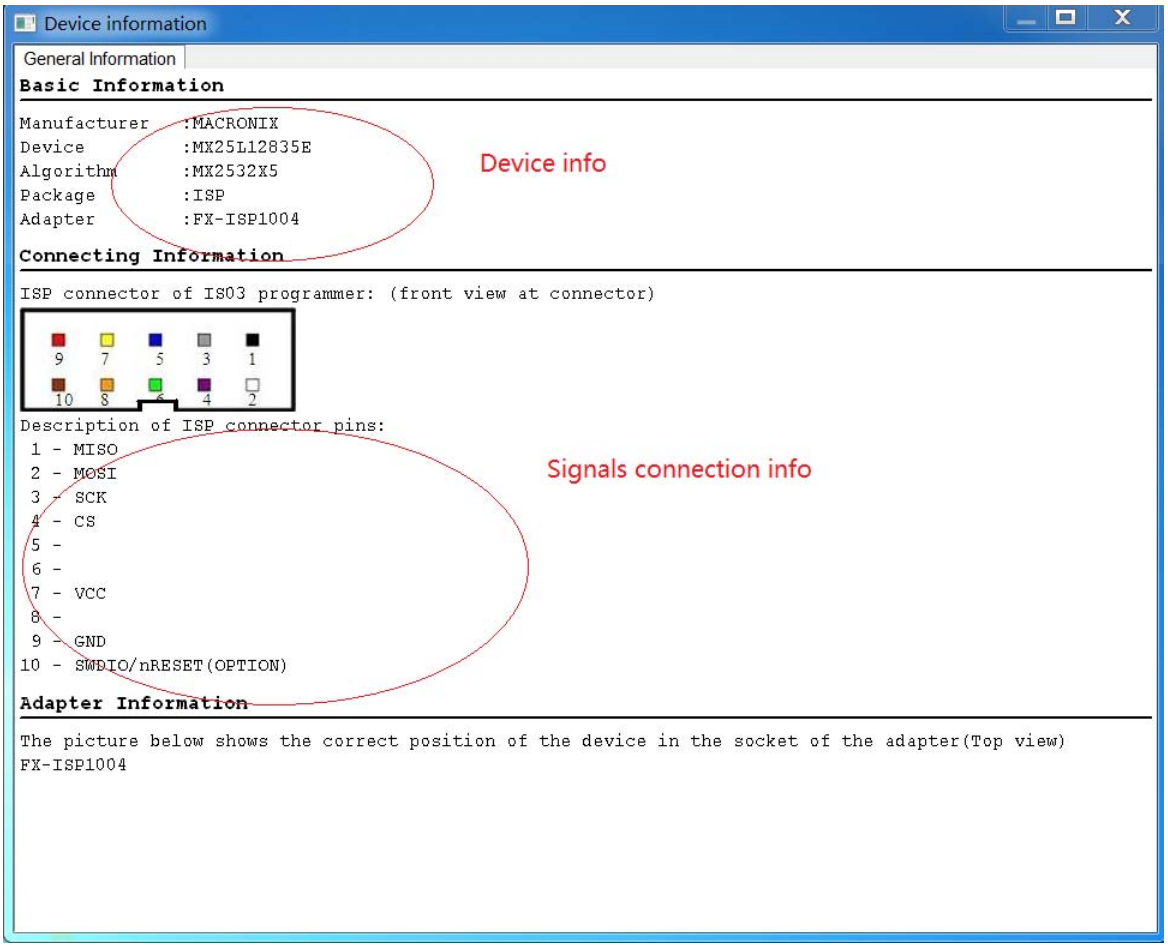
4.3 Device Menu

4.3.1 Device selection

Refer to section ***3.2.1*** for the operation of device selection.

4.3.2 Device information

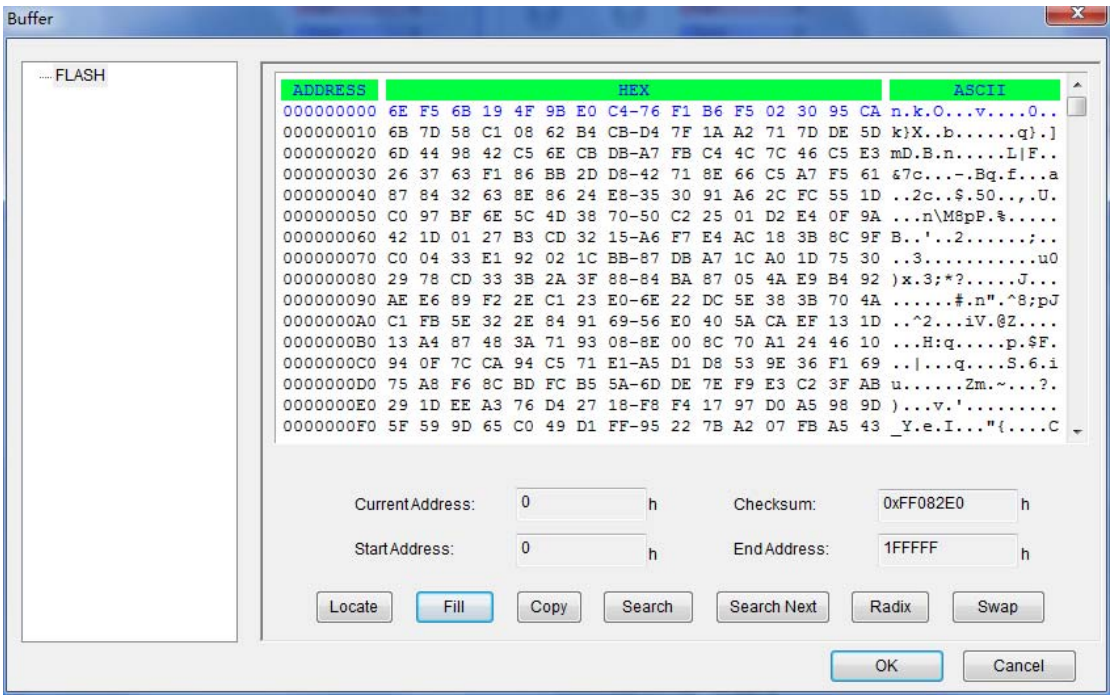
Click **Device information** will display the device information in a window (see the figure below).



