Getting Started

With

LP360

8/30/2024

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Getting Started with LP360

Welcome to LP360, a standalone LIDAR application for Windows®. This "Getting Started with LP360" booklet will help new users make their initial use of LP360 as successful as possible.

What is LP360?

LP360 is a 64-bit Windows® desktop application used for many years by the LP360 Geospatial community for processing traditional aerial, mobile, and terrestrial tripod laser scanner data. The new LP360 Graphical User Interface (GUI) makes it easier and more streamlined to complete data processing and generate high-quality deliverables in an intuitive GIS environment. Not only this, but LP360 offers a variety of visualization capabilities such as a top-down map, a scrollable profile, and an interactive 3D window, all with many display options available.

Just like feature layers such as shapefiles, LAS Layers can be colored based on the attributes of the underlying data. In the case of LiDAR data, the attributes are elevation, classification, intensity, return, and point source (to name a few). The LAS Layer Property pages, similar to that of a feature layer, allow for complete control over the display aspects (such as coloring and size) of the points for each attribute or legend.

System Requirements

- Windows Version 10, Professional (64-bit) or Windows 11 Professional, or their server equivalents.
- i7 or equivalent CPU. The more cores, the faster the processing.
- 16 GB RAM (32 GB recommended).
- Nvidia Graphics recommended but not required.
- Graphics must support Open GL 4.5.
- Internal Solid State Disk (SSD) with a minimum capacity of 256 GB.
- Secondary storage recommended but not required (e.g., 2 TB spinning disk).
- USB 3.0 Required for data transfer from the TrueView USB Mass Storage (TrueView USB memory stick).
- High speed network access required for TrueView Cloud processing.
- A minimum 1920 x 1080 resolution display recommended. High resolution, 4k displays, require configuring LP360 Drone shortcut properties per Microsoft's recommendations.
- Dual Display is highly recommended for office setups.

Installing LP360

To install LP360:

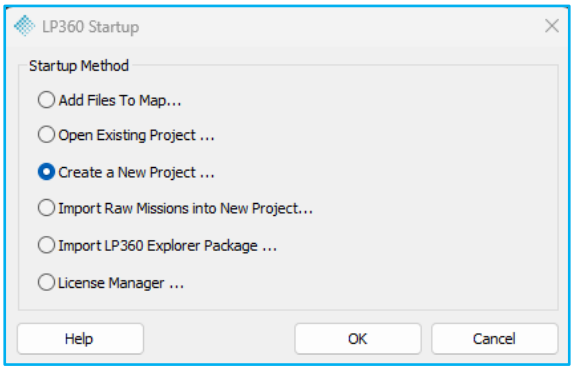
1. To install LP360, the latest version of LP360 can be downloaded from: https://portal.lp360.com/

2. For older versions of the software, please visit our LP360 Installers page.

3. Please find the LP360 Installation guide on our website at: https://support.lp360.com/hc/en-us/articles/31853418850579-LP360-Installation-Guide

LP360 Startup Options

When opening LP360, the LP360 Startup dialog will automatically open. This dialog allows the user to either add files to the map, create a new project, open an existing project, import a mission or Explorer Package, or open the License Manager. Each of these options will open its corresponding dialog to begin working in LP360.



For the first session of LP360, it is important to open the License Manager and use your unique licensing credentials (either subscription or perpetual) to gain access to your available licenses.

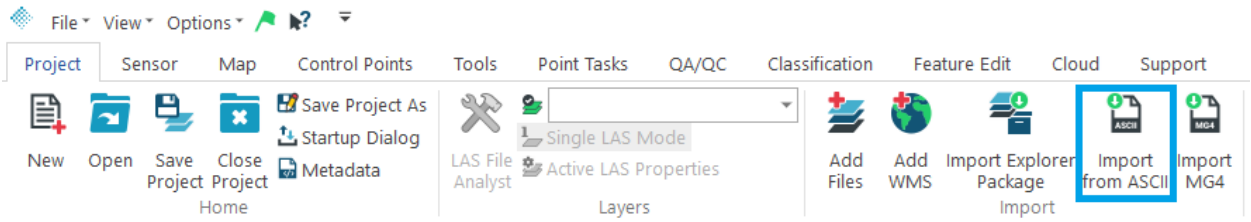
When creating a new project, be mindful of the coordinate reference system (CRS) the data is in. In the Create a New Project dialog: the Project Root Folder must be set, a unique project name given, and the CRS set. If a layer is added to the map prior to saving the project, the CRS of the layer will be preset in the dialog.

