Pylux User Manual
for Pylux v0.1-alpha2

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Contents

1 Introduction

1.1 About Pylux

Pylux is a program written in Python for the manipulation of OpenLighting Plot documents. Pylux currently allows for the basic editing of the OpenLighting Plot XML files, including referencing OpenLighting Fixture files to obtain additional data.

In the future, Pylux will be extended with modules that allow for the exporting of documentation in the LaTeX format, and creating lighting plots in SVG format.

Bugs and feature requests should be submitted to `https://github.com/jackdpage/pylux/issues`.

1.2 About this Manual

This manual is intended for general users of Pylux. If you are a developer who wants to contribute to Pylux, you should read the Developer Reference. The first section of this manual details all of the actions that you can enter on the command-line interface of Pylux. The second section goes into more detail about what tags you should use, etc.

2 Command-line Options

Pylux is invoked simply by running the `pylux` package with Python.

`--help`, `-h` Display the usage message of the program then exit.

`--version`, `-v` Display the version number of the program then exit.

`--file` *`FILE`*, `-f` *`FILE`* Load the file with path *`FILE`* as the plot file on launch.

`--gui`, `-g` Launch Pylux with the graphical user interface. This is not yet implemented. Omitting this flag launches Pylux with its standard CLI interface.

`--verbose`, `-V` Set the verbosity level of output. Don't include to keep logging level at the default of `WARNING`. Include once for logging level of `INFO` and include twice for a logging level of `DEBUG`.

3 Using the Command Line Interface

The command line interface (CLI) is the default interface used by Pylux. It allows for very efficient editing of plot files with very little CPU overhead.

The CLI is interacted with using a series of commands, each of which may have one or more arguments. When the prompt is displayed, the program is waiting for the user to enter one of these commands. Each command is a memorable two character sequence (apart from the utility commands), where the first character is the object that is going to be acted upon and the second character is the action to perform.

3.1 Piping Complex Objects into Commands

Many commands require that you specify an object other than one which can be represented by a simple command line string. For example, the `xs` command requires that you supply a fixture object as an argument. This is made possible whilst retaining the simplicity of text based entry through the interface reference system.

When you run a listing or filtering command such as `xl`, you will notice that the objects in the list each have a number which is underlined. This is that objects's interface reference. Using this, you can pipe objects into other commands, simply by specifying the number where the command calls for another object type.

To allow for the efficient manipulation of objects in batch, you can specify more than one object at once using a comma-separated list (provided of course that the command allows for multiple objects to be piped into it) such as `a,b,c`. You can also specify ranges of numbers if you are piping sequential objects from a list using the format `a:b` where `a` and `b` are the inclusive limits. You can of course use any combination of these formats, such as `a:b,c,d:e,f`.

If you need to pipe the same object or group of objects into multiple commands, you can use the `this` reference instead of a number or list of numbers. This points to the last used reference, so will pipe in the same object or objects that were used for the last command, unless the reference list has changed since (i.e. a listing command has been run again).

3.2 Utility Commands

`h` Display a list of the available commands for the interactive prompt. This prints the contents of `help.txt` to the output.

`c` Clears the screen of previous input and output. This uses the system screen clearing command. (`clear` on UNIX, `cls` on Windows)

`q` Exit the program and autosave any changes that have been made to the tree.

`Q` Exit the program without saving any changes to disk.

3.3 File Commands

`fo` *`FILE`* Open the file with path *`FILE`* as the plot file. This will override any unsaved buffer associated with the previous plot file, if there was one.

`fw` Save the current file buffer to its original location.

`fW` *`PATH`* Save the current file buffer to a new file with location *`PATH`*.

`fg` Print the path of the file that is currently loaded.

`fn` *PATH* Create an new empty plot file at the location with path *PATH* and load it as the new plot file

3.4 Metadata Commands

`mG` List all the metadata tags associated with the currently loaded plot file.

`ms` *TAG VALUE* Set the value of the metadata with tag *TAG* to *VALUE*. If the metadata already exists, it will be overridden.

`mr` *TAG* Remove the piece of metadata from the file which has the name *TAG*.

`mg` *TAG* Get the value of a piece of metadata. Prints the value of the metadata with name *TAG* on the screen.