4.3.3 Manage data in buffer

There are two major types of buffer, Fuse Buffer and Data Buffer (HEX/ASCII buffer). In following section, the operations of these two types of buffer is described and a typical buffer operation window is shown below.

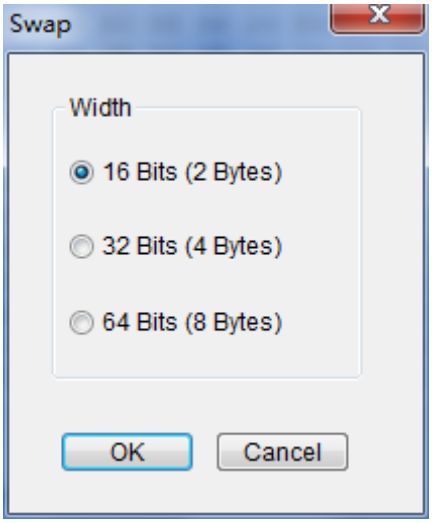
4.3.3.1 HEX/ASCII Data Buffer



- **Locate**. Enter the address of the data you wish to display and select OK to quickly move the cursor to the desired location.
- **Fill**. To fill the data in the buffer between the **Start** and **End** address. For Fuse buffer, the data must be 0 or 1, and for Data Buffer (HEX/ASCII buffer)
- **Copy**. Select **Copy** to open the Copy Buffer dialog box.
  - o Enter the start address in the Start Address field.
  - o Enter the end address in the End Address field.
  - o Select **OK** to copy the data between the start address and the end address, beginning with a new address. Otherwise, select **Cancel**.

- **Radix**. Select **Radix** to toggle between the HEX and DEC memory address display.
- **Search**. Select **Search** to search for a specified string. Select **Search Next** to begin the next search for the specified string
- **Swap**. Select **Swap** to open the Word Swap dialog box, illustrated below.

Select the **Word Width** option to swap high byte and low byte according to the specified width in the address range and select **OK**. Otherwise, select **Cancel**.



For example, if the data buffer address 0-10(HEX) is:

12 34 56 78 90 AA BB CC - DD EE FF 11 22 33 44 55

Then after swapping the data, it would look like this according to the selected word width:

- **16 Bits** (2 bytes)

  34 12 78 56 AA 90 CC BB - EE DD 11 FF 33 22 55 44

- **32 Bits** (4 bytes)

  78 56 34 12 CC BB AA 90 - 11 FF EE DD 55 44 33 22

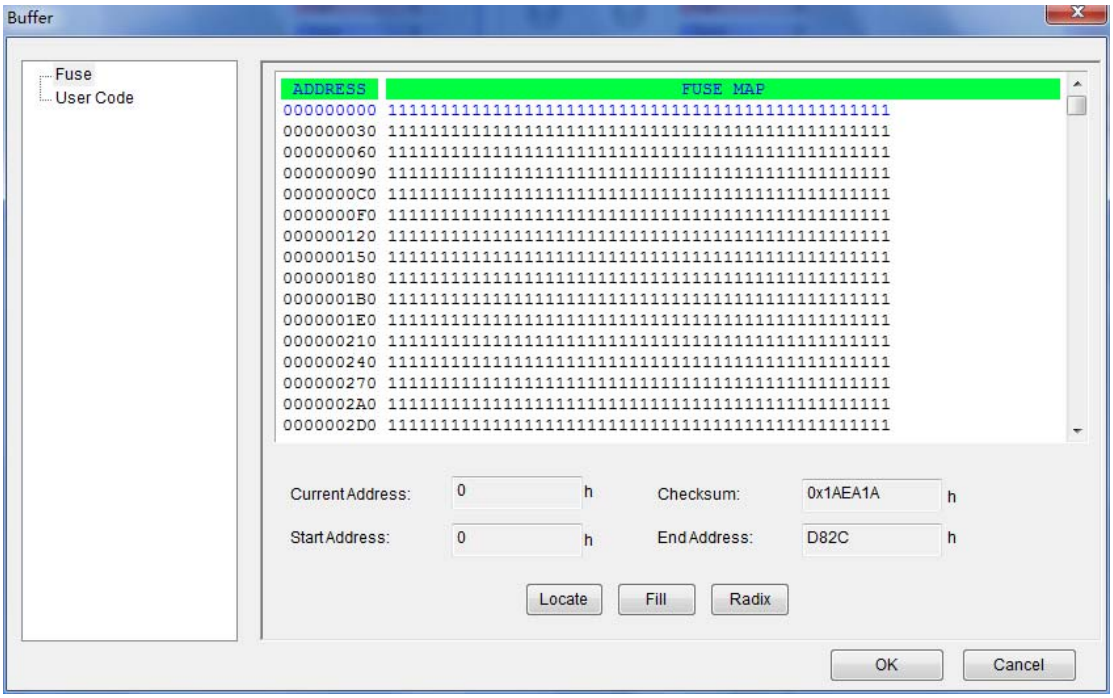
- **64 Bits** (8 bytes)

  CC BB AA 90 78 56 34 12 - 55 44 33 22 11 FF EE DD

4.3.3.2 Fuse Buffer

When you select **Edit** from the **Buffer** menu with the appropriate file type, the

system opens the **Fuse Buffer Edit** window, illustrated below.



