EQUIPMENT ADVANTECH

LABTOOL-148C

Compact Programmer

User's Manual

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How to use this manual

Thank you for purchasing the LABTOOL-148C compact Programmer. We designed this manual to help you quickly and easily set up and use your LABTOOL-148C. You can use the manual in two ways:

Step by step:
The manual should be used in conjunction with the On-line help contained in the LABTOOL-148C software. Once you have installed the LABTOOL-148C and the software, you should not need this manual again. You can just press ′Fl′ in the program and context sensitive help will guide you through the processes.

Quick start:
Our special Quick Start section gives experienced users the information they need to setup the LABTOOL-148C and software, and basic guidelines on using the LABTOOL-148C. If you need more information, you can refer to the rest of the manual. If you have any problems, you can work through the manual step by step for easy troubleshooting.
If you have any questions, feel free to call your local distributor or sales representative.

Software Updates:
Please visit our website at www.aec.com.tw to update the software.

Packing list

Before you begin installing your LABTOOL-148C, please make sure that the following materials have been shipped:

1. LABTOOL-148C compact programmer
2. Parallel cable
3. 3.5″ floppy disks containing the software for windows support Win 2000, Win 95/98/ ME and Win NT.

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CHAPTER 0

Quick Start

Quick Start

1) Select the chip to be programmed first.
   Use the Hot key “ALT-C”, then type the complete part number of the chips to be programmed; or use the mouse to select the desired part number.
2) Load the design file into the buffer.
   Use the Hot key “ALT-L”, then specify the origin of the file and load.
3) Alternatively, you can read a master chip into the buffer instead of a design file.
   Read operation (hot key ALT-R), you can transfer the chip′s contents into the buffer.
4) Insert blank chip of the same type into the ZIF sockets, set the device operation option (Hot key F4), then perform Program (Hot key ALT-P).
5) To speed up throughput, user can change the mode to Mass production mode (hot Key Alt-M). After entering this mode, the LABTOOL-148C will program chips automatically after the chip has properly inserted into the socket of the LABTOOL-148C.
6) If the chip has configuration byte for set up the oscillator type, watch dog , code protect .. Etc in the chip, User need to enable the configuration (hot Key ALT-G) then edit the desired set up in to the configuration byte , then perform memory protect/prog config in the SW to program the configuration byte of the chip, the configuration menu only available if the chip has this specific function.
7) Program the configuration byte or protect the chip can also be done in single key press or in mass production mode without need to press the memory protect separately, to achieve this user need to enable the memory protect in the device operation

menu first then after perform program , the programmer will program the main buffer then program the configuration byte or protect the chip in sequence. For chip has memory protect function, after the code protect bit been program, the chip will not allow to read back again and can not verify too.

8) For a detailed explanation of the device operation options, please refer to Chapter 3 and 4.

CHAPTER 1

General Information

Introduction

The LABTOOL-148C is a low cost PC-based universal programmer that works through your PC′s parallel port. It features 48-pin ZIF sockets , GAL, CPLD, EPROM, EEPOM, Serial EEPROM , Flash memory and common use MCU support , extremely high throughput, standard 5 V and 3 V chip support, device insertion and continuity checks, all within a PC-based design. Device updates are disseminated through software, giving our customers quicker and more flexible access to new chip support.

Features

Universal adapter for Flash chips

The LABTOOL-148C is designed to meet you future needs in high density Flash chips. Using the resources of your PC, it supports 32K bit up to 1G bit memory chips without upgrading its hardware. The LABTOOL-148C also has a universal adapter which accommodates 48-pin TSOP, 44-pin PSOP, 40-pin TSOP, and 32-pin TSOP Flash chips, which eliminates the need to buy multiple adapters and saves you money.

Unbeatable speed

The LABTOOL-148C′s on-board intelligence reduces system overhead to a minimum. It can program Flash chips of 8 MB capacity (such as Intel® 28F800B3, for example) within 40 seconds. An experienced operator can program thousands of high density chips per day.

Device-insertion and continuity checks – No mistakes!

The LABTOOL-148C performs device-insertion and continuity

checks before programming each device. It can detect poor pin contact, upside-down device insertion, incorrect position, and pin number mismatch. This function protects your pocketbook by preventing expensive chip damage caused by operator mistake.

Auto-sensing and self-programming

The LABTOOL-148C has implemented patented technology to meet mass-production requirements. When a chip insert into the ZIF socket , the LABTOOL-148C will start to program the chip automatically, operator just follow the LED to remove the chip and insert the chip without need to press any key

Project file “Save and Load”

You can save the program configuration project file which contains the device selection, the buffer data and all of the program setup options. This file can be recalled at any time for future use without having to go through the setup procedure again. This allows you to pass your design file to the production department without mistakes.

Variable VCC with one or two-pass verification

The LABTOOL-148C allows users to select the verification voltage after chip programming is complete, e.g., Vcc +/-5%, V_{cc}+/-10%, Vcc can range from 2 V to 7.5 V. Verification ensures that the chips have been properly programmed, with no data retention problems.

Device support summary

General EPROM:

27C128 /512/010/020/040/080/160, 27C320 , 27C1024/2048/4096 , support 8/16 bit data width.

Flash EPROM:

Supports NOR, NAND, AND, DI-NOR, and EEPROM technology Flash chips , include AMD, ATMEL, FUJITSU, HYUNDAI,INTEL,MACRONIX, MICRON, MOSEL, SAMSUNG , SHARP, ST, SST,TOSHIBA, Winbond, and others, with 3V or 5V VCC.

Microprocessor:

ATMEL 89CXX, 90SXX ,89SXX, HYUNDAI 97CXX , Intel 87C5X, ISSI 89C5X, Microchip 16CXX, 16FXX, Motorola 68HC705C8A/C9A/C6A/P6/P9,Philips 87C5X, 89C5X, SST 89XX, Siemens SABC5XX, Termic 87C5X, winbond 78Exx and other brand 87/895X compatible MCU.

