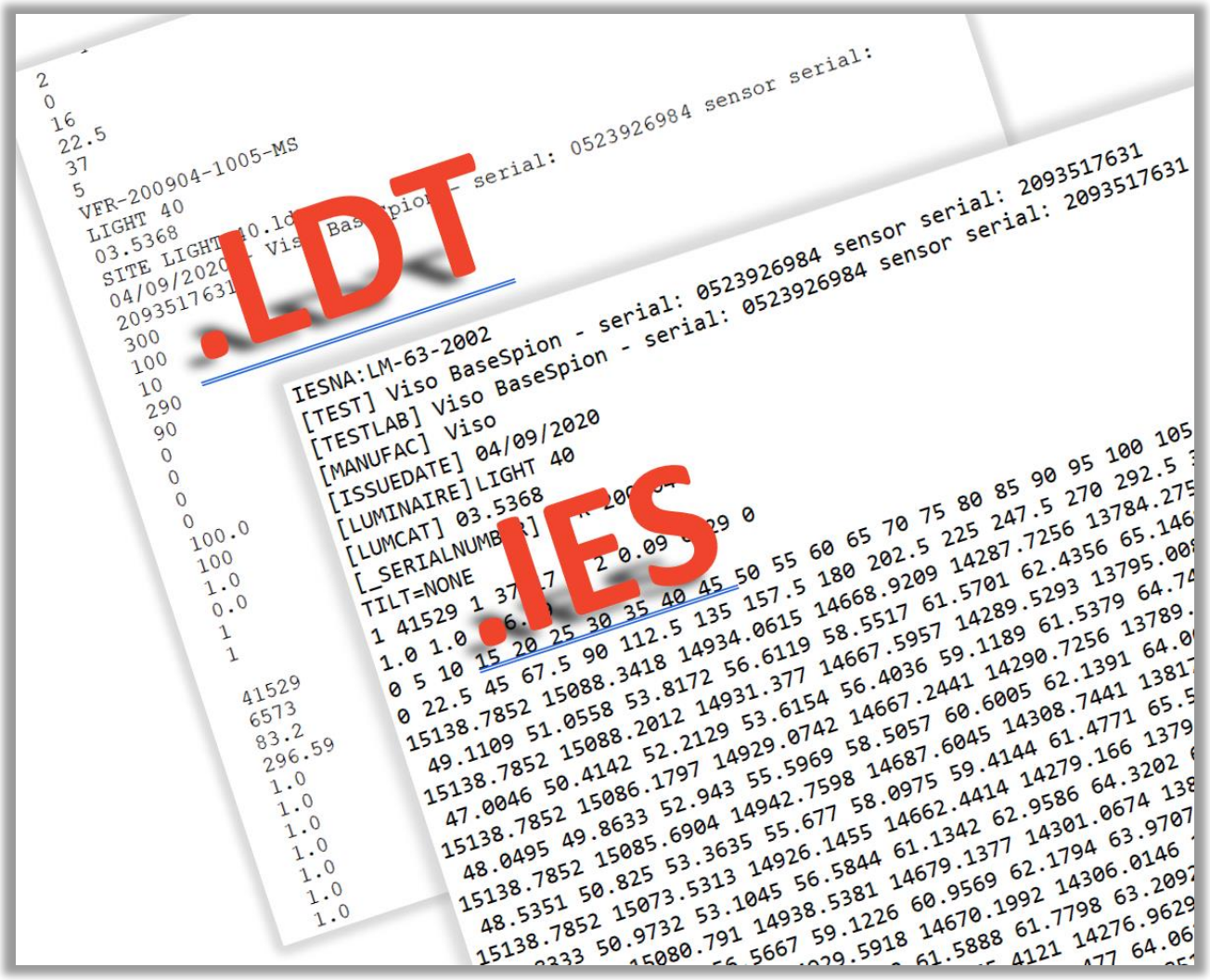
Guidelines

Dimensions of lighting fixtures in .IES and .LDT files

Revision: January 2021



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About export to .IES and .LDT formats