3.5 Fixture Commands

`xn` *TEMPLATE* Add a new fixture to the plot. This will load the contents of the fixture file with the name `TEMPLATE` into the new fixture, including DMX functions. This will not allocate DMX addresses to the fixture, use `xA` for that.

`xc` *REF* Clone the fixture with interface reference *REF* into a new fixture. This does not reassign any DMX values.

`xl` List all the fixtures in the plot. This will generate a list of every fixture in the plot, listing an interface reference, the fixture olid, and the fixture UUID.

`xf` *TAG VALUE* List all the fixtures in the plot which have a tag called *TAG* with a value of *VALUE*. Like the list function, this will list an interface reference, the fixture olid and UUID, and also the value of the tag that was given for verification purposes.

`xg` *REF TAG* Print the value of *TAG* for the fixture with interface reference *REF*.

`xG` *REF* List all the information associated with the fixture with interface reference *REF*.

`xr` *REF* Remove the fixture with the interface reference *REF*. This fixture will be removed from the plot, but associated DMX channels will not be removed, use `xp` for that.

`xs` *REF TAG VALUE* Set the value of *TAG* in fixture with interface reference *REF* to *VALUE*. For a list of standard fixture tags, see subsection 6.2. There are also some shortcuts to set mulitple tags at once, which can be found in the pseudo tags section.

`xa` *`REF UNIVERSE ADDR`* Assign DMX addresses to the fixture with interface reference *`REF`*. This will add the fixture to the universe *`UNIVERSE`*, beginning at the start address *`ADDR`*. *`ADDR`* can either be a user-assigned number or auto to allow Pylux to choose the most appropriate start address.

`xp` *`REF`* Remove the fixture with interface reference *`REF`* from the plot and also remove any DMX channels associated with it.

3.6 DMX Registry Commands

`rl` *`UNIVERSE`* List all the used channels in *`UNIVERSE`*. This will list the DMX address, fixture UUID and function of every channel in the DMX registry with identifier *`UNIVERSE`*.

3.7 Using Extensions

You cannot directly interact with extensions from the `editor` interface, you must first load the extension using the `:` command. For example, to load the `texlux` extension, use `:texlux`. This will then present you with the interface as defined by that extension which may vary but in practise should be a prompt of the form `pylux:extension` to indicate to you which extension you are operating in and some commands, much like in the `editor` interface. The extension defines its own way of returning to `editor` but this should in general be `::` or `q`.

4 Using the Graphical User Interface

Pylux also comes with a graphical user interface. This is currently in development so most features are not yet implemented. When the GUI is launched, you are presented with a window containing a list of the fixtures in the plot. (The only way to load a plot file is using the `-f` tag at launch as there is currently no menu.) Each of these fixtures has to the right of it three buttons.

The leftmost button is the only currently functional button and launches a window containing a list of the fixture's data tags. You cannot currently edit the data tags. The other two buttons are for cloning and removing the fixture but this functionality is not yet implemented.

5 Extensions

In the previous sections, we have discussed the usage of the base program in Pylux: `editor`. This is the program that you will use to edit your plots, however, beyond that, it doesn't do much. That is why Pylux is also bundled with extensions to provide extra functionality. In the current version, Pylux comes bundled with the `texlux` and `plotter` extensions.

5.1 `texlux`

`texlux` is an extension to the base `editor` program which allows for the creation of reports in the LaTeX format, which can then be post-processed to create a

PDF file, or many other formats through the use of an external tool such as Pandoc.

5.1.1 Commands

`rn` *`TEMPLATE OUTPUT TITLE`* Generates a report using the template *`TEMPLATE`*, with the title *`TITLE`*, writing the output to a file with path *`OUTPUT`*.

5.1.2 Processing

`texlux` uses built-in functions to generate LaTeX docments with pre-defined structures. Each built-in function has a corresponding LaTeX style file installed in `~/texmf` which is required to build the PDF report. Currently the only built-in function is `dimmer`, which produces a report categorised by dimmer and containing power draw totals.