EERPOM:

Altera EPC1/2 , Atmel 17CXX, 93CXX, 24CXX.

PLD:

Lattice GAL 16XX, 20XX, 22XX, AMD CEPAls.

Specifications:

Socket and pin driver:48-pin ZIF sockets with receptacle.

Four DACs for V_{cc}, V_{pp1}, V_{pp2} and V_{pp3} with 8 bit resolution.

Vcc range 2V to 7.5 V, resolution 50 mV

Vpp1,2&3 range 5 V to 16 V, resolution 100 mV

Over-current protection on all voltage sources

Logic level 5 V to 2.7 V programmable by software

Device Operation: Read, blank check, insertion/contact check, verify, check sum, erase chip, program, memory protect, edit buffer, configuration, load file, save file, project file load/save

File format: Binary, Intel HEX, Intel extend HEX, Motorola S, Hp64000ABS, TEKHEX, straight Hex

General

Power : 100V_{AC} to 240 V_{AC}, 47 to 63 Hz auto switch

Power consumption : 20W

Operation temperature : 5 to 45°C (41 to 113°F)

Safety : CE & LVD certified

Weight : 1.5 kg net, 2.5 kg shipping weight

Using the LABTOOL-148C Software

Menus

Accessing the menus can be done in two ways:

1. Use the mouse and click on the menu option displayed at the top of the screen. a pull-down menu will appear, and you can select the option you desire by clicking on that option.
   If you do not have a mouse available, you can also use the keyboard to access the menus. Press [F10] to activate the main menu bar.
2. Select the sub-menu that you want to use with the left and right arrow keys, and press <ENTER> to activate the sub-menu. Use the up and down arrows to select an option to execute. Press <ENTER> to execute the command.

Hot keys

Most of the options available on the menus can also be executed by pressing the hot key associated with that option. To see what the hot-key is for a certain option, look on the menu where the option is located. If a hot key is available, it will be displayed next to the option name.

CHAPTER 2

Installation

Minimum PC System Requirements

WIN 95/98/ME or WIN 2000 , WIN NT 4.0 or latest
CUP : 486 and above
RAM : 8MB minimum, 32 MB recommended
HD : 8 MB of free hard disk space
Interface : D-25 connector with standard parallel port or ECP

Installing the LABTOOL-148C Hardware

1.Connect the power supply output to the LABTOOL-148C input.
2.Connect the LABTOOL-148C to a parallel port using the cable supplied.
3.Switch the LABTOOL-148C on.
4.The LABTOOL-148C will perform self test first, the LED light will turn on with red light , then yellow light , if pass the self test , the LED will turn on green.

Installing the LABTOOL-148C Software

1.Insert the 3 and 1/2 inch diskette into the PC′s Floppy Drive; in my computer ICON ,double click the A driver; this activates the A : Drive.
2.Type Install C:\; this will create a directory called LT-148C on your computer′s C drive and will install the LABTOOL-148C software in this directory.
3.Following successful installation, run the software by execute LT-148C by double click the Labtool-148C ICON. The screen will display Labtool-148C firmware version and indicate which parallel port is attach to the LABTOOL-148C programmer.

Upgrading the LABTOOL-148C Software

Advantech provide quarterly formal releases of the LABTOOL-148C software on web . Monthly temporary releases are also available on web. Please download software from web at http// : www.aec.com.tw or www.labtool.com

CHAPTER 3

Command Hierarchy

LABTOOL-148C Command Hierarchy

File (ALT-F)	Save Buffer	ALT-S
	Load File	ALT-L
	Exit	ALT-X
Project(ALT-J)	Load Project	ALT-F1
	Save Project	ALT-F2
Device(ALT-D)	Change	ALT-C
	Mass Produce	ALT-M
	Edit	ALT-E
	Read	ALT-R
	Blank Check	ALT-B
	Program/Auto	ALT-P
	Verify	ALT-V
	Memory Protect	ALT-Y
		Erase
	ALT-K	
	Configuration	ALT-U
Options(ALT-O)	Device Operation Options	F3
	Modify Algorithm Parameter	F4
	Parallel port selection	F5
	Statistics	F6

CHAPTER 4

Operation

LED Display

The LABTOOL-148C has a three-color LED display to indicate the status of the socket. Read this section carefully to avoid damage to chips.

Warning: Do not insert or remove a chip from a socket

while the socket LED is yellow!

LED Color Key

Blank	The socket is not active.
Green	The socket is active or the last operation result passed
Yellow	The socket is busy; do not remove or insert the chip on the ZIF socket before turns Green or Red.
Red	The last operation resulted in failure; the socket is active and awaiting another operation.

Flashing LED, 5Hz frequency. This mode only applies to insertion and contact checks of the chips in the socket.

Flashing Green	The chip passed the continuity check.
Flashing Yellow	The socket is active and waiting for a chip to be inserted.
Flashing Red	The chip failed the insertion/continuity test , due to poor contact, incorrect chip positioning, pin count mismatch, chip upside-down, pin short-circuit, or chip damage.

File Commands

Save Buffer

Menu *File / Save Buffer*

Hot key *Alt-S*

This option is used to save the memory buffer to a file on the hard disk. Select a file (to overwrite!) using the mouse, or type the file name in the box provided. You can also type in a file spec. (e.g. *.hex) at the Name prompt. This will display all the files of the specified type, and you can then select the required file to overwrite.

View Text

Certain file types contain header information. Click on this box to see this information. This will display information similar to the following.

ABEL(tm) 3.00a FutureNet Div, Data I/O Corp. JEDEC file for ; P16V8R

Created on : 15-Sep-94 04:17 PM

PROM8908 pin configuration Ver 3 . 0

ADVANTECH CO. LTD. 4 NOV 1991*

QP20* QF2194$

L 0 0 0 0

0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Output File Format

Select the file format of the output file

From Buffer Mode

This mode functions as follows.

