Chapter 7 - Luminaire

In Visual, each ***Luminaire*** has certain fundamental properties (*photometric* information, graphical representation, and descriptive information) that are common to all *luminaires* of that ***Luminaire Type***. Before *luminaires* can be placed and manipulated in the **Design Environment**, these properties must be defined in the **Luminaire Schedule**. This is accomplished in the **Luminaire Schedule Editor**.

7.1 Luminaire Schedule

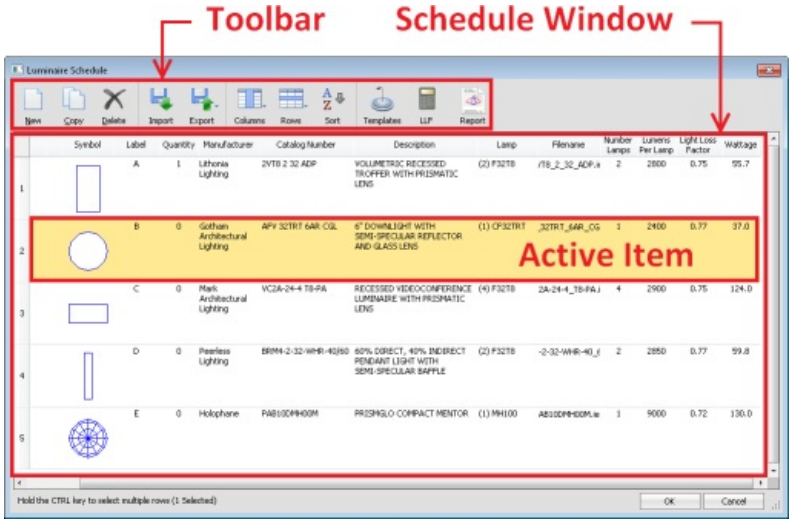
The **Luminaire Schedule Editor** allows for the creation and manipulation of the definitions of **Luminaire Types** to be placed in the **Design Environment**. The schedule is a spreadsheet format that allows for manipulation of text fields, symbols, and other parameters.

The **Luminaire Schedule Editor** is accessed from the **Luminaire** *tab*. Alternately, the **Schedule** button can be found in the **Luminaire** *panel* of the **Home** *tab*.

All necessary commands are included in the **Toolbar** located at the top of the **Luminaire Schedule Editor.** Some commands can be executed with multiple *luminaires* selected.

Left-clicking an entry in the **Schedule Window** will highlight it in yellow indicating it is the **Active Item** with respect to command buttons. Holding the *Ctrl* key while left-clicking additional entries will select multiple *luminaires*.

The window can be sized like any other Windows-based application with click-drag operations on corners and window edges. Scroll bars allow for all *luminaires* and their data to be shown.

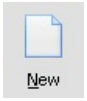


Specific usage and commands are discussed in this chapter. Content changes are passed to the **Print Editor** so **Luminaire Types** are defined identically in both places and the schedule is the same.

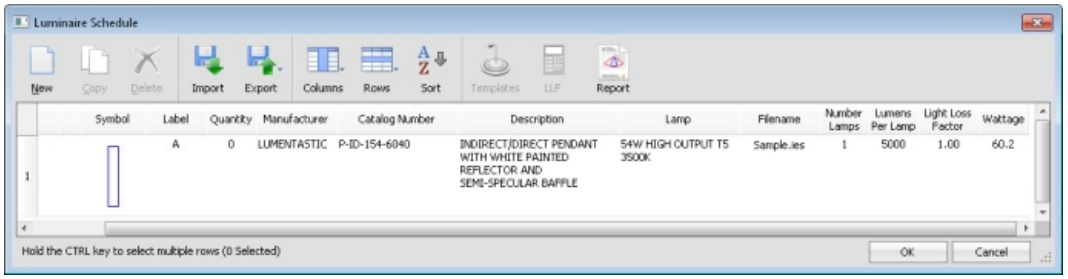
7.1.1 Creating a Schedule Entry

In order to place *luminaires* in the **Design Environment**, they must be defined in the **Luminaire Schedule**.

To define a new ***Luminaire Type***, left-click on the **New** button in the **Toolbar**. The ***Photometric*** **File** ***Dialog*** will appear, prompting for the selection of a *photometric file*. For information on how to use the ***Photometric*** **File** ***Dialog***, reference section Selecting a Photometric File.



After a file is selected, a new **Luminaire Schedule** entry will be created in the first available row in the **Schedule Window**. All available information from the *photometric file* will be placed in the appropriate fields of the new **Luminaire Schedule** item. If a field is left blank, the *photometric file* did not contain that particular information.



A default ***Symbol*** will be created for the new item based on the luminous opening dimensions included in the *photometric file* and not the physical dimensions of the entire *luminaire*. The *symbol* dimensions can be modified if necessary; see The Symbol Editor.

A ***Label*** will be assigned to the new ***Luminaire Type*** using the first available letter in the alphabet. For example, if **Luminaire Types** A,B, and F are defined, Visual will assign the newly created type the letter "C".

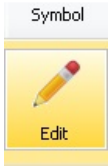
Clicking the **OK** command button saves changes and will exit the editor. Clicking the **Cancel** button exits without saving changes.

7.1.2 Modifying a Schedule Entry

All fields defining a ***Luminaire Type*** can be edited in the **Luminaire Schedule Editor** to accommodate all scenarios of both text changes and performance modification.

Left-click on any part of a row in the **Schedule Window** to make that ***Luminaire Type*** the **Active Item**.

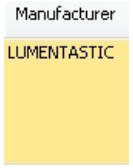
To edit the **Luminaire Symbol**, move the mouse pointer over the **Symbol** field. The **Symbol** field will become a button. Left-click on the button to launch the **Symbol Editor** . See The Symbol Editor for more information.



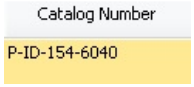
The ***Label*** can be thought of as the “name” of the ***Luminaire Type***. The ***Label*** may be any combination of alphanumeric characters.

The **Quantity** cannot be modified and will change as *luminaires* are added in the **Design Environment**.

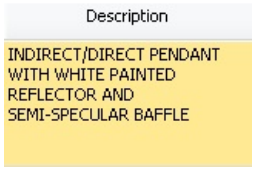
The **Manufacturer** can be any combination of alphanumeric characters, with a maximum length of 255 characters.



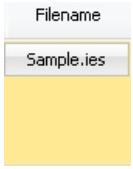
The **Catalog Number** is generally the specific product tested but changes to this field are frequent to indicate *luminaire* properties specific to the project at hand. This field can be any combination of alphanumeric characters, with a maximum length of 255 characters.



The **Description** can be modified to describe all *luminaire* properties as they relate to the performance of the *luminaire* or perhaps related to the project. For example, it could be indicated that the *pendant* indirect-direct at right was suspended 24" from the ceiling if that dimension was consistent for all instances of the *luminaire*. This field is 255 characters maximum.



The **Filename** field displays the currently associated *photometric file*. Moving the mouse pointer over the field causes it to become a button. Left-clicking this button launches the ***Photometric* File *Dialog***. Choosing a new file from the *dialog* will overwrite the current ***Luminaire Type*** with the new file information.



The **Number Lamps** field can be modified to provide a *linear* change to the output of the *luminaire* in Visual. For example, changing 2 lamps to 3 lamps would increase the luminous intensity by a factor of 1.5 (3/2 = 1.5) at all angles.

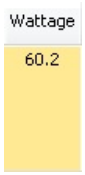
Note: Any change to the number of lamps in a *luminaire* has a non-*linear* impact on the shape of the distribution in reality, so changes to this field must be done very carefully and with direct knowledge of the validity of the change for a particular scenario.

The **Lumens Per Lamp** field will initially show the value that was contained in the *photometric file*, but it is most often changed to reflect the specific *lamp* that will be used in the design.

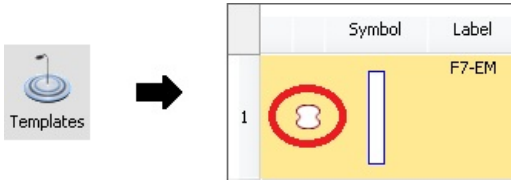
The **Light Loss Factor** (LLF) field is auto-populated with a value of 1.00 that is often used for "initial" conditions but should be changed to match equipment and installation conditions as appropriate.

The **Wattage** field displays the input power for the *luminaire* when it was tested. This

value is initially read from the *photometric file*, but may be changed as necessary to account for ballast loads or different *lamp* types. Modification of this value does not change *photometric* output but it is critical to obtain proper lighting power density when **Power Zones** are created. See Power Zones for more information.



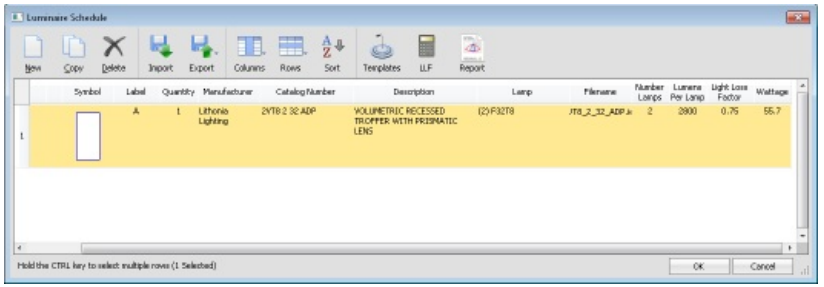
A **Template** is a set of iso-*illuminance* contour lines that are associated with the current ***Luminaire Type***. To assign a **Template** to a ***Luminaire Type***, make the desired ***Luminaire Type*** the **Active Item** and click the **Template** button in the toolbar. The **Luminaire Template Editor** will launch and **Template** values and colors can be assigned. For information on using the ***Luminaire*** **Template Editor**, reference section Luminaire Templates. Multiple *luminaires* can be selected by holding the *Ctrl* key while left-clicking in order to assign the same **Template** to those selected *luminaires*.



