

## Features

- LATTICE SEMICONDUCTOR CORPORATION (LSC) SOFTWARE FOR IN-SYSTEM PROGRAMMING (ISP<sup>TM</sup>)
- SUPPORTS ALL LSC ISP DEVICES
- JEDEC FILE CONVERSION TO ispSTREAM<sup>TM</sup> FOR DOWNLOAD VIA ispDOWNLOAD<sup>TM</sup> CABLE DIRECTLY FROM A PC TO A DEVICE
- DETECTION AND IDENTIFICATION OF AS MANY AS 30 DEVICES IN A DAISY CHAIN
- MULTIPLE LSC ISP DEVICE PROGRAMMING IN PARALLEL (TURBO) MODE
- USER ELECTRONIC SIGNATURE (UES) PROGRAMMING
- SECURITY FUSE SUPPORT
- EASY-TO-USE DEVICE CONFIGURATION MENUS WITH FUNCTIONS FOR PROGRAM, VERIFY, CHECKSUM, ERASE AND READ AND SAVE
- BOTH DOS AND WINDOWS VERSIONS INCLUDED IN EVERY PACKAGE
- INTEGRATED ispATE<sup>TM</sup> Programming Support

## Introduction

ISP Daisy Chain Download software is a comprehensive, programmable device download package for all LSC In-System Programmable<sup>TM</sup> device families. ISP Daisy Chain Download software provides an efficient method for programming LSC ISP devices from the logic design JEDEC file generated by any LSC Fitter or compiler tool. ISP Daisy Chain Download software allows you to quickly and easily program devices using specific commands like Program and Verify. ISP Daisy Chain Download software programs ISP devices on a printed circuit board (or in-system) quickly and easily. Most importantly, devices can be programmed again and again, depending on your system needs.

## In-System Programmability

ISP is an LSC innovation that enables device programming and reprogramming on the printed circuit board at

5 volts. There are several advantages to in-system programmability: 1) It accelerates board- and system-level debug and enables you to define your board layout earlier in the design process; 2) ISP eliminates bent leads caused by extra handling and socket insertions made during the device programming process; 3) Systems incorporating ISP are reconfigurable with the devices already soldered to the printed circuit board, minimizing board rework expense; and 4) Field upgrades become easy by downloading a new configuration file to the end equipment via floppy disk or modem.

Figure 1 illustrates a typical block diagram of multiple LSC ISP devices cascaded together for ISP programming.

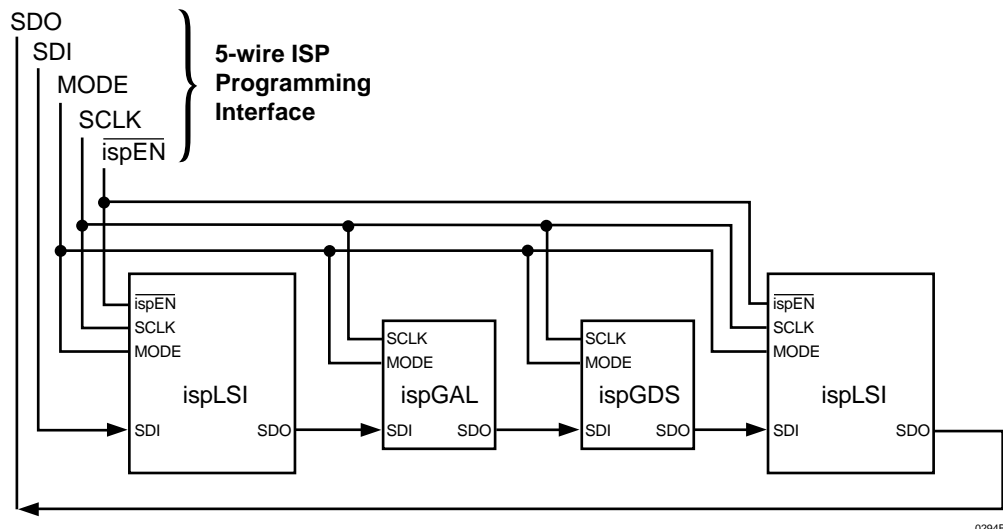
## ISP Daisy Chain Download for Windows

When you invoke the download program, the ISP Daisy Chain Download software window appears. Use the drop-down windows or the toolbar icons to perform the various functions required to configure and download for ISP programming. Figure 2 shows the ISP Daisy Chain Download for Windows main menu.

A convenient menu banner and command icons make it easy to execute all the operations available with ISP Daisy Chain Download software. Included are File, Configuration, Command, Help, Turbo and UES drop-down menu options and/or command icons. The software automatically creates a .dld configuration file which may be stored and edited as desired.

Up to 30 devices may be selected for programming using the New Configuration window. JEDEC file names must be specified for each device programmed in a given configuration. Easy-to-use menus allow for the selection of devices and programming operations with the click of a mouse. Programming operations include Program and Verify, Verify, Checksum, Erase, No Operation, and Read and Save. Once the configuration is complete, a status window provides immediate results relating to the operation.