It is recommended to set up a Default Project Root Folder within the Project Settings dialog for LP360. This will be the default location on a given machine that new projects will be saved to automatically.

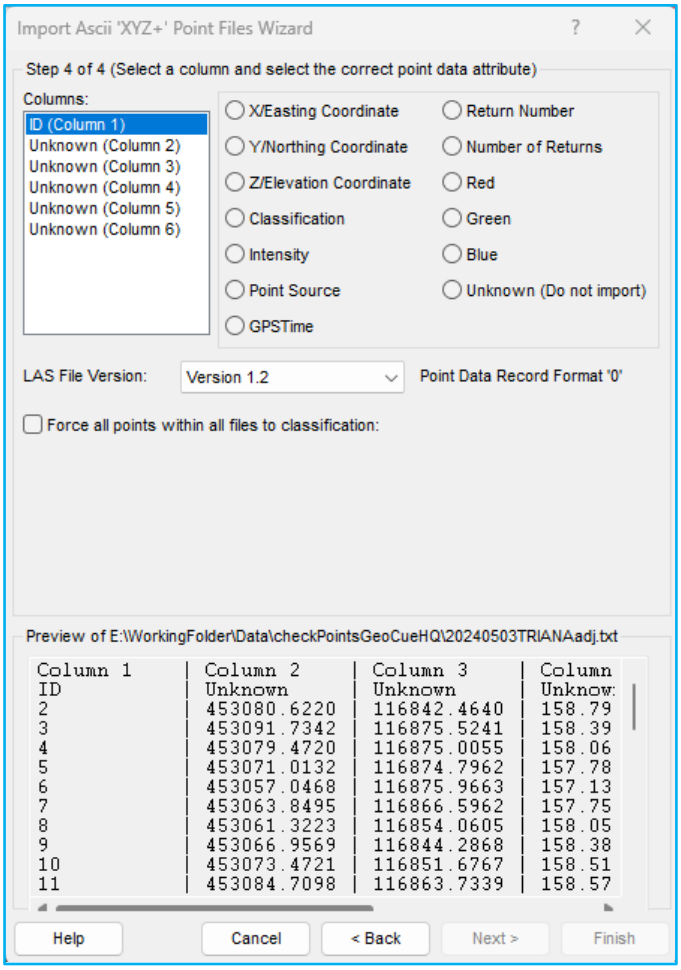
To open the Project Settings, either click the Settings button on the Project Ribbon or use the File dropdown > Project Settings. For more information on the Project Settings options available, please visit the File and Project Settings LP360 Help Page.

How to Import ASCII and MG4 Files

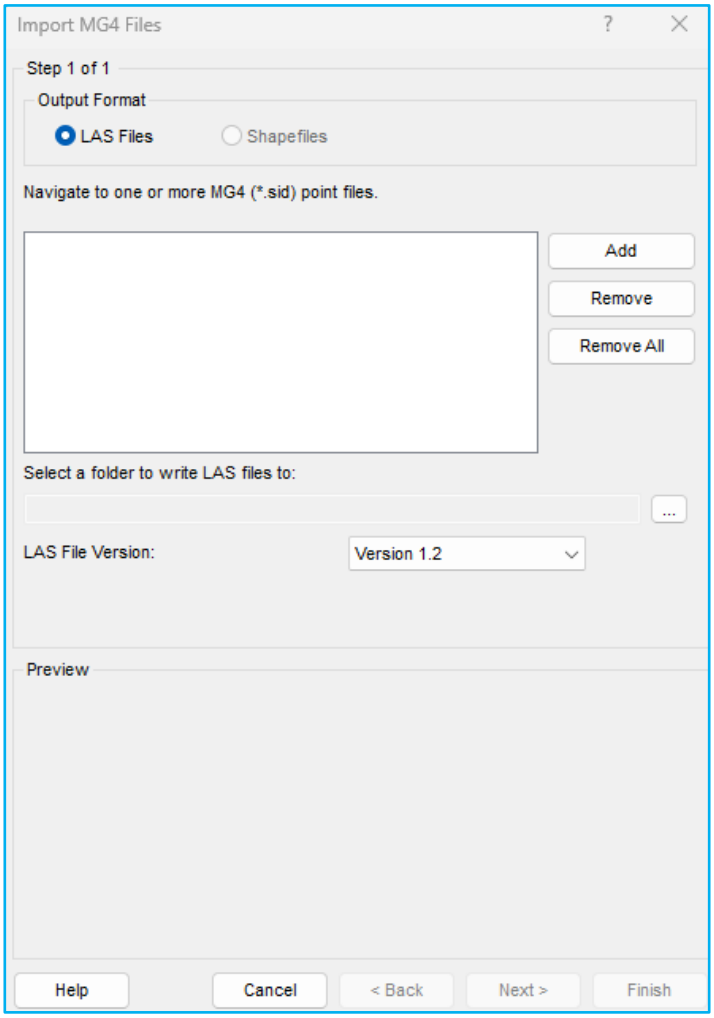
To use ASCII XYZ text files of LIDAR points in LP360, the text files must first be imported or converted to LAS files or shapefiles. Visit the ASCII Import Wizard LP360 Help page for instructions and information to create LAS files from text files. This is found in the Project Ribbon or by going to the File Drop Down in top left-hand corner of LP360 and selecting "Import from Ascii XYZ …". At this point, the "ASCII File Import Wizard" dialog box will appear. Follow the four steps to import the files.