Normal

Every byte is written to the output file.

File shuffling

Odd

Every Odd byte is written to the output file.

Even

Every Even byte is written to the output file.

The following four options are used to write the buffer into four different files:

1st byte of 4

This writes the bytes 1,5,9,13,.....into the output file.

2nd byte of 4

This writes the bytes 2,6,10,14,.....into the output file.

3rd byte of 4

This writes the bytes 3,7,11,15,.....into the output file.

4th byte of 4

This writes the bytes 4,8,12,16,.....into the output file.

Load File

Menu *File / Load File*

Hot key *Alt-L*

This option loads a file from disk into the memory buffer. The type of files that can be loaded for a device depends on the device type.

Select a file to load using the mouse, or type the filename in the box provided. You can also type in a file spec. (e.g. &.hex) at the name prompt. This will display all the files of the specified type, and you can then select the required file to load.

View Text

Certain file types contain header information. Click on this box to see this information. This will display information similar to the following.

ABEL(tm) 3.00a FutureNet Div, Data I/O Corp. JEDEC file for ; P16V8R

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QP20* QF2194*

L 0 0 0 0

0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Auto Format Detected

The software automatically detects the format of the file that is to be loaded. If the desired format of the file differs from the format detected, select the correct file format.

From File Mode

This option indicates which bytes must be read in the input file. Select the required format.

To Buffer Mode

This option indicates where the byte previously read is to be written. This enables you to ′build′ the memory buffer from several files.

From File Address

If only a selected range is to be read from the input file, fill in the address that will contain the first byte into this box, and the size of the buffer to be read in Size.

To Buffer Address

If the data read is to be copied into a specific area of the buffer, fill in the starting address here.

Size

This box contains the buffer size. By default it is the same size as the device size. If you want to download a file into memory that is bigger than the active device, insert the size here (or in Options |

Operation Options).

Clear Buffer Options

Four options are available during memory buffer data loading. The default option is to clear the buffer to its blank state prior to data loading.

Disable

This option leaves the original buffer data unchanged, but then overwrites it with the contents of the newly loaded file.

Blank state

This option clears the buffer to the device blank state (using command 00 or FF, depending on device selection), then overwrites the buffer during file loading.

0x00

First clears the buffer of its contents using command 00, then over-writes the buffer with the new file contents

0xFF

First clears the buffer of its contents using command FF, then over-writes the buffer with the new file contents.

Change Directory

Menu *File / Change Directory*

Hot key *None*

Change the default directory to another directory.

Exit to DOS or WIN

Menu *File / Exit to DOS*

Hot key *Alt-X*

Quit the LABTOOL-148C program and exit to DOS or WIN.

Project File Commands

Save Project

Menu *Project / Save Project*

Hot key *Alt-F2*

This option saves the current setup of the LABTOOL-148C software into a project file. The file includes devices selected, buffer data, operation options setup and device configuration setup. You can also attach a footnote to this project file. The project file acts as macro, eliminating the need to go through each procedure during future programming sessions.

Load Project

Menu *Project / Load Project File*

Hot key *Alt-F1*

This option loads the desired project file. After the project file has been loaded, you can immediately program the chip using the data and setup functions selected.

Device Commands

Change Device

Menu *Device / Change Device*

Hot key *Alt-C*

This option is used to select a new device as the active device. It is important to select the correct device, as the algorithms used to program devices are device-specific. The following screen will appear:

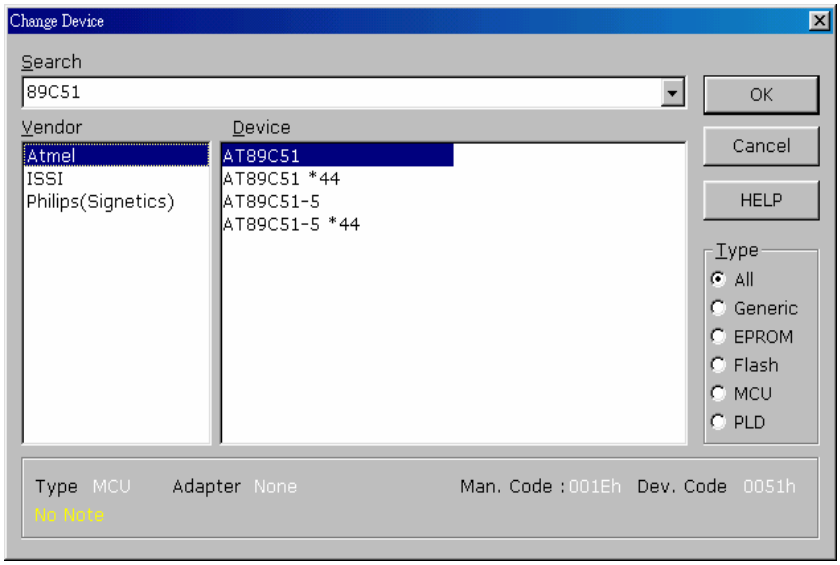


Figure 4.1 Screen for selecting Change Device

1. Select the type of device that will be the active device.

   Mouse

   Click on ′All,′ ′EPROM′ or ′MPU′.

   Keyboard

   Press TAB until the cursor is flashing in the ′Type′ box. Use the up and down arrows to go to the appropriate type. Press the space bar to select the type.

2. Enter the part number, the manufacturer number, or parts of both in the ′Search′ box.

   Mouse

   Click on ′Search′. Type in the character.

Keyboard

Press TAB until the cursor flashes in the ′Search′ box. Type in the known characters. All the devices that satisfy this partial information will be displayed. Use the mouse to select a device, and click ′OK′. If you are not using a mouse, use the TAB key to skip between the various screens, and use the arrow keys to move around in each screen.