Figure 1. Multiple Lattice Semiconductor ISP Devices Cascaded for ISP Programming



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Figure 2. ISP Daisy Chain Download Main Menu, Including ispATE Support (Windows Version)

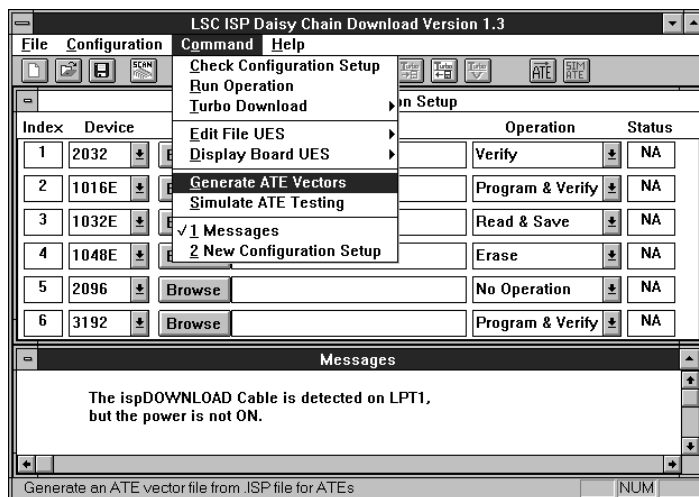
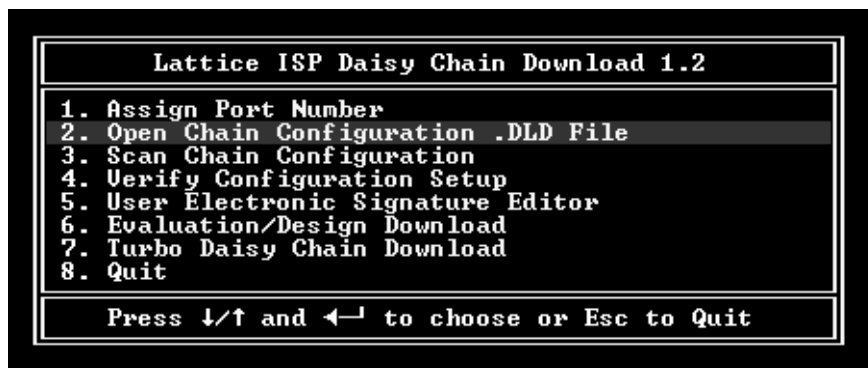


Figure 3. ISP Daisy Chain Download Main Menu (DOS)



## ISP Daisy Chain Download for DOS

The DOS version of ISP Daisy Chain Download software performs generally the same functions as the Windows version. When the DOS version is launched from the project working directory, the main menu appears on the screen (see Figure 3). The menu items allow you to assign the parallel port for programming and to perform functions such as opening a configuration file.

Use any text editor to generate or edit a configuration (.dld) file for device programming. The .dld file contains the ISP device type, desired programming function and the full path to the device JEDEC file(s).

## ISP Turbo Download

LSC has patented the way the ispSTREAM is read from the JEDEC files and sent to the daisy chain. You must have a daisy chain configuration to use Turbo Download.

From the .dld file, the ispSTREAM is created and turbo programming may be performed. With ISP Turbo Download, you can program any number of devices in the time it takes to program a single device in the chain. An example can be illustrated in a chain of three devices with programming times of ten, seven and seven seconds, respectively. Serially, the programming time would be 24 seconds for all three devices. ISP Turbo Download programs all three devices in parallel in a total of ten seconds. The more devices chained together, the more time is saved.

Both the Windows and DOS versions of ISP Daisy Chain Download software have Turbo Download capabilities.

## UES Programming

A new feature allows the user to edit and/or read the User Electronic Signature (UES) data in the JEDEC file. The Windows version allows you to set the UES in ASCII format, while the DOS version provides both ASCII and Hexadecimal UES access.

The UES is a reprogrammable memory area within each device used to identify the device logic revision and other functions. For instance, the UES may include user ID codes, revision numbers, pattern identification codes or inventory control codes.

## Hardware Requirements

- IBM PC-AT 486 or compatible
- One serial port
- One parallel port
- 1 MB RAM
- EGA/VGA display (VGA is recommended)
- 3-1/2" floppy disk drive
- Mouse, Microsoft Windows compatible
- DOS and Windows versions of ISP Daisy Chain Download software occupy 500KB of disk space

## Product Ordering Information

ISP Daisy Chain Download software is included with every LSC ispStarter<sup>TM</sup> Kit, ISP Synario System, pDS<sup>®</sup> and pDS+<sup>TM</sup> Fitter (PC only).

## Warranty Service

- 90-day warranty on disk media

## Technical Support Assistance

Hotline:	1-800-LATTICE (Domestic) 1-408-428-6414 (International)
BBS:	1-408-428-6417
FAX:	1-408-944-8450
email:	apps@latticesemi.com



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