HANDY LEAPER

NAND-FLASH IC WRITER

LEAPER-9

User's Manual

Thank you for purchasing this LEAP product.

- **Before using it, be sure to read the precautions contained in this User's Guide.**
- **Keep the User's Guide for future reference.**
- **For update information of Leaper-9, please visit www.leap.com.tw**

力浦電子實業股份有限公司
LEAP ELECTRONIC CO.,LTD.

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INTRODUCTION

Please check the programmer provided with above accessories.
If there's something missing, please contact the distributors you purchased the programmer as soon as possible.

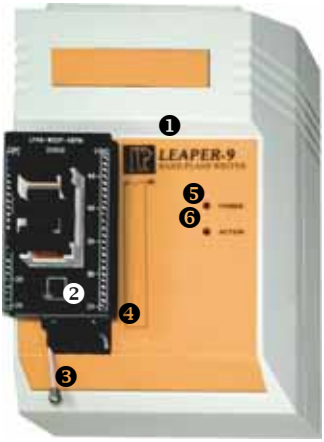
Handy
IC Writer

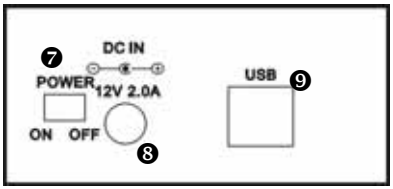
DC 12V/2A
switching power

USB cable

S/W &
Operation CD-R

General Guide





❶ Product name
❷ Textool / Socket
❸ Textool handle
❹ PIN assignment
❺ Power indicator light
❻ Working indicator light
❼ Power switch
❽ Power plug-in
❾ USB port

Introduction

LEAPER-9 is a NAND FLASH IC Programmer with high efficiency, performance. It is small, light, portable and power saving programmer provided with USB connecting to PC or notebook.

LEAPER-9 has the simple operation software graph showing users. It selects devices brand & number by prompt and convenient crossing search. It also provides system self-test to check hardware status. When new devices added, LEAPER-9 can download the latest driver via USB connecting to PC to update the IC library.

Specifications

Physical Dimension

Dimension: 16cm × 11cm × 4.5cm
Weight: 0.5Kgs
Operative temperature: +5℃~ 45℃
Operative humidity: up to 90% non-condensing

System requirements

Operating System: Windows 98(OSR2)/ME/2000/XP
Processor: above Pentium pro
Memory: 128MB RAM above, RAM added by IC size
Hard disk: 60 Mb above
Communication Interface: USB ver1.1

Electrical Requirements

Voltage wide range: 90 ~ 260 VAC, auto-switching
Frequency: 47 ~ 63 Hz
Power consumption: 24 W maximum

Supported Devices

Samsung, Toshiba, ST...NAND FLASH devices

Optional Adaptors

LP48-TSOP-48PIN
LP48-WSOP-48PIN
LP9-TBGA-63
LP9-TFBGA63-S

Introduction

Device Socket

48-pin DIP ZIF (Zero Insertion Force) socket
Use various adaptors to support different packages

DC/AC Characteristics

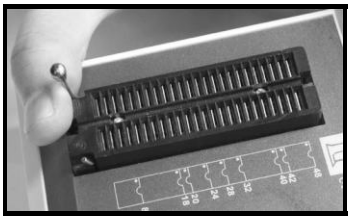
Signal Voltage: 2.5V- 5.0V
VCC Voltage: 1.0V-9.0V 500mA
VPP, VHH Voltage: 1.0V-20.0V 500mA
CLOCK Frequency: 0Hz - 32.0MHz

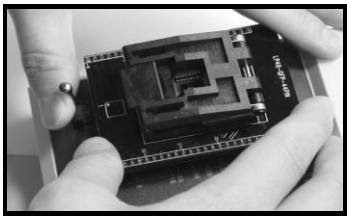
Data File Format

Binary, HEX...

Precautions

- LEAPER-9 is a programmer only for NAND FLASH IC and can't program other kinds of devices.
- The most suitable display of the NAND FLASH programming software is small font (96dpi). Please confirm the [Font Size] of Windows has been set as small fonts to bring you the optimal operation menu.
- Recommend using the computer with internal USB port built-in, but not external appended to. Because the external USB Card might cause problems on running LEAPER-9. If there're any damage caused by users using external USB Card, LEAP Electronic Co., Ltd won't be responsible for the damages or losses.
- If it is needed to additional socket adaptors/modules (for different packages like BGA, TSOP, WSOP), please use the adaptors produced by LEAP to match up LEAPER-9. LEAP Electronic Co., Ltd won't be responsible for the damages or losses caused by users using other adaptors.
- When you use special socket adapters (BGA, TSOP, WSOP...), please pull the textool up to 80^{o}. Put the special socket adapter in the textool and pull the handle down to fix the socket adapter, so that it could be clipped tightly.