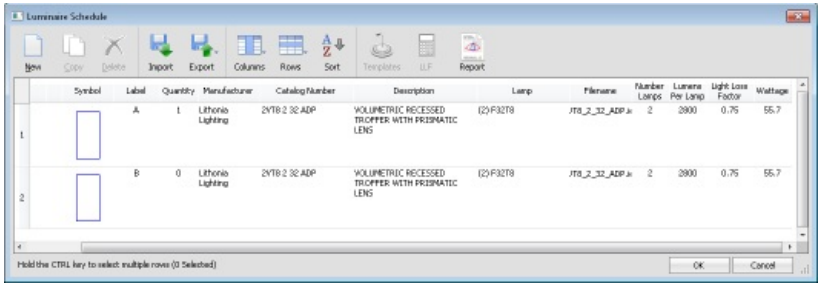
7.1.3 Copying a Schedule Entry

Luminaire Types can be copied. A common use for this feature is *luminaires* with emergency batteries or wiring. The base *photometric file* is the same for both types, but modifications to **Catalog Number**, **Description**, and **Wattage** would be appropriate to indicate the difference in the product to be used.

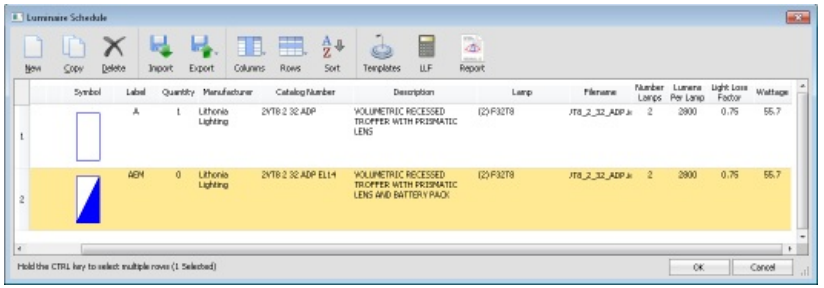
To **Copy** an existing ***Luminaire Type***, select the entry to be copied by left-clicking on the appropriate row in the **Schedule Window** to make it the **Active Item**.



Left-click the **Copy** button on the **Toolbar**. The selected entry will be appended to the bottom of the list of **Luminaire Types**. The ***Label*** will be assigned based on the earliest unused character in the alphabet.



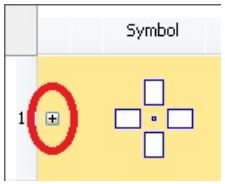
The copied ***Luminaire Type*** can then be edited as necessary. See Modifying a Schedule Entry for more information.



7.1.4 Expanding a Schedule Entry

When a ***Luminaire Type*** has been defined with multiple **Heads**, the properties of each **Head** can be modified. Multiple **Heads** are most common in area lighting projects, but there are also some interior applications with track and retail lighting products. For information on how to create multi-headed **Luminaire Types**, reference Multi-head Luminaires.

When a ***Luminaire Type*** can be expanded, a plus-sign graphic will appear at the left side of the entry in the **Luminaire Schedule.** To expand the item, left-click the *symbol*.

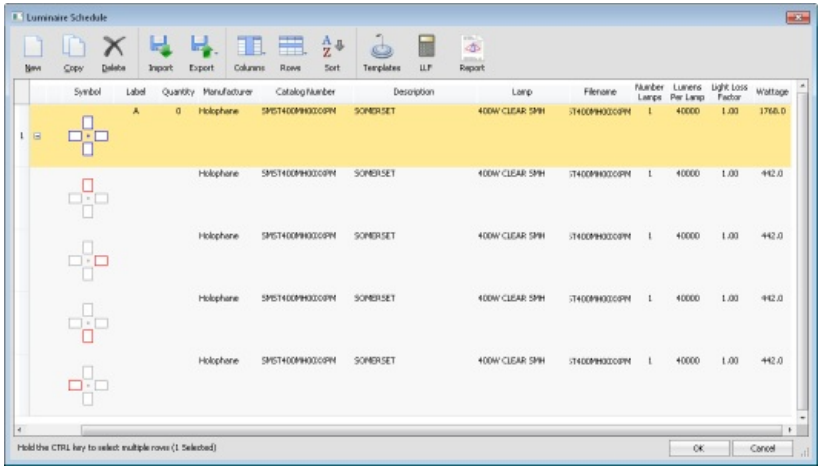


With the exception of ***Label*** and **Quantity**, all fields can be modified on a per-**Head** basis. The **Head** to which the entry applies is shown in red in the sub-***Symbol***.

Most often, the need for a different *photometric file* would be the impetus for this process. Select a new *photometric file* as appropriate for each head and modify the other fields as necessary.

To modify a field, simple left-click the entry and Visual will highlight the entire text field to indicate it is selected and allow for editing.

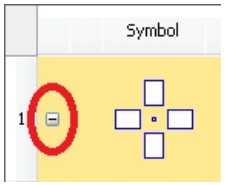
Note: The yellow **Active Item** *panel* will not shift to the sub-entries.



Modification of any fields on the **Head** level proceeds in the same manner as discussed in section Modifying a Schedule Entry.

Modifications to fields on the ***Luminaire*** level (i.e., in the yellow **Active Item** area) are applied to all **Heads** in the currently selected ***Luminaire Type***.

To collapse (i.e. un-expand or close) a **Luminaire Type**, left-click the minus-sign *symbol* on the left side of the entry.



7.1.5 Modifying Columns

In the **Luminaire Schedule Editor**, **Columns** can be modified to provide configuration specific to user preference and needs.

To change which **Columns** Visual displays, click the **Columns** button in the **Toolbar**.

Clicking the **Columns** button will pull down the sub-menu that includes the list of available **Columns** that can be shown or hidden.

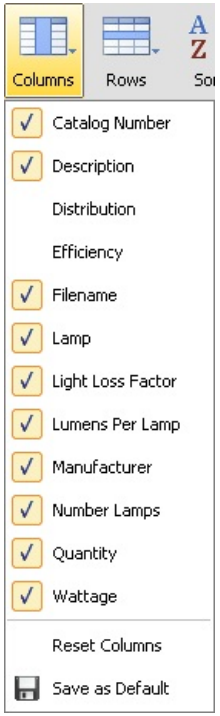
The currently visible **Columns** are indicated with check marks. The list is ordered alphabetically in this sub-menu and is independent of how the **Columns** are displayed in the ***Luminaire*** **Schedule**. Columns can be moved as discussed below.

Clicking any **Column** name selects/deselects that column, and changes will be made immediately in the **Schedule Window**.

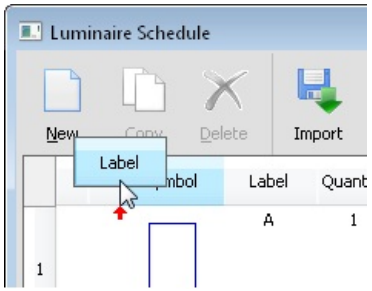
The **Reset Columns** command returns the columns to the default state shipped with Visual (shown at right).

Save as Default saves the column configuration as the default that Visual will display in new *Luminaire* Schedules in future projects.

The sub-menu will stay visible until the mouse is clicked elsewhere in the **Luminaire Schedule Editor**.



Columns can be moved by left-click-dragging (left-click and hold, and then drag) the **Column** header (name) to the desired position. A red arrow will indicate where the **Column** header will be placed when the mouse button is released. In the example at right, the ***Label*** column is being moved to the left of the ***Symbol*** column.



To re-size **Columns** , place the mouse cursor over the vertical boundary between two **Columns** . The cursor will change to a double-arrow. Left-click (and hold) and drag the mouse to the left or right to the desired width. Note: the **Column** for which the width will be changed is to the left of the cursor. Visual will highlight one **Column** or the other depending on the specific *coordinates* of the cursor but that has nothing to do with the re-sizing process.

Changes made to which **Columns** are displayed and the order they appear in the **Luminaire Schedule Editor** are independent of those made to the **Luminaire Schedule** in the **Print Editor**.

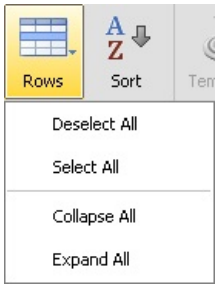
7.1.6 Modifying Rows

In the **Luminaire Schedule Editor**, **Rows** can be manipulated in a few ways.

The **Rows** button in the **Toolbar** provides quick selection and expansion of **Rows**.

Clicking the **Rows** button will pull down the sub-menu that includes commands to select/deselect all **Rows** (for use with other command buttons) as well as expand/collapse all **Rows** if the *luminaire* definitions allow. See Expanding a Schedule Entry for more information.

The sub-menu will stay visible until the mouse is clicked elsewhere in the ***Luminaire*** **Schedule Editor**.



Rows can also be sorted alphabetically based on the content of the various ***Label*** fields in each ***Luminaire Type*** by clicking the **Sort** button. It is not necessary to select all of the **Rows** .

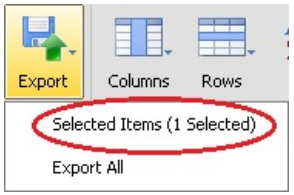
The **Sort** order of **Rows** will pass through to the **Luminaire Schedule** in the **Print Editor**.

7.1.7 Importing and Exporting Schedules

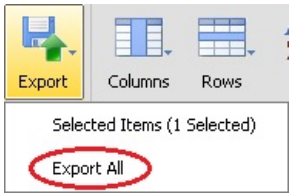
Luminaire Types can be imported and exported singly, in groups, or as complete schedules.

To export **Luminaire Types**, select those to be exported from the **Schedule Window**. Hold the *Ctrl* key to select multiple types. Once the desired entries are selected, click the **Export** button in the **Toolbar**.

