

AOV Setup and Viewing

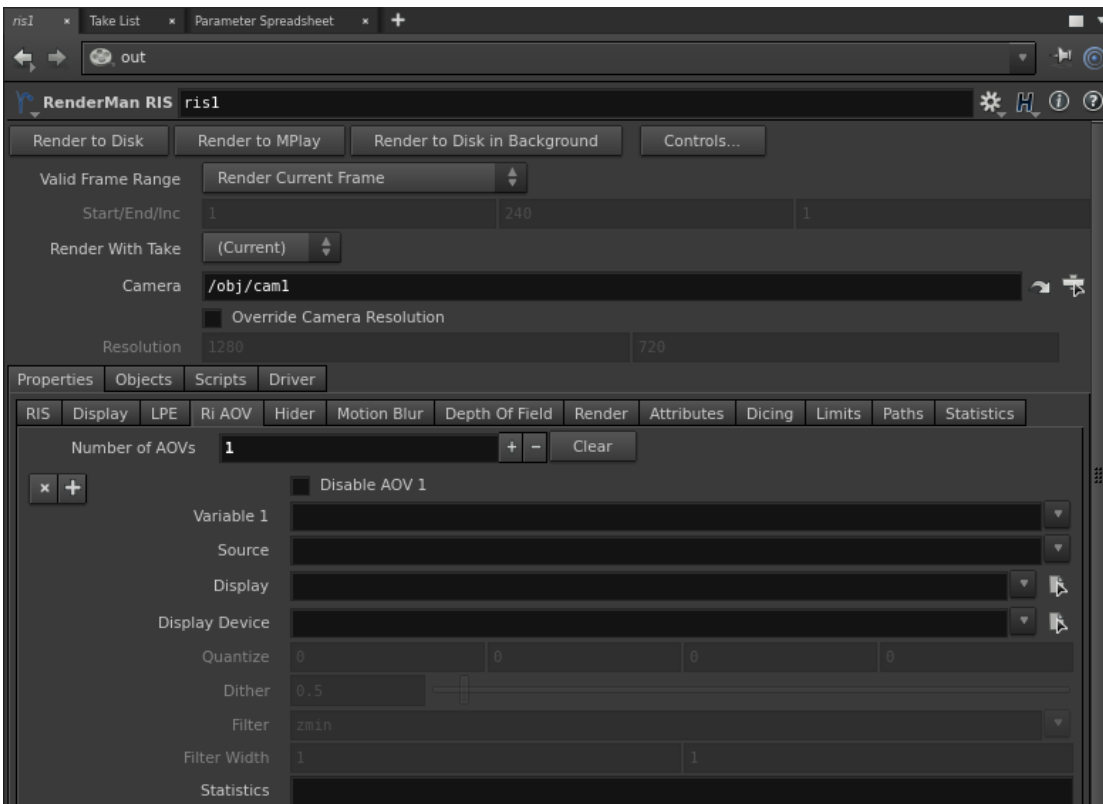
RenderMan for Houdini exposes a powerful system of AOV creation called [Light Path Expressions](#).

To specify an AOV you should provide the following information to RenderMan:

- **Variable** - Specify the name and type of the AOV, e.g. varying normal Nn.
- **Source** - Set the source string for the LPE. If using a built-in LPE (see below), you can leave this field empty; otherwise, you must provide the appropriate LPE expression, e.g. color lpe:C<RD>[<L.>O].
- **Display** - Set this to framebuffer or a specify a filename.
- **Display Device** - Specify the type of output. If you want to see your AOVs interactively, you would set it to **houdini** (for Render View) or **framebuffer** (for 'it').
- **Quantize** - Set the quantize for your output file. For openexr, keep the default 0 0 0 0.
- **Dither** - This is unnecessary for floating point outputs such as an EXR.
- **Filter** - For color AOVs, the recommended filter is Gaussian. Data AOVs should be unfiltered.
- **Filter Width** - As above, when using color AOVs, a filter width of 2 2 using Gaussian matches the default render settings.
- **Statistics** - This field is only used if you are specifying AOVs manually for [Denoising](#).