Introduction

- Considering about possible variation and situations while programming IC, LEAPER-9 can't guarantee 100% programming success. If users are programming the IC for production master IC purpose, please make sure to execute the **Verify** process to check the IC content to ensure the quality of devices mass production.
- The socket textool is one of consuming materials. It's not included in LEAP products guaranteed.
- If there's any problem on using LEAPER-9 and the service staffs can't help you to solve it on line, please send it back to LEAP or distributors worldwide you purchase it from for repairing. Do not try to disassemble and repair it by yourself. Otherwise, LEAP Electronic Co., Ltd won't be responsible for the damages or losses or offer the free products repair services.
- LEAP Electronic Co., Ltd won't be responsible for the damages or losses caused by user inappropriate using LEAPER-9. Neither the free products repair services.

Getting Ready

This section contains information about things you need to know about and do before trying to use the NAND FLASH IC writer. Includes the installation of LEAPER-9 programming software and hardware USB drive.

Insert the s/w and manual CD-ROM attached into computer. Install the programming software first and then connect the writer to computer and start up the hardware USB driver.

Please follow below installation illustrations to install software and driver.

Install Programming Software

1. **If your computer supports Auto-Run, it will start up the installation program when you insert the CD-R into it. Please follow the Wizard to complete programming software installation.**
2. **If your computer doesn't support Auto-Run, please click the installation program (Setup.EXE) in the CD-R or the subdirectory where the installation program is in.**

Install Hardware USB Driver

1. Take out the programmer from the cartoon. Check if the power switch is turn off.
2. Use the USB cable to establish the connection between the computer and the IC programmer.
3. Connect the power switching converter to the programmer. Then plug in the power converter (not to turn on the power yet). Check if the USB cable and power are connected correctly.
4. Now, turn on the power of the programmer. The green light on the converter and the power light on the programmer should be lighted up.
5. **Installing hardware USB driver is different according to the OS of the computer is Windows 98, ME, 2000 or XP.**

   The driver for ***USB N-FLASH WRITER*** is enclosed in the CD-R. The subdirectory is: **[CD-R:\NAND FLASH WRITER\Driver\USBWrite.inf]**

If you have installed the programming software, you can also find the USB driver in following subdirectory where you the software installed.
[C:\Program Files\NAND FLASH WRITER\Driver\USBWrite.inf]。

- If you are running Windows 98 or ME…
  - Follow Step 6 to install USB driver.
  - Note that the example installation presented here uses Windows 98.

- If you are running Windows XP, you do not need to install the USB driver manually.
  - Follow Step7 to install USB driver.
  - Note that the example installation presented here uses Windows 2000.

6. Install USB drive on Windows 98 or ME

When you turn on the power of the programmer, a message window will shows that the computer finds a new USB Plug-and-Play hardware and starts to install the USB driver.

If your computer doesn't show any message, please open **[Add New Hardware Wizard]** to install manually.

- Click **[Add New Hardware].** Follow the ***Hardware Add Wizard*** *(*Search the most suitable driver) to complete installing ***USB N-FLASH WRITER***.
- If Windows can't find the driver in last step, please select the second option to find out the driver by yourself. The driver is in the subdirectory **[CD-R:\NAND FLASH WRITER\Driver\USBWrite.inf]**
- If Windows still can't find the driver in designate location, please click **[System]** and check if there's any new USB device (***USB N-FLASH WRITER***) in **[Device Manager]**.
  - If there's a question mark or exclamation mark in front of the ***USB N-FLASH WRITER***, that means the computer can't find its driver. Please double click the left button on it. Select Reinstall Driver in **General** label to install USB driver. The driver is in the subdirectory **[CD-R:\NAND FLASH WRITER\Driver\USBWrite.inf]**
  - If there's nothing in front of ***USB N-FLASH WRITER***, that means the programmer has been drove. You can start to use it.
- You need to perform this step only once, the first time you connect the programmer to your computer.

7. Install USB driver on Windows XP

When you turn on the power of the programmer, there's message window showing that the computer has found a new USB Plug-and-Play hardware and starts to install the USB driver.

- ***Add New Hardware Wizard*** will ask you how to search the driver. Please select the auto search (default).
- Where to find the driver? Please select the CD-ROM Drives.
  [CD-R:\NAND FLASH WRITER\Driver\USBWrite.inf]
  If you had installed the programming software, you can also find the driver in subdirectory where the software installed.
  [..\NAND FLASH WRITER\Driver\USBWrite.inf]。
- Please make sure the version of Windows XP had been updated and newer than Service Pack 1 above. Otherwise, it may not be able to work successfully with LEAPER-9.
- You need to perform this step only once, the first time you connect the programmer to your computer.

8. Why I can't find the programmer hardware?

- Check if the power switch on the programmer is turned on.
- If the power is O.K., the green light on the power converter and the power light on the programmer should be lighted up.
- Please confirm if your Windows version supports USB Plug-and Play device.
- Please check if the USB cable has established the connection between the programmer and the computer correctly.
- If auto searching still can't find the driver, please go to the subdirectory [**Driver**] in CD-R to install driver manually.