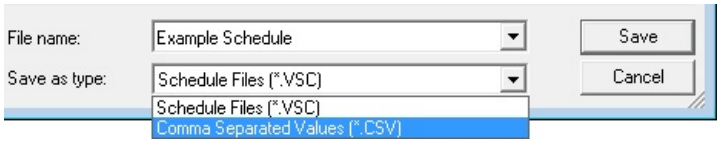
Clicking the **Export** button will pull down the sub-menu. Click **Selected Items** and a standard file *dialog* will appear. Choose a filename and location; be sure to note where you have saved the file.



If the entire schedule is to be saved, there is no need to select items prior to clicking the **Export** button. Simply click the **Export** button and then click **Export All**. A standard file *dialog* will appear. Choose a filename and location; be sure to note where you have saved the file. Visual saves exported schedules with a *.VSC extension.



The **Luminaire Schedule** can also be exported as a Comma Separated Value (*.CSV) file for use with spreadsheet software. If desired, select that format from the "Save as type:" *combo box* at the bottom of the file *dialog* prior to clicking **Save**.



Note: If ***Luminaire Type*** fields (**Description**, ***Lamp***, etc) contain commas, those commas are inherently interpreted as part of the separation construct of the *.CSV file format. Extensive formatting may be necessary to use the *.CSV file in other software related to this idiosyncrasy.

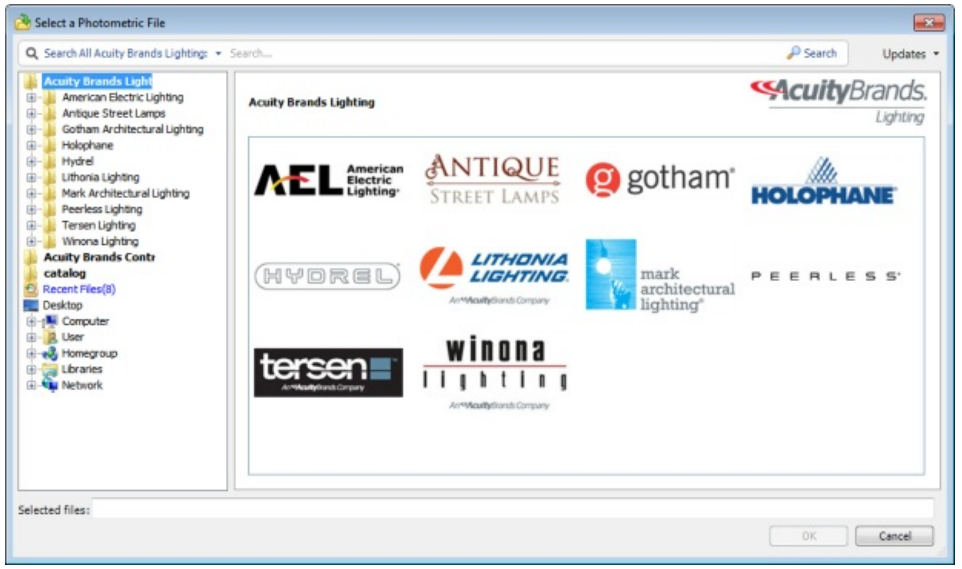
To import saved **Luminaire Types** into the current list, click the **Import** button. Select the desired *.VSC file using the *dialog* (only *.VSC files can be imported). Visual will sort the list by ***Label*** as the last step of importing. Note that Visual cannot resolve duplicate ***Label*** names so there may be multiple **Luminaire Types** with the same ***Label*** after **Import**.

Exported files could be given to other Visual users to maintain continuity in a project or as a "*boilerplate*". Imported files are appended to previously defined **Luminaire Types** in the **Schedule**.

7.1.8 Selecting a Photometric File

Selecting a *photometric file* is a necessary part of defining a ***Luminaire Type*** in the **Luminaire Schedule Editor**. The ***Photometric File Dialog*** is the tool used to select *photometric* files. This *dialog* is similar to dialogs found in other Windows-based applications with the addition of functionality to aid in the selection of the appropriate file based on physical and performance characteristics.

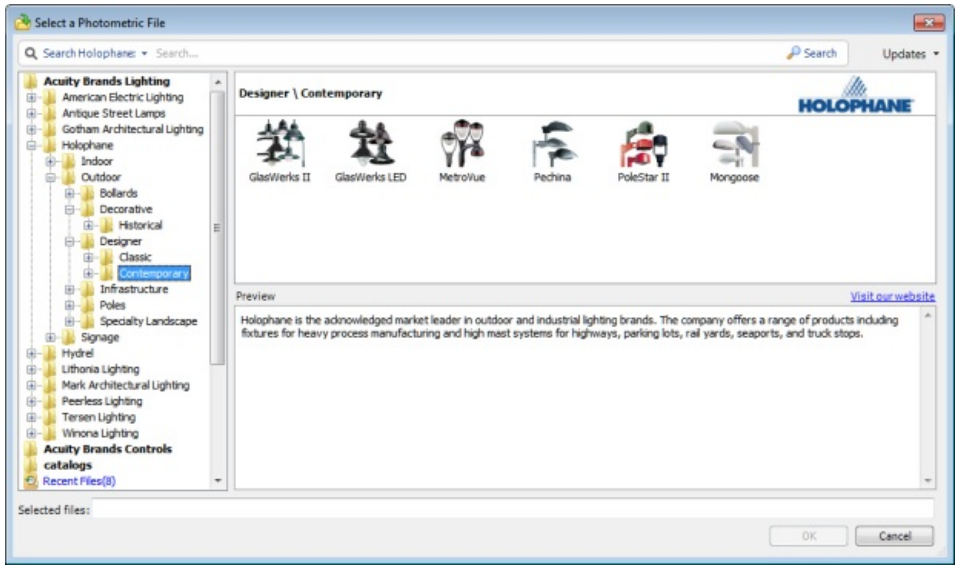
To define a new ***Luminaire Type***, select **New** from the toolbar in the **Luminaire Schedule Editor**. A file selection *dialog* customized to *photometric* files will appear.



Acuity Brands products can be selected from the database included with Visual. This database is comprised of all publicly available data and is updated regularly.

For non-Acuity Brands products, navigation is done in the lower half of the directory structure on the left, just as in other Windows-based applications.

The left side of the *dialog* houses a directory structure that is similar to that used in other Windows-based applications.



Left-clicking a "+" will expand the sub-directories. Alternately, the sub-directory name can be double-clicked to navigate into the structure.

Left-clicking a product category name will show images for all products in the sub-directories.

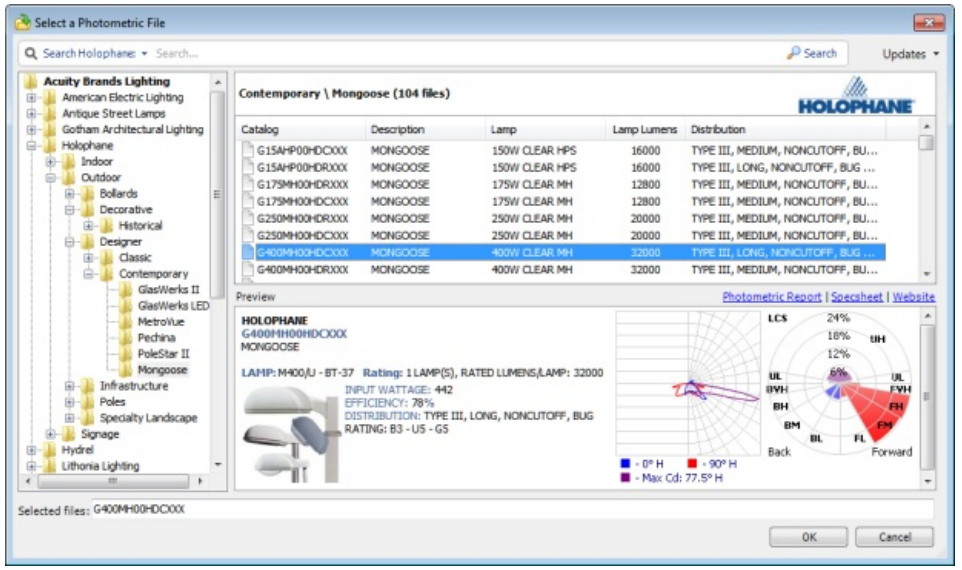
Left-clicking a product family directory name in the left pane will display all available *photometric* files in the upper portion of the right pane. All files in the directory are read by Visual and the most common header information is displayed for each available file.

If information is missing from the header of a particular *photometric file*, the entry for that file in one or more columns may be blank.

The lower portion of the right pane is a preview of the selected file above. An image (if available) is shown, along with basic header information, a polar *candlepower* curve plot, and the *Luminaire* Classification System BUG plot related to IESNA publication TM-15.

Between the upper and lower right panes, Visual displays helpful links to additional information. All files will have links to a complete *photometric* report, a PDF specification sheet, and the product or family website; all requiring internet access.

Some files will additionally have links to solid *model* information. "*Model*" will be displayed if the information is available.



Visual can search (in the Acuity Brands database only) for files with keywords as defined by the user in the Search box at the top of the *dialog*. If the name of a product is known but the location of that product is not, this is a simple way to quickly get to that product.

When selecting outside the Acuity Brands database, the *dialog* will list any files with an IES, LDT, CIB, TMS, or CB1 extension. Visual can read any *photometric file* that is formatted in accordance with the IESNA LM-63, EULUMDAT, or CIBSE-TM14 specifications.

7.2 Luminaire Editor

The ***Luminaire Symbol*** is a graphical *model* used to communicate the physical properties of the ***Luminaire*** and the associated components.