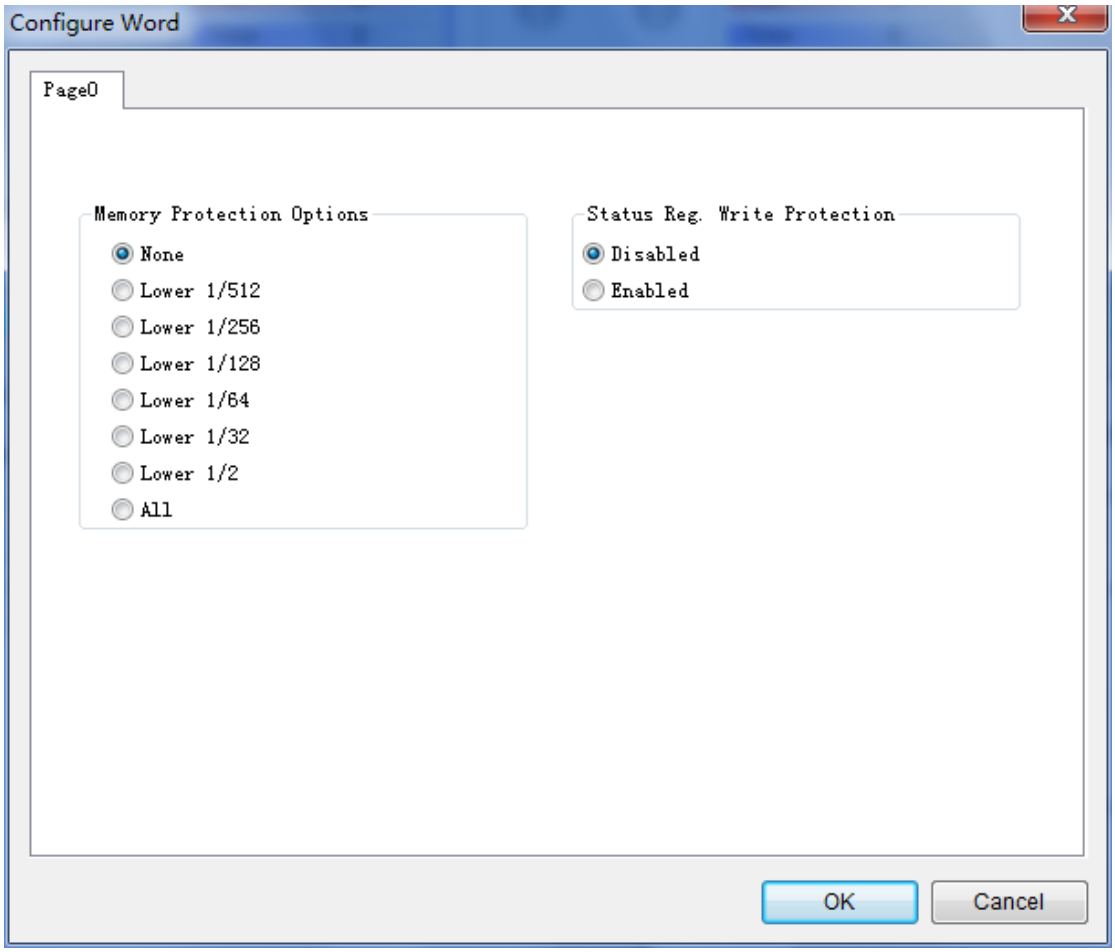
The data for editing is either 0 or 1. Refer to the data manual of the device and the JEDEC to determine which of the following explanations for the data apply.

- 1 represents an intact fuse and 0 represents a blown fuse, or
- 1 represents a blown fuse and 0 represents an intact fuse

4.3.4 Device Configuration Word

Important: The device configuration word varies from device to device. Refer to the device data manual for more information about the configuration words. Set the configuration words according to the requirements of your target system. Otherwise, you cannot use the device normally even if it is normal when preparing and verifying the program. Some single-chip microcomputers allow special working modes, such as the storage area mapping, the watchdog time, the clock, or the encryption. Set these special modes through the Device Configuration Word option. The user files contain the configuration words of some devices. When you load these files, the system automatically loads the configuration words into the configuration word buffer. However, you must select the configuration words for some devices manually.

Select Device Configuration Word from the Device menu to open the ConfigWord



dialog box. The following sample illustration shows the configuration word for EON,EN25B16(Bottom Boot).

It contains the watchdog and three protection modes. Some single-chip microcomputers include many items for the configuration word. The items may appear on separate tabs or pages. Make sure to set all the items on all pages before programming a chip. The input of the configuration word can be divided into several ways:

- The 8-bit (byte) edit box input
- The 16-bit (word) edit box input
- The single choice input (select and deselect, choose one out of two)
- The multiple choice input (choose one out of many)

The configuration words for chip programming are classified into two categories:

- If the configuration word contains some protected items, then you cannot verify the items after preparing the program. When preparing the program, the programmer automatically shields the protected items and writes the other items. Select Security or Protection to write the protected items.