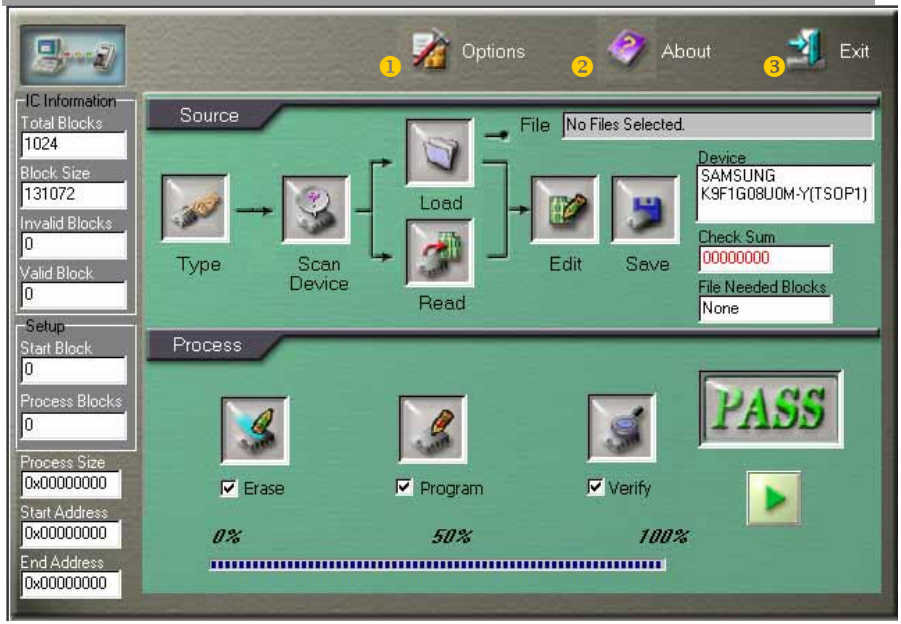
Complete installing hardware USB driver and programming software, you may start to use ***NAND FLASH IC WRITER***.

If there's showing a message window as follows when you run the programming software, that might has several reasons. Such like the USB driver hasn't been installed, the power isn't turned on or the USB cable or power cord doesn't connect properly. Then the software will only be ran in DEMO mode.

Operation Guide

This section describes operation menu and option function.

Menu Interface

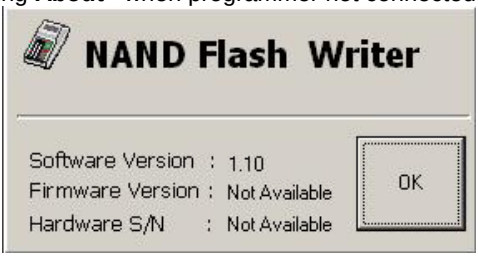


❶ **Options**:
system options and self-test

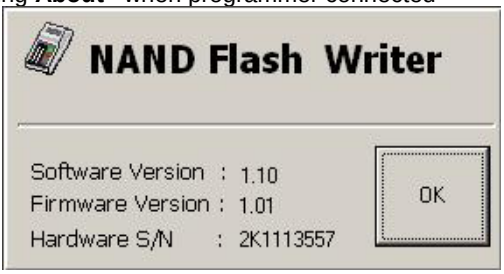
❷ **About**:
the software and hardware version of the programmer

❸ **Exit**:
exit the programming system

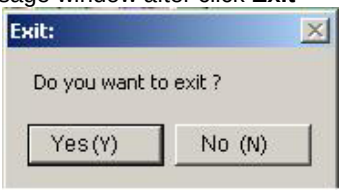
H/D & S/W information of the programmer after clicking **About** –when programmer not connected



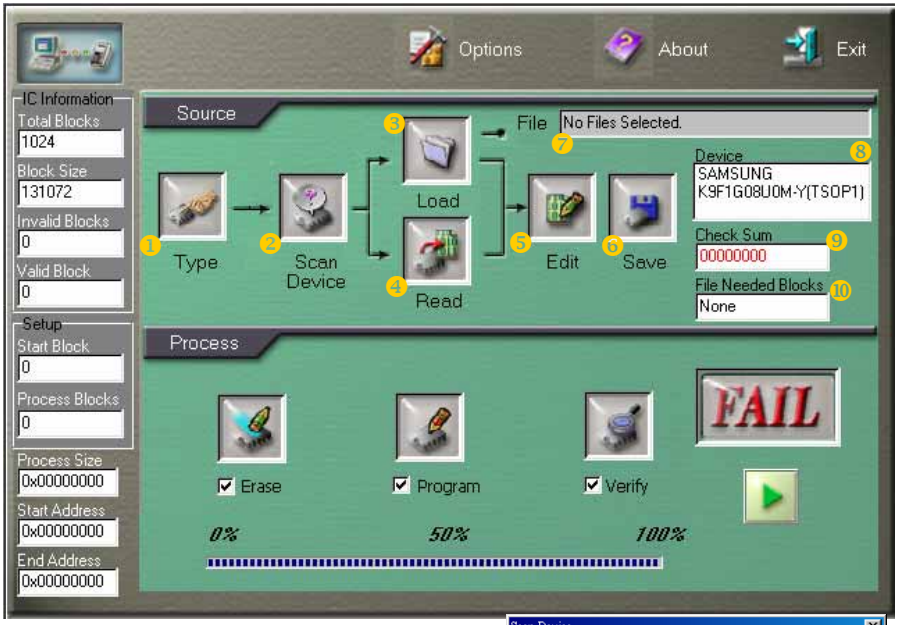
H/D & S/W information of the programmer after clicking **About** –when programmer connected