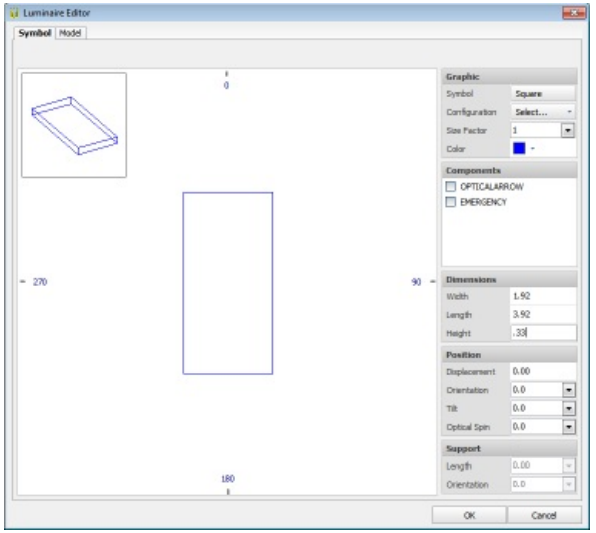
To open the **Luminaire Editor**, move the mouse pointer over the ***Symbol*** field of a ***Luminaire Type*** in the **Luminaire Schedule Editor**. The ***Symbol*** field will become a button. Left-click on the button to launch the **Luminaire Editor**.

The **Luminaire Editor** provides flexibility in constructing and modifying a ***Symbol*** to allow for multiple colors and configurations.

The ***Luminaire*** **Editor** contains two *tabs*, both of which contain a view pane and multiple *panels* for parameter definition:

- The ***Symbol Tab*** configures what is displayed in the **Wireframe Display Mode**.

- The ***Model Tab*** configures what is displayed when **Shaded** and **Rendered** modes are important and may therefore not be necessary for certain projects or certain users. See Display Modes for more information.



Visual populates the **Luminaire Editor** with information relevant to the data in the *photometric file*. A ***Symbol*** of appropriate size and shape will be chosen by Visual based on the luminous dimensions (in feet) recorded in the *photometric* test. For example, a 2ft x 4ft *troffer* might be 1.92ft x 3.92ft. Note: Visual cannot account for poor *photometric* tests that have incorrect dimensions, incorrect shape indicators, or other issues. See the IESNA publication LM-63 for information about dimensions in *.IES files.

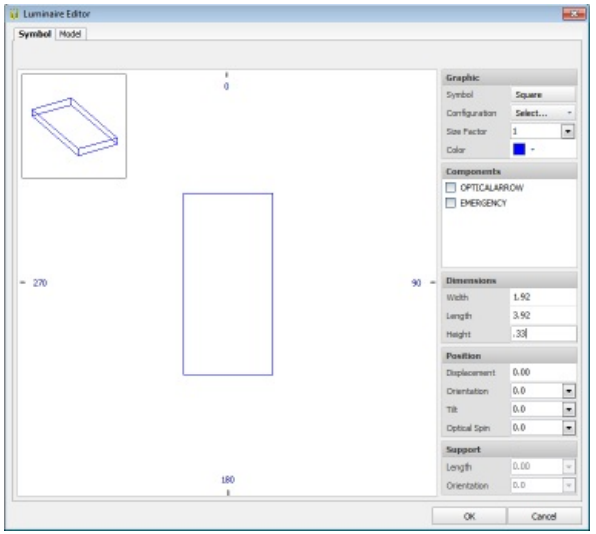
The ***Symbol*** chosen is an indicator only. Visual performs calculations based on the luminous dimensions in the files associated with each ***Luminaire Type***.

7.2.1 Symbol Tab

The ***Symbol*** *tab* configures what is displayed in the **Wireframe** **Display Mode**.

The **Preview Pane** is the main portion of the *tab* and shows the ***Symbol*** in a plan view.

Angular markers are provided at the edges of the **Preview Pane** for reference when specifying angular parameters in the *panels*. Note: 0 degrees when referencing *luminaires* is the Y-Axis due to *photometric* reporting conventions, unlike the *Cartesian* convention where 0 degrees is the X-Axis when *drawing* objects



The multiple *panels* on the right side of the *tab* allow for parameter definition and ***Symbol*** manipulation. The *panels* are discussed in more detail in subsequent sections of this manual.

Changes made to the parameters will modify all heads of a multi-head ***Symbol*** equally. See Multi-head Luminaires for more information.

The thumbnail view in the upper left corner of the **Preview Pane** shows the ***Symbol*** in an isometric view to provide further feedback of the effect of parameter changes.

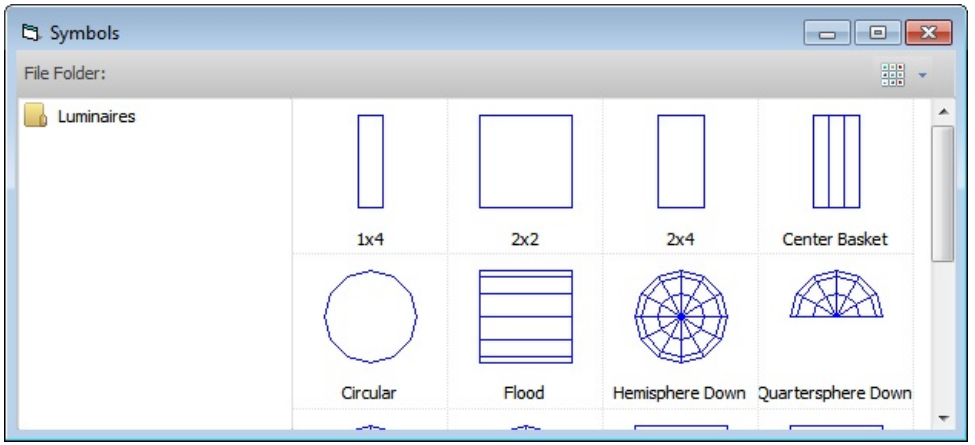
The various components and their use are described in the following topics.

7.2.1.1 Symbol Tab Graphic Panel

The **Graphic** *panel* is part of the ***Symbol Tab*** in the **Luminaire Editor**.

To change the basic ***Symbol*** shape, click the ***Symbol*** button in the **Graphic** *panel* to open the **Symbols** *dialog*.

The **Symbols** *dialog* contains several common shapes that can be associated to the ***Luminaire Type***. These are 3-D wireframe representations that have depth/height.



Left-clicking the desired ***Symbol*** will close the *dialog* and place that information in the **Luminaire Editor**. Note that all **Symbols** are shown in blue in this *dialog* regardless of the ***Symbol*** color chosen in the **Luminaire Editor**.

To close the ***Symbol*** *dialog* without making a choice, click the red X at the upper right of the form.

Configurations are multiple *luminaires* that are arranged in commonly used groups. To create a **Configuration**, click the **Configuration Select…** button to open the flyout *dialog*. See Multi-head Luminaires for more information.

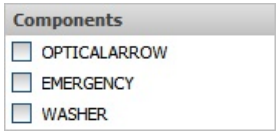
Size Factor increases the size of the ***Symbol*** in the **Design Environment** and **Print Editor** to allow for ease of viewing for large projects. The default **Size Factor** of 1 is most common for **Interior** designs, whereas a larger **Size Factor** would be appropriate for **Exterior** (site) applications. Note: Visual does not alter calculations based on this value.

The **Color** button shows the currently assigned color. Left-clicking the **Color** button launches the **Color** *dialog*, which can be used to change the color of the ***Luminaire Symbol***. This does not impact the color of the ***Model*** associated to the *Luminaire Type*. See Using the Color Dialog for more information.

7.2.1.2 Symbol Tab Components Panel

The **Components** *panel* is part of the ***Symbol Tab*** in the **Luminaire Editor**.

The **Components** *panel* contains checkboxes that allow the available **Components** defined in the ***Symbol*** to be chosen such that additional detail or variation can be shown in the **Design Environment** and **Print Editor**. The **Components** shown will vary based on the base ***Symbol*** chosen. Multiple **Components** can be selected by placing a check in the desired box(es)



Typical **Components** are: **Optical Arrow**, **Emergency**, and **Washer**. These three **Components** are shown at right for the **Circular** ***Symbol*** as an example.

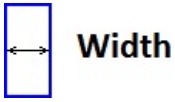
7.2.1.3 Symbol Tab Dimensions Panel

The **Dimensions** *panel* is part of the ***Symbol Tab*** in the **Luminaire Editor** and allows for the modification of ***Symbol*** size.

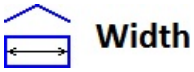
Visual populates these cells with the luminous dimensions in the *photometric file*, which are not always the same as the physical dimensions. Note: 0 degrees when referencing *luminaires* is the Y-Axis due to *photometric* reporting conventions, unlike the *Cartesian* convention where 0 degrees is the X-Axis when *drawing* objects

Length is defined as being along the 0-degree axis of the *luminaire*. Again, 0 degrees is at the top of the screen and therefore **Length** is generally top-bottom on the screen.

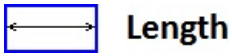
Width is defined as being perpendicular to the 0-degree axis of the *luminaire* in the most basic case. **Width** is always initially left-right on the screen.



Photometric file data for directional *luminaires* (e.g. wallwash and/or asymmetric reflectors) are likely oriented so the "throw" is in the 0-degree direction. Therefore **Width** and **Length** may not be as intuitive as it is in the definition graphics above. In the example at right the long axis is the **Width** whereas it might at first seem to be the **Length**.



When an **Orientation** angle is applied, the "length axis" rotates with the ***Symbol***. For example, with the 2x4 ***Symbol*** and a 90 degree **Orientation**, changes to **Length** would apply left-right on the screen as seen at right. See Position Panel for more information on **Orientation**.

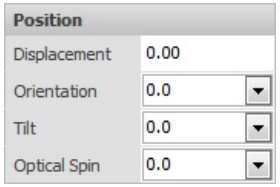


The resultant size of the ***Symbol*** is for display only; Visual calculates the lighting *model* based on the dimensions in the related *photometric file*. The Audit may report issues related to dimensions if user-specified values are used.

