



Instabase - Manufacturers Guidelines

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Overview

Lighting Analysts software programs AGi32, ElumTools and Photometric Toolbox are designed to utilize a searchable database of photometric files supplied by the lighting industry's most prominent manufacturers. We call this database the **Instabase**.

The Instabase provides a convenient platform for software users to obtain photometric data electronically for immediate use. The system is timely and intuitive making it a natural first choice for photometric decisions by end users.

In 2015, the Instabase has migrated to an entirely cloud-based system with many tremendous advantages, we call it Instabase in the Cloud (IITC). With the data in the cloud, end users always have access your latest photometric data. Photometric files are only downloaded on an as needed basis so your entire database never resides on the user's local drive. The Instabase system is designed for search and query access across multiple suppliers so it is in your best interest as a manufacturer to see your data appear in appropriate queries (more on this to follow).

For manufacturers, the process of assembling the database and uploading to Lighting Analysts' cloud server has been simplified dramatically over previous versions. The process is straight forward with data maintenance possible on your own schedule. Manufacturers are provided with a Supplier portal to the Instabase System to view statistics relative to their product data usage.

Data formats

The Instabase utilizes the following data formats: IES (*.IES), EULUMDAT (*.LDT, *.EXL) or CIBSE TM-14 (*.CIB, *.TML). However, in order for the Instabase query functions to work most precisely, it is recommended that IES format data be used. The Instabase allows for queries based on IES keywords, custom search keywords (CSK's) and associated data which are not present in the European format data files. Queries for calculated metrics such as LCS or IES roadway classifications will function across all data formats. The construction of this document assumes the use of IES format data.

Organizing the data

The key to an effective Instabase that is easy to navigate and search is its level of organization. Within the Instabase system, this means planning a coherent folder tree broken down by product line, application or both. This will require some planning on your part, although nothing that can't be easily sketched out in a few minutes time.

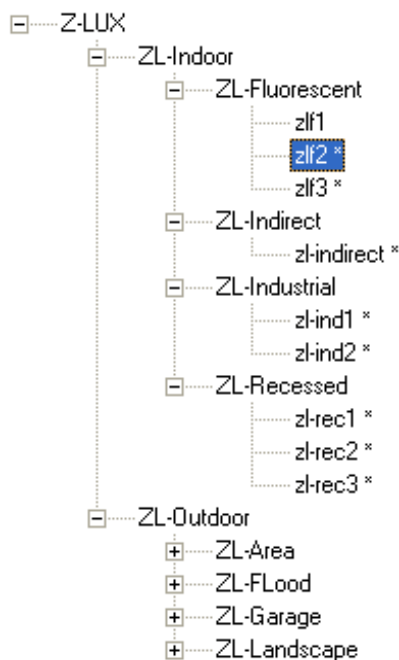
The amount of effort you put into naming folders, associating graphic images, including keywords and organizing descriptive information in your photometric files will directly affect the level of customer satisfaction with your data.

Ingredients of a successful Instabase:

1. Folder tree
2. Photometric files (IES preferred)
3. Accurate keyword responses and custom search keywords (CSK's)
4. Custom luminaire symbols (optional)
5. Graphic images (optional but very important)
6. More Information URL file (InfoURL.txt, optional)

Building the folder tree

A folder tree is simply a folder containing other folders, which in turn may contain other folders. Folders at some level in the tree contain photometric files. When we refer to a folder tree containing your photometric data, it might look something like our demonstration database below.



In the Z-Lux demo database, the top node is created from a folder titled “Z-LUX”.

Within the Z-Lux folder are two other folders, one titled ZL-Indoor and one titled ZL-Outdoor. Within the ZL-Indoor folder, there are four other folders titled: ZL-Fluorescent, ZL-Indirect, ZL-Industrial, ZL-Recessed.

Finally, within the ZL-Fluorescent folder, there are three IES files: zlf1, zlf2, zlf3. The zlf2 file is currently selected in the graphic shown.

In the case of the Z-Lux sample data, we have divided the tree into two main branches by application: Indoor luminaires and Outdoor luminaires. Each of these branches is in turn broken down by application, or by luminaire type. In some cases it may make sense to divide products by function, in others by source or application. Think of how users might browse through your data organization. It is often logical to mimic the organizational structure already presented to the public on your website.

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It is best to keep your folder structure confined to a manageable number of branches or sub-branches. If customers have to go too deep to reach the photometric files, they may find the database inconvenient to use.

It is valuable when planning your folder structure to keep products similar in appearance contained in the same folder. If products are quite different in appearance, it will be more time consuming to match photographs and custom luminaire symbols with your database (more on this to follow).