How to set up AOV

In the RenderMan RIS ROP, go to **Properties | Ri AOV** tab, "**Number of AOVs**" is a dynamic array of AOVs. Click on the **+** icon to create an AOV.



Built-in LPE

Instead of specifying a variable, you can click on the down arrow icon to the right of Variable to get a list of built-in LPEs. When you select an item from the list, it will automatically populate the Variable field, e.g. varying color Ci.

Beauty RGB (Ci)
Colored Opacity (Oi)
Alpha (A)
Depth (Z)
P
Nn
Tn
Vn
VLen
U
V
Id
Curvature
Shading Time
dPmtime
CPU Time
Sample Count

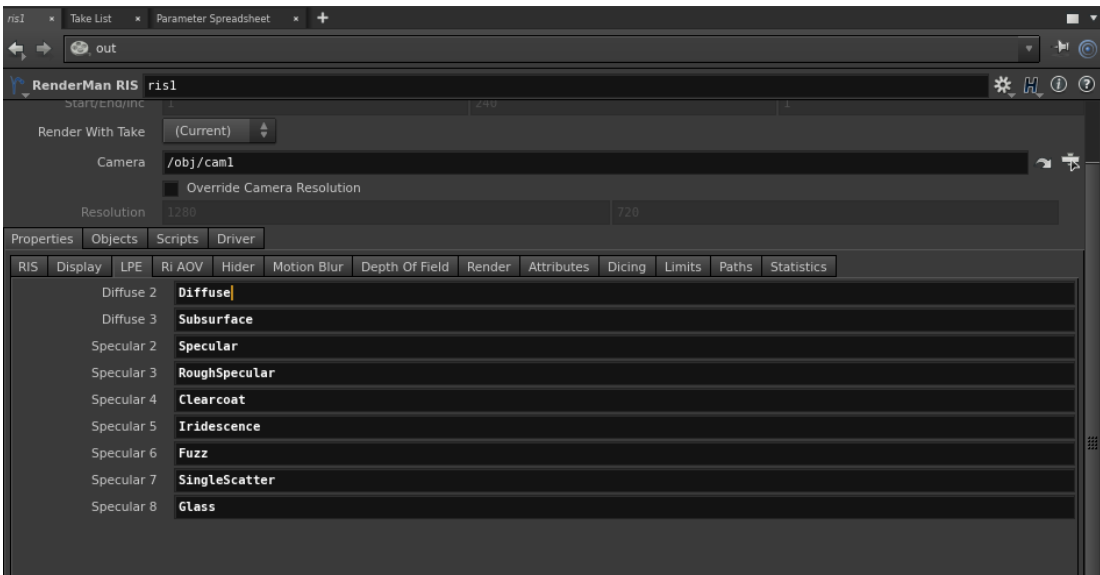
Built-in Source String

This built-in source string is a convenient list to work with user LPEs that is needed for outputting AOVs for PxrSurface's [Per-Lobe LPEs](#).

Direct Diffuse
Indirect Diffuse
Subsurface
Direct Specular
Indirect Specular
Refraction
Emission
Direct Diffuse Lobe
Indirect Diffuse Lobe
Subsurface Lobe
Direct Specular Lobe
Indirect Specular Lobe
Direct Rough Specular Lobe
Indirect Rough Specular Lobe
Direct Clearcoat Lobe
Indirect Clearcoat Lobe
Direct Iridescence Lobe
Indirect Iridescence Lobe
Direct Fuzz Lobe
Indirect Fuzz Lobe
Single Scatter Lobe
Glass Reflection Lobe
Indirect Glass Reflection Lobe
Glass Refraction Lobe

PxrSurface's AOV

Some Bxdf's such as [PxrSurface](#) require user LPE setup.