Mass-production Mode

Menu *Device / Mass Produce*

Hot key *Alt-M*

The LABTOOL-148C can be use as a mass-production programmer for manufacturing. When enter mass production mode, all keyboard and mouse functions are disabled and the operator needs only to insert the chip into the ZIF socket, wait until the green LED next to the socket lights up, remove the programmed chip and insert new chip. Anyone can do the job well without special training or skills. Since all keyboard and mouse functions are disabled, the possibility of errors being caused by pressing the wrong keys or changing the buffer′s contents are eliminated.

In mass production mode, the LABTOOL-148C first performs an insertion test and an ID check on newly inserted chip. It then automatically programs the chip.

Note: The insertion test must be enabled to use mass-production mode!

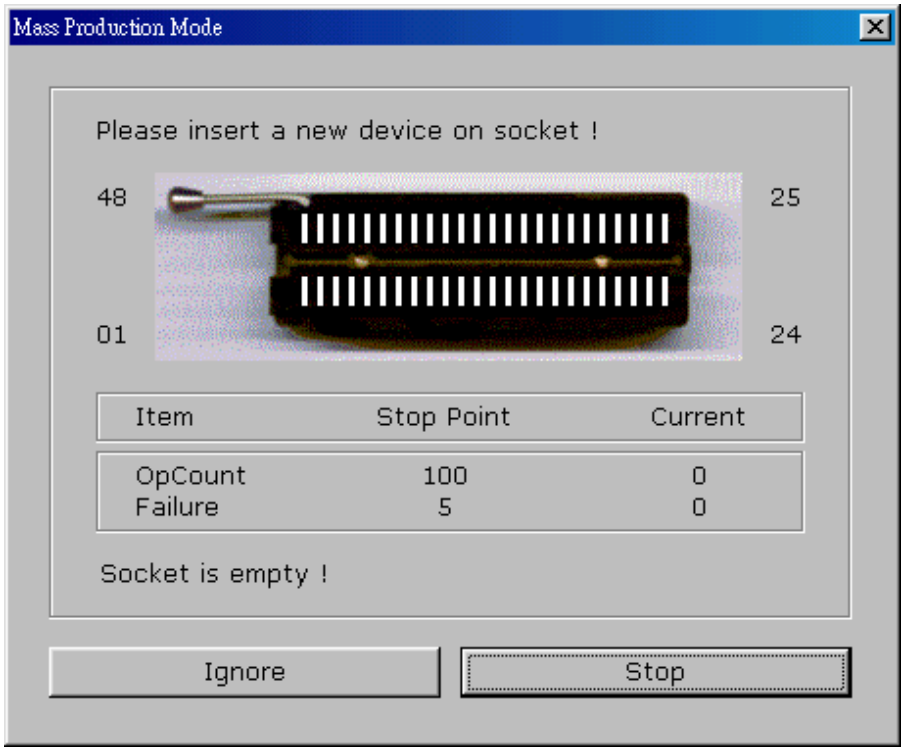


Figure 4.2 mass production mode screen

Editing the Buffer

Menu *Device / Edit*

Hot key *Alt-E*

This function is used to edit the memory buffer. The memory buffer contains the last file downloaded from disk into memory. If no file has been downloaded from disk into memory since the LABTOOL-148C was switched on, the memory buffer will contain ″garbage″.

The screen that is displayed is dependent on the type of device that is currently active.

The purpose of the buttons displayed are as follows:

Radix

This button controls the display of the memory address in Hex/Decimal format. If the address is currently displayed in decimal format, clicking this button will convert and

display the address in Hex.

Fill

This option is used to fill a block of memory with a specified value. It needs the starting address, the ending address and the value to be copied into this block of memory.

Copy

This function copies a block in memory to a new address. It requires the starting address, the ending address and the address the block must be copied to.

Search

This function searches for a specified ″search-string″. It requires input of the search-string to search for.

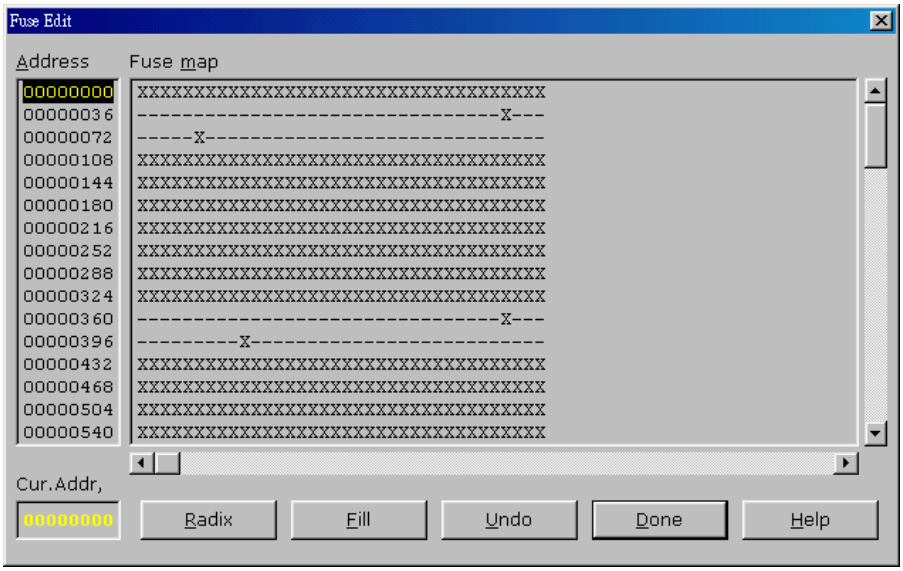
Undo

As you make changes to the memory buffer, the changes on the current page are highlighted. If you choose this option, it will reverse all changes made to the highlighted areas.

As soon as the changed memory positions move off the screen, or get deselected by another command, the Undo command will not undo the changes.