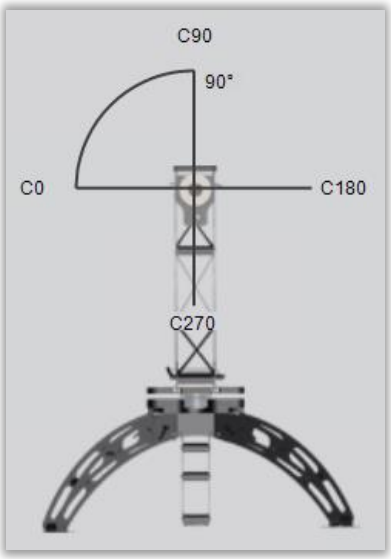
Viso Systems' software – Light Inspector – can export light measurement data in both .IES and .LDT formats. Both export file formats are intended for posterior processing in lighting design software such as Relux and Dialux.

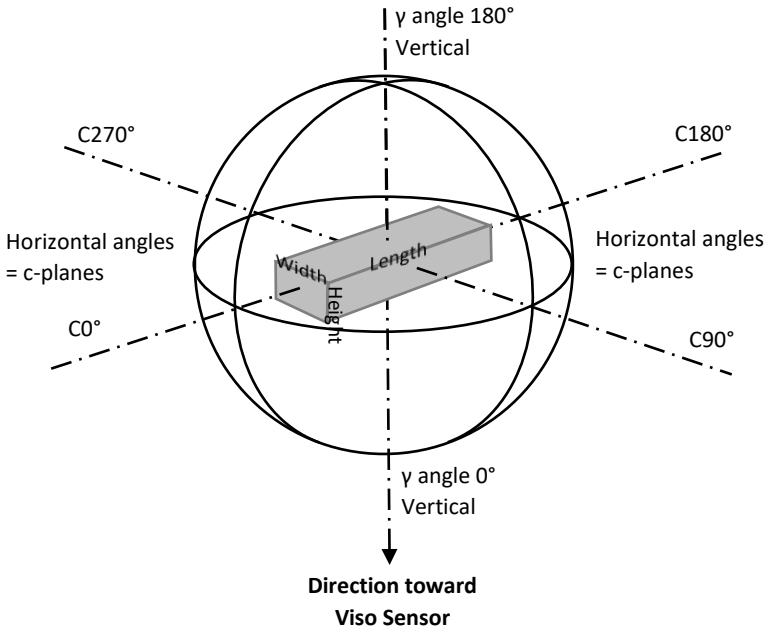
The .IES[1] format is primarily used in the US, while .LDT[2] formats are used in Europe. Both are text formats and contain much of the same information:

- Some general information about the measurement
- Lighting fixture data – also diameter or length, width and height
- Light distribution in all planes and full resolution – a matrix of c and γ values

Aligning the fixture

As the software does not "know" how the lighting fixture is actually positioned on the goniometer, it is very important that the fixture is aligned in a way that the "length" will actually be interpreted as "length" in posterior outputs. In other words, make sure that the measurement starts with the fixture having the *length being parallel to c0-c180* on the goniometer.





The image to the left shows the C-plane orientations of the LabSpion. BaseSpion and LightSpion work the same way).

[1] Standardized in ANSI/IESNA LM-63-02

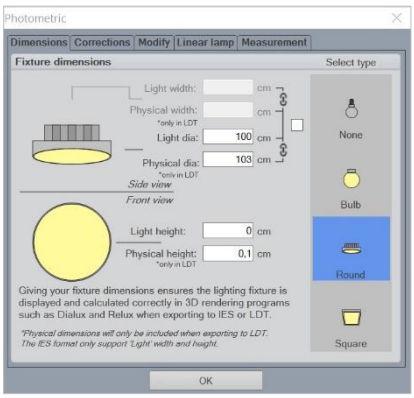
[2] Also called EULUMDAT. Not standardised, but proposed by Axel Stockmar (Light Consult Inc., Berlin) in 1990