7.2.1.4 Symbol Tab Position Panel

The **Position** *panel* is part of the ***Symbol Tab*** in the ***Luminaire*** **Editor**.

Parameters editable in the *panel* allow for movement of the ***Symbol*** with respect to the insertion point. Common angles are included in the lists accessed by clicking the arrows to the right of the various fields. Custom values can also be entered with the keyboard by simply clicking in the text field and typing.



Displacement allows the ***Symbol*** to be moved in relation to the insertion point (origin) that is by default the center of the luminous dimensions. The value entered is applied to the ***Symbol*** by shifting it on the 0-degree axis toward the top of the screen in the *Luminaire* Editor.

When placed in the **Design Environment**, the displacement orients in conjunction with the ***Symbol*** orientation.

The most common use for this feature is with wall-mounted *luminaires* as in the example at right where a 12in x 6in wallpack is displaced 3in (0.25ft).

Orientation rotates the ***Symbol*** clockwise about the origin. This value adds **Orientation** angle to *luminaires* when placed in the **Design Environment**. The examples at right have an **Orientation** angle of 90 degrees; the two examples are with and without a **Displacement**.

Tilt is applied in the Y-Z *plane* of the *luminaire* such that the ***Symbol*** is tilted counterclockwise when viewed from the right elevation in the ***Luminaire*** **Editor** as in the area lighting example at right.

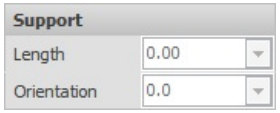
Optical Spin rotates the *candela* distribution clockwise with respect to the ***Symbol***. Visual automatically selects the **Optical Arrow Component** to make this change clear. See Components Panel for more information.

Remember that dimensional information is input in terms of decimal feet or meters.

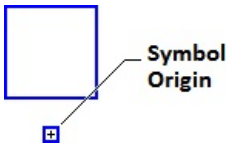
7.2.1.5 Symbol Tab Support Panel

In general these fields are used to configure elements of a *pole*-mounted ***Luminaire Type*** used in **Exterior** lighting *models*.

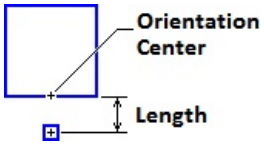
The **Support** *panel* is uneditable for certain configurations, which don't have supports, like downlights. Choose an **Exterior Configuration** to enable use of these parameters. See Graphic Panel for more information.



The origin for the ***Symbol*** is the center of the *pole*.



For *pole*-mounted configurations, Visual assumes a **Displacement** of half the *luminaire* **Length** such that these parameters are related to an origin as in the graphic at right. These parameters will be scaled by the **Size Factor**. See Graphic Panel for more information.



The **Length** of the **Support** is the distance from the *pole* to the edge of the ***Symbol***.

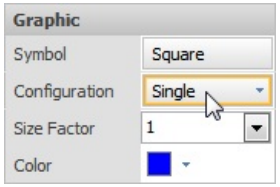
Orientation is the clockwise rotation angle of the **Support** with respect to the 0-degree axis that points to the top of the screen. The **Orientation** of the ***Symbol*** (as indicated in the **Position** *panel*) will be automatically changed to rotate the *luminaire* when a **Support** change is made.

Support parameters impact calculations in that the *luminaire* center is moved and rotated according to the user inputs.

7.2.1.6 Multi-head Luminaires

Symbols with multiple heads can be manipulated in various ways to better mimic real assemblies.

Symbols with multiple heads can be created using the **Configuration** section in the **Graphic** *panel* on the **Symbol** *tab*.

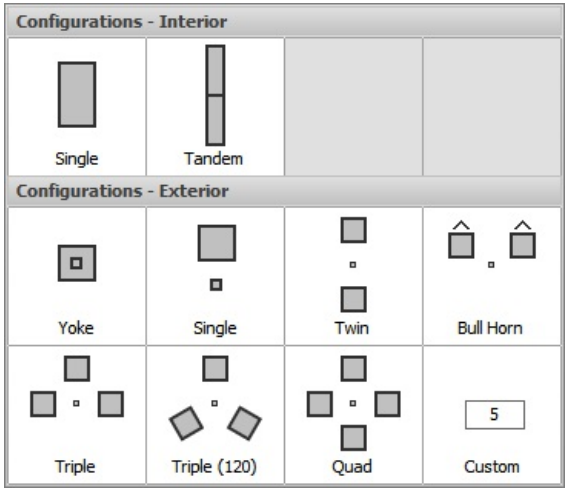


Interior and **Exterior** groups are provided, but **Exterior Configurations** can be used in an **Interior** calculation.

Note: **Exterior Configurations** include poles and therefore enable the **Support** *panel* input fields in the **Symbol** *tab*. See Support Panel for more information.

Left-click the desired configuration and Visual will apply the change to the **Symbol** in the **Luminaire Editor**.

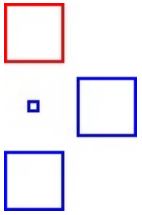
The **Custom Exterior Configuration** will place the indicated number of *luminaires* in a polar array around a central *pole* as in high-mast lighting.



It is possible to select a single head of a multi-head **Configuration** so as to modify only one head with parameters discussed in this sub-chapter.

To select a head, left-click and left-click again to make a window around the desired head. The selected head will be highlighted in red. Unlike selecting in the **Design Environment** the window does not have a "crossing" variant; it is inclusionary only.

To un-select a selected head, simply select blank space with a window.

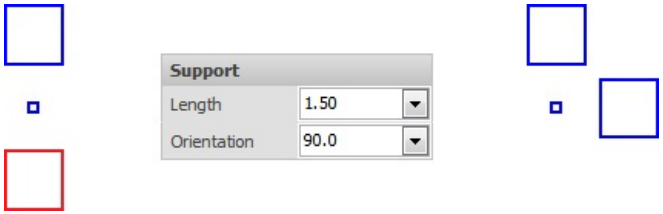


Changes made to any parameter on the **Symbol** *tab* will impact all heads of a multi-head **Symbol** in an equal fashion. **Symbols** with multiple heads are not merely a modification of the **Symbol**; additional instances of the *photometric file* are included and positioned to more accurately represent reality.

Illustrative Example 1

To make the **Symbol** at far-right, start with a ***Photometric File*** for an area *luminaire*, choose a **Twin Exterior Configuration**, and then select a single head. Then change the **Support Orientation** to "90" and the resultant **Symbol** would be applicable for positioning site lighting on a corner.

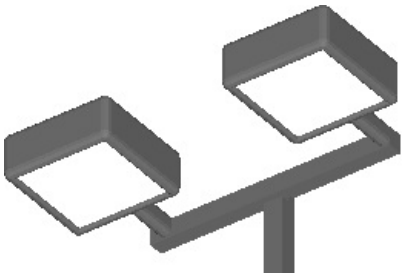
Note that the default **Length** most likely needs to change so the heads don't overlap as would be the case in reality.



Illustrative Example 2

The **Bullhorn Configuration** is pre-built for convenience and can be manipulated as necessary, but illustrating how to construct it will further illustrate how to use some of the parameters. The goal is to simulate the assembly at right.

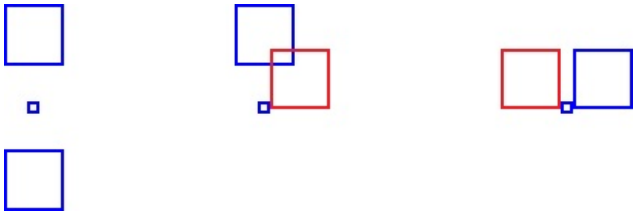
This configuration might be used on tennis courts or in situations where a field-rotatable area lighting is not available.



Select a **Twin Exterior Configuration**.

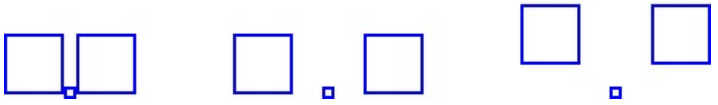
Select the lower head and set **Support Orientation** to "90" as we want that support to point in the 90-degree direction. With the lower head still selected, set the **Position Orientation** to 0 to point the head in that direction.

Select the other head and set **Support Orientation** to 270 and **Position Orientation** to 0.



Thus far, the *luminaires* are oriented properly but not positioned properly. Be sure to left-click in whitespace to de-select *luminaires*.

Recall that a 0.75ft **Support** is the default. A bullhorn will in reality have *luminaire* spacing of nominally 3ft, so the appropriate **Length** is 1.5. Both supports are changed at the same time because no *luminaire* is selected.



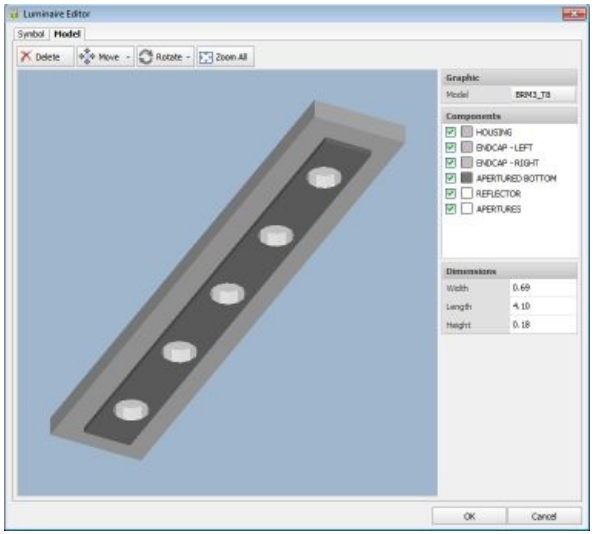
Lastly, the *luminaires* need to be moved forward to account for the arm attached to the housing; in this case, 0.75ft. To do this, add 0.75 to the value in the

Displacement textbox. Again, both supports are changed at the same time.