On the 4th page on the ASCII Import Wizard, each column must be correctly labeled for proper import into LP360. The LAS File Version should also be reviewed to ensure the correct version is selected. See figure below to see the 4th page of the ASCII Import Wizard.



Similar to the Import From ASCII tool, the Import MG4 tool can either be found on the Project ribbon or in the File drop-down. The MrSID MG4 LIDAR Import dialog shown below provides the ability to convert MG4 LIDAR files into LAS files. Unlike the ASCII Import wizard, which involves 4 steps, this dialog simply requires manual selection of the MG4 files for conversion, along with an output folder to write the converted files. When this is done, the "Finish" button will be enabled. The user has the choice to select one of several LAS file versions to create. Not all point attributes can be imported with each LAS file version. For example, the RGB color fields can only be imported when version 1.2 or later is selected.



LAS Files

LAS is the standard format for storing and accessing LIDAR data. The LAS format is an industry standard recognized by ASPRS. LP360 takes advantage of the regular binary structure of the LAS format to achieve exceptional data access performance.

Follow the instructions in the Help topic "The LIDAR Layer" to view existing LAS files on a given system in LP360.

For performance reasons, we strongly recommend that LAS files be pyramided. LP360 is capable of displaying pyramided or un-pyramided LAS files, but pyramided files display much more quickly. To pyramid LAS files, follow the steps in the Pyramiding LAS files section below.

Creating a Layer from LAS Files

LAS files are viewed through a specially designed data layer called a LIDAR Layer. The relationship between the LIDAR Layer and the LAS files is one-to-many. The LAS files, whether tiled or in their raw flight line state, are encapsulated within a layer so that many LAS files representing a geographic area, such as a city or county, behave cohesively like one data layer.