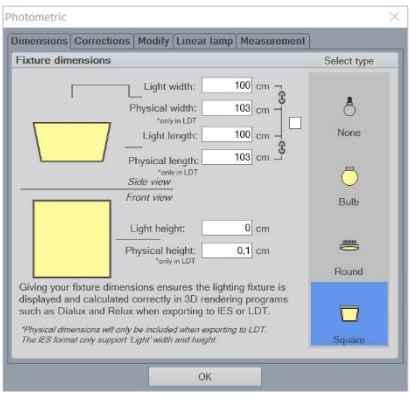
Typing dimensions into the system

The fixture dimensions are easily entered in the Light Inspector software

To calculate the correct light outputs for further visualization, it is necessary to insert the dimensions of the measured lighting fixtures (bulbs, spots and panels) in the table as shown in the figures. The table is found in:

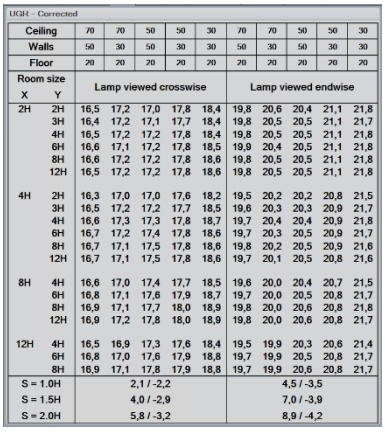
Edit → Photometric → Dimensions.





Thus, this feature enables the data files to reflect the luminous and physical dimensions for an accurate visualization in 3D lighting software.

UGR tables



UGR - Corrected

Ceiling		70	70	50	50	30	70	70	50	50	30
Walls		50	30	50	30	30	50	30	50	30	30
Floor		20	20	20	20	20	20	20	20	20	20
Room size		Lamp viewed crosswise					Lamp viewed endwise				
X	Y										
2H	2H	16,5	17,2	17,0	17,8	18,4	19,8	20,6	20,4	21,1	21,8
	3H	16,4	17,2	17,1	17,7	18,4	19,8	20,5	20,5	21,1	21,7
	4H	16,5	17,2	17,2	17,8	18,4	19,8	20,5	20,5	21,1	21,8
	6H	16,6	17,1	17,2	17,8	18,5	19,9	20,4	20,5	21,1	21,8
	8H	16,6	17,2	17,2	17,8	18,6	19,8	20,5	20,5	21,1	21,8
	12H	16,5	17,2	17,2	17,8	18,6	19,8	20,5	20,5	21,1	21,8
4H	2H	16,3	17,0	17,0	17,6	18,2	19,5	20,2	20,2	20,8	21,5
	3H	16,5	17,2	17,2	17,7	18,5	19,6	20,3	20,3	20,9	21,7
	4H	16,6	17,3	17,3	17,8	18,7	19,7	20,4	20,4	20,9	21,8
	6H	16,7	17,2	17,4	17,8	18,6	19,7	20,3	20,5	20,9	21,7
	8H	16,7	17,1	17,5	17,8	18,6	19,8	20,2	20,5	20,9	21,6
	12H	16,7	17,1	17,5	17,8	18,6	19,7	20,1	20,5	20,8	21,6
8H	4H	16,6	17,0	17,4	17,7	18,5	19,6	20,0	20,4	20,7	21,5
	6H	16,8	17,1	17,6	17,9	18,7	19,7	20,0	20,5	20,8	21,7
	8H	16,9	17,1	17,7	18,0	18,9	19,8	20,0	20,6	20,8	21,8
	12H	16,9	17,2	17,8	18,0	18,9	19,8	20,0	20,6	20,8	21,7
12H	4H	16,5	16,9	17,3	17,6	18,4	19,5	19,9	20,3	20,6	21,4
	6H	16,8	17,0	17,6	17,9	18,8	19,7	19,9	20,5	20,8	21,7
	8H	16,9	17,1	17,8	17,9	18,8	19,7	19,9	20,6	20,8	21,7
S = 1.0H		2,1 / -2,2					4,5 / -3,5				
S = 1.5H		4,0 / -2,9					7,0 / -3,9				
S = 2.0H		5,8 / -3,2					8,9 / -4,2				

The Light Inspector calculates UGR (Unified Glare Rating) tables according to CIE 117-1995 and CIE 190:2010.