  NOTE: If you select **None** as the Protection option, the system does NOT carry out an operation when performing Security or Protection.
- In some devices, the configuration words cannot be separated, so the system does not write the configuration word when preparing the program. To write the configuration word in these cases, select the corresponding item, such as **Write_Option**.

  Some FLASH devices also use the configuration word for the protect operation and to execute and display the segment protection.

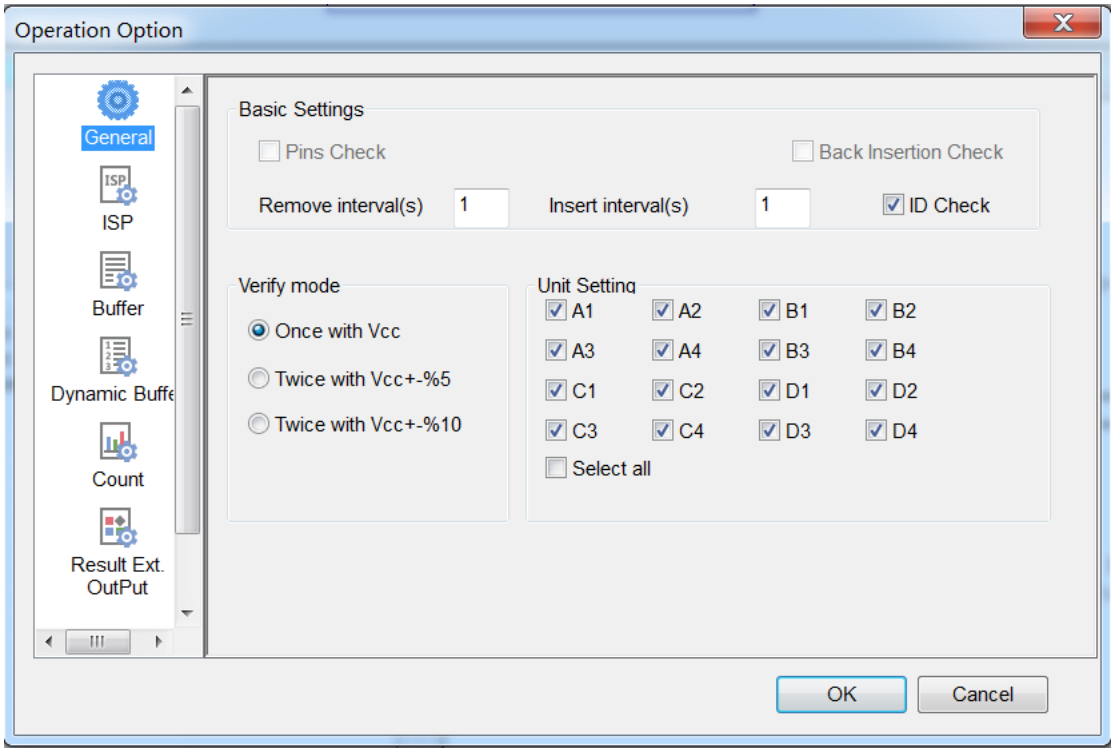
4.4 Option Menu

The **Option** menu includes items to help you program in a specific mode to meet the targeted system requirements. Before programming a chip, make sure to select the necessary settings. The **General** view of the Operation Option screen is illustrated below. The **Operation Option** screen includes four tabs:

- General
- Buffer
- Auto.Inc
- Count

Each view is explained in the following sections

4.4.1 General



1. Don't care "Remove interval(s)", "Insert intervals(s)"

2. Select ID Check to have the programmer read the Electronic Identifier Code from the chip to identify the manufacturer, the device type and the programming algorithm code. If you have already selected the device, the default for this option is checked.

3. Unit Setting

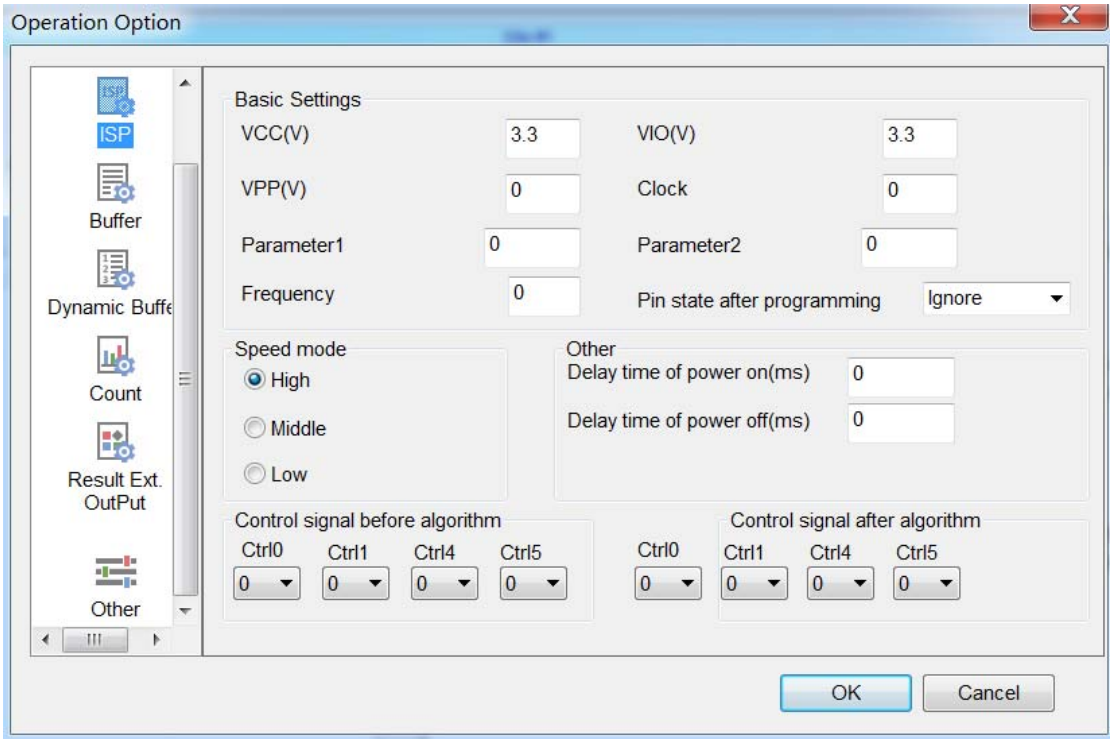
   Select units that to be operated. For example, if want to operate A1,B1, please select A1 and B1.