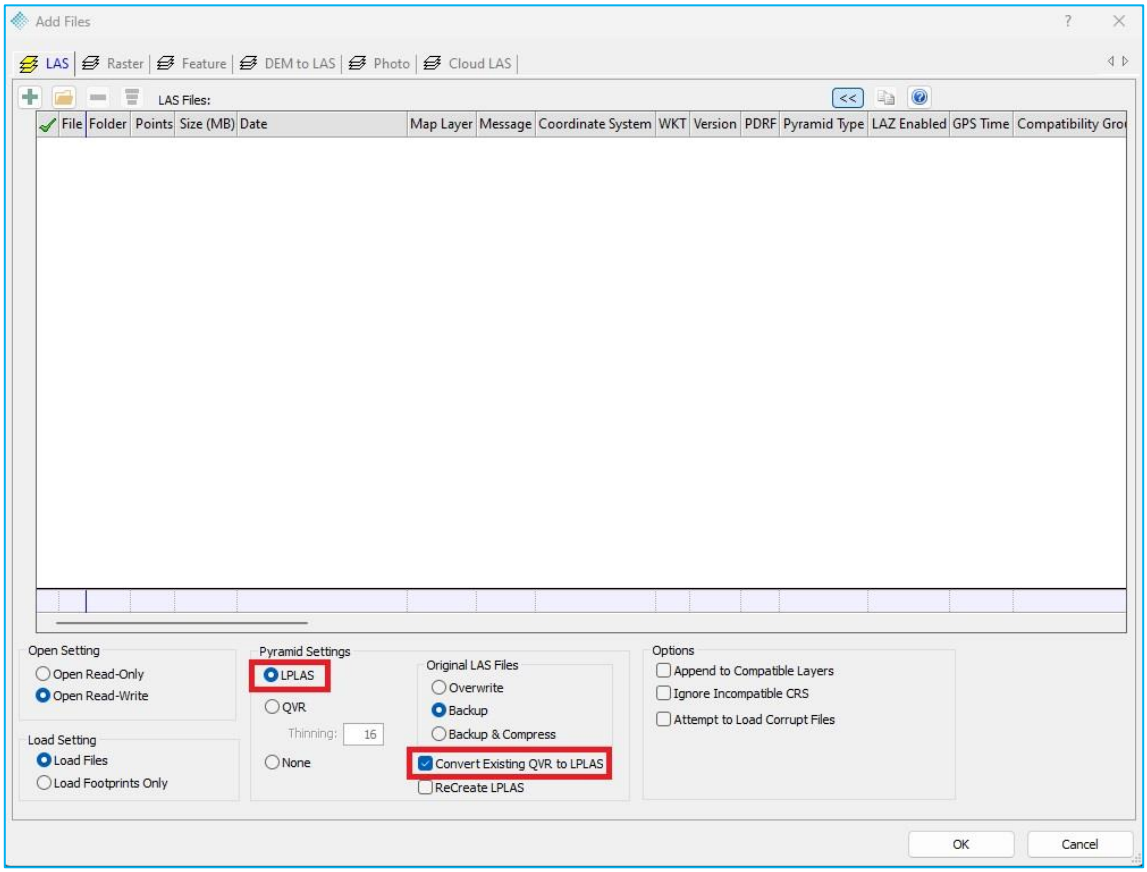
The LIDAR Layer is integrated into the user interface. When a LIDAR Layer is created and added to the map, it becomes another layer in the Table of Contents view that can be turned on or off, dragged up and down in the layers collection, or modified to have different layer properties.

In addition to displaying points in the map, the LIDAR Layer can also display the boundaries of the LAS files that are referenced by the layer. This is useful for large projects where LAS file management is important, such as locating a single file spatially or determining the spatial extent of a known file using LP360 tools. Whether adding one LAS or multiple LAS files, the LAS file boundaries will display and the points will be loaded automatically.

How to Create a LAS Layer

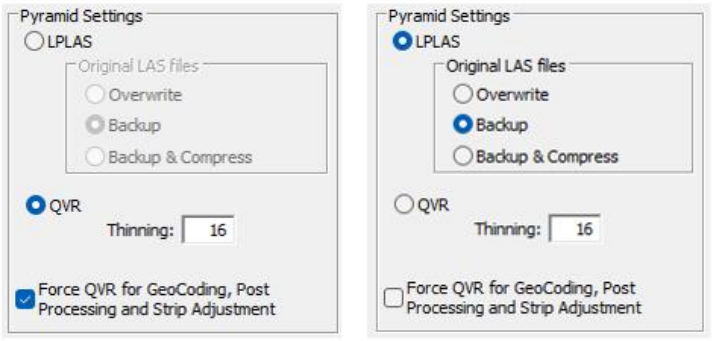
Creating a LIDAR Layer from LAS file(s):

1. Click the Add Files tool on the Project Ribbon.
2. Ensure the LAS tab is selected then click the add button
3. Navigate to the folder containing the LAS files.
4. Select the LAS file(s) and click “Open”.
    a. Be sure to review the Open Settings and Load Settings.
    b. Pyramid Settings can be set to QVR or LPLAS. LPLAS is the default and can be seen in the image below.
5. Click “OK” on the Add LAS files dialog.
6. Click “OK” again.