The character string length limitation and restrictions

It is vital when planning your data structure to stay within Windows maximum character string length of 260 characters. This is the combined length of the data path from the root folder (C:\) to the end of your most deeply buried files. This applies not only your specific data path, it also includes the preceding folders on the end users system when the files are downloaded. AGi32 places all downloaded instabase files in:

C:\ProgramData\AGi32\PhotometricData_DownloadedFromCloud

For example, the following path is 116 characters (with spaces):

C:\ProgramData\AGi32\PhotometricData_DownloadedFromCloud\Z-Lux Sample Instabase\ZL-Outdoor\ZL-Landscape\Zl_land2.ies

Bottom line: avoid extra-long folder names and/or filenames. It is best practice to avoid using spaces, commas, extra periods and other non-alpha-numeric characters in your file or folder names. The following characters must not be found in any file or folder names: the plus sign (+), the single quote or apostrophe (‘), the hash or pound sign (#) and the ampersand (&). Any incidences found will cause your instabase to fail the build process. See the example below.



IES format photometric files

The standard file format for luminaire photometry in North America and much of the world is maintained by the Illuminating Engineering Society of North America (IESNA). The technical document is titled LM-63 and the most recent version is dated 2002 (LM-63-02). It can be obtained electronically from www.iesna.org. Every manufacturer should own a copy.

LM-63 version differences

Lighting Analysts software will read files in IES format as far back as the original release of LM-63 in 1986. However, early versions of the format were tolerant of sloppy testing and reporting procedures that our software will not permit (see 1995 version below). It is suggested that all manufacturers update their photometric file offerings to the 1995 release of LM-63 as a minimum. If you want to insure that your files operate flawlessly with all modern software programs, update them to the 2002 release of LM-63.

LM-63 version	Summary	Major changes
LM-63-1986	Inaugural release. All data prior to TILT= line is free form character based, 80 chr. per line	
LM-63-1991	First line in the file must be IESNA91. Keywords added to text description (lines before TILT=).	13 approved keywords, no custom keywords
LM-63-1995	First line in file must be IESNA:LM-63-1995. Keywords expanded. Definitions for shape of luminous opening expanded.	Custom keywords allowed with underscore before keyword. E.G.: [_CUSTOM]. IMPORTANT: Asymmetric Type C luminaires MUST end at horizontal angle =360 and vertical angle=90 or 180. Type B photometric files MUST end at +90 on both horizontal and vertical angle.
LM-63-2002	First line in the file must be IESNA:LM-63-2002. Certain keywords now required. Changes and additions to luminous shapes. Lines can now be 256 chr. in length.	Keywords REQUIRED. .IES extension REQUIRED. 90-270 Horizontal reports no longer valid. Some luminous shapes changed from 1995: Circular, Sphere, Vertical Cylinder, Horizontal cylinder, Ellipse, Ellipsoid

Keywords

The use of specific keywords is mandatory in LM-63-02. In LM-63-95, the specific keywords are “recommended”. In either version, custom keywords MUST be preceded

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by an underscore. In the table below we show the mandatory keywords for LM-63-02 and what we would recommend for LM-63-95 compatibility.

LM-63-02	LM-63-95
Required keywords	Recommended keywords
[TEST] [TESTLAB] [ISSUEDATE] [MANUFAC]	[TEST] [DATE] [MANUFAC] [LUMCAT] [LUMINAIRE] [LAMPCAT] [LAMP]
Recommended additions	
[LUMCAT] [LUMINAIRE] [LAMPCAT] [LAMP]	



IMPORTANT: It is *HIGHLY* recommended that all manufacturers provide concise and accurate descriptive keyword responses for all IES files.

Custom Search Keywords (CSK's)

IITC provides users the ability to search across multiple Instabases selected from the Suppliers list for products of interest. In order to ensure that your products are included in end user queries, the use of Custom Search Keywords (CSK's) is strongly recommended.

Current CSK's include:

[_SEARCH_SOURCETYPE]
[_SEARCH_APPLICATION]
[_SEARCH_MOUNTING]
[_SEARCH_CERTIFICATION]
[_SEARCH_CLASSIFICATION]
[_SEARCH_SP_RATIO]
[_SEARCH_CRI]
[_SEARCH_COLORTEMP]

The use of all CSK's is optional and you can pick and choose as you wish. As a minimum we recommend the use of "SOURCETYPE, APPLICATION and MOUNTING".

[PDF describing CSK's](#)

Inserting CSK's into your IES files can be done in bulk using our free software utility, the Instabase Keyword Editor (IKE). See "Editing IES Files" below.

Editing IES files (IKE utility)

With the previous sections in mind, you may find yourself faced with editing a large number of IES files to bring them up to standard with keywords and descriptions. There are tools to help you with this, beginning with our Instabase Keyword Editor (IKE).

IKE can insert Custom Search Keywords for IITC to guarantee that your products are found by end user queries. IKE can be downloaded from Lighting Analysts website (link below).

[Download IKE](#)

[Watch the videos on using IKE](#)

Our software Photometric Toolbox will help you correct many photometric errors and make appropriate changes to migrate from different versions of LM-63. This can be a very useful tool if you are faced with upgrading old IES files.

While editing all of your IES files may seem like a monumental chore, rest assured, the end users who actually must make sense out of your data will appreciate it. We believe you will see the payback in terms of increased business. You would be surprised how many times we hear “I won’t use their products as the data is poorly organized”, or “their descriptive information is unintelligible”.

