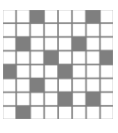
# ALP

**Accessory Light modulator Package**

# Quick Start Guide
# ALP-4.2 *high speed*



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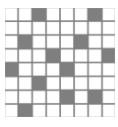


# Read This First

# Introduction

ALP-4.2 is the DLP® Controller Suite for use with the V4100 hardware; it is part of the V-7000 Module. It includes FPGA logic, USB controller firmware, and PC software modules giving the customer instantly high-speed control over the DLP® chip mirrors and, optionally, high-power LEDs.

## Precautions before Getting Started

Ensure that you have a clean non-conductive work area. The ALP electronics are exposed and are very sensitive to electro-static discharge and rough handling. You should always wear an anti-static discharge device, such as a wrist strap or other properly grounded device, while working with the ALP.

## Unpacking

The V-7000 package contains the following items:

- V4100 printed circuit board with connected DLP® chip
- Power Supply Unit
- USB 2.0 cable
- ALP Installation CD
- Printed Documentation

The ALP-4.2 *high-speed* controller is implemented with an encrypted FPGA code on the V4100. The corresponding Virtex-5 FPGA key is factory installed and supported by a long life battery.

IMPORTANT NOTE: Do not remove the battery.

## System Requirements

- Processor Architecture x86 or amd64
  This is true for most of the current Intel® or AMD desktop and laptop processors.
- 50MB of free hard disk space (optional)
- 256 MB of RAM available
- SVGA (800x600) display minimum (1024x768 recommended)
- 1 USB 2.0 high-speed port or USB 3.0 port

The ALP software is supported on all current Microsoft® Windows® operating systems.

### Getting Started

An automatic installation program is available for ALP-4.2. It is launched by the Windows® AutoRun feature when the ALP-4.2 Installation CD is inserted.

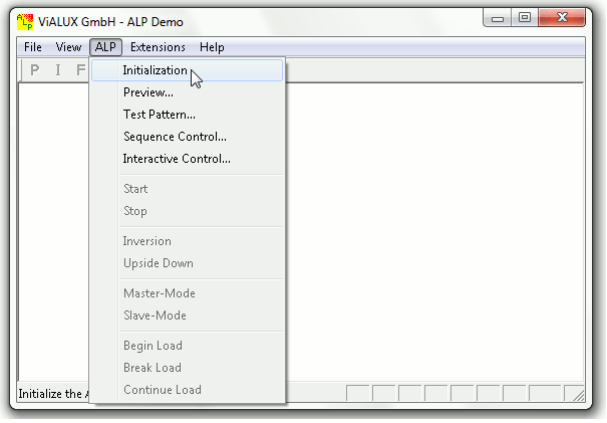
For those who decide to *not install* ALP software to the hard disk, the files are also contained unpacked on CD. Please install the ALP device drivers manually from the directory “driver”. This is the minimum required installation. The applications can be run directly from CD.

## Step-by-Step: Starting Up the ALP Demo Application

Note: This demo application is supplied as a convenient check of the system functions. It is not intended to be used as a GUI or as a programming sample.

**Step 1:** Open the *“ALP high-speed Demo”* from the Windows start menu.

**Step 2:** To control the ALP, you have to tell the software to connect to the ALP hardware. Connect the ALP by selecting “Initialization” from the pull down menu as first step. The initialization after power up may take several seconds.




**Step 3:** Next, you can look at the prepared sequences. Several sequences are generated at program start:

- 1 sequence with up to 5 images, loaded from files
- 2 binary sequences (Test Pattern, Spinning wheel) and
- 3 gray scaled sequences (Wedge - see-saw, Sine circles, Sine circles narrow)

After selecting *“Preview”* from the ALP pull down menu the *“Sequence Selection”* dialog box appears. Select the desired sequence and click *OK*. You can cycle through the individual pictures by pressing any key. Look at the Status Bar to check the picture numbers.

**Step 4:** Once the ALP device is initialized, the upload of sequence data to the ALP device memory starts. Watch the Status Bar to see the picture numbers count upwards. Additionally, some of the on-board LEDs are flashing during image data download. The 6 prepared sequences load into 7 memory locations, the "Spinning wheel" sequence is duplicated in reverse order for clockwise and counter-clockwise turn direction.

You can stop, continue, or restart the upload of sequence data to the ALP device memory. This is done by selecting the ALP pull down menu and selecting *"Break Load"*, *"Continue Load"*, or *"Begin Load*".

**Step 5:** Now you can control the display of sequences at the DMD. This is done by selecting the ALP pull down menu and selecting *"Test Pattern"* and *"Sequence Control"*. You will be presented the *"Test Pattern"* and *"Sequence Control"* dialog boxes.

NOTE: You can see images on the DMD in ambient light. However, for customers who purchase a LED-OM the DMD is covered by the optics. They need to switch the LED on, see below: "Controlling the ViALUX high-power LED Driver (HLD)".

**Step 6:** On the *"Test Pattern"* dialog box simply select one pattern by double-clicking on the desired list entry. The ALP device selects the second sequence (Test Pattern) and displays the chosen picture.