4. Indicate the mode for verifying the data by selecting one of the Verify Mode options. These options refer to the voltage of the pin VCC, which may vary when the programmer verifies the data. The manufacturer provides the MinVcc and MaxVcc values for verifying the data.

   VCC(+/- 5%) or VCC(+/- 10%) is adopted for the verification. If VCC = 5.00V, select one of the following options:

- VCC = 5.00V and verify the data once
- VCC = 4.75V and VCC = 5.25V, and verify the data twice (+/- 5%)
- VCC=4.50V and VCC=5.50V, and verify the data twice (+/- 10%)

4.4.2 ISP



1: VCC, VIO, VPP: Most time don't change these default values. If program result is not stable and need to modify these values a little. For example, 3.3 to 3.4 or 3.2.

2: Parameter1, Parameter2, Frequency: Most time don't change these default values.

3: Pin state after programming:

Ignore: Don't care the pin state of port in programmer after programming.

Pullup: Pin state of port in programmer is pullup.

Pulldown: Pin state of port in programmer is pulldown

4: Speed mode

Generally IS416 supports 3 speeds for each IC(some ICs only one speed), and customer may select the speed of operation. For example, if customer find the High speed is not stable, and often fail to work, and then

may try to select Middle or Low speed to work. Sometimes the on-line program is complex, the target boards of customer are various, so the setting of Speed mode is important.

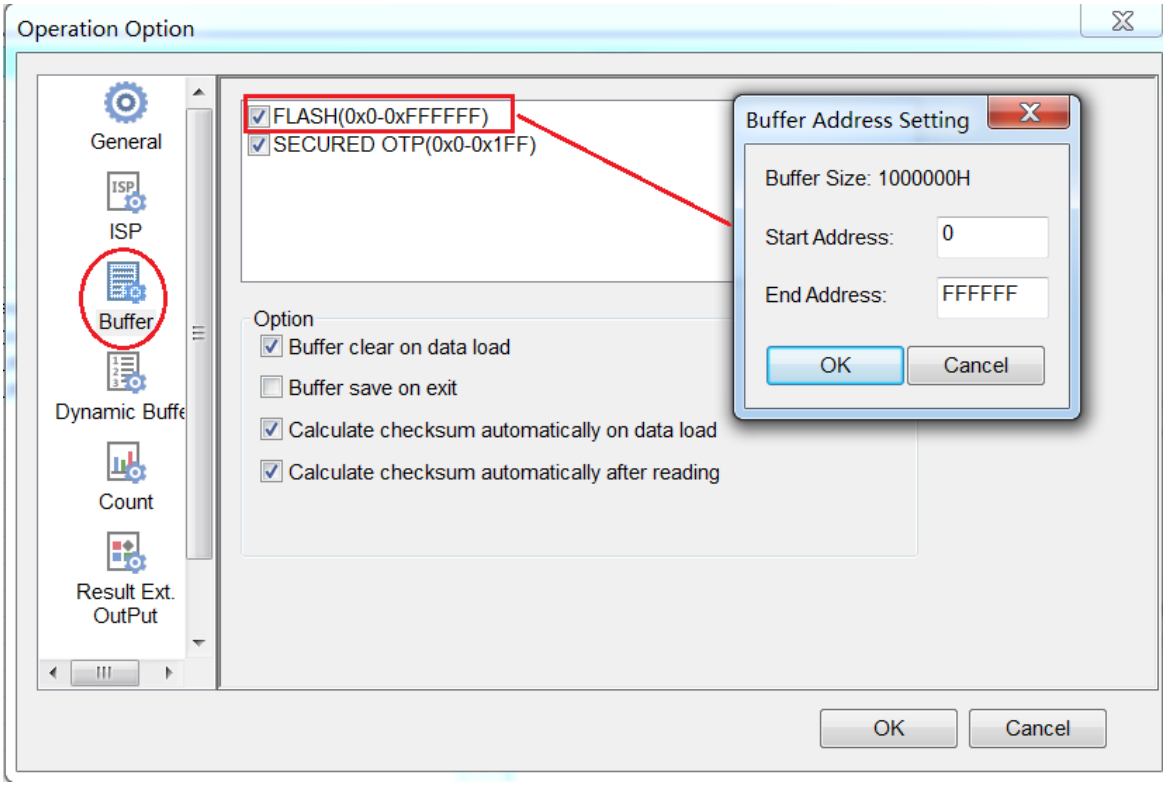
5: Delay time of power on/off

Most time don't care these values. But if the board of customer has large electric capacity, Maybe it's need to wait long time to power on or off. The engineers of XELTEK will tell customer how to set these delay time if need to do.