Lastly, if you need assistance, we have access to consultants who can perform this task for you as a service. [Contact Dave Speer](#) for a list.

Custom Luminaire Symbols

While the creation of custom symbols for your products is completely optional, it can be a very nice touch for users when rendering. We would recommend that manufacturers selling high-end interior products begin a process of creating and assigning custom symbols to at least some of your products. Your customers will be very appreciative (we have heard this firsthand), and you will find the time to be easily made up in customer relations and future sales.

Creation and implications

Creating custom symbols is much easier than you might think and can be done in AGi32 from existing tools, or by importing from SketchUp ([using our free plugin](#)), or 3D-CAD. Acceptable simple approximations can be made using a combination of AGi32 object types. Geometries imported from SketchUp and 3D-CAD might be beautiful, **but will most likely need major simplification**. As a general rule of thumb, the more surfaces contained within the symbol, the longer the radiosity calculations will take. A reasonable simplified approximation of the luminaire is preferred to an exact replica. NEVER attempt to use your mechanical designer’s 3D models as AGi32 symbols! Also, keep in

mind that exterior pole mounted luminaires seldom need custom symbols as they are very difficult to see, most of the light is directed downwards.

For information on how to create custom luminaire symbols, please see the [AGi32 HTML help system](#).

Association with photometric files

When your symbols are named and located correctly, they will automatically gain association with the appropriate photometric files when used in AGi32. This not only makes your products appear more attractive in the rendered images, it can eliminate the question of symbol choice making end users more comfortable with your data.

Associating symbols with photometric files is most efficiently done on the folder level. With this in mind, you should organize your folders such that a single symbol can satisfy all of the photometric files contained within that folder. This is not an absolute requirement, but it is preferred.

To utilize a single custom symbol for all photometric files in a single folder:

1. Copy the symbol file as created from within AGi32 (*.SYM) and place it in that folder.
2. Rename the symbol to be identical to the folder name (retain the SYM extension).

As an example, consider a folder named “Mt_Elbert_Series”. For a symbol in that folder to cover all photometric files enclosed, drop the symbol file in the folder and name it “Mt_Elbert_Series.SYM”. The symbol name and folder name must be identical (not caps sensitive).

If there are photometric files contained in a folder that should use a different symbol, or, you just want to associate a custom symbol with a single photometric file, this can be easily done. The disadvantage of course, is if you have many of these instances, you will end up with a large number of symbol files in your database.

To associate a custom symbol with a single photometric file:

1. Copy the symbol file as created from within AGi32 (*.SYM) and place it in that folder.
2. Rename the symbol to be identical to the photometric filename that the symbol is to be associated with (retain the SYM extension).

You can find examples of the single file association in the Z-Lux sample database automatically installed with AGi32.



***IMPORTANT:** The application of symbols is a cascading event. Once a symbol has been applied on the folder level, it will be associated with all files and folders beneath it in the tree unless another symbol has been applied on the folder or file levels below.*

Revit families

The Instabase system does not currently support Revit families. However, ElumTools has a compilation of generic families that can be used in your projects and matched with photometric data from the Instabase. See the [ElumTools Help](#).

Images

The use of product photographs in your Instabase will make it much more effective allowing users to narrow their interests easily.

Format and Size

The Instabase is designed to accept graphics files in JPG or BMP formats. When the files are uploaded they are converted to Base64 images.

The optimum file size is 165 x 165 pixels for best display quality. Smaller image sizes will be stretched and will appear distorted. Files that are rectangular and not square will be located against the top or left edge of the picture area depending on aspect ratio.

Association with photometric files

The association of images in your folder structure is identical to that of custom luminaire symbols. To use a single image for all files in that folder (and below), name the image file exactly the same as the folder name (do not change the extension, JPG etc.). Best practices dictate that a single image would be contained within each folder. That image should be indicative of the files or folders contained within. Your ability to do this will be entirely commensurate with your planned folder structure. The more refined your structure is, the easier it will be to match images.

It is also possible to associate a single image with a single photometric file. This is inherently inefficient and should be avoided on a large scale. To associate an image with a single photometric file, simply name the image exactly like the photometric file with the exception of the extension.

Example: **12345.IES** and **12345.JPG**

More Information URL file

The Instabase can work together with your website to create a richer information experience for the end user interested in your products through the use of “Information

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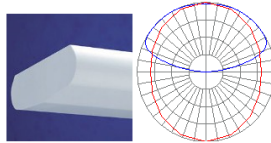
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URL's". An Information URL is a dynamic link to a specific location in your website for additional information on the luminaire, or more powerfully, a web script that can point to literally any content on your site.

IITC

Photometric File Details

Filename: S1-1T8-91W.JES
 More Information: <http://www.finite.com>
 Classification: Luminaire Lumens 2724
 Efficiency 89.31%
 Upward Waste Light Ratio 1.00
 CIE Type Indirect
 Luminaire Efficacy Rating (LER) 66
 Bug Rating 80-US-GO



The More Information hyperlink in IITC is displayed in the “Details” section.