Edit the buffer (logical device only)

When GAL, PALCE and other logical devices are selected as active device, the main memory buffer will contain a fuse map instead of hexadecimal value, the screen will appear as following:



In the mode, “X” refers to blown fuse , and “-“ refers to an intact fuse. The purpose of the buttons are as follows:

Radix

This button control the display of the memory address in Hex/Decimal format, If the address is currently displayed in decimal format, clicking this button will covert and display the address in Hex.

Fill

This option is used to fill a block of memory with fuse value. It needs the starting address , ending address and the value to be copied into this Block of memory.

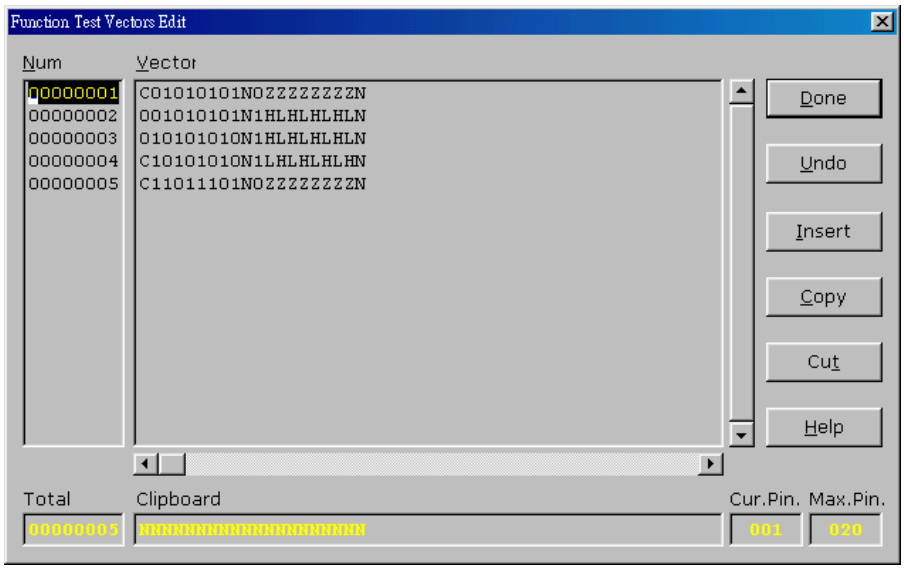
Modify Vector

Menu Device / Modify vector

Hot Key ALT- T

This command only available for PLD been select as an active devices ,the option is used to modify the vectors that will be used to test a device after the logical chip has been program, this test vector are usually generate by other PLD design tool when the circuit

diagram and layout for chip is done, The JEDEC file is download into the LABTOOL-148C and it also contains the test vector that will be used to test the device for correct programming and function.The follow screen will be display when enable the Modify Vector:



The purpose of the buttons are as following:

Undo

When changes are made, the changed area are highlighted . If you wish to undo this change, just can click this button . It will restore the value prior to the editing done. When a position that is highlight scrolls off the screen, the changed made become permanent and you cannot reverse these changes by clicking this button.

Insert

You can insert a line of vectors by clicking this button. The position where the line will be inserted depends on the position of the cursor. The line will be inserted before the cursor is on. The contents of the “editing clipboard” are shown at the button

of the editing screen. The contents of the clipboard will be inserted when this button is click.

Copy

This button copies the line the cursor is on to the editor clipboard.

Cut

This button copies the current line to the clipboard , and also removes it from the memory. Use this button in conjunction with “insert” to move the contents of a line to another position.

Edit the test vector

Vectors are input in standard JEDEC format. The vector buffer is arranged in rows and columns. Following test condition code can be use as a test vector.

0	Driver input low
1	Driver input high
C	Driver input low, high, low (clock)
F	Float input or output
H	Test output high
K	Driver input high, low, high (clock)
L	Test output low
N	Power pin and the outputs not test
X	Output not tested, input default level
Z	Test input/output with high impedance

Blank Checking a Device

Menu *Device / Blank Check*

Hot key *Alt-B*

This option checks if the active device is in its erased state. It will return a message stating ″Device not blank!″ at the first occurrence of data in the device. The address where the data is

found will also be displayed.

Reading a Device

Menu *Device / Read*

Hot key *Alt-R*

This option reads a master chip into the memory buffer for duplication of the master chip. Prior to executing this command, chip must be select in the software , then a corresponding chip should inserted into the socket .

Programming a Device

Menu *Device / Program / Auto*

Hot key *Alt-P*

This option programs the active device with the contents of the memory buffer , when the programming is complete, verification will take place. The type of verification depends on the ′verification options′ set in the options | Operation options menu.