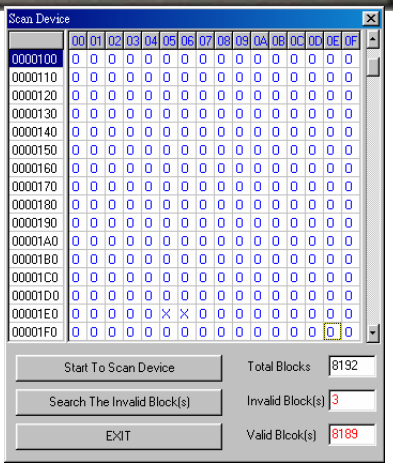


Exit message window after click **Exit**



Source-Programming Source Data





❶ **Type**: Select IC manufacturer, number and package, also set the Block Size of Code Area (Setting Block Size described in advanced option instruction)

❷ **Scan Device:** Scan bad blocks
X: It means bad block
O: It means good block

❸ **Load**: Load data from the PC

❹ **Read**: Read data from the IC

❺ **Edit**: Edit the data loaded or read

❻ **Save**: Save the data that has been revised

❼ **File**: The location of the data loaded/read in PC

❽ **Device**: IC information of the IC selected

❾ **DeviceSum**: Sum value of the data loaded/read

❿ **File Needed Blocks**: Load file, it will depend the device block's size.

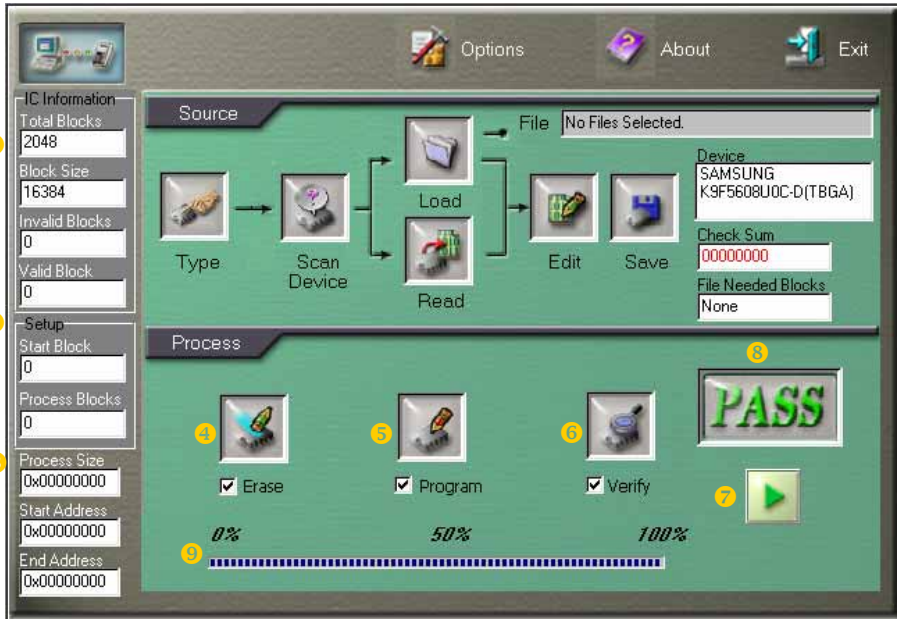
※ Mark 1: The vendor define the bad block as follow:

1. page size is 512 bytes device
   It will indicate "FF" at the sixth byte from the spare area on first page & second page of each good block.("00" means bad block)

2. page size is 2048 bytes device
   It will indicate "FF" at the first byte from the spare area on first page & second page of each good block.("00" means bad block

※ Mark 2: Use the block size to calculate the loading file blocks need.
If you are loading a file size of 256KB with Samsung K9F2808U0C device, Its block size is 16KB so you will need 16 block to load the file. Example: 256KB/16KB=16Blocks.

Process- Start to Programming IC



❶ **IC Information**: Total Blocks: Device total block
Block Size: Total bytes in each block
Invalid Block: Total fail blocks
Valid Block: Total good blocks in one device.