Static InfoURL

In its simplest form, the “InfoURL” is a simple static link to a website, for example: <http://z-lux.AGi32.com/>, or a specific location in the website: <http://z-lux.AGi32.com/zl-industrial.htm>. In this context, you might employ a unique *InfoURL.txt* file in each folder in your tree structure to point to a relevant location in your website for the files contained within that folder.

The *InfoURL.txt* file is an ASCII text file (*.txt) created using Notepad (or other text capable applications). Its name must always be: *InfoURL.txt* (although it is not case sensitive). The content of the static file is simply one line, the URL. For example: the URL to point to the AGi32 website would be:
<http://www.AGi32.com>

Scripted InfoURL

A much more flexible and robust application of the *InfoURL.txt* file is to link it to a specific script on your webserver that will then route all traffic requests as they arrive. In this case, you need only one *InfoURL.txt* file located in the top most folder of the tree structure. The content of the *InfoURL.txt* file then contains a URL to point to the script name and location on your server.

Typical composition of a scripted URL:

<http://z-lux.AGi32.com/Instabase>

In this case, “*Instabase*” is the name of the script located at *z-lux.AGi32.com*

In order to facilitate this action, Instabase will automatically send an extended URL to the script depending on where the focus point is in the database at the time the “More Information” link is selected. The script then needs only to point to an appropriate place in the website relative to the extended URL.

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Typical extended URL sent by clicking the More Information link with the Zlroad1.ies file selected:

<http://z-lux.AGi32.com/photometrics.htm?Filename=Zlroad1.ies>

In this case, the script should point to a web page with information relevant to the Zlroad1 luminaire.

Get Your Instabase Online!

This document assumes that you have completed the composition of the folder structure and all your various file types are as they should be. If not, please refer to the larger document titled “[Manufacturer Guidelines](#)”.

Getting your Instabase online is straight forward, but requires you to use an FTP process to upload your data. Get used to using FTP (if not already) as this will be your avenue for updating your data once online.

There are different ways to access the FTP process:

1. Using Windows Explorer is handy and very easy. This is the Windows file system on your computer and NOT Microsoft Internet Explorer web browser. NOTE: if you have Google Chrome installed, you may not be able to use the Windows Explorer process shown below. In this case you must use an FTP client software.
2. Or use any FTP client software, we recommend [FileZilla](#) (Note: download only from the link here, the author site: <https://filezilla-project.org/>).

Step 1 - Open an FTP client window

1. Enter the address: <ftp://suppliers.agi32.com>

Using Windows Explorer (figure 1):

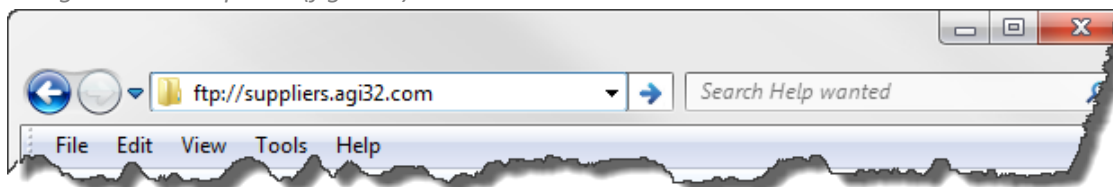


Figure 1

Using Filezilla (figure 2):

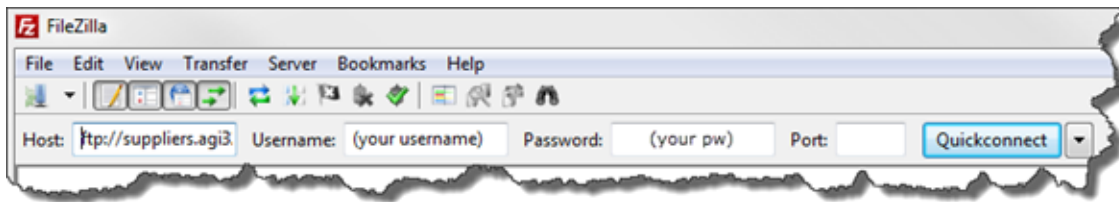


Figure 2

2. When the log in dialog pops up (Explorer), or on the toolbar (Filezilla), enter your unique username and password. Usernames and passwords are created by Lighting Analysts.

Existing Suppliers: your old log in username and password have been changed! This was emailed to your primary contact. [Contact Dave Speer](#) if you do not have this information)

*Windows Explorer
Log in screen is
displayed as soon
as you initiate the
FTP window by
pressing enter
after typing in the
address.*



Figure 3

Step 2 – Drag and Drop your Data

New suppliers will upload their entire Instabase folder structure the first time. Once the Instabase is in the cloud, you don't need to update the entire database for each change. Instead, you will simply upload any files that have changed or are being added, as well as remove any obsolete files from the online version.

Using Windows Explorer: Drag and drop your folder structure (or just changes) from the local Windows Explorer window into the FTP client window as shown in Figure 4. The upload process will depend on the size of your folder structure and the speed of your Internet connection.