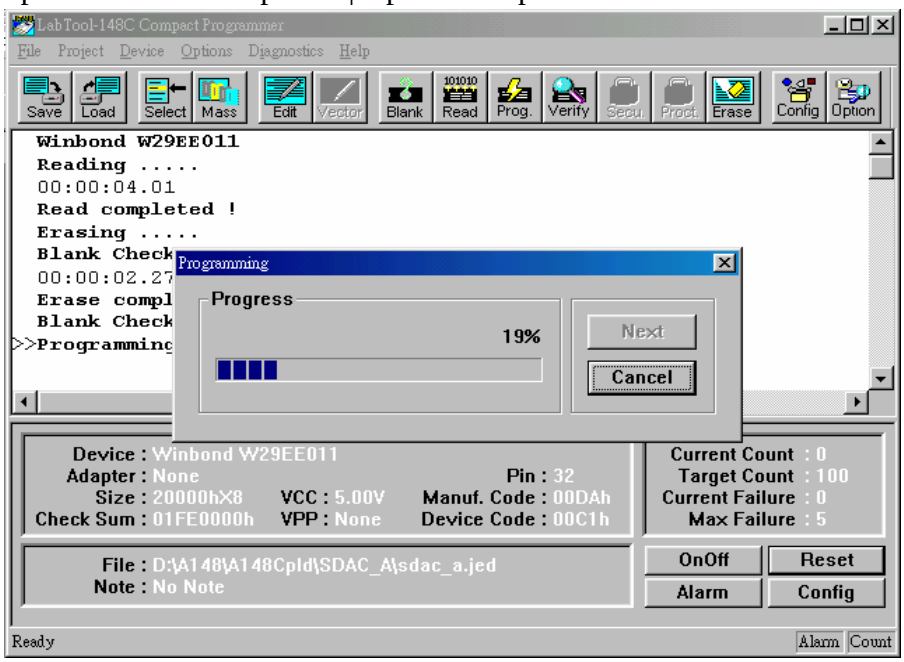


Figure 4-4 Programming progress screen

Verifying a Device

Menu *Device / Verify*

Hot key *Alt-V*

This function compares the contents of the active device with the contents of the memory buffer. It will display an error message and the address if it finds an address where the data differs. It will also abort the process when this happens.

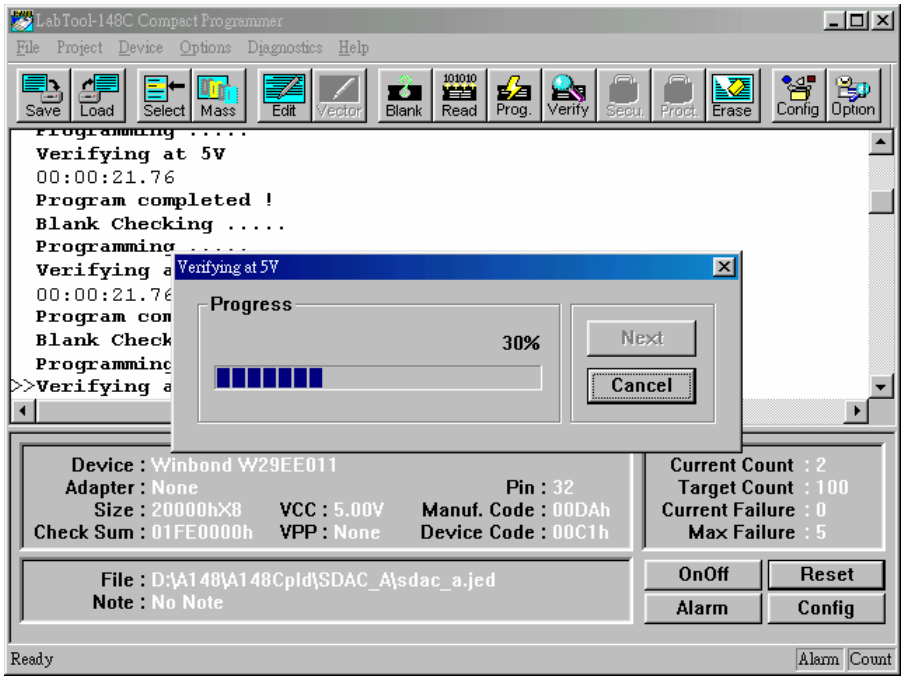


Figure 4-5 Device verification screen

Memory Protect/program configuration

Menu *Device / Memory Protect*

Hot key *ALT-Y*

This function is a device-specific command; it appears on the main menu only after chips been selected have this capability.

For example GAL, CEPAL , Microprocessor , and some Flash memory, The function must be configured before use. When properly edit the configuration byte by enable the configuration (ALT-G), set the desired value and status in the buffer then perform

this command will program the configuration data of chips, most user will program the main memory first then program the configuration (two step), However in mass production mode , user can enable the memory protect /program configuration in the device operation menu , after the main memory buffer has been load and configuration byte data has set to desired value , perform program will automatically program the main memory and program the configuration byte in a single command (program or mass production mode program)

Function test

Menu Device/ Function test

Hot key ALT-T

This function only available when a logical device has been selected it applied the test vector to the device and compare the outputs with the expected outputs. It test if the logical chip has been programmed correctly after the chip has been secure and the fuse map is not readable again. It displays a message indicating success or failure, once failure it display the vector number and which pin is not match the expect result.

Erasing a Device

Menu *Device / Erase*

Hot key *ALT-K*

This function is a device-specific command; it appears on the main menu only after electronically erasable chips have been selected. The function can be used to erase a desired memory range from a chip.

Compare

Menu Device/compare

Hot Key CTRL-F3

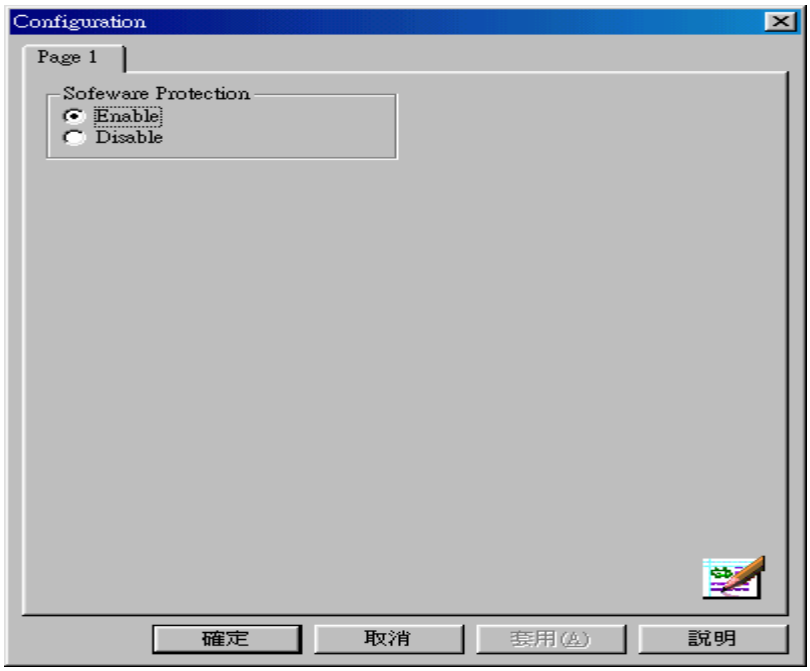
Device Configuration

Menu *Device / Configuration*

Hot key *ALT-U*

This function is a device-specific command for a single Flash chip with a software protect blank, an option register, configure word and lock bit. The function must be configured before use. When used, the memory protect configuration data will be burned into the chip′s memory and will protect specified memory blocks.