6: Control signals before/after algorithm

Don't care these settings.

4.4.3 Buffer

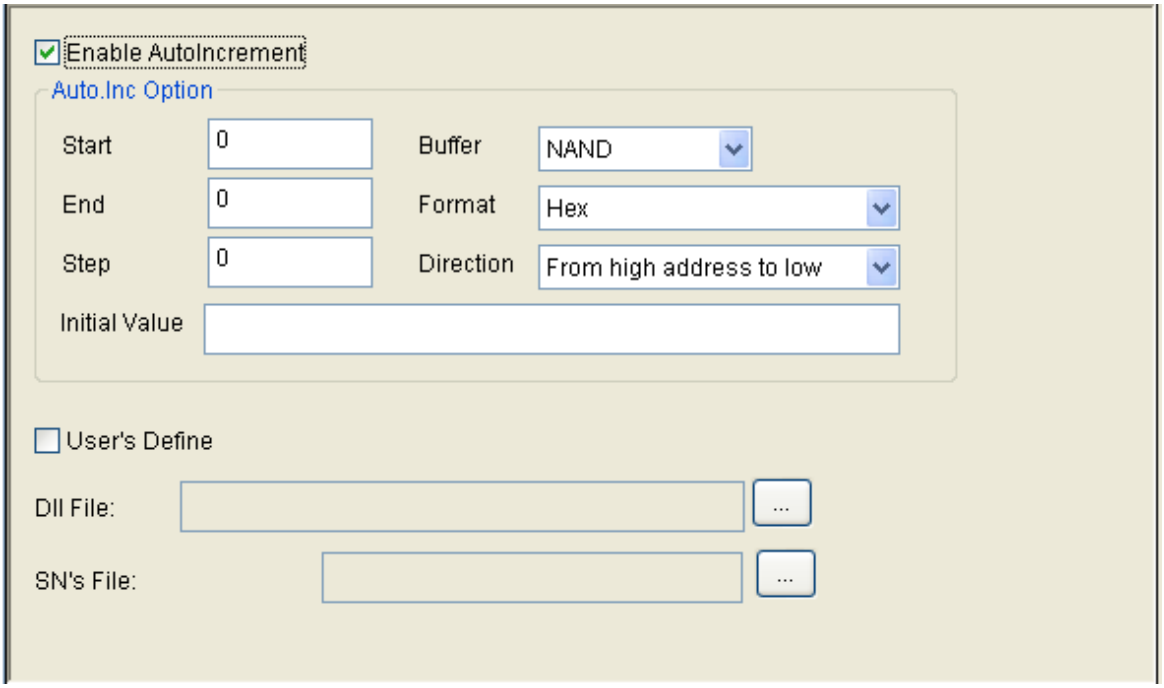


The default programming method is to program the device from the start address to the end address. However, you may choose to program only a part of the chip, such as with most E/EPROM (FLASH) devices. (Double click on buffer name and set the range of programming)

If customer wants to cut down the cost time of operation, may set the start address and end address. Because in this case it's no need to operate the whole range of IC, and only the valid range of IC. The efficiency is high if to do so. But note that not all ICs support change the address of operation.

4.4.4 Dynamic Buffer

Auto Increment provides two methods of generating the serial numbers: Auto Increment and User Defined. This function is not available in stand-alone mode.



NOTE: The serial number is the content required by some applications that must be written in a certain area for every chip. This information includes the product sequence number and the MAC address.

To have the software generate the serial number, select **Enable AutoIncrement**.

1. Enter the automatic start buffer address in the Start Addr field.
2. Enter the automatic end buffer address in the End Addr field.
3. Enter an increment value less than 10 in the Inc. Step field.
4. The AutoInc Format defines the start value and the overflow value. The

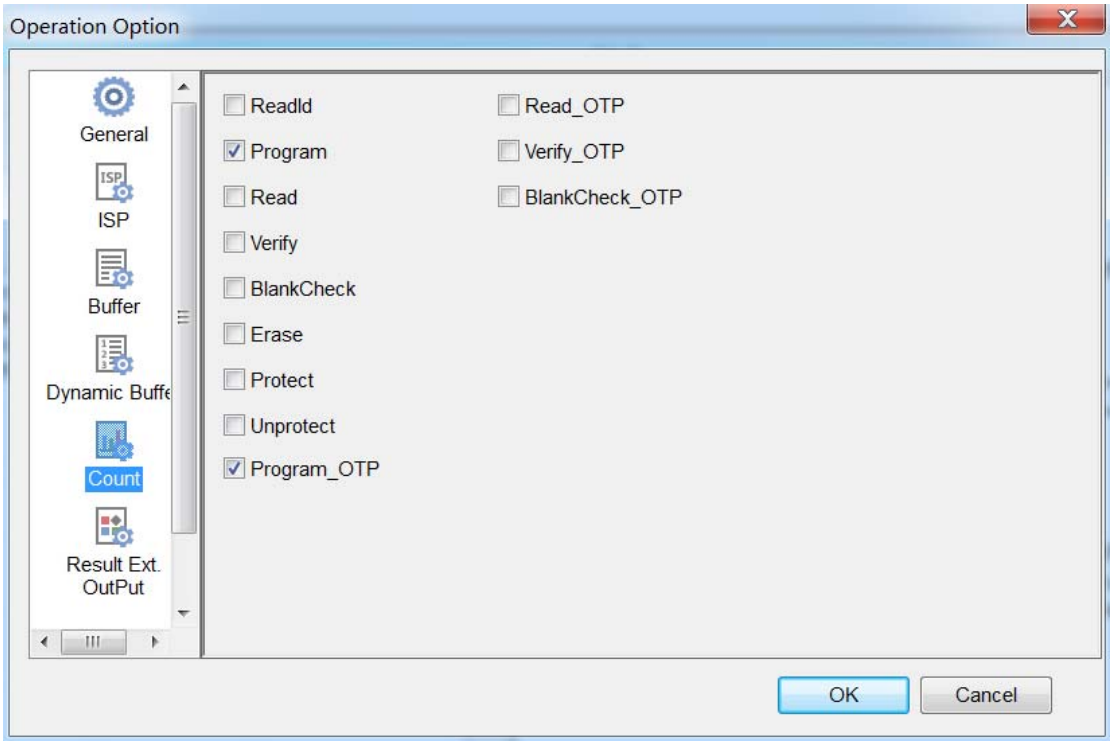
overflow value is the number at which the increment ceases and carries to the next address, which becomes the new start value.