❷. **Setup**: where you want to put your data.
Start Block: Input start block
Process Blocks: Total blocks of data

❸. **Process Size**: Indicating total usage of file's byte.
Start Address: Display the start address of IC
End Address: Display the end address of IC

❹ **Erase**: Erase the content of IC.

❺ **Prog**: Program the data loaded or read into target IC **Prot**: Security protecting. NAND FLASHI IC Writer doesn't support this function.

❻ **Verify**: Verify if the data programmed into IC is the same with the source data.

❼ ▶: Start to run the programming processes marked.

❽ **Result**: The outcome of processes completed.

Please wait while running programming processes.

Processes running completely and successfully.

Processes running failed and interrupted.

❾ **Processing Bar**: Indicating the percentage of the processes completed.

※ The background color of the process item changes to yellow when running the process. It turns into green when the process is done, and goes on next process. If fails, the procedures stops and the result column shows "**FAIL**".

※ You will need to run "Scan Device" after select IC Type, else you will not have correct information to access Setup sector.

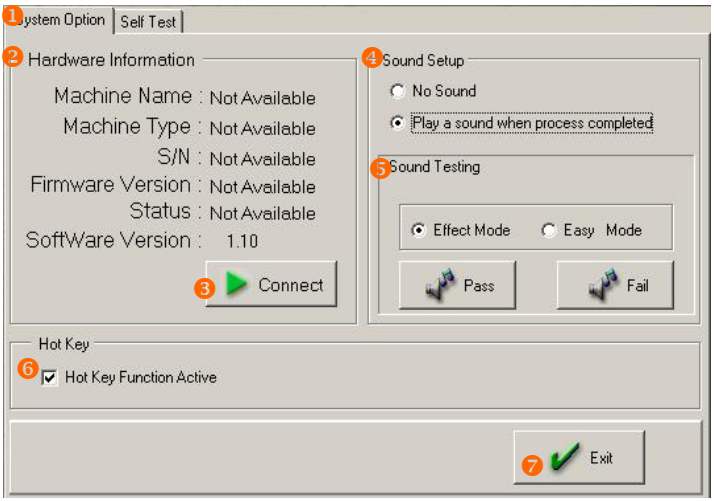
Advanced Option Instruction

This section describes the operation interface of advanced options and illustrates option functions.

Advanced Option Instruction

Options - System Options

Information about the settings of programming system, hardware, software and the programmer.



❶ **System Option**: Programming system options

❷ **Hardware Information**: Programmer information and status

❸ **Connect**: Check the connection status of the programmer with the computer

❹ **Sound Setup**: Set the sound effect

❺ **Sound Testing**: Test the sound effect

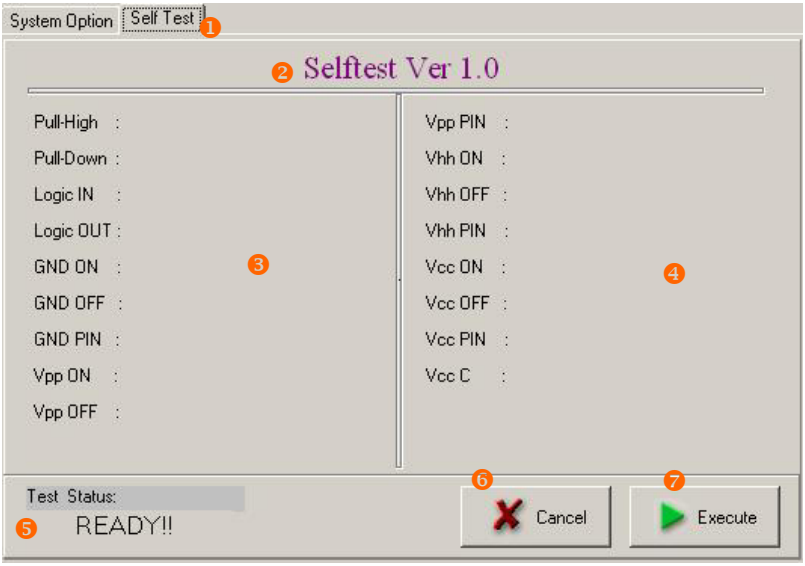
❻ **Hot Key**: Quick function key

Hot Key Function Active: Enable the Hotkey function

❼ **Exit**: Quit system option menu

Options – Hardware Self Test

LEAPER-9 can test hardware status itself. Repairing persons can find out the problems and solutions quickly.



❶ **Self Test**: Programmer hardware testing.
❷ **Selftest Ver**: The version of Self-Test program.
❸ **&** ❹: The results of all hardware check points testing (PASS or FAIL).
※ If the result is FAIL, please contact LEAP services team or distributors you purchased the item. Let the professional check the programmer for you. Do not try to take apart it, fix it or refit it. Otherwise, LEAP Electronic Co., Ltd won't be responsible for the damages or losses or offer the free products repair services.

