

# Lighting

PFM supports four light source types:

- Sun Lights (aka directional light or environmental light)
- Point Lights (aka omni light)
- Spot Lights
- HDRI lighting

To create a light source, open the actor editor and click the gear icon, then select "New spot light", "New point light" or "New sun light" respectively. The light source will appear in front of the camera, so make sure you're not standing right in front of a wall or an object, otherwise the light may appear behind it.

When creating a light source (or any other actor), make sure a film clip is selected in the timeline window first! The light source will only be valid for that particular film clip.

To change the properties of the light source, select it in the actor editor. The available properties depend on the light source type and will appear in the righthand window of the actor editor.

PFM uses Pragma's renderer for rendering your scene in real-time in the viewport, however the final render is processed using the Cycles path-tracing renderer. Due to the different rendering method between the two, the lighting in your scene may look quite a bit different (especially with outdoor scenes). For this reason it's recommended to render a preview image of your scene from time to time to ensure the lighting in the final render matches your expectations.

## Point Light

Point light sources are omnidirectional lights, which means they emit the same amount of light in all directions from a point in space.

### Intensity

The intensity of the light source in Lumen or Candela (depending on the specified unit type).

### Intensity Unit

The intensity unit field specifies the base unit that the intensity value represents, which can be either Lumen or Candela. If you're unsure which value to choose, you can just use the Lumen intensity value printed on the side of most light bulb packages.

## Radius

The maximum radius of the light source in meters.

This property is currently ignored when rendering with Cycles!

## Spot Light

Spot lights emit light as a cone in a particular direction.

## Intensity

The intensity of the light source in Lumen or Candela (depending on the specified unit type).

If you're specifying the light intensity for a spot light in Lumen, beware that the perceived light intensity will depend on the outer cone angle of the light source, i.e. a smaller cone angle will create a brighter light. If you want to have consistent light intensities regardless of the angle, use Candela instead!

## Intensity Unit

The intensity unit field specifies the base unit that the intensity value represents, which can be either Lumen or Candela. If you're unsure which value to choose, you can just use the Lumen intensity value printed on the side of most light bulb packages.

## Radius

The maximum radius of the light source in meters.

This property is currently ignored when rendering with Cycles!

## Outer Cone Angle

The angle (in degrees) of the cone in which light should be emitted. The angle mustn't exceed 180 degrees.

# Inner Cone Angle

The difference between the outer and inner cone angles determines the smoothness towards the edges of the cone. The smaller the inner cone (relative to the outer cone), the smoother the light falloff will appear. This value should always be lower than the outer cone angle.

# Sun Light

A sun light source does not have an origin in space and emits the same light everywhere from the same direction.

# Intensity

Contrary to point and spot lights, the intensity of a sun light source is measured in Lux (Lumen per square meter). This means that the value doesn't actually represent the amount of light emitted by the light source, but rather the amount of light **received** by a surface that is being lit by this light source.

# HDRI Lighting

HDRI lighting is special in that it's not a conventional light source, but rather based on a HDR panorama image. This type of lighting can have a substantial effect on your scene, but only works for outdoor scenes and you can only specify one HDRI image for your entire scene.

HDRI Lighting currently only works when rendering with Cycles and has no visible effect in PFM's viewport.

To specify a HDRI image, open the Cycles render settings and click the "Sky Override" field. You can then press "..." to select your HDRI image file. Pragma already ships with several HDRI skies you can choose from, but you can also get additional skies from websites like <https://hdri-skies.com/> or <https://hdrihaven.com>.

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