- Select Binary to set the start value as 0 and the overflow value as 256.
- Select ASCII Decimal to set the start value as 30 (hexadecimal representation of 0) and the overflow value as 39+1 (the hexadecimal representation of 9).
- Select ASCII Hex to set the start value as 30 (hexadecimal representation of 0) and the overflow value as 46+1 (the hexadecimal representation of a number greater than F, where 9+1=A).

To define the increase of the serial number, select **User's Definition**. You must be authorized to use this function. If so, you can change the data as desired in the 4K byte range.

4.4.5 Count

The Count view of the Operation Option screen is illustrated below. This screen allows you to change the default setting regarding the statistical work of the programming status. In the default case, it is only effective for the function program".



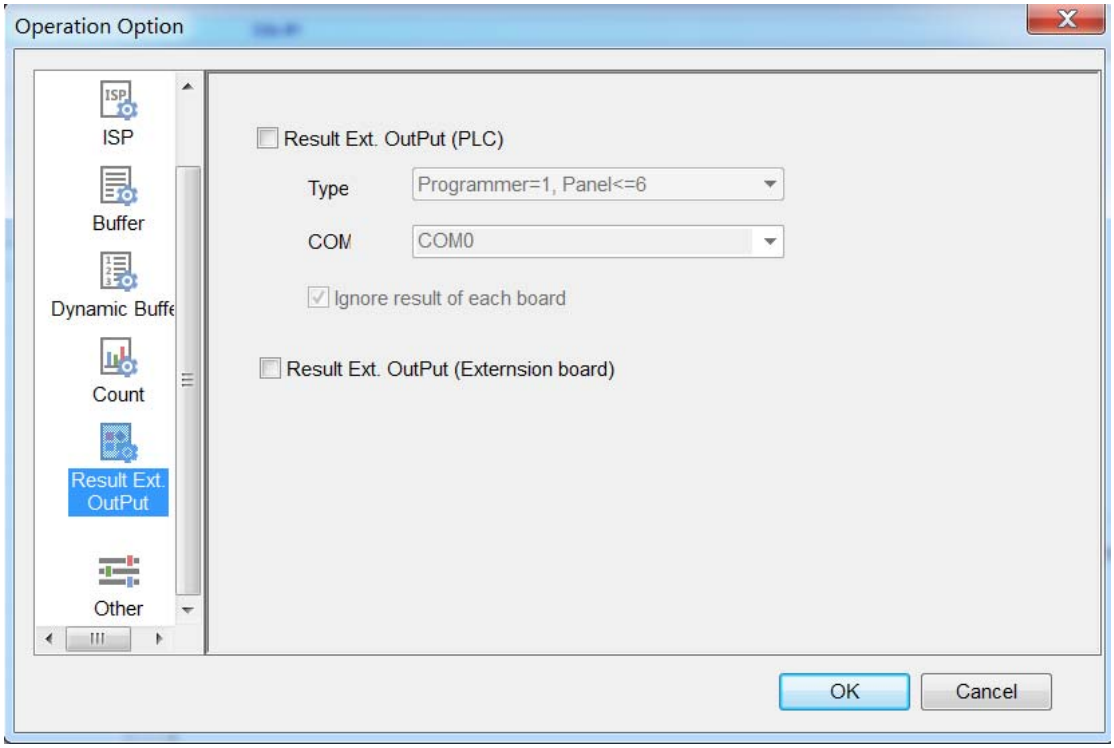
4.4.6 Result Ext. OutPut

Sometimes customer wants to embedded IS416 into auto production line system. We offer two ways to do so.