7.2.2 Model Tab

The ***Model*** *tab* allows for the specification and manipulation of the solid *model* used in **Shaded** and **Rendered** Display Modes.

The ***Model*** *tab* consists of: the **Toolbar** at the top, the large ***Model*** **Pane** that displays the ***Model***, and various *panels* on the right.



In the ***Model Panel***, the mouse can be used to manipulate the view of the ***Model*** just as the view would be changed in the **Design Environment.**

3-D Orbit the view by left-click-drag.

Pan the view by right-click-drag.

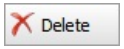
Zoom by rolling the mouse wheel.

For information on creating solid *models*, see Luminaire Models

7.2.2.1 Model Tab Toolbar

The **Toolbar** includes several buttons to manipulate the ***Model*** in the event that positional issues arise and editing the base ***Model*** file is not possible or practical.

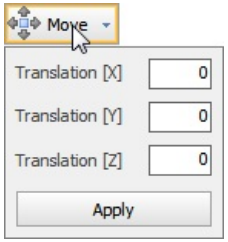
Delete removes all associated solid *model* information.



Move shifts the *Model* to correct alignment issues that may arise.

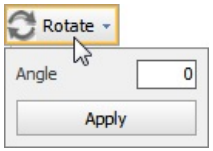
Dimensions are in feet. "X" refers to the normal *Cartesian* X-axis; i.e. to the right on the screen. "Y" refers to "up" on the screen. "Z" refers to in and out of the screen. All of these are with respect to a plan view of the ***Symbol*** as it appears in the ***Luminaire*** **Schedule**.

Moving the ***Model*** is an advanced feature and should be done carefully.

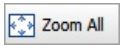


Rotate changes the plan view orientation of the ***Model*** with respect to the ***Symbol***. Rotation occurs counterclockwise when the ***Model*** is viewed in plan view as it appears in the ***Luminaire*** **Schedule**.

Rotating the ***Model*** is an advanced feature and should be done carefully.



Zoom All changes the view to include the entire ***Model***.

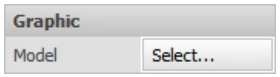


The **Undo** function in Visual will not impact changes made in the ***Model*** *tab*. To reset the *model*, the file must be re-selected or a new choice must be made from the database.

7.2.2.2 Model Tab Parameter Panels

The parameters of the solid *model* can be modified to fit the product specifically chosen to yield the most accurate **Shaded** or **Rendered** view possible.

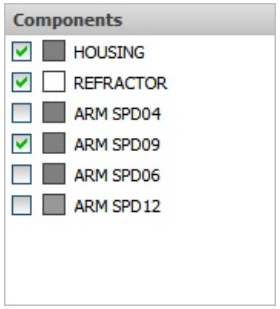
The **Graphic** *panel* contains the **Model Select…** button that allows a *DWG* format *model* file to be chosen. Clicking the button will open a file *dialog* to allow for selection. Only *DWG* format files may be imported and specific information is necessary in the file.



The **Components** *panel* lists the available components in the *Model* file. The color of each **Component** can be changed by clicking the colored box next to the name.

Some files may contain multiple product options such that certain **Components** would need to be unselected to make the ***Model*** *coordinate* with the options desired.

For example, in the *model* file at right, multiple arms are available (4", 9", and 12") so the arms not used should be unchecked by left-clicking those associated boxes.



The **Dimensions** *panel* allows the ***Model*** to be scaled by a *linear* factor in each of the *Cartesian* axes with **Length**, **Width**, and **Height** the same as in the ***Symbol Tab***; see Dimensions Panel for more information.

Changes are applied to all **Components**; i.e. flanges and arms will be stretched as well, which may not yield a desirable result in certain cases.

The value entered is the new dimension in feet not a scaling factor.

It will likely be necessary to consult specification sheets to determine which **Components** can be validly combined. Specification sheets can be viewed on the manufacturer's website or in the Visual program if it is an Acuity Brands product. See Selecting a Photometric File for more information.

7.3 Luminaire Templates

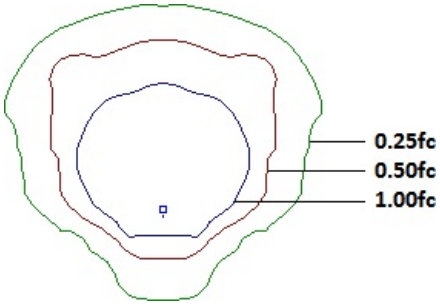
Luminaire Templates are assigned in the **Luminaire Schedule**; see Luminaire Schedule for more information.

A ***Template*** is one or more iso-*illuminance* lines (contours) attached to the ***Symbol***. and is generally used in exterior projects related to roadway, site, and area lighting.

Because *illuminance* generally increases closer to a *luminaire*, all points inside an iso-*illuminance* line will have *illuminance* greater than or equal to the iso-*illuminance* line value.

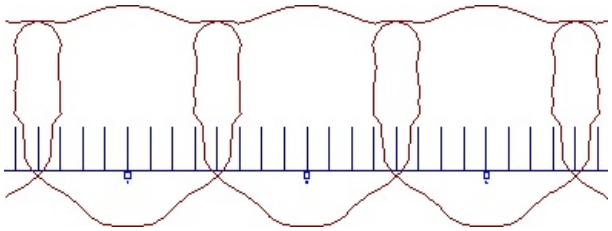
Luminaire **Templates** allow for quick design to meet common site lighting criteria in parking lots where a minimum *illuminance* needs to be met.

Alternately, **Templates** show the general shape of the effect of the *luminaire candela* distribution and are useful for design even when they are not specifically used to meet design criteria.



Since *illuminance* is additive, and the *illuminance* inside a contour is greater than the iso-*illuminance* line value, appropriate values can be assigned related to design criteria, and **Templates** can be overlapped to design to meet minimum *illuminance* criteria quickly. This method says nothing about uniformity criteria, so in most cases a point-by-point analysis is still necessary.

In the example at right, ***Template*** iso-*illuminance* lines of 0.5fc are overlapped to ensure that a 1.0fc minimum is maintained along a curb line in part of a parking lot.



To apply **Templates** to one or more **Luminaire Types**, select the desired **Luminaire Types** and click the ***Template*** button in the **Luminaire Editor Toolbar**. Remember that multiple **Luminaire Types** can be selected by holding the *Ctrl* key while left-clicking entries.

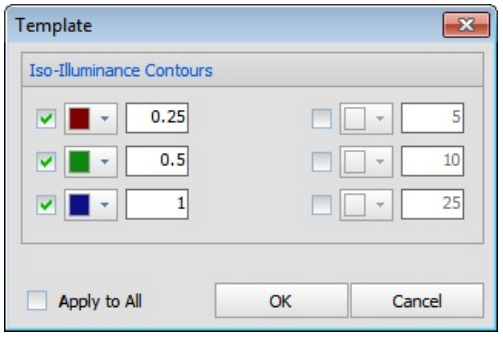
Clicking the ***Template*** button initiates the **Template Editor**. This editor allows for the assignment of values and colors for up to eight iso-*illuminance* lines per ***Template***.

To assign an iso-*illuminance* line to the ***Template***, left-click the check box next to an entry. Inactive entries are gray in color and are uneditable.

To edit the value of an iso-*illuminance* line, modify the value in the *text box*.

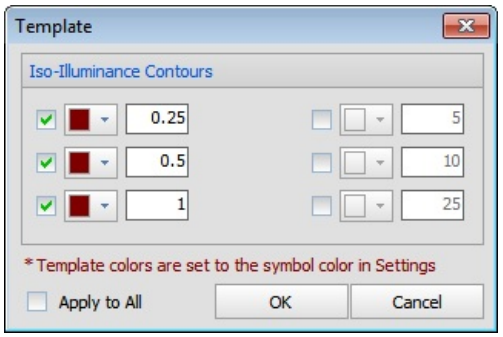
To change the color of the iso-*illuminance* line, click the **Color** button. Clicking the **Color** button initiates the **Color *Dialog***. See Using the Color Dialog for more information.

The entry order of values has no impact on any aspect of how **Templates** are displayed.



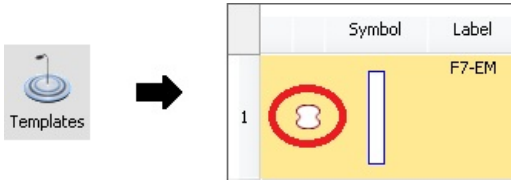
Selecting the "Apply to All" checkbox will associate the chosen values and colors to **Templates** for all **Luminaire Types** in the **Luminaire Schedule** *regardless of what is in the* ***Active Item*** *selection set*.

Template Color can be connected to the ***Symbol*** **Color** in the **Settings** ***Dialog***. When this option has been selected, Visual provides notification in the **Template Editor** and **Color** selections are overridden by the **Settings** ***Dialog*** choice(s). See Luminaires Settings for more information.

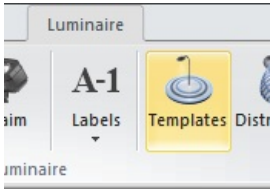


Luminaire **Types** with assigned **Templates** are indicated at the far left of each entry. The *symbol* indicates that a *Template* is assigned not the shape or any other property of the *Template*.

To view the assigned parameters of a ***Template***, select the ***Luminaire Type*** and left-click the ***Template*** **Button** in the ***Luminaire*** **Editor Toolbar**.



Global display of **Templates** is controlled with the **Templates** button on the ***Luminaire*** *tab* of the **Ribbonbar**. The yellow highlight indicates display of templates is turned on.



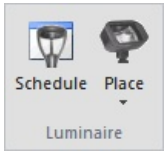
Different ***Template*** lines can be assigned to different ***Luminaire*** **Types** by repeating the process described above for each set of desired ***Template*** configurations and/or values. Note that ***Template*** iso-*illuminance* lines become part of the ***Symbol*** and can then be left-clicked when selecting a *luminaire* in commands.