Figure 4-6 Example of device-specific configuration screen



Options

Modify Algorithm Parameters

Menu *Options / parameters modify*

Hot key *F4*

This function allows a user to modify the programming parameters of the chip being programmed. With the programming parameters for the selected chip appearing on screen, the user activates the ″modify algorithm screen″ and changes the parameters by moving the cursor to the corresponding field and changing the value to the desired value. If a value entered exceeds the allowable limits for a given parameter, a warning will be flashed, together with allowable limits, after the user attempts to confirm the setting by pressing ″OK″.

Warning : Only experienced users should use this option,

as it can damage the device if it is used incorrectly.

If you want to program a device that is not supported by the LABTOOL-148C, do the following :

1. Select a device that uses the same programming algorithm as the device in question.
2. Modify the device programming parameters.
3. Program the device.

As the programming parameters are for temporary use only, they cannot be saved. After you select a new device or exit the LABTOOL-148C software the original parameters will automatically be restored.

Device Operation Options

Menu *Options / Operation options*

Hot key *F4*

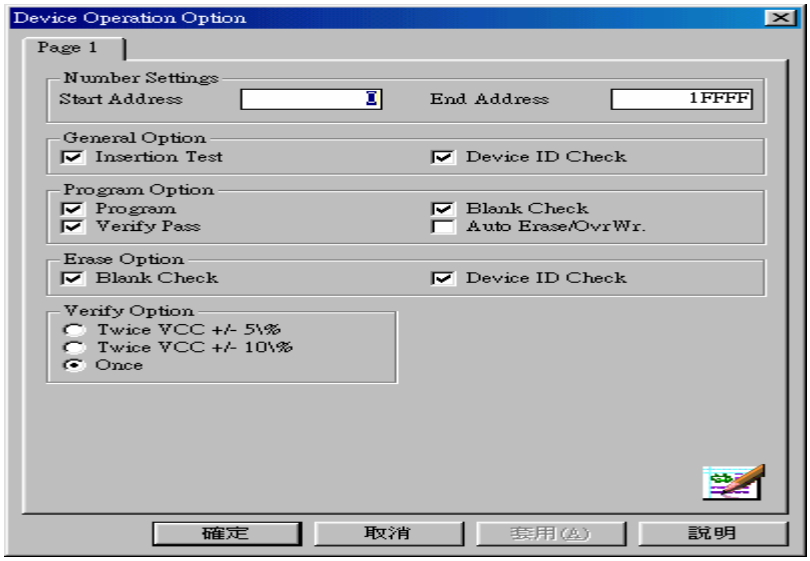


Figure 4-8 Example screen : Device-specific operation options

The following options can be set :

Start address, End address

This is the start and the end address of the edit buffer. If you want to program a certain area of a device, you can change the start and end addresses accordingly.

This option is only displayed when the device can be programmed in this way.

When the end address is calculated, it divides the buffer size by (device-bits/8-bits). A 16-bit device, of which the buffer size is 80 (Hex), will therefore an end address of 3F.

When selecting a start or an end-address, you should align the buffer on the right boundary : single-word for 8-bit devices, double-word for 16-bit devices, etc.

Erase start/end address

This option is for electronically erasable Flash chips only. The default setting of this option will erase the entire chip. However, a user can specify ranges of blocks to be erased; data in the remaining blocks will be unchanged. A user should reference the chip data book or configuration menu when setting the ranges of blocks to be erased.

Insertion Test

This option performs the device-insertion check of the chips in the sockets. The insertion check includes poor pin contact, pin count mismatch (the pin count of the chip designated in the software does not match the pin count of the actual chip in the socket), device in wrong position, device upside-down, short-circuit between pins, and chip damage. Result is displayed at the socket's LED.

Device ID Check

This option performs a device signature and manufacturer match test. With the chip selected and plugged into a socket, LABTOOL-148C checks the device ID and displays the results of each check on the LED display.

Verify Passes

Checking this option will instruct the LABTOOL-148C to perform device verification with the buffer data when programming is complete. When verify passes is enabled, one of the three verify options (as described below) must be set.

Verifying Options

The following three options are available for verification of data retention following programming :

verify twice with V_{cc} ±5%, verify twice with V_{cc} ± 10% , and verify once with V_{cc}. These options will

only be enabled if the ′Verify passes′ option (see above) is enabled.

(.) Twice V_{cc} ±5%

When this option is selected, the LABTOOL-148C will do two verify passes on the device : one using V_{cc}+5%, the other V_{cc}-5%.

Example:
If V_{cc} is 5.0 V, the LABTOOL-148C will do one verify pass using a V_{cc} of 4.75 V, and one using a V_{cc} of 5.25 V.

(.)Twice V_{cc} ±10%

When this option is selected, the LABTOOL-148C will do two verify passes on the device : one using V_{cc}+10%, the other V_{cc} –10%.

Example:
If V_{cc} is 5.0 V, the LABTOOL-148C will do one verify pass using a V_{cc} of 4.5 V, and one using a V_{cc} of 5.5 V.

(.)Once

If this option is selected, the LABTOOL-148C will do one verify pass using V_{cc}.

Blank Check on Program Option

This option performs a device blank check test before programming. This option can be disabled for brand new chips to save time. For electronically erasable chips, enabling the auto-erase/overwrite option will allow the LATBOOL-148C to automatically erase the chips if they are not already blank.