The table allows you to evaluate the glare properties of a given light source through tabularized glare calculations based on standard spaces, reflectivity, viewing direction. Hence, the glare limits set forth in e.g., standard *EN 12464-1 Light And Lighting – Lighting of Work Places – Part 1: Indoor Work Places* and standard *ISO 8995-1:2002(E)/CIE S 008/E:2001 "Lighting of Workplaces – Part 1: Indoor* can be evaluated during lighting design and planning.

Again, getting the dimensions right is very important as the UGR table values are categorized "lengthwise" (meaning seen from the end of elongated fixture) and "crosswise" (meaning seen from the side).

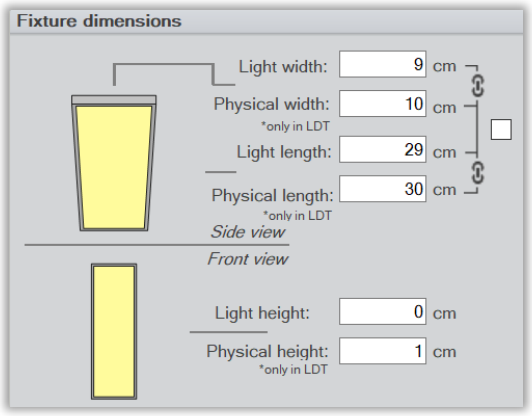
You need to enter two types of information:

- The dimensions of the luminous area are manually entered as described in *Edit → Photometric → Dimensions*.
- You need to correct symmetry to either circular symmetry or V and H symmetry (Click *Edit → Photometric → Corrections*. Check box "Correct asymmetry", Choose "V and H plane" or "Circular" depending on luminaire type (double symmetrical or round symmetrical).

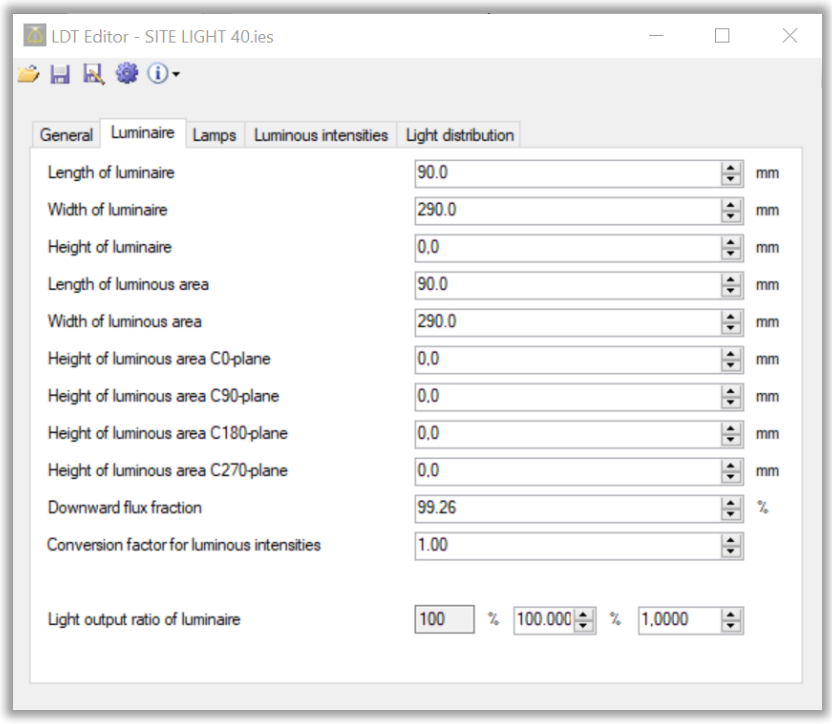
Working with Viso outputs in LDT Editor

Viso has decided generate both the .IES and .LDT files exactly as they are described in the standards/definitions.