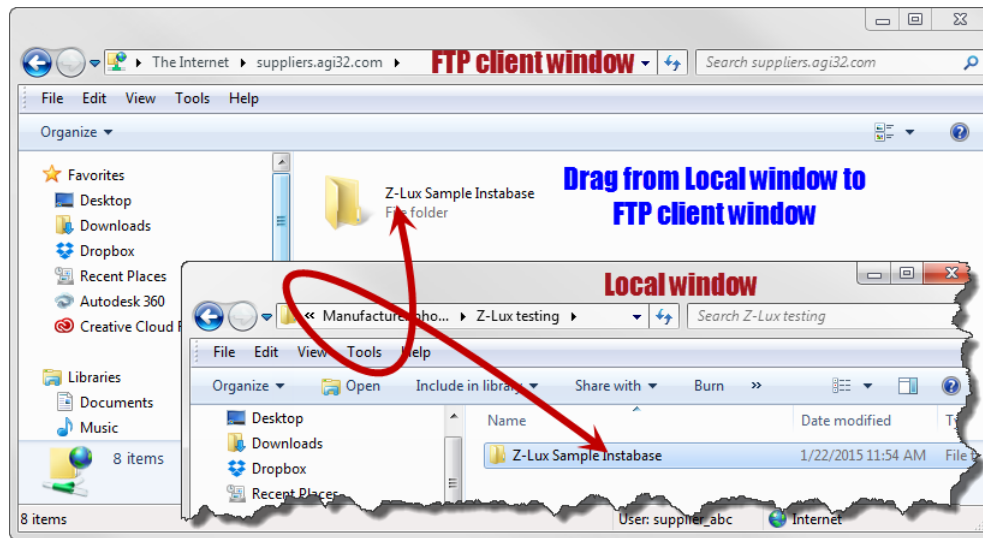


Figure 4

Using Filezilla: Navigate to your master folder in the left side window. Then drag and drop your folder structure (or changes) from the left side to the right side as shown in Figure 5. The upload process will show in the lower portion of the window (not shown).