**Step 7:** On the left-hand side of the *"Sequence Control"* dialog box you can select the Spinning wheel sequences. Click the *"Clockwise"* option to change the turn direction. Use the slider to control the rotation speed.

On the right-hand side of the *"Sequence Control"* dialog box you can select the Sine circles sequences. Click the *"Narrow"* option to change the circle distance and phase shift direction. Use the slider to control the frame rate. You can reduce the resolution to reach higher frame rates.

To make the changes take effect click Assign (or press the return key). The ALP device selects the corresponding sequence and displays it in an infinite loop.

**Step 8:** You can load up to 5 images from file. This is done by selecting the *"File"* pull down menu and selecting *"Open"*. You will be presented the *"Open Pattern File"* dialog box. The images load to the first sequence. Consequently they can be uploaded quickly to the ALP device memory by selecting the ALP pull down menu and selecting *"Begin Load"*.

Note that the image loaded will not be automatically shown to programs output window. This has to be done with the *"Preview"* menu item described above.

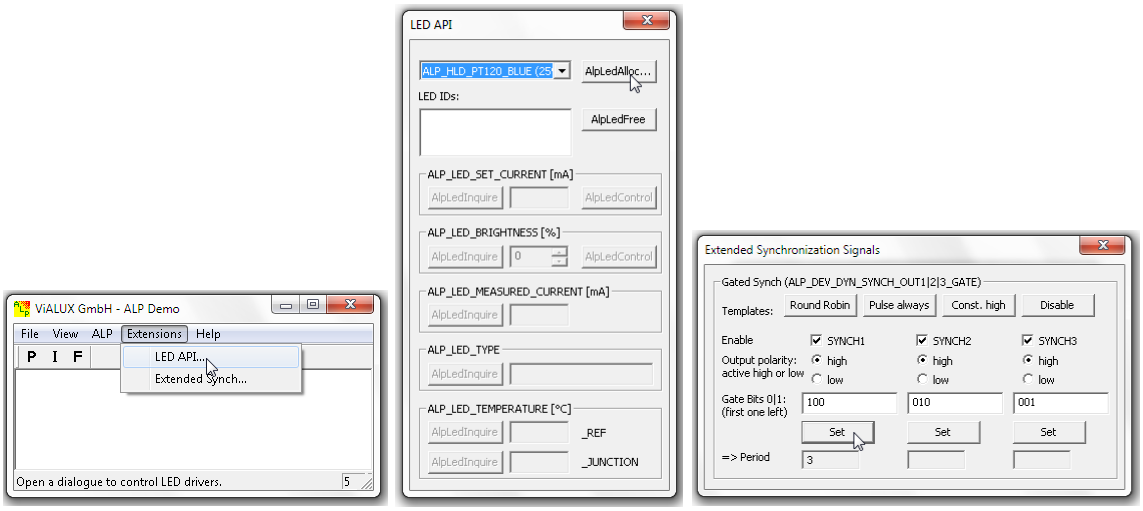
**Step 9:** You can have access to each individual sequence and its images by means of the *"Interactive Control"* dialog box. This is done by selecting the ALP pull down menu and selecting *"Interactive Control"*. You can select one sequence and choose the frame range – even one single frame is possible. Use the slider to control the frame rate. You can reduce the resolution to reach higher frame rates.
To make the changes take effect click Assign (or press the return key). The ALP device selects the corresponding sequence and displays it in an infinite loop.

**Step 10:** In order to finish you can clear the DMD display by selecting *"Stop"* from the ALP pull down menu.

## Controlling the ViALUX high-power LED Driver (HLD)

The LED-OM high-power LEDs are digitally controlled by the ALP software. The ALP *high-speed* Demo includes a dialog for controlling and monitoring the LED operation. It will pop-up by using the Extensions menu item LED API…

As the name suggests, it provides the features described in the ALP-API LED section in a straight-forward manner. This way it is intended to improve the learning curve when using the LED-OM components in custom programs. Please see the ALP-4 *high-speed* API description for details.




LED-OMs are available in single-color and multi-color versions. The Multi-Color version additionally requires configuration of extended synchronization signals. Therefore please use the Extensions menu. Press F1 for short help and again, refer to the ALP-API description for details.

## Further Information and Documentation

The following packages are included in the ALP-4.2 Installation:

- 32- and 64-bit device drivers for Microsoft Windows
- ALP *high-speed* Demo, the demonstration application mentioned above
- ALP *high-speed* Application Programming Interface (API) for use of full DLP® performance with on-board RAM (Folder: *ALP-4.2 high-speed API*)
- sample code for ALP *high-speed* API in several programming languages (C++, C#, Visual Basic .NET, LabVIEW; Subfolders of *ALP-4.2 high-speed API*)
- Graphical User Interface (GUI) for interactive DLP® control and script programming using ALP *basic* (Folder: *ALP basic GUI*)
- ALP *basic* API for flexible DLP® control without on-board RAM (Folder: *ALP-4.2 basic API*); sample applications using this API in several programming languages
- Documentation related to ViALUX hardware and software

Comprehensive technical details about the DLP® chips are available from ViALUX on demand. Please feel free to contact ViALUX for support.