5.2 `plotter`

`plotter` generates, from the fixture list and the fixture's symbol files, a plan view of the lighting plot in SVG format. It will consult the fixture's `posX` and `posY` tags to translate the symbol in the output image. It will also refer to the `rotation` tag to rotate the fixture symbol in the plot. Finally, it will colour the fixture using the hexadecimal colour code in the fixture's `colour` tag. If the `rotation` or `colour` tags are not present, `plotter` will calculate these when run.

There are also some options that can be set to customise the output of `plotter`.

5.2.1 Commands

`pn` *`OUTPUT`* Generates a new SVG plot, writing the output to the file with path *`OUTPUT`*.

`os` *`OPTION VALUE`* Set the value of the option with name *`OPTION`* to *`VALUE`*.

`og` *`OPTION`* Print the value of *`OPTION`* to the console.

`oG` Print the values of all the options.

5.2.2 Options

`beam_colour` The colour of the beam focus lines. Can be any colour in the legal list of gel colours or `auto` to make the focus lines the same colour as the fixture from which they come. Default: `Black`.

`beam_width` The thickness of the beam focus lines in SVG points. Default: `6`.

`show_beams` Choose whether or not to display the beam focus lines. Must be `True` or `False`. Default: `True`.

6 Standard Tags

Below is a list of standard tags for each section, to advise which tags you should apply to your metadata and fixtures. Also included is a list of pseudo-tags: tags which are not added to the file but actually represent one or more other tags to make adding them easier.

6.1 Standard Metadata Tags

Whilst you can use any name for a tag you wish, there are some standard ones which are used by Pylux and its bundled extensions.

`production` The name of the production for which the lighting documentation is being produced, e.g. 'Romeo and Juliet'. Used by: `texlux`.

`designer` The name of the lighting designer for this production. Used by: `texlux`.

`board_operator` The name of the person operating the main lighting board for this production. Used by: `texlux`.

`spot_operator` The name of the person operating the primary followspot for this production. Used by: `texlux`.

`director` The name of the director of the production. Used by: `texlux`.

`venue` The location at which the production is taking place. Used by: `texlux`.

6.2 Standard Fixture Data Tags

`dmx_functions` This is the parent of a list of empty elements, each of which represents a function that the fixture has that requires the use of a DMX channel. For example, traditional fixtures will have an `intensity` function whilst modern LED fixtures may have `colour` and `mode` functions.

`dmx_channels` The number of DMX channels that a fixture needs. This is automatically calculated from the `dmx_functions` tag, so should not be changed manually.

`dmx_start_address` The start address of this fixture, if it has been addressed. This is automatically assigned using the address function so shouldn't be changed manually.

`universe` The universe in which the DMX channels for this fixture are located. This too is set when the address command is run so shouldn't be changed by the user.

`posX` The x position in 2D space where this fixture is located. Measured in metres.

`posY` The y position in 2D space where this fixture is located. Measured in metres.

`focusX` The x position in 2D space where the centre of this fixture's beam is focused. Measured in metres.

`focusY` The y position in 2D space where the centre of this fixture's beam is focused. Measured in metres.

`rotation` The rotation of this fixture about its centre. Measured anticlockwise from the positive x axis in degrees. This can be automatically calculated if the preceding four data tags are present.

`circuit` For traditional fixtures only. The circuit into which the fixture is patched. Used by: `texlux`.

`power` For traditional fixtures only. The maximum power draw by the lamp in this fixture.

`dimmer_uuid` For traditional fixtures only. The UUID of the dimmer (which must exist as a separate fixture in the plot file) which is controlling this fixture.

`dimmer_chan` For traditional fixtures only. The name or number of the dimmer channel by which this fixture is controlled.

`gel` The manufacturer's code of the gel that is being used in this fixture. The automatic colour calculation currently supports Rosco Supergel and E-colour and the named HTML (X11) colours.

`colour` A hexadecimal colour code indicating the colour which best represents the gel in this fixture. Can be automatically calculated if gel is present.

6.2.1 Pseudo Fixture Tags

These tags can be used to set multiple attributes of a fixture at once.

`position` *`X,Y`* Sets `posX` to *`X`* and `posY` to *`Y`*.

`focus` *`X,Y`* Sets `focusX` to *`X`* and `focusY` to *`Y`*.