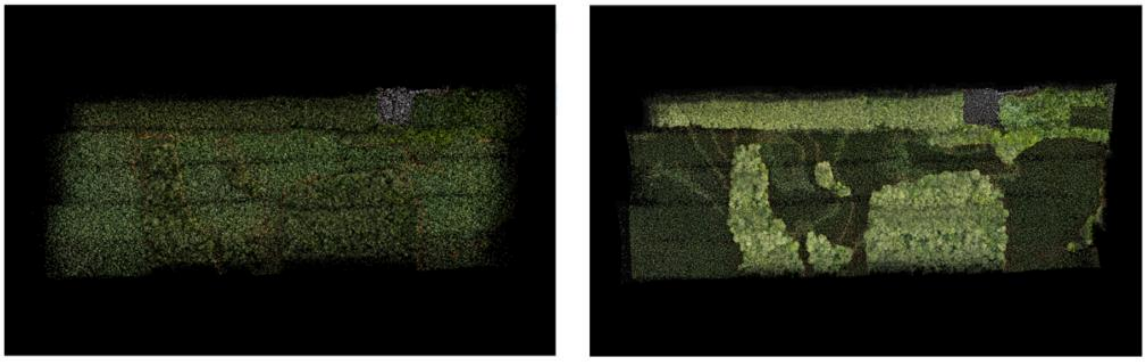


Pyramiding LAS Files

Like many GIS data sources, LAS files can be pyramided to provide faster display of points. The pyramids work similarly to image catalogs where the resolution or density of points increases as the user zooms in on the map. LP360 offers two methods for pyramiding LAS files: LPLAS and QVR. To set the default pyramiding method, open the Project Settings and navigate to the EXP tab. Depending on preference (LPLAS or QVR), match one of the two Pyramid Setting options below, then click Apply and Ok.



The LPLAS file format is compatible with any software able to read LAS and follows the ASPRS standards for the most up-to-date specifications for LAS. LPLAS files are useful for their improved pyramid performance and highly detailed point cloud display capabilities over the older QVR format. An example of this can be seen below.

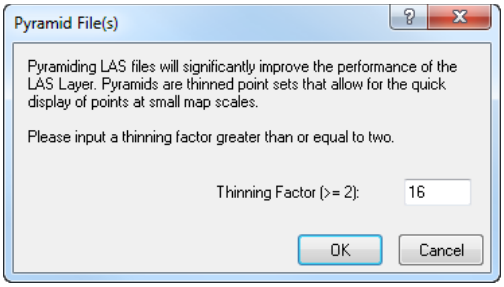


Traditional LPLAS

The traditional pyramiding method used is QVR. This pyramiding process requires a thinning factor that determines the number of levels in the pyramid. The higher the thinning factor, the more changes will be seen in the point densities as the map is zoomed in. With a lower thinning factor, point densities will appear to change much more gradually in the map as the user zooms in. The lowest possible thinning factor is “2”, but note that such a small thinning factor creates index data approximately equal in size to the actual LAS files, effectively doubling the amount of data on disk. High values for thinning factors will create much smaller index files. For QVR, we recommend an intermediate thinning factor of 16.

How to Pyramid LAS Files

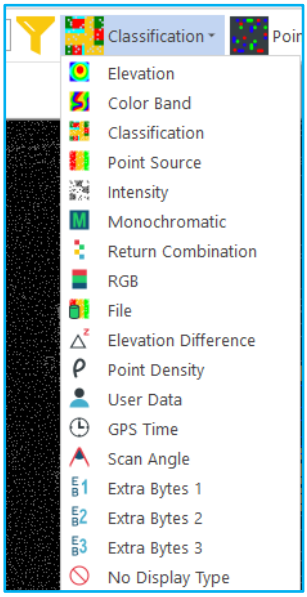
1. Navigate to the LAS Files tab found at the bottom of the Table of Contents
2. Right-click on an individual LAS file or a selection of LAS files.
3. Click the Pyramid File command. To pyramid all LAS files without selecting each file, right-click on the LAS Layer label and select "Pyramid All Files...".
4. Enter an integer greater than or equal to 2. The default is 16.
5. Click OK to begin indexing.
6. A confirmation dialog will display once the indexing is complete.



