# Creating R20 files from d4 personalities

(This is NOT an official documentation but simply based on my personal experiences - it might be not complete or even simply wrong in some aspects. Please give feeback if you find anything that you think should be improved.)

R20 files had been the personalities for the Classic consoles from the Pearl 2000 on. After production of the Classic consoles was stopped, Avolites also ceased to offer free personality service for this system in 2019. You can still download the existing personalities, but no new ones will be created.

This page is intended to be helpful when you need a new personality for a fixture which isn't in the library for classic consoles but does exist as d4 file for the Titan system.

Please understand that this page is currently **Work In Progress**.

## **Preliminary Considerations**

It is good to understand the main differences (with regards to personalities) between the old Classic system and the new Titan system. When using the Personality Builder to export R20 files from existing d4 files you most likely need to correct some details following these points.

- 1. With R20 files, **each mode requires a separate personality file**, while in the d4 world there is only one file per fixture, holding all the modes.
- 2. **No Virtual Dimmers in Classic!** In Titan you can define a dimmer channel which doesn't exist in the fixture, to proportionally dim e.g. red/green/blue colour channels. This is not possible on Classic consoles, and thus not supported in R20 files.
- 3. **No cells/subfixtures in Classic!** Nowadays there are numerous fixtures available with many individually controllable pixels or other parts, and in Titan there is a mechanism where you can control all such parts simultaneously (as Master channels) or individualle (as subfixtures or cells). This is not possible in Classic. As such, cell modes as well as modes using cells are not supported in R20 files. There is a special feature called compatibility attributes which attempts to spread out all such attributes onto available attribute banks but this is currently not covered from this explanation.
- 4. No Conditions in Classic! In Titan it is rather common to have a virtual function-select attribute which controls how other attributes can be adjusted, e.g. a wheel Gobo Func where you can select Index, Scroll and Shake, and the Gobo wheel itself then shows only a subsection of all the Gobo values. This is not possible in Classic.
- 5. **No 16 bit Dimmer in Classic!** While in theory this should be possible, in reality there is an issue in the software which doesn't allow such dimmers to be dimmed down to 0. Thus you might need to reduce the resolution to 8 bit and put the extra channel elsewhere.
- 6. **Two wheels only in Classic!** While there are at least three control wheels on Titan consoles and it is easy to add and operate attributes on multiple pages, Classic consoles have only two wheels, and spreading attributes across pages is best avoided.
- 7. **Classic wheel mapping not stored in d4 files!** Subsequently to the previous point the wheel mapping (i.e. how the attributes are laid out onto the wheels) for Classic consoles is in most cases different from the mapping in Titan. However, as the d4 file format is targeted towards

Titan, it doesn't provide means to store the mapping for Classic consoles. The personality builder has the option to export and import this as separate xml file in File  $\Rightarrow$  Export  $\Rightarrow$  Pearl Mapping. But you need to keep track of such files if you are using this.

### 1. Check if there really doesn't exist one

Use the search on https://personalities.avolites.com/ to check if there really doesn't exist what you need - downloading is always faster than attempting to do yourself.

# 2. Update your personality library

You certainly do not want to work with old data. Thus, download and install the latest Titan Fixture Library from https://personalities.avolites.com/.

## 3. Identify the correct d4 file

We assume that a d4 personality for your fixture already exists. Luckily they usually have verbose file names - have a look in the personality folder (with the PC suite installed it is C:\Program Files (x86)\Avolites\Titan\FixtureLibrary). If you don't find what you need then search at https://personalities.avolites.com/ or https://www.avolites.de/downloads/d4find for the correct filename. If you still don't find anything then request the personality for Titan or build it yourself (this might be explained on another day).

If you have found the correct d4 file copy it to a suitable location, e.g. your desktop, and open it in the Titan Personality Builder.