`dimmer` *`REF CHAN`* Sets `dimmer_uuid` to the uuid of the dimmer represented by *`REF`* and `dimmer_channel` to *`CHAN`*.

A Included Fixture Templates

Here follows a list of the included fixture templates.

Fixture Type	Pylux Short Name
Generic Incandescent	generic
Hutton P650	p650
LEDJ RGB PAR	ledjrgbpar
PAR64 MFL	par64mfl
Strand Patt.23	patt23
Zero88 Betapack 2	betapack2

B Supported Gel Colours

These are the gel names that can be assigned to a fixture and their colour be generated automatically.

B.1 HTML Standard Colours

Standard HTML/X11 named colours. Taken directly from the HTML colour definitions.

Pylux Gel Name	Rendered Colour
AliceBlue	#F0F8FF
AntiqueWhite	#FAEBD7
Aqua	#00FFFF
Aquamarine	#7FFFD4
Azure	#F0FFFF
Beige	#F5F5DC
Bisque	#FFE4C4
Black	#000000
BlanchedAlmond	#FFEBCD
Blue	#0000FF
BlueViolet	#8A2BE2
Brown	#A52A2A
BurlyWood	#DEB887
CadetBlue	#5F9EA0
Chartreuse	#7FFF00
Chocolate	#D2691E
Coral	#FF7F50
CornflowerBlue	#6495ED
Cornsilk	#FFF8DC
Crimson	#DC143C
Cyan	#00FFFF
DarkBlue	#00008B
DarkCyan	#008B8B
DarkGoldenrod	#B8860B
DarkGray	#A9A9A9
DarkGreen	#006400
DarkKhaki	#BDB76B

DarkMagenta	#8B008B
DarkOliveGreen	#556B2F
DarkOrange	#FF8C00
DarkOrchid	#9932CC
DarkRed	#8B0000
DarkSalmon	#E9967A
DarkSeaGreen	#8FBC8F
DarkSlateBlue	#483D8B
DarkSlateGray	#2F4F4F
DarkTurquoise	#00CED1
DarkViolet	#9400D3
DeepPink	#FF1493
DeepSkyBlue	#00BFFF
DimGray	#696969
DodgerBlue	#1E90FF
FireBrick	#B22222
FloralWhite	#FFFAF0
ForestGreen	#228B22
Fuchsia	#FF00FF
Gainsboro	#DCDCDC
GhostWhite	#F8F8FF
Gold	#FFD700
Goldenrod	#DAA520
Gray	#808080
Green	#008000
GreenYellow	#ADFF2F
Honeydew	#F0FFF0
HotPink	#FF69B4
IndianRed	#CD5C5C
Indigo	#4B0082
Ivory	#FFFFF0
Khaki	#F0E68C
Lavender	#E6E6FA
LavenderBlush	#FFF0F5
LawnGreen	#7CFC00
LemonChiffon	#FFFACD
LightBlue	#ADD8E6
LightCoral	#F08080
LightCyan	#E0FFFF
LightGoldenrodYellow	#FAFAD2
LightGreen	#90EE90
LightGrey	#D3D3D3
LightPink	#FFB6C1
LightSalmon	#FFA07A
LightSeaGreen	#20B2AA
LightSkyBlue	#87CEFA
LightSlateGray	#778899
LightSteelBlue	#B0C4DE
LightYellow	#FFFFE0
Lime	#00FF00