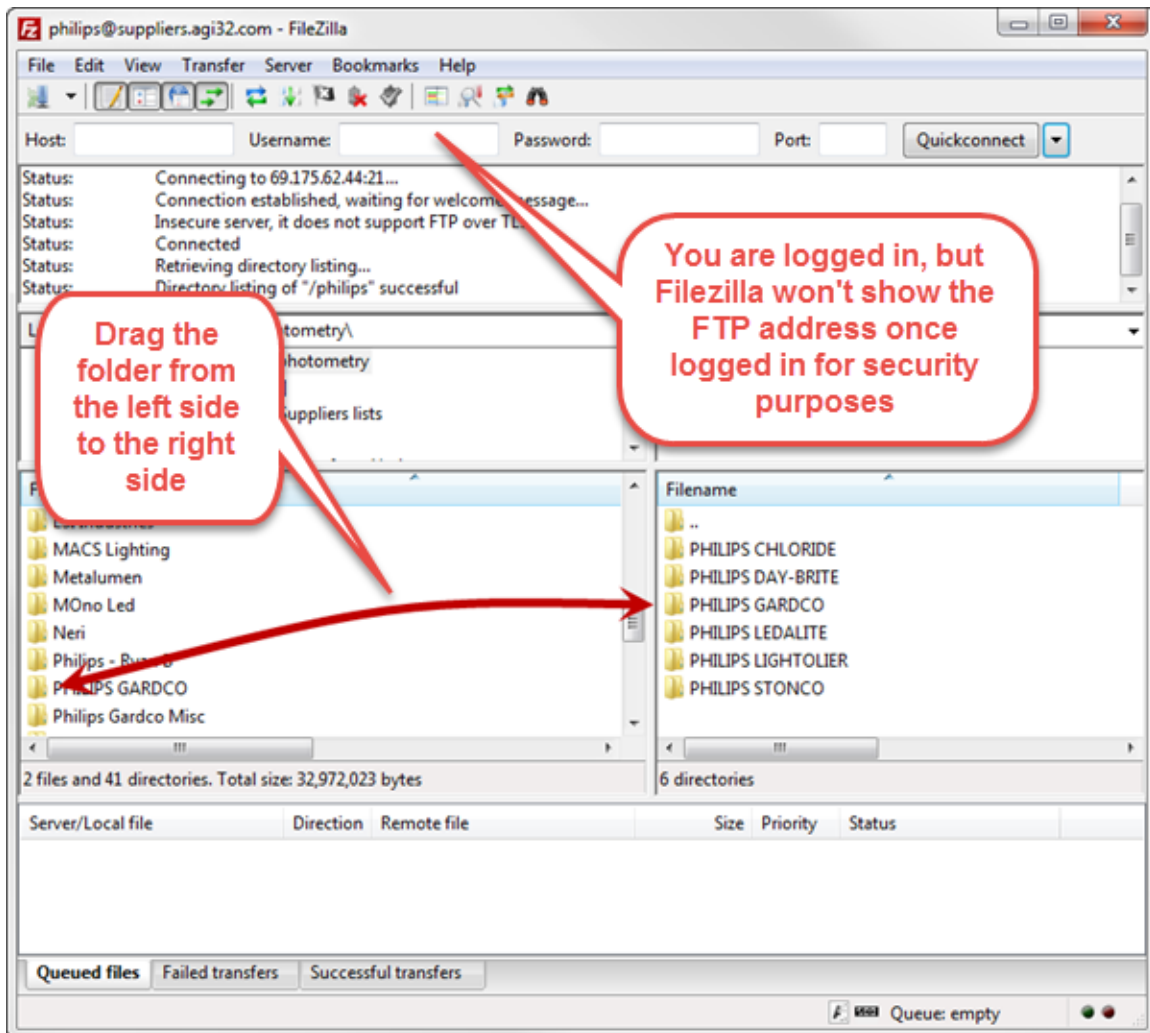


Figure 5

Note to existing suppliers, your last update for the old Instabase has been uploaded for you and your data is currently available in IITC. Any new uploads will replace this data.

HINT for Best Practice: Do not rename your Instabase master folder for each update (with a date for example). Using a new name will cause the data to become a new Instabase and will not overwrite the old data. It is preferred to use the same master folder name and simply make changes.

Step 3 – Log In to the Instabase Portal

Once uploaded, open a browser window to: <http://photometrics.agi32.com>. Log in with your unique username and password. Your account will come up as shown in Figure 7.

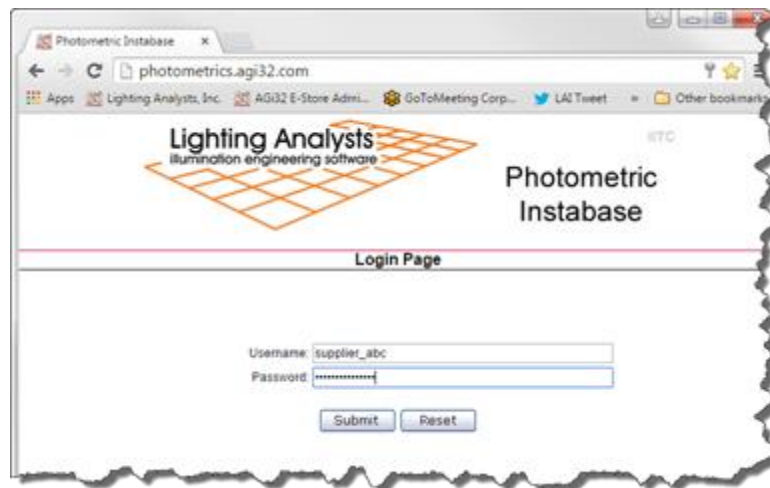


Figure 6

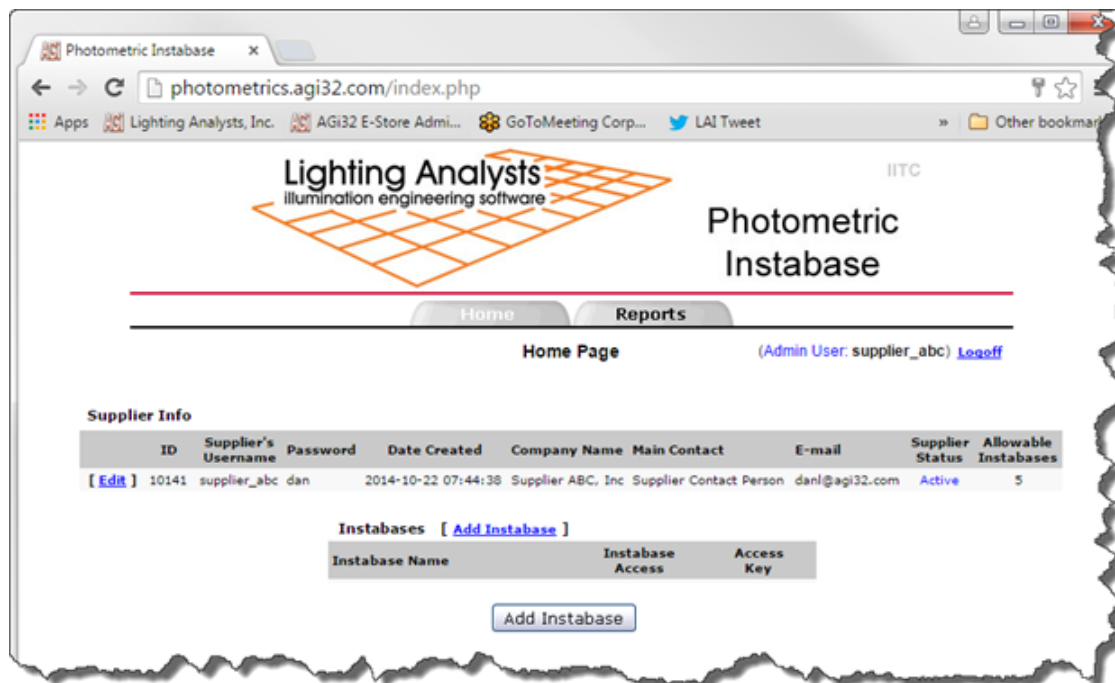


Figure 7

New Suppliers (first time)

If you are a new supplier and doing this for the first time, select the Add Instabase link or button (same function). See below for existing suppliers.