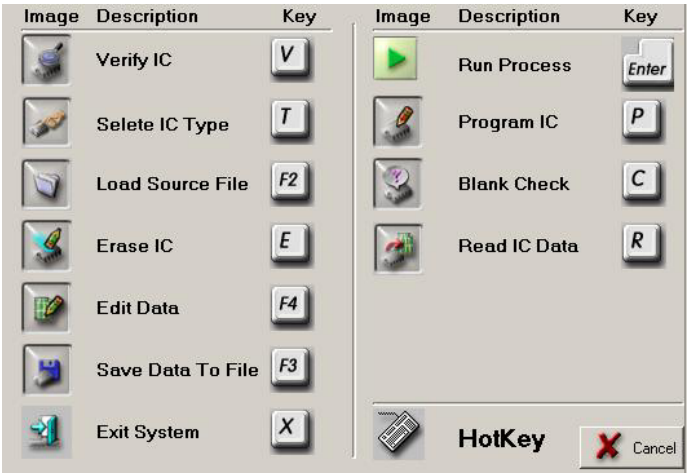
❺ **Test Status**
READY!! Ready to start testing.
Not Connected The programmer isn't connected to the computer.
Time Out Stop detecting. The time trying to detect the programmer exceed regulation.

❻ **Cancel**: Cancel and be back to previous menu.
❼ **Execute**: Run the Self-Test.

※ Make sure to remove IC on the programmer before starting to running Self-Test. Otherwise that will damage the IC even the programmer and LEAP Electronic Co., Ltd won't responsible for any lost.

What's Hotkey

Press space bar on the keyboard on Main Operation Menu to open the Hotkey window.



Item:

Image Process icon

Description Key function

Key Function key

Hotkey Description

1. **Verify IC**: Check source data with IC data programmed
2. **Select IC Type**: Pick IC manufacturer and number
3. **Load Source File**: Load data from the computer
4. **Erase IC**: Clear the content in the IC
5. **Edit Data**: Revise the data which is loaded or read
6. **Save Data to File**: Save the data revised in the computer
7. **Exit System**: Quit programming system
8. **Run Process**: Execute the processes selected
9. **Program IC**: Copy data to the IC
10. **Blank Check**: Check if the IC is empty
11. **Read IC Data**: Read data from the IC

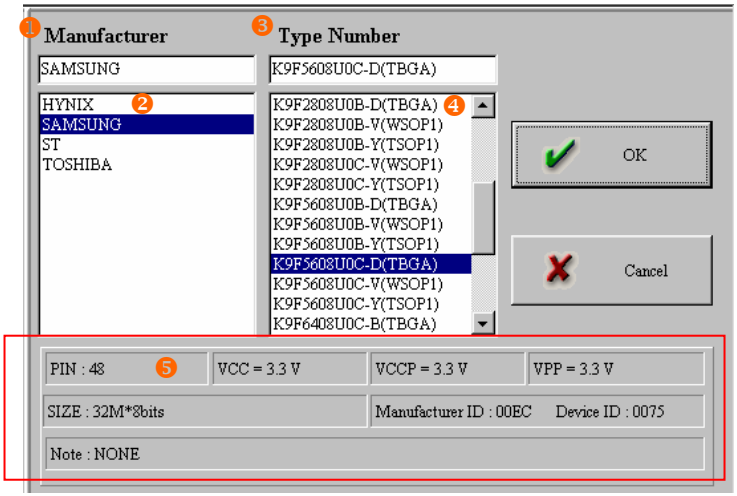
Cancel: Abandon and quit

Advanced Programming Process

When users first time run the programming system, be sure to select IC type then go no other processes. Otherwise, processes can't work.

Select IC Number

Click  on Main Operation Menu to enter this menu to select the IC manufacturer, number and package.



❶ **Manufacturer:** IC brand

❷ You can just input the IC manufacturer here to locate it directly. (capitalization/lowercase)

❸ **Type Number:** IC number, package and PIN

❹ You can just input the IC number here to locate it directly. (capitalization/lowercase)

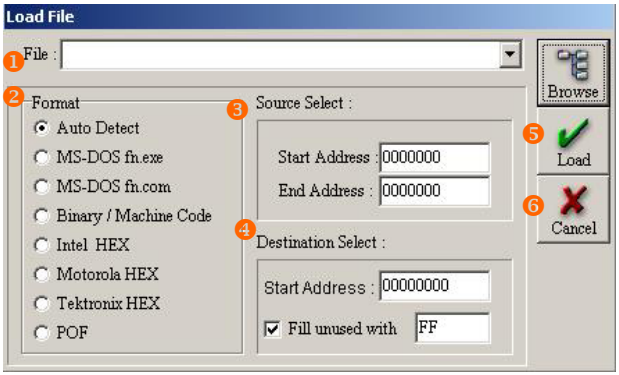
❺ IC information

PIN: PIN assignment of the IC
VCC: VCC voltage of the IC
VCCP: VCCP voltage of the IC
VPP: VPP voltage of the IC
SIZE: The memory size of the IC
Manufacturer ID: ID Code of the IC manufacturer
Device ID: ID Code of the IC

Note: The adaptor needed

LOAD Source Data From PC

Click  on the Main Operation Menu to enter this menu to load the source data from the computer to the buffer area.