LimeGreen	#32CD32
Linen	#FAF0E6
Magenta	#FF00FF
Maroon	#800000
MediumAquamarine	#66CDAA
MediumBlue	#0000CD
MediumOrchid	#BA55D3
MediumPurple	#9370DB
MediumSeaGreen	#3CB371
MediumSlateBlue	#7B68EE
MediumSpringGreen	#00FA9A
MediumTurquoise	#48D1CC
MediumVioletRed	#C71585
MidnightBlue	#191970
MintCream	#F5FFFA
MistyRose	#FFE4E1
Moccasin	#FFE4B5
NavajoWhite	#FFDEAD
Navy	#000080
OldLace	#FDF5E6
Olive	#808000
OliveDrab	#6B8E23
Orange	#FFA500
OrangeRed	#FF4500
Orchid	#DA70D6
PaleGoldenrod	#EEE8AA
PaleGreen	#98FB98
PaleTurquoise	#AFEEEE
PaleVioletRed	#DB7093
PapayaWhip	#FFEFD5
PeachPuff	#FFDAB9
Peru	#CD853F
Pink	#FFC0CB
Plum	#DDA0DD
PowderBlue	#B0E0E6
Purple	#800080
Red	#FF0000
RosyBrown	#BC8F8F
RoyalBlue	#4169E1
SaddleBrown	#8B4513
Salmon	#FA8072
SandyBrown	#F4A460
SeaGreen	#2E8B57
Seashell	#FFF5EE
Sienna	#A0522D
Silver	#C0C0C0
SkyBlue	#87CEEB
SlateBlue	#6A5ACD
SlateGray	#708090
Snow	#FFFAFA

SpringGreen	#00FF7F
SteelBlue	#4682B4
Tan	#D2B48C
Teal	#008080
Thistle	#D8BFD8
Tomato	#FF6347
Turquoise	#40E0D0
Violet	#EE82EE
Wheat	#F5DEB3
White	#FFFFFF
WhiteSmoke	#F5F5F5
Yellow	#FFFF00
YellowGreen	#9ACD32

B.2 Rosco E-colour and Supergel

Colour representations taken from `http://stagedepot.co.uk`. Gels from the Supergel range are indicated by the preceding # in the name.

Pylux Gel Name	Rendered Colour
#24	#F50014
127	#E16273
166	#F06165
24	#FF5A64
157	#FF92A3
185	#D5BFC1
186	#DCB9BD
107	#FFA5AF
248	#FFE2E4
787	#B9003C
#50	#BB002C
27	#C8003C
#26	#D70229
46	#DC005A
29	#E1003C
26	#E6003C
#46	#EB016D
106	#F00032
113	#FF0064
#324	#F50F39
#339	#FF1283
#342	#FF1562
#332	#FF2957
332	#FF3787
#343	#FF397F
#43	#FF3E93
148	#FF507D
748	#E96785
#36	#FF6D96
#336	#FF73B7

111	#FF8CBE
192	#FF8CB4
36	#FFA0B9
#35	#FFA7BB
#337	#FFAFC2
110	#FFB4C8
247	#FAC3D7
#33	#FFC2D0
35	#FFC8D2
249	#FFECF0
49	#BE0091
126	#BE009B
#39	#E800BC
#344	#FF05D3
#346	#FF2DD5
341	#BC7DA8
793	#FF3CA0
795	#FA46C8
128	#FF50B4
48	#E66EAF
328	#FF64C8
2	#FF78DC
170	#E6AADC
136	#F0BEE6
794	#FFAFDC
#38	#FFBBE2
39	#FFBDE1
169	#FADCF0
797	#AF0096
798	#A000BE
#49	#C900E6
#349	#F000FF
#47	#CC4EB9
345	#CD6ED7
703	#D282DC
704	#F0AAFA
705	#EFAAFA
707	#6400B4
700	#7D00CD
343	#8C00D2
#347	#B101DD
#358	#8E0AEA
#348	#DA2DFF
701	#B45ADC
58	#B46EF0
194	#BE8CF0
52	#E6AAFA
702	#E6D2F0
#54	#E6C7FF
#351	#EFDCFF

750	#F9F1FE
#382	#250070
181	#5000AA
799	#3C00B4
#385	#4F02CF
#74	#4200FF
#374	#4200FF
#59	#7200FF
706	#6E46C8
#377	#7124FF
#357	#8A2BFF
#56	#8C2FFF
#58	#933FFD
#359	#683FFF
180	#A064E6
#57	#B482FF
#356	#C38DFF
#355	#A590FF
137	#C8B4E6
#55	#C0AAFD
#353	#C4ADFF
#52	#DDBFFF
#53	#E4DCFF
71	#0000B4
#384	#0500D0
#83	#0228EC
508	#5A46C3
344	#6662AE
#79	#1626FF
#82	#4F34F8
199	#6464E6
#84	#5767FF
#78	#6F6FFF
142	#AAAAF0
#371	#A3A8FF
709	#C8C8FA
#372	#D9DCFF
53	#E6E6FA
713	#003CA0
120	#005FBE
#85	#0049CE
716	#0064D2
#80	#0048FF
715	#3C6EDC
714	#5A91D2
198	#6478C8
723	#5082DC
#68	#447DFF
#368	#448AFF
#81	#486FFF