1. Select your newly uploaded instabase from the drop down menu as shown in Figure 8.

Photometric Instabase

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Home Reports

Add Instabase (Admin User: supplier_abc) [Logout](#)

Supplier: **supplier_abc**

Instabase Name:

Access: **Active-Private**

Access Key: If setting Access to **Active-Private** an Access Key will be auto-generated for you.

Click the Submit button to save your work.

Figure 8

- a. Set the Instabase access to Public or Private. Public Instabases can be seen by all users, Private instabases can only be seen by users that have created a User Profile in the Instabase system and have been given your private access code

Photometric Instabase

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Home Reports

Add Instabase (Admin User: supplier_abc) [Logout](#)

Supplier: **supplier_abc**

Instabase Name:

Access: **Active-Private**

Access Key: If setting Access to **Active-Private** an Access Key will be auto-generated for you.

Click the Submit button to save your work.

Figure 9

- b. Click Submit button. This process may take some time depending on the size of your Instabase. Instabase will automatically resample oversize photographic images at this time to 165 pixels in the largest dimension. If there are problems

creating your Instabase in the cloud, the following window will report them. Otherwise you will see a “Completed Successfully” message as shown below.



Figure 10

Existing Suppliers (updates)

If you are an existing supplier and modifying an existing Instabase, click on the link for the Instabase name in your list of existing Instabases. If you have only one master folder structure, you should have only one Instabase.



Figure 11

The Edit Instabase screen (Figure 12) will appear. From this screen you have a number of options:

1. Set the Instabase access to Public or Private. Public Instabases can be seen by all users, Private instabases can only be seen by users that have created a User Profile in the Instabase system and have been given your private access code.
2. Set an IITC Action:
 - a. The most common is to “Update existing Instabase...”. This should be your choice if you have only made changes to your existing data structure.
 - b. Update access keys for private instabases
 - c. Delete Instabases
 - d. Remove data from the old Instabase system (this will be done automatically on July 30th, 2015)
 - e. Rename your existing Instabase
 - f. Export Photometric file links (URL’s)
3. Click the Submit button

Once you have clicked the Submit button your Instabase will be processed for Instabase in the Cloud (Figure 10 above). This can take some time depending on the size of your Instabase. At this point, the entire Instabase (database) must be reprocessed for even a small number of changes.

Supplier Homepage

After processing (Figure 10 above), click the return button. The screen shown below will appear after. This is your Home Page as a Supplier. You can login to the Suppliers area of the Instabase System anytime. Be sure to logout when you are finished making changes to your Instabase files.

For additional information on the various reports available to track your data statistics, see the Supplier’s Portal document. This document is attached to the Welcome email when Lighting Analysts establishes your supplier account.

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Photometric Instabase

Home Reports

Edit Supplier (Admin User: supplier_abc) [Logout](#)

Supplier ID: 10141

Username: supplier_abc

Password: dan Required

Company Name: Supplier ABC, Inc Required

Main Contact: Supplier Contact Person Required

Email: dani@agi32.com Required

2nd Contact: Email:

3rd Contact: Email:

Status: Active

Allowable Number of Instabases: 5

Phase: 2

Submit Back

Instabases [[Add Instabase](#)]

Instabase Name	Date Uploaded	Filename	File Size	Display Name	Description	Instabase Access	Access Key
Supplier ABC Inc	Mar 03 2015 11:26:31 AM	Supplier ABC Inc	<1k	Supplier ABC Inc		Active-Private	K4pZA9zcbu

Figure 12

Step 4 – View your Data in the Cloud

View your data in the new Instabase in the Cloud (IITC) and tell all of your customers! Instabase can be accessed from AGi32 versions 16, 15, Photometric Toolbox version 1.9 and ElumTools 2016, 2015*, 2014*.

** Most current release only*

Start Instabase from within the software program, then click on the Select Manufacturers link as shown below. Select your Instabase (and any others of interest) by checking and then clicking “OK” at the bottom of the dialog.