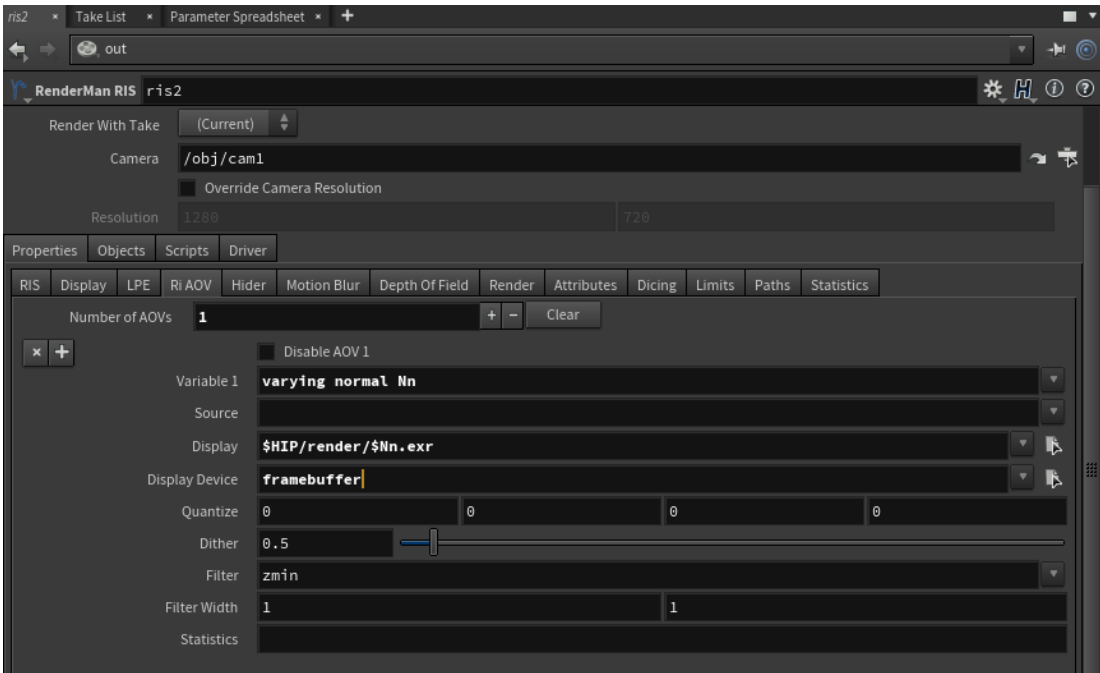


How to View AOV Interactively

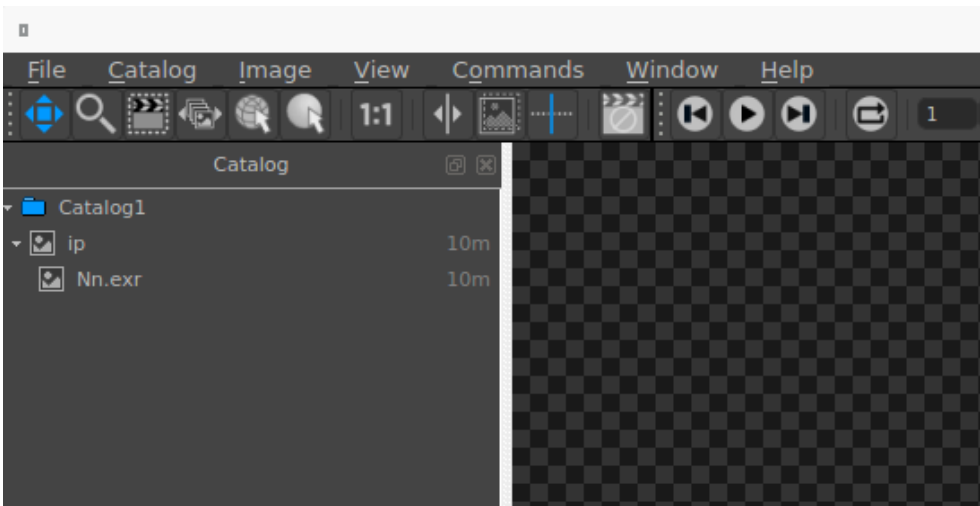
Using 'it'

To view your AOVs interactively in 'it':

- Set your Display to either a file or framebuffer. If it is empty, 'it' won't display the AOVs.
- Then set Display Driver to **framebuffer**. Setting it to houdini won't work.