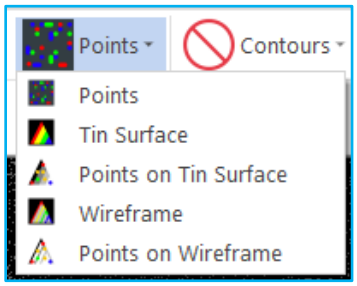
When pyramids are created, a file is created in the same directory as the LAS files called a LAS pyramiding file (*.qvr). The user can choose to have LP360 automatically pyramid the LAS files when adding them by selecting the “Pyramid” option in the “Add LAS Files” dialog.

Viewing LAS Files

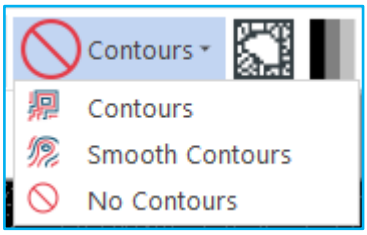
LP360 provides quick and easy access to manipulating the visualization of LAS data. The user can access the “Layer Properties” page by either clicking the Active LAS Properties tool on the Project ribbon or by right-clicking on the LAS layer and selecting Properties. This dialog is where Breaklines, Symbology, and Performance Options for a LAS layer can be edited. The Source information for the LAS layer can also be found in this dialog. Viewing options for quick symbology changes are located in a drop-down list on the Navigation bar.



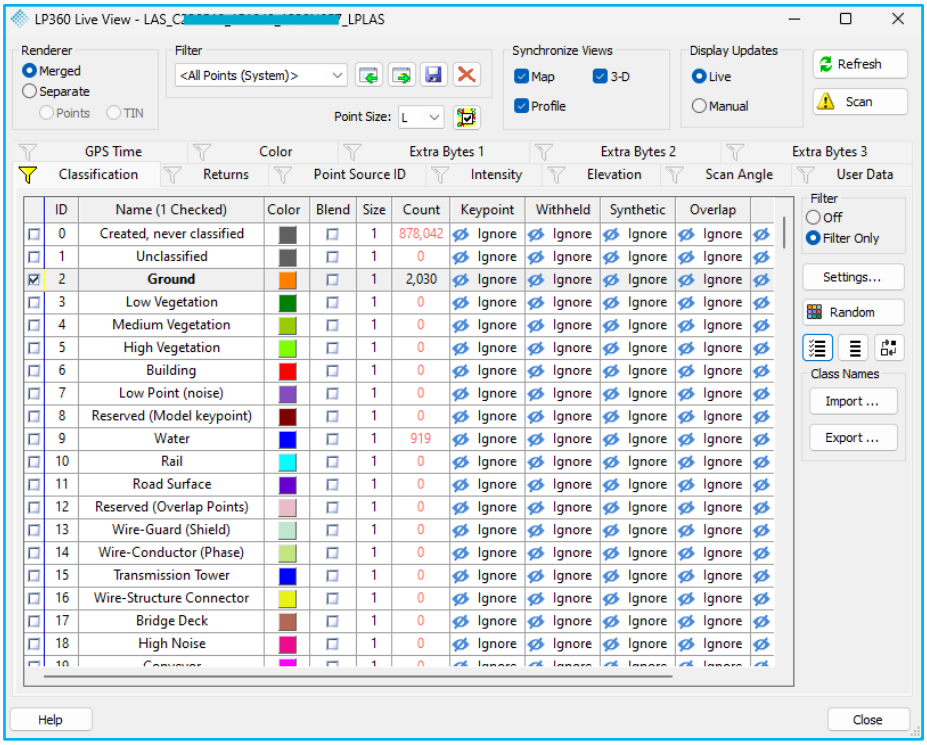
LP360 also TINs and contours on the fly. The Navigation bar has a drop-down list, shown below, where the user can select no points (by toggling the button off), points, TIN, points on TIN, wireframe, or points on wireframe to be drawn.



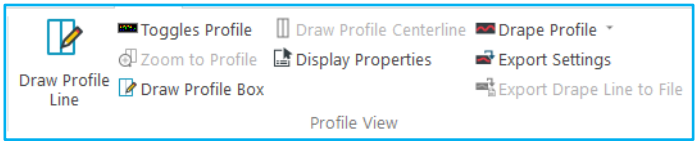
Similarly, a “Display Contours” button initiates contours to be drawn. The user may choose between displaying the contours and displaying the contours with smooth contours.