❶ **File:** The filename and location of the source data
You can just input the source filename and exactly location to load the data. Or you can click  to locate the file.

❷ **Format**: The format of the source data
The programming system supports 7 kinds of format. If you are not sure the format of the source data, you can select **[Auto Detect]** to detect it automatically.

❸ **Source Select**: Set the range of the source data
You can set the start and end address to limit the source data area.

❹ **Destination Select**: Set the start address of the destination
You can set the start address to limit the destination area in the IC.

Fill unused with Fill the empty space with xx
You can set to fill the empty space with some value while programming IC. The default value if FF(blank)

❺ **Load**:
Confirm to load file in the computer with selected settings.

❻ **Cancel**:
Abandon loading file.

※ Item ❷、❸、❹ setting depends user's demand but not necessary.

After loading data, there's a message window popping up to notify the file format and sum value of the data. As following.

※ Check Sum value is used for IC data confirming and verifying.

READ Source Data From IC

Click  on the Main Operation Menu to enter this menu to read data from the IC to the buffer area.

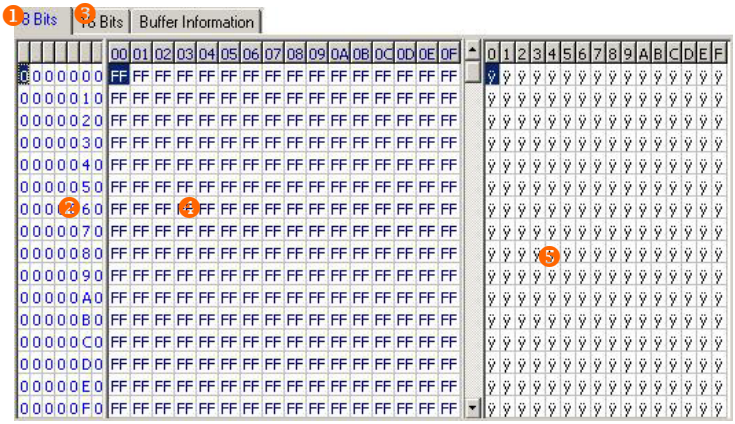
If you have mark on  , the system will check that if the data in the buffer area and the data in the IC are the same completely.

If there's no IC placed on the socket, or the IC type is different from the IC type user selected, there will pop up following alarm message window.

When read data from source IC, there'll pop up message window showing data format and sum value. Just the same with loading data from computer (refer to **LOAD** procedure).

EDIT Source Data

Click  on the Main Operation Menu to enter this menu to edit data in buffer area.



❶ **8bits** data (hexadecimal format)

❷ **Data Address (HEX)**

You can move cursor to this column and click on it to input the address you want to move to.

❸ **16bits** data (hexadecimal)

❹ **HEX column**

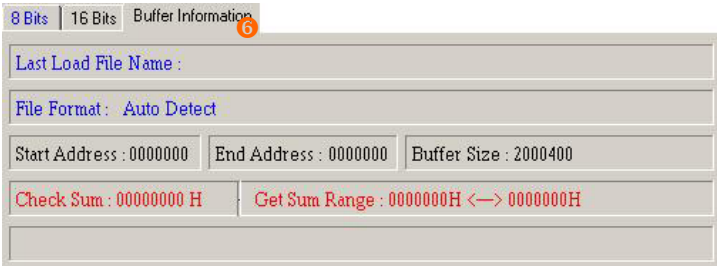
Data in hexadecimal format. Click here to edit directly.

❺ **ASCII column**

Data in ASCII format. Click here to edit directly.

❻ **Buffer Information**

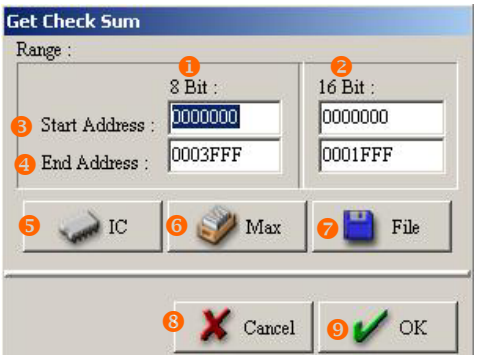
Information of data in buffer area.



Get IC Check Sum

Click 

in **EDIT** menu to enter this menu.



❶ **8 Bit**: device (hexadecimal format)

❷ **16 Bit**: device (hexadecimal format)

❸ **Start Address**: Set start address of the data range computed in sum.

❹ **End Address**: Set end address of the data range computed in sum.

❺ **IC**: Compute the sum in range of the IC size selected.