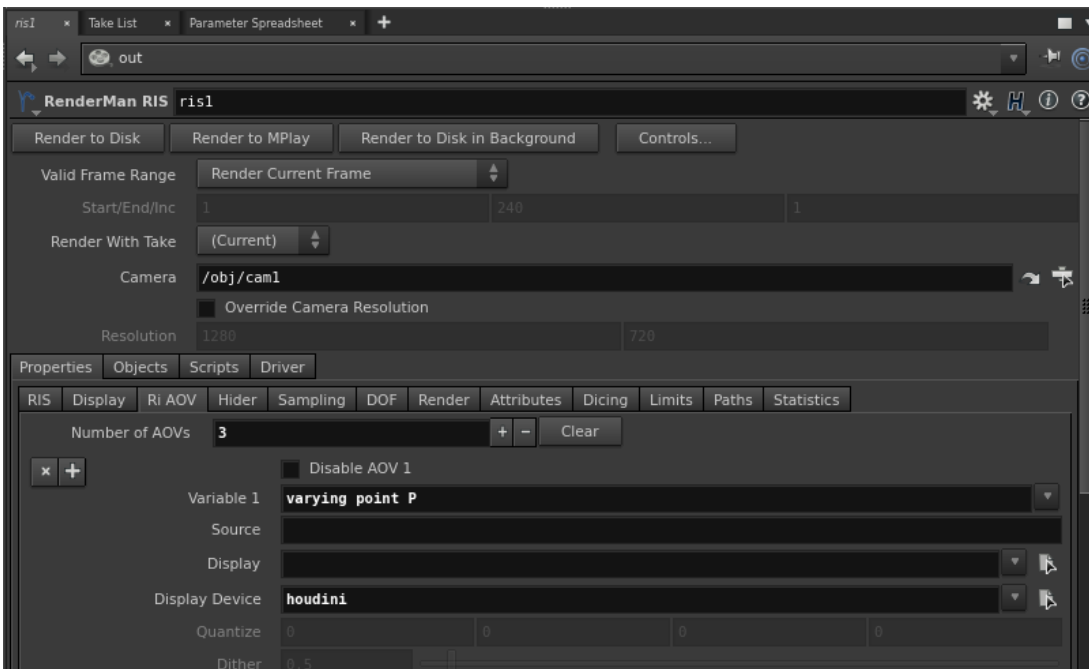


In 'it', expand the down arrow key to see a list of your AOVs. Simply click on the AOV (e.g. Nn.exr in this example) to view it.

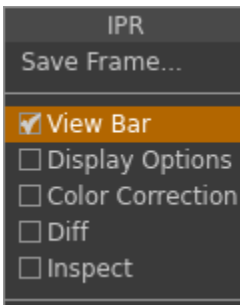


Using Render View

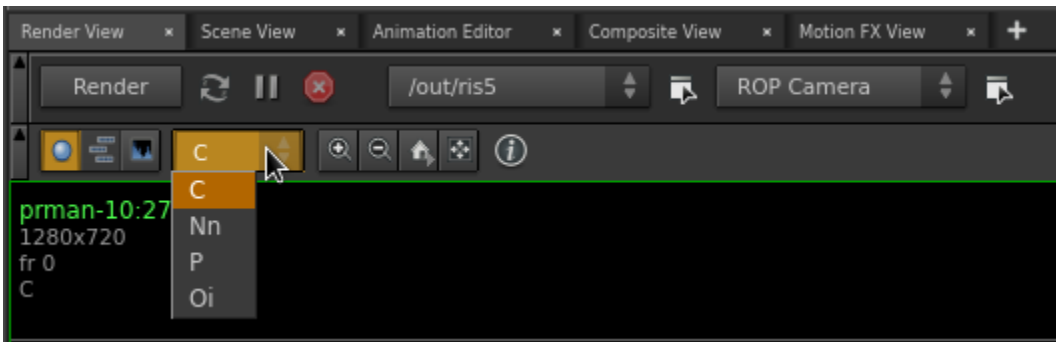
To view your AOVs interactively in Render View, set your Display Device to houdini:



Turn on View Bar in your Render View.