Protect on Program Option

This option automatically sets the memory protect on newly programmed chips. Failure to set this protection allows the chips to be readable or software erasable.

Auto-erase/Overwrite on Program Option

This option only applies to chip which is electronically erasable. It causes LABTOOL-148C to automatically erase non-blank chips prior to programming.

Blank Check on Erasing Option

This option causes LABTOOL-148C to automatically perform a blank check on a device after performing an Erase operation on it. This assures that a chip has been erased completely.

Device ID Check on Erasing Option

Some chips feature an option that allows the device ID information to be erased when the chip undergoes an erasing operation. This option must be disabled prior to erasing the chip; otherwise, LABTOOL-148C will report an ID mismatch error and stop operation.

Unprotect on Erasing Option

Some Flash chips have a software protection feature which, when enabled, prohibits erasure of the chip's memory. The unprotect option on these chips must be enabled before trying to erase these chips.

Reset Counter

Menu *Statistic / Reset Counter*

This command clears the statistic report in the lower right corner of the screen.

CHAPTER 5

Using Adapters

Adapter Requirements

LTATOOL-148C supports universal 48-pin TSOP, 44-pin PSOP, 40-pin TSOP and 32-pin TSOP pin packages. You will need to order an adapter for non-DIL chip packages. You can order the following available adapters to fit your needs. other adapters will become available after release of new chips.

PLCC3232-11	32-pin PLCC adapter for EPROM/Flash, 1 MB and above
PLCC3228-11	32-pin PLCC adapter for EPROM/Flash, below 512 KB
PLCC4440-01	44-pin PLCC adapter for 44-pin PLCC package 16-bit EPROM
PLCC4440-02	44-pin PLCC adapter for 44-pin PLCC package 87C5X processor
SDP-UNIV-28TS	28-pin universal TSOP(8mm x 14mm) adapter.
SDP-UNIV-32TS	32-pin universal TSOP(8mm x 20mm) adapter.
SDP-UNIV-40TS	40-pin universal TSOP(10mm x 20mm) adapter.
SDP-UNIV-40TS/W	40-pin universal TSOP(10mm x 14mm) adapter.
SDP-UNIV-44PS	44-pin universal PSOP adapter.
SDP-UNIV-48TS	48-pin universal TSOP (12mm x 20 mm) adapter.
SDP-UNIV-48TS/W	48-pin universal TSOP (12mm x 14 mm) adapter.
SDP-UNIV-48TSS	48-pin universal TSSOP adapter (10mm x 14 mm) 0.4 mm pitch.
SDP-F400-56TS	56-pin TSOP adapter for Intel/Sharp 28F4/200 Flash.

SDP-F016-56TS	56-pin TSOP adapter for Intel/Sharp 28F016/32 Flash.
SDP-F320-56SS	56-pin SSOP adapter for Intel/Sharp Flash chips.

APPENDIX A

Error Messages

Error Messages

The LPT Driver can't be opened!

The windows system need reboot when software for LABTOOL-148C is installed successful.
Try to reinstall if the message still remain after reboot, Since the LPT driver may in conflict with other Application program.

The temp license for LABTOOL-148C has expired!

Some LABTOOL-148C shipment is limited to 30 days for evaluating purpose, Once the message appear, please contact your dealer to ask a permanent license.

This function is not supported in demo mode!

When the LABTOOL-148C is not activated, some functions may be inhibited.

Illegal range of erase address setting! Retry again!

The address range for an erase command must match the sector edge.

Time out error!

The LABTOOL-148C does not respond when the system times out.

Cannot open file:×××××××××*!*

The file was not found or a disk error occurred.

Device ID Code unmatched!

This error message is returned when the LABTOOL-148C does a device ID check. The device code found on the device is not as expected. You might have selected an incorrect device as

active device,

or the device is an older/newer version than the device supported

by the LABTOOL-148C.

File write error!

Illegal file name or disk error. The LTBTOOL-148C detected an error when writing a file to disk. Check that there is enough space on the disk to hold the file. Also check that the disk is not write-protected. This might happen on a network if you are a user that does not have rights to the directory you want save the file to. Use another directory or disk.

File read incomplete!

The user break. File format was unmatched or a disk error occurred during file reading.

Function code has not been initialized yet !

This message indicates that the data file is corrupt.

Obtain a valid copy of the data file and retry.

LABTOOL-148C not found, Do you want to retry?

The LABTOOL-148C software does not detect the LABTOOL-148C on one of the parallel ports. Press enter to retry. Press Esc to enter demo mode. Make sure the power on the LABTOOL-148C is on. Also check the parallel connection between the PC and the LABTOOL-148C. If the LABTOOL-148C shares the parallel port with another device, remove the other device or move the LABTOOL-148C to its own port.

LABTOOL-148C power off or disconnected from PC!

The LABTOOL-148C software does not detect the LABTOOL-148C on one of the parallel ports. Make sure the power on the LABTOOL-148C is on. Also check the parallel connection

between the PC and the LABTOOL-148C and between the PC and the printer. If the LABTOOL-148C shares the parallel port with another device, remove the other device or move the LABTOOL-148C to its own port.

Over current detected !

A current higher than expected was found. This might indicate that the device has been damaged or is short-circuit. Check the socket or replace the device.

Record checksum/length error !

This message usually indicates that the wrong file-type was selected. It can also indicate that the input file has a record that has been corrupted. Select the correct file format or obtain a new copy of the input file.

Record checksum/length error !

This message is displayed whenever you 'Cancel' an operation.

Other Error Messages

The following list of error messages uses the code XXXX, where XXXX can be Read; Verify/Blank Check; Program; Erase; or Memory Protect. Aborted has the same meaning as user break.

×××× Aborted!

××××× error found!

×××× error on Device address ××××h!