Contour settings can be adjusted in the LAS Layer Properties dialog by going to the Contours tab under Symbology. Contours are generated for all points active in the map view. Therefore, if the user only wants to display ground contours, a filter can be set in the Live View Filter button (dialog seen below) found on the Navigation bar. Live View allows the user to filter LAS display by a multitude of options. Additional Symbology options can be found here as well.

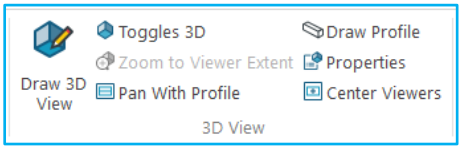


Profile Viewer



The Map ribbon provides controls for a profile or cross-section window. The Toggle Profile tool opens the Profile View window. Initially, the profile window will be drawn in the lower bottom section of LP360. Depending on the Display settings, this window may need to be enlarged for viewing. Resizing can be accomplished by hovering over the top portion of the window until a directional arrow appears, clicking, and adjusting the window. The extent of points to be brought into the profile window is determined with the Draw Profile Line button and a series of three clicks, first to draw the line over the desired viewing area, then to draw "out" to define a profile depth. The Draw Profile Line can also be found on the Navigation bar. For additional information on this topic, please visit the Profile Window LP360 Help page.

3D Viewer



The Map ribbon also provides controls for the 3D window. Turning on the 3D window in a new project places the 3D window in a default location (to the right side of LP360). The 3D window can be re-sized and docked to a preferred location. The extent of data drawn in the 3D viewer is selected by selecting the Draw 3D View button and dragging the box to the desired extent. The Draw 3D View button can also be found on the Navigation bar. For additional information on this topic, please visit the 3D Window LP360 Help page.

Exporting

LP360 provides a wizard to export points and surfaces from the loaded LIDAR data. The Export Wizard is opened on the Project ribbon. The Export Wizard contains options for exporting rasters, points, and contours. LP360's export functions handle the merging of multiple LAS files within a single LIDAR Layer.

How to Get Help in LP360

- To open the LP360 Help webpage, navigate to the Support ribbon and click the Help button.
- Dialog Boxes – To get help for a control in a dialog box, left click the "Help" button at the bottom left of the dialog box.

How to Use Help

- Table of Contents Tab – Click the  button in the top left to open the topics on the page. Click each topic to view the help pages. Click the "Print" button at the top of the help page to print the current page.
- Index Tab – Click the  button to open the Index view. Type one or more keywords in the text box. Click on the index item to open the help topic associated with it.
- Search Tab – Type the word or combination of words that the user wants to find in the topics. All the topics in the Help system will be searched for the word(s) entered. When using a combination of words, use double quotation marks to string the words together in the search, so that the search results yield only those words when used together.

Technical Support for LP360

Technical Support Contacts:

Searchable Support Knowledgebase: support.LP360.com

E-mail: support@LP360.com

Phone: 1-256-461-8289

GeoCue Group provides both e-mail and telephone support. E-mail requests must be submitted through the designated support e-mail address: support@LP360.com. Telephone support is provided through GeoCue, and can be reached at 1-256-461-8289.

Business hours are 8am to 5pm, Monday through Friday, CST excluding federal holidays.

Visit us at http://www.LP360.com

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GeoCue Group

GeoCue is a U.S. based LiDAR data technology company offering software, hardware, training, support and consulting services for high accuracy LiDAR and imaging drone mapping to help civil engineering and surveying professionals achieve successful data collection, processing, and management.

With its TrueView drone LiDAR/Imaging sensors and LP360 point cloud data processing software, GeoCue is the leader in LiDAR mapping processing in North America.

Our Mission

Our mission at GeoCue is to develop LIDAR software that enables users of point cloud data to easily and efficiently access and interface point cloud data with day-to-day operations. We strive to continue to be the provider of choice for LIDAR software solutions.

What We Do

At GeoCue we use our extensive experience with LIDAR to focus on specific functionality that enables users to maximize LAS LIDAR point clouds. We believe that LIDAR has significant and often untapped value. We focus on integrating LIDAR into workflows that already provide substantial value but lack sufficient architecture and/or specialized functionality for maximizing LIDAR investments. Our customers include all aspects of LIDAR users including commercial LIDAR data collection and processing providers, federal agencies, state government, local government, environmental and civil engineering firms, consulting firms, research facilities… in short, groups like yours who desire an easy and effective way to use LIDAR.

Thank you for your business!