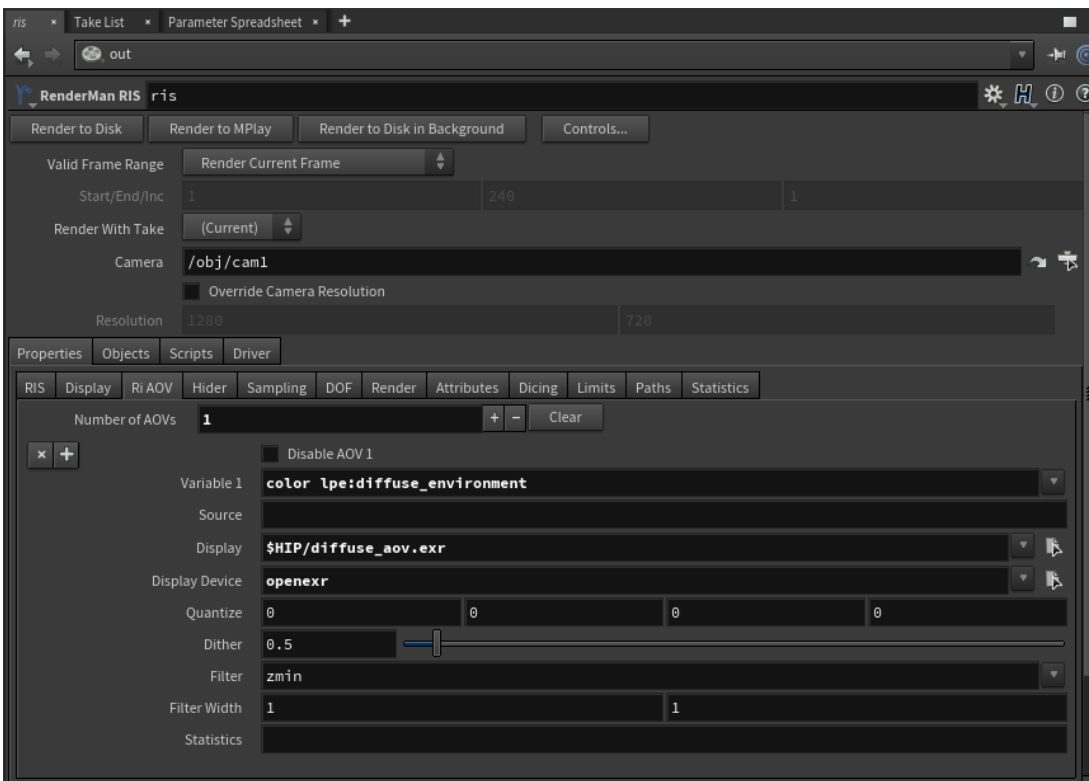


You will see a list of your AOVs like the below example:



How to Write AOV to Disk

To output your AOVs to disk, specify the file path and set your Display Device to the file format you want to output to, e.g. openexr.



How to Write AOVs into A Multichannel EXR

To output your AOVs into a single EXR (multichannel EXR), you can reference the display channel names with comas. In the example below, we have two display channels: mydiffuse and myspecular. When you leave Display and Display Device blank, RfH will just emit the DisplayChannel. Then you can use those channels to output one multichannel EXR for the AOVs.

ris x Take List x Parameter Spreadsheet x +

out

RenderMan RIS ris

Properties Objects Scripts Driver

RIS Display Ri AOV Hider Sampling DOF Render Attributes Dicing Limits Paths Statistics

Number of AOVs **3** + - Clear

x +

Disable AOV 1

Variable 1 **color myspec**

Source **color lpe:specular**

Display

Display Device

Quantize 0 0 0 0

Dither 0.5

Filter **zmin**

Filter Width 1 1

Statistics

x +

Disable AOV 2

Variable 2 **color mydiffuse**

Source **color lpe:diffuse**

Display

Display Device

Quantize 0 0 0 0

Dither 0.5

Filter **zmin**

Filter Width 1 1

Statistics

x +

Disable AOV 3

Variable 3 **myspec,mydiffuse**

Source

Display **\$HIP/multichannel_aov.exr**

Display Device **openexr**

Quantize 0 0 0 0