

**NAME**

ies2rad - convert IES luminaire data to RADIANCE description

**SYNOPSIS**

**ies2rad** [ options ] [ input .. ]

**DESCRIPTION**

*ies2rad* converts one or more IES luminaire data files to the equivalent RADIANCE scene description. The light source geometry will always be centered at the origin aimed in the negative Z direction, with the 0 degree plane along the X axis. (Note, this means that the IES "width" is actually along the Y axis, while "length" corresponds to the X axis.) Usually, two output files will be created for every input file, one scene file (with a ".rad" suffix) and one data file (with a ".dat" suffix). If the IES input file includes tilt data, then another data file will be created (with a "+.dat" suffix). If the *-s* option is used, the scene data will be sent to the standard output instead of being written to a file. Since the data file does not change with other options to *ies2rad*, this is a convenient way to specify different lamp colors and multipliers inline in a scene description. If the *-g* option is used, then an octree file will be created (with the ".oct" suffix). The root portion of the output file names will be the same as the corresponding input file, unless the *-o* option is used. The output files will be created in the current directory (no matter which directory the input files came from) unless the *-l* or *-p* options are used.

*ies2rad* assigns light source colors based on information in a lamp lookup table. Since most lamps are distinctly colored, it is often desirable to override this lookup procedure and use a neutral value that will produce color-balanced renderings. In general, it is important to consider lamp color when an odd assortment of fixture types is being used to illuminate the same scene, and the rendering can always be balanced by *pfilt(1)* to a specific white value later.

- l *libdir*** Set the library directory path to *libdir*. This is where all relative pathnames will begin for output file names. For light sources that will be used by many people, this should be set to some central location included in the RAYPATH environment variable. The default is the current working directory.
- p *prefdir*** Set the library subdirectory path to *prefdir*. This is the subdirectory from the library where all output files will be placed. It is often most convenient to use a subdirectory for the storage of light sources, since there tend to be many files and placing them all in one directory is very messy. The default value is the empty string.
- o *outname*** Set the output file name root to *outname*. This overrides the default output file name root which is the same as the input file. This option may be used for only one input file, and is required when reading data from the standard input.
- s** Send the scene information to the standard output rather than a separate file. This is appropriate when calling *ies2rad* from within a scene description via an inline command. The data file(s) will still be written based on the output file name root, but since this information is unaffected by command line options, it is safe to have multiple invocations of *ies2rad* using the same input file and different output options. The *-s* option may be used for only one input file.
- d *units*** Output dimensions are in *units*, which is one of the letters 'm', 'c', 'f', or 'i' for meters, centimeters, feet or inches, respectively. The letter specification may be followed by a slash (/) and an optional divisor. For example, *-dm/1000* would be millimeters. The default output is in meters, regardless of the original units in the IES input file. Note that there is no space in this option.
- i *rad*** Ignore the crude geometry given by the IES input file and use instead an illum sphere with radius *rad*. This option may be useful when the user wishes to add a more accurate geometric description to the light source model, though this need is obviated by the recent LM-63-1995 specification, which uses MGF detail geometry. (See *-g* option below.)
- g** If the IES file contains MGF detail geometry, compile this geometry into a separate octree and create a single instance referencing it instead of including the converted geometry directly in

the Radiance output file. This can result in a considerable memory savings for luminaires which are later duplicated many times in a scene, though the appearance may suffer for certain luminaires since the enclosed glow sources will not light the local geometry as they would otherwise.

- f lampdat** Use *lampdat* instead of the default lamp lookup table (*lamp.tab*) to map lamp names to xy chromaticity and lumen depreciation data. It is often helpful to have customized lookup tables for specific manufacturers and applications.
- t lamp** Use the given lamp type for all input files. Normally, *ies2rad* looks at the header lines of the IES file to try and determine what lamp is being used in the fixture. If any of the lines is matched by a pattern in the lamp lookup table (see the **-f** option above), that color and depreciation factor will be used instead of the default (see the **-c** and **-u** options). The *lamp* specification is also looked up in the lamp table unless it is set to "default", in which case the default color is used instead.
- c red grn blu** Use the given color if the type of the lamp is unknown or the **-t** option is set to "default". If unspecified, the default color will be white.
- u lamp** Set the default lamp color according to the entry for *lamp* in the lookup table (see the **-f** option). This is the color that will be used if the input specification does not match any lamp type patterns. This option is used instead of the **-c** option.
- m factor** Multiply all output quantities by *factor*. This is the best way to scale fixture brightness for different lamps, but care should be taken when this option is applied to multiple files.

## EXAMPLE

To convert a single IES data file in inches with color balanced output and 15% lumen depreciation, creating the files "fluor01.rad" and "fluor01.dat" in the current directory:

```
ies2rad -di -t default -m .85 fluor01.ies
```

To convert three IES files of various types to tenths of a foot and put them in the library "/usr/local/lib/ray" subdirectory "source/ies":

```
ies2rad -df/10 -l /usr/local/lib/ray -p source/ies ies01 ies02 ies03
```

To convert a single file and give the output a different name:

```
ies2rad -o fluorescent ies03
```

## ENVIRONMENT

**RAYPATH** directories to search for lamp lookup table

## AUTHOR

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## BUGS

In pre-1991 standard IES files, all header lines will be examined for a lamp table string match. In post-1991 standard files, only those lamps with the [LAMP] or [LAMPCAT] keywords will be searched. The first match found in the file is always the one used. This method of assigning colors to fixtures is less than perfect, and the IES would do well to include explicit spectral information somehow in their specification.

The IESNA LM-63 specification prior to 1995 provided three basic source shapes, rectangular, round, and elliptical. The details of these shapes is vague at best. Rectangular sources will always be rectangular, but *ies2rad* will approximate round sources as spherical if the height is close to or greater than the width and length, and as a ring otherwise. Elliptical sources are treated the same as round sources. The 1995 standard rectifies this problem by including detailed luminaire geometry as MGF data, though nothing in the standard requires manufacturers to provide this information.

IES2RAD(1)

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**SEE ALSO**

mgf2rad(1), oconv(1), pfilt(1), rad2mgf(1), rpict(1), xform(1)