7.4 Placing and Orienting Luminaires

Visual includes many ways to place and modify ***Luminaires***.

The ***Luminaire*** *tab* of the **Ribbonbar** contains placement and modification and display commands.

The **Home** *tab* of the **Ribbonbar** also contains the most commonly used commands.



Luminaires are copied, moved, and arrayed like any other objects.

7.4.1 Place Luminaires

Place is the most common method of inserting ***Luminaires*** into the **Design Environment**.

The **Place** command can be found on the **Luminaire** *tab* and the **Home** *tab* of the **Ribbonbar**.

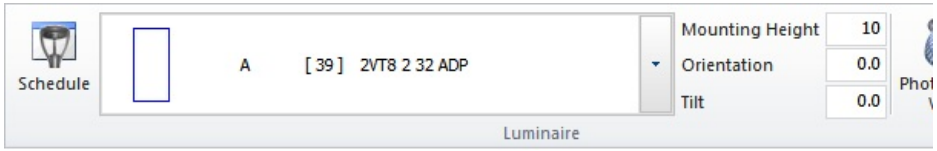
The **Home** *tab* button is dual function; the upper portion executes the command, the lower portion initiates a *drop-down menu*.

Once a selection has been made other than the default, the upper button portion will change to execute that command with the next press and the graphic is changed accordingly. Selecting one of the other commands from the *drop-down menu* will revert the button to that mode.

To insert a *luminaire*, one must first be defined in the **Luminaire Schedule**. See The Luminaire Schedule Editor for more information.

To **Place** a *luminaire*, select a ***Luminaire Type*** from the graphical list. Select the *coordinates* desired with the mouse, keyboard entry or **Object Snap**.

After a *luminaire* is inserted with **Place**, Visual continues the command to allow for multiple insertions. To end the command, right-click or press *Enter*.



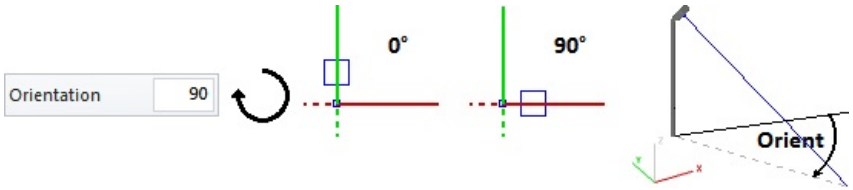
By clicking the ***Luminaire Type*** **List** during command execution, all defined **Luminaire Types** are shown and a selection can be made.

Symbol, **Type**, and **Catalog Number** are shown to identify types in complex projects.

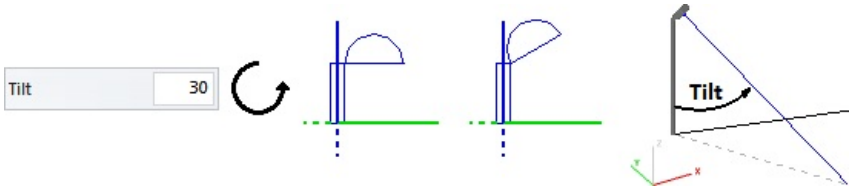
Preceding the **Catalog Number** is a number in square brackets representing the number of that ***Luminaire Type*** currently inserted in the **Design Environment**.

Mounting Height is the distance from the ***Active Plane*** that the *luminaire* will be inserted. **Mounting Height** is always applied in the z-direction. Changes to the ***Active Plane*** orientation (i.e. moving to the X-Z or Y-Z *planes*) will still result in the ***Mounting Height*** being applied in the Z-direction.

Orientation is the rotation angle applied in the horizontal *plane*. This angle is in reference to the 0° axis of the ***Luminaire Symbol*** defined in the **Luminaire Editor**. Angles are applied in a clockwise fashion and the impact can be immediately seen prior to placement as shown at right.



Tilt is the rotation angle applied in the vertical *plane*. Unlike **Orientation**, **Tilt** angle is applied in place of the angle used to define the ***Luminaire Symbol*** in the **Luminaire Editor**. Angles are applied in a counterclockwise fashion when viewed from the **East Elevation**, with 0° being straight down; thus a positive tilt angle rotates the *luminaire* up.



See Luminaire Display Options for further explanation of augmentation to ***Luminaires*** to aid in design.

7.4.2 Place and Orient Luminaires

Place and Orient is one of the most common methods for inserting ***Luminaires*** into the **Design Environment**. This command allows for placement and graphical manipulation of the **Orientation** parameter for each placement instance.

The **Place and Orient** command can be found on the **Luminaire** *tab* and the **Home** *tab* of the **Ribbonbar**.

The **Home** *tab* button is dual function; the upper portion executes the command, the lower portion initiates a *drop-down menu*.

Once a selection has been made other than the default, the upper button portion will change to execute that command with the next press and the graphic is changed accordingly. Selecting one of the other commands from the *drop-down menu* will revert the button to that mode.

To insert a ***Luminaire***, one must first be defined in the **Luminaire Schedule**. See Luminaire Schedule for more information.

To **Place and Orient** a ***Luminaire***, select a ***Luminaire*** from the **Luminaire Type List** then select the *coordinates* desired for the location of the ***Luminaire*** with the mouse, keyboard entry or **Object Snap**. Secondly, specify the **Orientation** with the mouse, keyboard, or **Object Snap**. Visual displays the angular change as the mouse is moved to illustrate the end result.

After a ***Luminaire*** is inserted with **Place and Orient**, Visual continues the command to allow for multiple insertions. To end the command, right-click or press *Enter*.

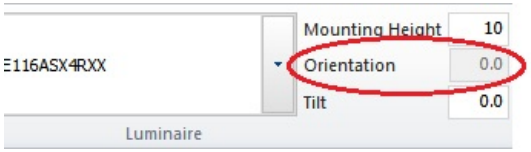
By clicking the **Luminaire Type List** during command execution, all defined **Luminaire Types** are shown and a selection can be made.

Symbol, **Type**, and **Catalog Number** are shown to identify types in complex projects.

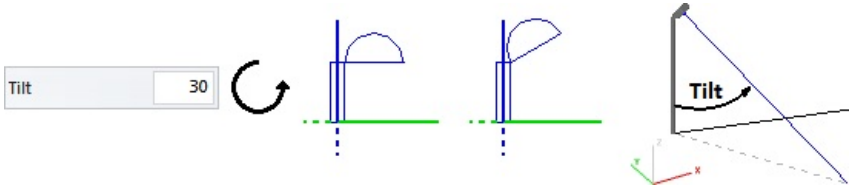
Preceding the **Catalog Number** is a number in square brackets representing the number of that ***Luminaire Type*** currently inserted in the **Design Environment**.

Mounting Height is the distance from the ***Active Plane*** that the ***Luminaire*** will be inserted. ***Mounting Height*** is always applied in the z-direction. Changes to the ***Active Plane*** orientation (i.e. moving to the X-Z or Y-Z *planes*) will still result in the ***Mounting Height*** being applied in the Z-direction.

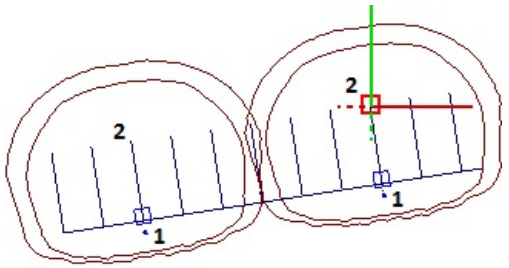
Orientation is solely specified by user input at the **Command Line** in this command. The **Orientation** parameter *text box* is accordingly inactive.



Tilt is the rotation angle applied in the vertical *plane*. Unlike **Orientation**, **Tilt** angle is applied in place of the angle used to define the ***Luminaire Symbol*** in the **Luminaire Editor**. Angles are applied in a counterclockwise fashion when viewed from the **East Elevation**, with 0° being straight down; thus a positive tilt angle rotates the *luminaire* up as would be expected.



This command is useful with odd-angled alignments necessary in site lighting, as shown at right where the angle is specified by using **Object Snap** to align to the parking lot line.



See Luminaire Display Options for further explanation of augmentation to ***Luminaires*** to aid in design.

7.4.3 Place and Aim Luminaires

Place and Aim allows ***Luminaires*** to be graphically aimed in the direction of a chosen *coordinate*. This command allows for placement and graphical manipulation of the **Orientation** and **Tilt** parameters for each placement instance. This method is useful for *floodlighting*, track lighting, sports lighting, and landscape lighting.

The **Place and Aim** command can be found on the **Luminaire** *tab* and the **Home** *tab* of the **Ribbonbar**.

The **Home** *tab* button is dual function; the upper portion executes the command, the lower portion initiates a *drop-down menu*.

Once a selection has been made other than the default, the upper button portion will change to execute that command with the next press and the graphic is changed accordingly. Selecting one of the other commands from the *drop-down menu* will revert the button to that mode.

To insert a ***Luminaire***, one must first be defined in the **Luminaire Schedule**. See The Luminaire Schedule Editor for more information.

To **Place and Aim** a ***Luminaire***, select a ***Luminaire Type*** from the graphical list. Select the *coordinates* desired for the ***Luminaire*** location with the mouse, keyboard entry or **Object Snap**. Visual then provides instant feedback by placing the aim point at the mouse *crosshairs* and shows the resultant **Aiming Line** and ***Luminaire*** orientation as the mouse is moved. Specify the aiming point with the mouse, keyboard, or **Object Snap**.

After a ***Luminaire*** is inserted with **Place and Aim**, Visual continues the command to allow for multiple insertions. To end the command, right-click or press *Enter*.