However, DIAL switches the terms for width and length in their software LDT Editor – a free-to-use viewer.



An entry like the above in Viso Light Inspector can be exported correctly to .IES and .LDT – still, when opening these files in LDT Editor length and width are exchanged:



When importing Viso .IES/.LDT files to DIAL Software DIALux Evo and DIALux 4.13 the length/width parameters are right.

EULUMDAT - .LDT file format specification

Item	Designation	Number of Characters
1	Company identification/data bank/version/format identification max.	Max. 78
2	Type indicator **Ityp** 1 - point source with symmetry about the vertical axis 2 - linear luminaire; 3 - point source with any other symmetry [See Note 1]	1
3	Symmetry indicator **Isym** 0 - no symmetry 1 - symmetry about the vertical axis 2- symmetry to plane C0-C180 3- symmetry to plane C90-C270 4- symmetry to plane C0-C180 and to plane C90-C270	1
4	Number **Mc** of C-planes between 0 and 360 degrees (usually 24 for interior, 36 for road lighting luminaires)	2
5	Distance **Dc** between C-planes (in degrees) (Dc = 0 for non-equidistantly available C-planes)	5
6	Number **Ng** of luminous intensities in each C-plane (usually 19 or 37)	2
7	Distance **Dg** between luminous intensities per C-plane Dg = 0 for non-equidistantly available lumin. intensities in C-planes	5
8	Measurement report number	Max. 78
9	Luminaire name	Max. 78
10	Luminaire number	Max. 78
11	File name	8
12	Date/user	Max. 78
13	Length/diameter of luminaire (mm)	4
14	Width of luminaire b (mm) (b = 0 for circular luminaire)	4
15	Height of luminaire (mm)	4
16	Length/diameter of luminous area (mm)	4
17	Width of luminous area b1 (mm) (b1 = 0 for circular luminous area of luminaire)	4
18	Height of luminous area C0-plane (mm)	4
19	Height of luminous area C90-plane (mm)	4
20	Height of luminous area C180-plane (mm)	4
21	Height of luminous area C270-plane (mm)	4
22	Downward flux fraction DFF (%)	4
23	Light output ratio luminaire LORL (%)	4
24	Conversion factor for luminous intensities (depending on measurement)	6
25	Tilt of luminaire during measurement (road lighting luminaires)	6
26	Number n of standard sets of lamps (optional, also extendable on company-specific basis)	4
26a	Number of lamps	n * 4
26b	Type of lamps	n * 24
26c	Total luminous flux of lamps (lumens)	n * 12
26d	Color appearance / color temperature of lamps	n * 16
26e	Color rendering group / color rendering index	n * 6

26f	Wattage including ballast (watts)	n * 8
27	Direct ratios DR for room indices k = 0.6 ... 5 (for determination of luminaire numbers according to utilization factor method)	10 * 7
28	Angles C (beginning with 0 degrees)	Mc * 6
29	Angles G (beginning with 0 degrees) – γ-angles	Ng * 6
30	Luminous intensity distribution (candela / 1000 lumens) [See Note 2]	(Mc2-Mc1+1) * Ng * 6

NOTES

1. Only linear luminaires (**Ityp** = 2) are being subdivided in longitudinal and transverse directions.
2. The parameters **Mc1** and **Mc2** for the luminous intensity distribution are determined by:

Isym	**Mc1**	**Mc2**
0	1	Mc
1	1	1
2	1	**Mc** / 2 + 1
3	3 * **Mc** / 4 + 1	**Mc1** + **Mc** / 2
4	1	**Mc** / 4 + 1