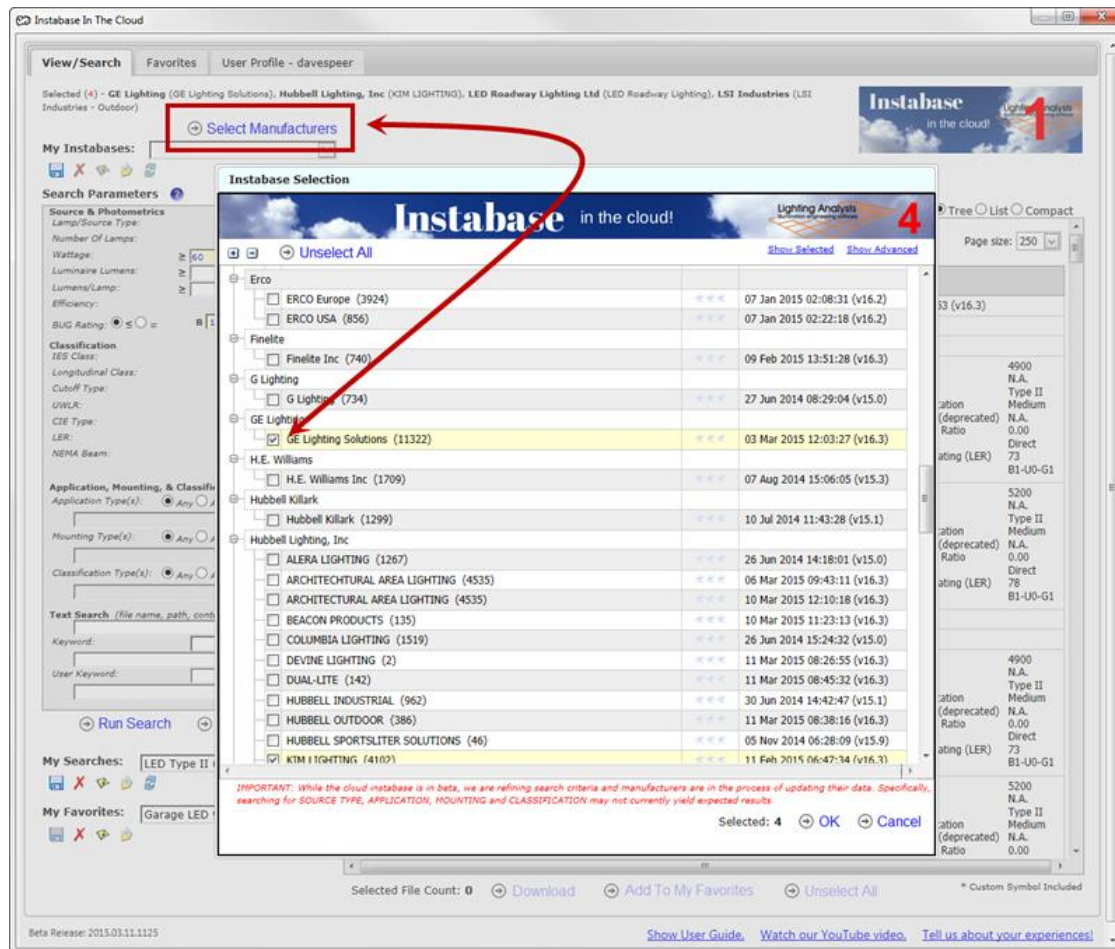


Figure 13

Browse the Instabase, or much better, use the search functions on the left side of the dialog to find IES files by performance metrics and Custom Search Keywords. Investigate files of interest using the “Details” links and checkmark the files for download when ready to use in your software.

The screenshot displays the Instabase web application interface. The top navigation bar includes 'View/Search', 'Favorites', and 'User Profile - davespeer'. Below this, a list of selected manufacturers is shown: GE Lighting, Hubbell Lighting, Inc., LED Roadway Lighting Ltd, and ESI Industries. The 'My Instabases' section is empty. The 'Search Parameters' section on the left includes filters for 'Source & Photometrics' (Lamp/Source Type, Wattage, Luminaire Lumens, Efficiency, Beam Angle, etc.), 'Classification' (IES Class, Longitudinal Class, Cutoff Type, etc.), and 'Application, Mounting, & Classification Types'. A red arrow points from the 'Run Search' button to the 'Photometric File Details' window. The 'Photometric File Details' window shows the filename 'ERS1_23C1140_-120-277V.IES' and its contents, including a photometric diagram and technical specifications.

Search Parameters:

- Source & Photometrics:
 - Lamp/Source Type: LED
 - Wattage: 60 and 150
 - Luminaire Lumens: 4700 and 5
 - Efficiency: 77V and 5
 - Beam Angle: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100
- Classification:
 - IES Class: Type II
 - Longitudinal Class: Medium
 - Cutoff Type: N.A.
 - Upward Waste Light Ratio: 0.00
 - CIE Type: Direct
 - Luminaire Efficacy Rating (LER): 73
 - Bug Rating: B1-U0-G1
- Application, Mounting, & Classification Types:
 - Application Type(s): Any / All
 - Mounting Type(s): Any / All
 - Classification Type(s): Any / All

Photometric File Details:

Filename: ERS1_23C1140_-120-277V.IES

More Information:

- Classification: Luminaire Lumens 4700, Efficiency N.A., IES Classification Type II, Longitudinal Classification Medium, Cutoff Classification (deprecated) N.A., Upward Waste Light Ratio 0.00, CIE Type Direct, Luminaire Efficacy Rating (LER) 73, Bug Rating B1-U0-G1

Contents: IESNA LM-63-2002, (TEST) 13101814, 13101815, 13102120, 13102211, TEST LAB LIGHTING - EAST FLAT ROCK, NC

Figure 14

Need assistance? Please contact Lighting Analysts, Inc., Customer Care department email: help@AGi32.com, or telephone: 303-972-8852, press 2 for technical support.