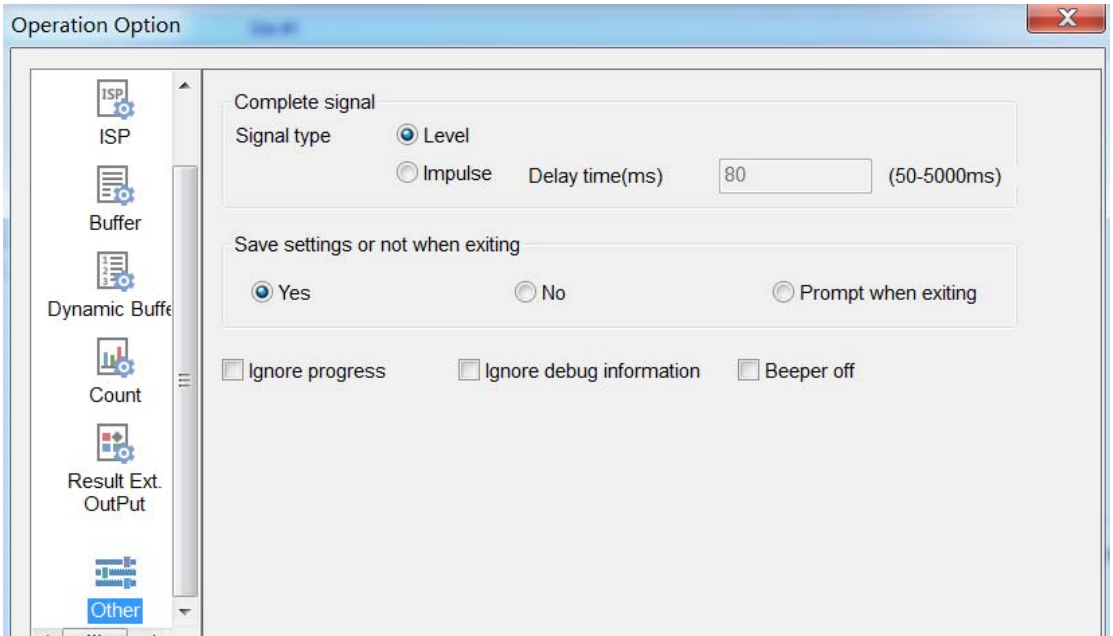
1: PLC to receive the trigger and output operation result. The PLC in/out ports match the electrical interface of production line.

2: Extension board

We may offer extension board to support requirement of embedding IS416 into production line system.



4.4.7 Other



- Complete signal
  Don’t care these values

- Save setting or not when exiting
  Whether save the settings of operation option

- Ignore progress
  Don’t display the progress if set.

- Ignore debug information
  Don’t display the debug information

- Beeper off
  Select Beeper On to turn the beeper on or off. The beeper makes a sound to indicate the results of operations such as Insertion Test error, ID unmatched, programming successfully completed or failed.

  NOTE: Not all programmers include a beeper.

4.5 Edit Auto

The Auto function organizes the different functions of the device into a sequential group and carries out the functions in order, similar to a batch command. **Edit Auto** enables edit functions and operations, in order to automatically execute the programming procedure according to pre-arranged functions and operations. As can be seen from the figure above, user can select one certain function/operation and **Add**, **Delete** the selected one, or **Delete All** to cancel all the previous arrangement.

4.6 Tool Bar

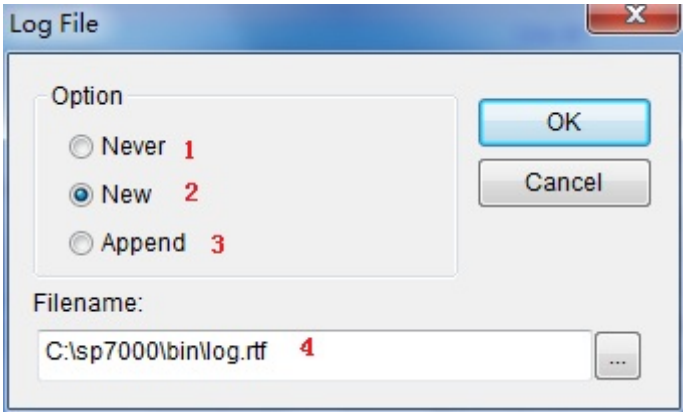
The tool bar provides a quick way to execute common functions. The toolbar from the main SUPERPRO screen is illustrated below. Each tool is labeled with a number and described below.

1. Load file

2. Save file
3. Load project
4. Save project
5. Edit buffer
6. Calculating the Checksum
7. Select device
8. Device information
9. Device configuration word
10. Edit Auto
11. Option
12. Logic test
13. Production mode
14. Factory mode
15. Global settings
16. Help

4.7 Log History Window

User can create a log file to have the system save Operation Information window content into a log file when you exit the program. Select Log File from the Option menu to open the Log File dialog box, illustrated below. The red labels refer to the numbered explanations below:



1. Select **No** to delete the log file. The system will not create a log file on exit.
2. Select **New** to overwrite the existing log file every time the program starts.
3. Select **Append** to add the log file information at the end of the existing log file each time the program starts.
4. Enter, edit or Browse for the full path name of the log file in the Log file's name: field.

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.
    - In the Buffer Address field, enter 0.
    - In the File Address field, enter 200.
3. Select **Load** from the File menu to load the Sample2 file.
    - In the Buffer Address field, enter 3000.
    - In the File Address field, enter 0.
4. Select **Load** from the **File** menu to load the Sample3 file.
    - In the Buffer Address field, enter 4000.
    - 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:
    - **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.
    - **The POF file has errors.**
    - **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 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:
  - Make sure you can repeat the circumstances that created the error.
  - 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, and the operating system.
- Make sure you are at your computer when you call so the engineer can guide you through the solution.

Contact Information

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General Consultation

086-025-68161233

Order/Sales

086-025-68161203

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Website: http://www.xeltek.com.cn

License Agreement

You may:

1. Copy the program for back-up purposes ONLY in support of its use on a single computer.
2. Transfer the program and license to another party if the other party agrees to accept the terms and conditions of this agreement.

You may not:

1. Use this product on a computer system or network that allows the program to be operated by more than one user at the same time.
2. Modify, copy, or transfer the User's Guide or other documentation or any copy.
3. Decompile or disassemble any program modules or encrypted devices.