224	#94A2BD
75	#64A0F0
#361	#669EFC
197	#82AAE6
710	#8CA0F0
711	#AABEDC
200	#91BEF5
525	#8EB4FA
719	#9BC3F0
712	#A0BEF0
#62	#A1CEFF
500	#B4D2FF
708	#DCEBFA
#373	#E0E9FD
502	#E1F0FF
#76	#005773
#75	#007AAC
85	#006EB9
363	#006EC3
#71	#0096C7
119	#0078C8
195	#006ED2
722	#008CD2
132	#00A0DC
721	#0082E6
#69	#00A3F7
#369	#00C6FF
#65	#00A9FF
79	#3C8CD2
#67	#14A9FF
#366	#29C0F9
143	#64BED2
68	#46B4F0
352	#5AC8E1
#367	#44A5FF
165	#5AC8EB
#64	#50AEFD
#72	#55CCFF
196	#78D2E6
#70	#6CE5FF
161	#7DD2F5
#66	#94EAFF
366	#AAD2F0
#63	#A4D3FF
283	#AFD9F5
174	#AFE1FA
#363	#ABE9FF
191	#C9DDE4
201	#C3E1FA
720	#C3E1FB

717	#C3E1FB
281	#CDE6FA
718	#D5ECFA
501	#D7EBFA
63	#D2F5FF
#61	#D3EAFF
202	#D7F0FF
61	#DCF5FF
#395	#00726A
#392	#009493
#95	#009C91
#93	#01A3A0
729	#00AFAA
727	#00A5B4
#73	#00A4B8
116	#00C8B9
172	#00DCDC
#370	#01CDDF
183	#00D7E3
141	#00D2E6
115	#00EBC8
118	#00E1EB
354	#00F0D7
601	#90A0A0
144	#5AE1E6
600	#98A8AA
353	#61E8E3
724	#69E1EB
140	#87F0EB
117	#B4FAF5
725	#BEF2F3
203	#EBFCFF
#393	#007150
327	#008C50
#94	#00985D
325	#019879
735	#00BE78
124	#00DC78
323	#00E1AA
322	#41F5BE
131	#64FAD2
241	#AADCC3
#91	#005E2C
219	#9BDCAF
190	#C5E0D1
728	#C8EBD2
504	#D2F5DC
730	#DCFFE6
#90	#007F06
736	#00AA00

90	`#00BE00`
#389	`#29F433`
89	`#5ADC5A`
#89	`#51F655`
122	`#78FA6E`
242	`#B9E6B9`
139	`#4BC300`
#86	`#89FA19`
243	`#CDF5AF`
731	`#E1FAD7`
213	`#E6FCDC`
740	`#5A6E00`
#386	`#7BD300`
738	`#AAFF00`
#388	`#D0F54E`
505	`#E3FF5A`
121	`#B4FF64`
88	`#DCFF64`
138	`#DCFFA0`
189	`#D9E6C8`
244	`#E6FABE`
733	`#EBF7CF`
245	`#F0FCD2`
246	`#F5FFE6`
642	`#968200`
643	`#B4A000`
104	`#FFDC00`
#312	`#FFEA00`
#10	`#FFF200`
767	`#FFE600`
10	`#FFFF00`
100	`#F5FF00`
101	`#FFF500`
550	`#E3CA3C`
514	`#F5FF5A`
#96	`#F3FF6B`
513	`#F5FF7D`
7	`#FAFAD2`
#07	`#FDFAD1`
212	`#FFFAD7`
#06	`#FCFADB`
746	`#6E3C00`
741	`#826400`
653	`#965500`
777	`#F58200`
#15	`#FECB00`
15	`#FFCD00`
179	`#FFBE00`
105	`#FFA000`
158	`#FF8700`

768	#FFC600
770	#FFB400
#14	#FCD419
#11	#FFD21A
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103	#FCEACC
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