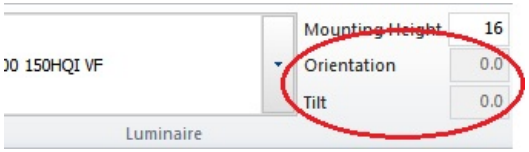
By clicking the **Luminaire Type List** during command execution, all defined **Luminaire Types** are shown and a selection can be made.

Symbol, **Type**, and **Catalog Number** are shown to identify types in complex projects.

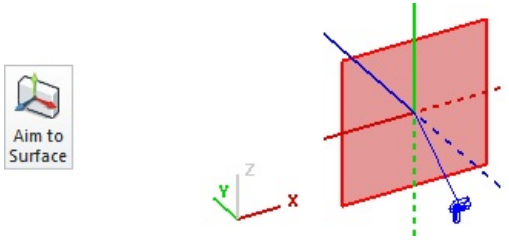
Preceding the **Catalog Number** is a number in square brackets representing the number of that ***Luminaire Type*** currently inserted in the **Design Environment**.

Mounting Height is the distance from the ***Active Plane*** that the ***Luminaire*** will be inserted. ***Mounting Height*** is always applied in the z-direction. Changes to the ***Active Plane*** orientation (i.e. moving to the X-Z or Y-Z *planes*) will still result in the ***Mounting Height*** being applied in the Z-direction.

Orientation and **Tilt** are solely specified by user input at the **Command Line** in this command, most often with the mouse. The **Orientation** and **Tilt** parameter text boxes are accordingly inactive.



Aim to Surface (found on the **Luminaire** *tab*) is applicable to the Place and Aim command. Because in many *floodlighting* applications it is necessary to have the ***Luminaire*** aimed onto a specific surface, Visual can determine when the mouse is placed "over" a **Solid Object** and the ***Active Plane*** can be automatically and temporarily changed to the *plane* of that **Solid Object** such that when the mouse is clicked the aiming point is placed in the *plane* of that **Solid Object**.

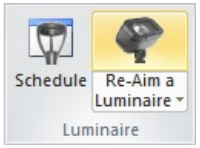


See Luminaire Display Options for further explanation of augmentation to ***Luminaires*** to aid in design.

7.4.4 Reaiming Luminaires

Once inserted into the **Design Environment**, ***Luminaires*** can be **Reaimed** if necessary.

The **Reaim** command can be found on the ***Luminaire*** *tab* and the **Home** *tab* of the **Ribbonbar**.

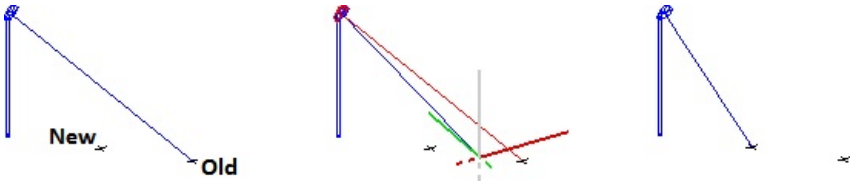


The **Home** *tab* button is dual function; the upper portion executes the command, the lower portion initiates a *drop-down menu*.

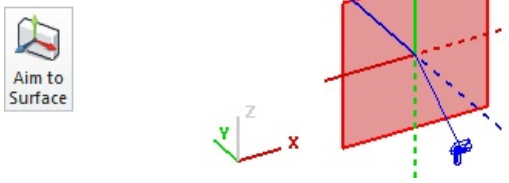
Once a selection has been made other than the default, the upper button portion will change to execute that command with the next press and the graphic is changed accordingly. Selecting one of the other commands from the *drop-down menu* will revert the button to that mode.

To **Reaim** a ***Luminaire***, left-click the *luminaire* ***Symbol*** or the **Aiming Line** (if displayed). Visual will highlight the selected *luminaire*. Specify the new aiming point with the mouse, keyboard, or **Object Snap**.

While in the command, Visual displays the previous **Aiming Line**, the new **Aiming Line** attached to the mouse *crosshairs*, and the resultant ***Symbol*** alignment as the mouse is moved.



Aim to Surface (found on the ***Luminaire*** *tab*) is applicable to the **Reaim** command just as it would be to the initial **Place and Aim** command. Visual can determine when the mouse is placed "over" a **Solid Object** and the ***Active Plane*** can be automatically and temporarily changed to the *plane* of that **Solid Object** such that when the mouse is clicked the aiming point is placed in the *plane* of that **Solid Object**.



See Luminaire Properties for information about displaying aiming lines.

Luminaire Display Options

After ***Luminaires*** have been placed in the **Design Environment**, there are ways to augment the display to aid in design.

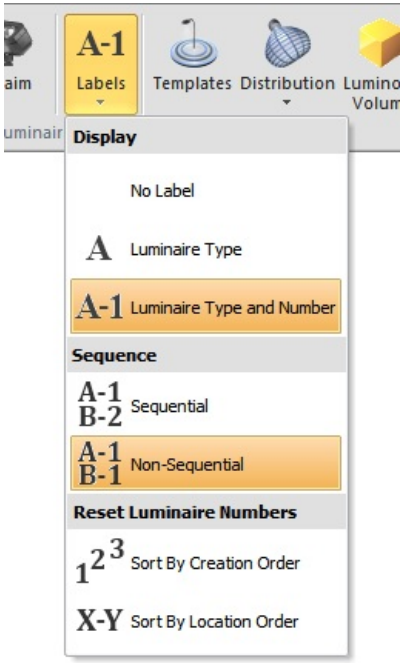
Luminaire display options are found on the **Luminaire** *tab* of the **Ribbonbar**.

Luminaire **Labels** can be shown with the **Luminaire Type** or the ***Luminaire Type*** **and Number**.

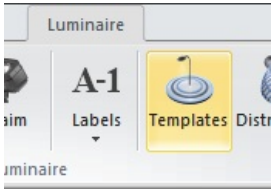
When the **Display** is set to ***Luminaire Type*** **and Number**, Visual activates the following additional options:

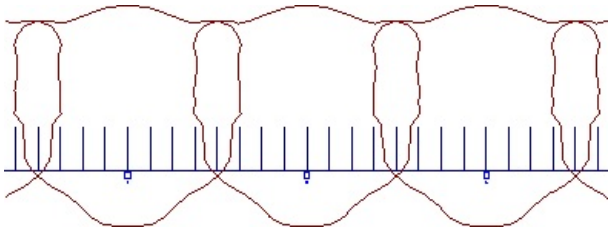
Sequence tells Visual how to handle numbering across **Luminaire Types**. **Sequential** will number ***Luminaires*** regardless of ***Luminaire Type***. **Non-Sequential** will re-start numbering for each ***Luminaire Type***.

Reset Luminaire Numbers. controls the numbering used with the **Sequence** options. **Sort By Creation Order** tells Visual to number ***Luminaires*** based on the order they are placed (created) in the **Design Environment** regardless of where they are placed. **Sort By Location Order** tells Visual to use the internal algorithm for sorting based on the relative position in the *Cartesian* X-Y *plane*.

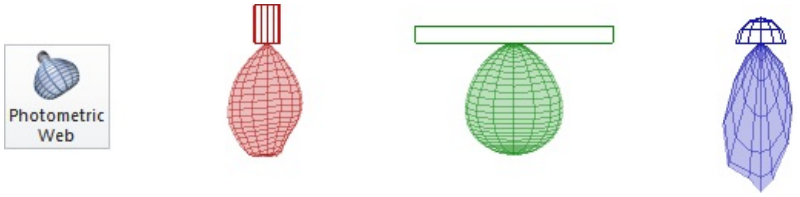


The **Templates** button turns on or off the global display of iso-*illuminance* templates for **Luminaire Types** where **Templates** have been defined in the **Luminaire Schedule**. See Luminaire Templates for information on defining **Templates**.



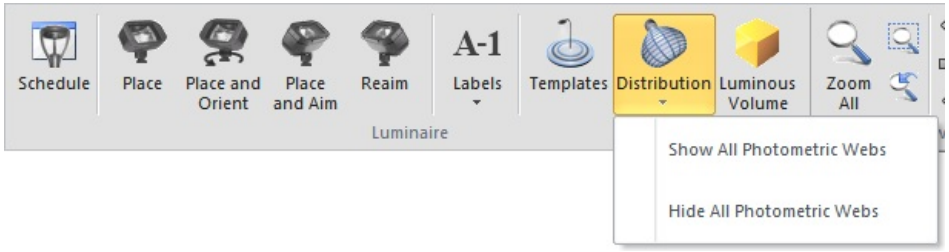


The **Photometric Web** button turns on or off the display of the **Photometric Web** for the *luminaire* currently being placed. It does not impact already placed ***Luminaires***; see Luminaire Properties for information on controlling display of placed ***Luminaires***.



The **Photometric Web** illustrates the shape of the *candela* distribution and provides visual feedback as to proper alignment. Note that the magnitude is scaled to allow for all sizes to be visible. For example, a 32W *CFL downlight* will have the same magnitude as a 4-*lamp troffer* or a 1000W metal halide floodlight even though actual *candlepower* could be 10,000X different.

Analogous to the **Photometric Web** button when inserting ***Luminaires***, the **Distribution** button found on the **Luminaire** *tab* of the **Ribbonbar** initiates a *drop-down menu* that allows the user to turn on or off **Photometric Webs** in the **Design Environment** for all ***Luminaires***.



The **Luminous Volume** button directs Visual to display the luminous dimensions graphically (as seen in the wireframe view at middle-right) for each placed ***Luminaire*** in the **Design Environment** in conjunction with the ***Symbol*** as defined in the Luminaire Schedule.

Design Audit will automatically turn on this feature when an interference is found. At right, the wall sconce ***Symbol*** is aligned properly but the alignment of the ***Symbol*** and the ***Photometric File*** is incorrect, yielding half of the luminous area inside a wall as can be seen in plan view.