❻ **Max**: Compute the sum in range of the buffer area size.

❼ **File**: Compute the sum in range of the file size loaded.

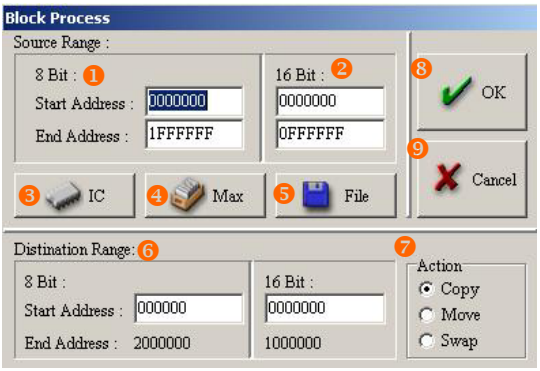
❽ **Cancel**: Abandon and quit.

❾ **OK**: Confirm to compute the sum.

Block Process-Data Copy/Move/Swap

Click 

in **EDIT** menu to enter this menu.



❶ **8 Bit**: device (hexadecimal format)

❷ **16 Bit**: device (hexadecimal format)

❸ **IC**: Set Block area in range of the IC size selected.

❹ **Max**: Set Block area in range of the buffer area size.

❺ **File**: Set Block area in range of the file size loaded.

❻ **Destination Range**: Set the start address of destination.

※ After inputting Start Address, system will get the End Address automatically and display below.

※ If the Destination Range exceeds regular range, there'll be an error message showing as following.

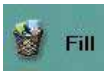
❼ **Action**:

Copy: Copy block data to elsewhere designate
Move: Move block data to another block
Swap: Swap block data to another block

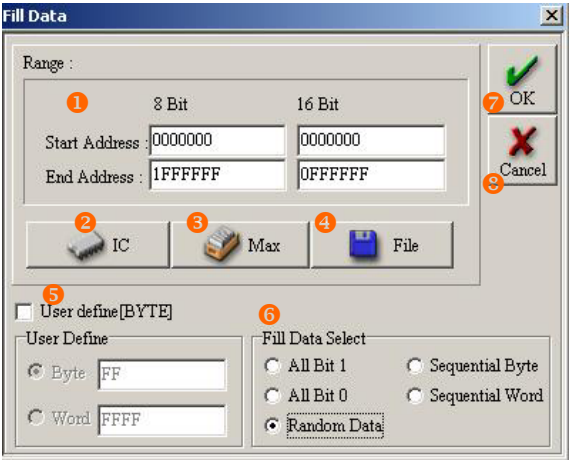
❽ **OK**: Confirm to execute action.

❾ **Cancel**: Abandon and quit.

Fill Data

Click 

in **EDIT** menu to enter this menu.



❶ **Range**: The start address and end address of the block which data is going to fill in.

❷ **IC:** Set the range according to the IC size selected.

❸ **Max:** Set the range according to the buffer size.

❹ **File:** Set the range according to the file size loaded.

❺ **User define [BYTE]**
Byte Fill with [FF] byte by byte.
Word Fill with [FFFF] word by word.

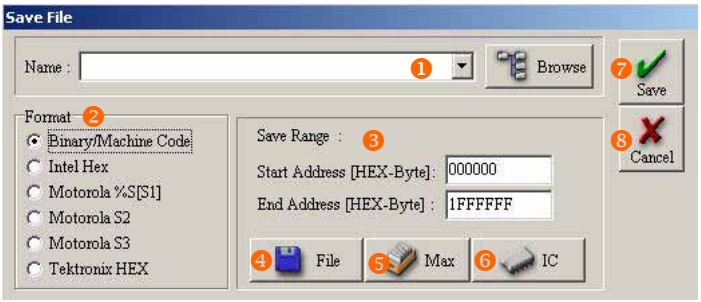
❻ **Fill Data Select**
All Bit 1 Fill the block with 1.
All Bit 0 Fill the block with 0.
Random Data Fill the block with random number.
Sequential Byte Fill the block with sequential byte.
Sequential Word Fill the block with sequential word.

❼ **OK**: Confirm to fill data.

❽ **Cancel**: Abandon and quit.

SAVE Data

Click  on the Main Operation Menu to enter this menu to save data.



❶ Name

You can just input the filename and exactly location to save the data. Or click  to search the subdirectory where the data's saving.

※ When you input the filename in the blank space, be sure to input the complete filename, path and subdirectory.

❷Format

Supports 6 kinds of file format. If you pick the wrong format to save data, that will cause data incorrect.

❸ Save Range

You can set the Start Address and the End Address to limit the saving range.

※ Only allow value in HEX-Byte.

❹ **File:**: Set the range according to the file size loaded.
❺ **Max**: Set the range according to the buffer size.
❻ **IC**: Set the range according to the IC size selected.
❼ **Save**: Confirm to save data and quit.
❽ **Cancel**: Abandon and quit.