3. Each field is an ASCII string that is terminated with an MS-DOS <CR><LF> pair.

.IES file format specification

Item	Mandatory	Designation	VISO
1		IESNA-LM-63-2002	*
2	*	[TEST] Test report no	*
3	*	[TESTLAB] Photometric testing laboratory	*
4		[TESTDATE] Date that the photometric report was generated	
5		[NEARFIELD] D1,D2,D3 Indicates near field goniophotometry was used, D1,D2,D3 being specific distances – more info in LM-63-2002	
6	*	[MANUFAC] Manufacturer of luminaire	*
7		[LUMCAT] Luminaire catalogue number	*
8		[LUMINAIRE] Luminaire description	*
9		[LAMPCAT] Lamp catalogue number	
10		[LAMP] Lamp description (e.g., type, wattage, size, etc.)	
11		[BALLAST] Ballast description (e.g., watts, volts, magnetic or electronic, etc.)	
12		[BALLASTCAT] Ballast catalogue number	
13		[MAINTCAT] A digit (1-6) indication IES maintenance category	
14		[DISTRIBUTION] General description of the light distribution (e.g., Type II, Medium; Direct, etc.)	
15		[FLASHAREA] Light emitting area of the medium projected under 76 degrees in square meters. Used in calculation of CIE glare control	
16		[COLORCONSTANT] Used in calculations of CIE Glare Control	
17		[LAMPPOSITION] Two angles that specify the lamp position in the luminaire with respect to the photometric angles	
18	*	[ISSUEDATE] Date that the manufacturer issued the IESNA LM-63-2002 photometric file	*
19		[OTHER] Other information about this file	
20		[SEARCH] User created search string	
21	*	[MORE] More information tied to previous keyword– *in VISO [_SERIALNUMBER] =Viso Tracking no*.	*
22	*	TILT (TILT=NONE or TILT=INCLUDE or TILT=<filename>) This line indicates whether the lamp output varies as a function of the luminaire tilt angle – more info in LM-63-2002	*
23a	*	Indicates number of lamps	*
23b	*	The initial rated lumens for the lamp used in the test or -1 if absolute photometry is used and the intensity values do not depend on different lamp ratings.	*
23c	*	A multiplying factor for all the candela values in the file. This makes it possible to easily scale all the candela values in the file when the measuring device operates in unusual units—for example, when you obtain the photometric values from a catalog using a ruler on a goniometric diagram. Normally the multiplying factor is 1.	*
23d	*	The number of vertical angles in the photometric web (no. of c-planes)	*
23e	*	The number of horizontal angles in the photometric web (no. γ-steps)	*
23f	*	Photometer type – 1 is Type C, 2 is Type B, 3 is Type C	*
23g	*	The type of unit used to measure the dimensions of the luminous opening. Use 1 for feet or 2 for meters.	*

23h	*	The width, length, and height of the luminous opening. Length is measured parallel to horizontal angles 0°-180° = C0 – C180 Width is measured parallel to horizontal angles 90°-270° = C90 – C270	*
24	*	Luminous shape (if other than rectangular) – more info in LM-63-2002. First number is width (alternatively -diameter) Second number is length (alternatively -diameter) Third number is height (alternatively -diameter)	*
25	*	The set of vertical angles, listed in increasing order. If the distribution lies completely in the bottom hemisphere, the first and last angles must be 0° and 90°, respectively. If the distribution lies completely in the top hemisphere, the first and last angles must be 90° and 180°, respectively. Otherwise, they must be 0° and 180°, respectively.	*
26	*	The set of horizontal angles, listed in increasing order. The first angle must be 0°. The last angle determines the degree of lateral symmetry displayed by the intensity distribution. If it is 0°, the distribution is axially symmetric. If it is 90°, the distribution is symmetric in each quadrant. If it is 180°, the distribution is symmetric about a vertical plane. If it is greater than 180° and less than or equal to 360°, the distribution exhibits no lateral symmetries. All other values are invalid.	*
27	*	The set of candela values. First, all the candela values corresponding to the first horizontal angle are listed, starting with the value corresponding to the smallest vertical angle and moving up the associated vertical plane. Then, the candela values corresponding to the vertical plane through the second horizontal angle are listed, and so on until the last horizontal angle. Each vertical slice of values must start on a new line. Long lines may be broken between values as needed by following the instructions given earlier.	*