If you want to try it yourself then, as an example, you can download and open the personality of the

#### Prolight Equinox Fusion 260ZR

. The PersoBuilder will open with the whole tree collapsed, and the Attributes (top) and Properties (bottom) tabs selected:

٠ ^

Ĵ

୍ <del> </del> କୁ	Created Attrib Reserved Tit Colour 1 Gobo	Caller St	immer	History	Modes	^
୍ <del> </del> କୁ	Reserved	D Si Ca	immer hutter olour 2	History	Modes	~
୍ <del> </del> କୁ	Reserved	D Si Ca	immer hutter olour 2			^
	Colour 1	C	olour 2			
						~
turer		Proligh	t			-
- M		Equino	x Fusion 2	60ZR		
fixture						
	Channela	Wheel Mannin	Locate	/alues	Cells	
f					ixture MX Values Channels Wheel Mapping Locate Values	

# 4. Identify modes, enter references

As stated above the Classic system cannot handle some specific things which came with Titan. One of them are cells and subfixtures. Thus, cell modes as well as modes referencing those cannot be exported as R20 (we omit the 'Compatibility Attributes' workaround for the moment).

In the left-hand pane expand the Modes section by clicking on the + sign. Now it will look like this:

2010 Prolight Equinox Fusion 260ZR - Personality	y Builder			_		×
File Edit View Tools Help						
Equinox Fusion 260ZR	Attributes Functions (	Created Attributes	Current Functions	History	Modes	Max + +
Manual Physical	ବିଲୁ Pan ବ	Reserved	Dimmer Shutter Colour 2			^
⊕		Gobo	Gobo Rot			~
⊕- <u>- </u> ¶_ 17 DMX	Manufacturer		Prolight			^
·	Name		Equinox Fusion	260ZR		~
<ul> <li>macros</li> <li>macros</li> <li>macros</li> <li>macros</li> </ul>	Name Name of this fixture					
	Properties DMX Values	Channels Whee	el Mapping Locate	Values	Cells	
						.::

One by one expand each mode (you might enlarge the PersoBuilder's window for a better overview), and identify the modes which you want to and can export as R20 file:

- the **2 DMX** mode features only Auto and Sound as attributes. You will hardly use this at all. Let's just skip it.
- the 8 DMX and 17 DMX modes look promising. We'll attempt to export those as R20.

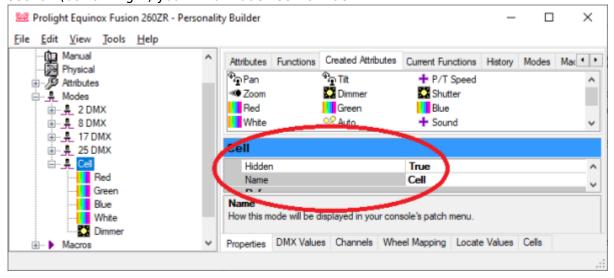
3/13

Prolight Equinox Fusion 260ZR - Personalit	y Builder	- 🗆 ×
<u>File Edit View</u> Tools <u>H</u> elp		
⊡ <u>₽</u> Modes ^	Attributes Functions Created Attributes Cur	ment Functions History Modes Mac
		Dimmer ^
9 Tilt Zoom	Colour Colour 1	Colour 2 O Gobo Rot V
Dimmer	Fixture	
Green	Manufacturer Pr	olight
		quinox Fusion 260ZR
⊕ <u>म</u> . 17 DMX ⊕ <u>म</u> . 25 DMX ⊕म. Cell	Name Name of this fixture	
· → Macros ✓	Properties DMX Values Channels Wheel M	apping Locate Values Cells

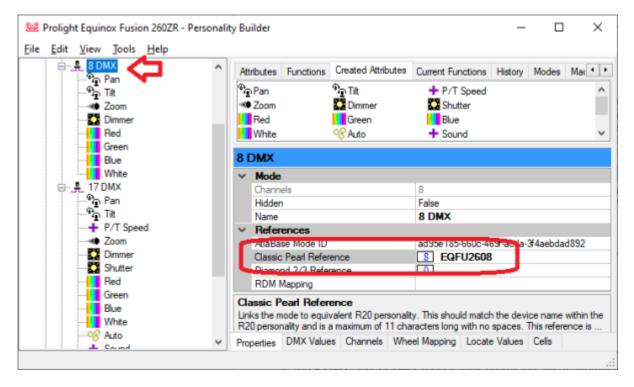
• the **25 DMX** mode contains the sections Cell Master, Cells, and Compatibility Attributes (here empty) - this is a mode which uses cells, and thus cannot be exported as R20.

Prolight Equinox Fusion 260ZR - Personal	ty Builder	- 🗆 X
	Attributes     Functions     Created Attributes     Current Function       +     Generic     +     Reserved     Immer       +     Pan     +     Tit     Immer       +     Colour     +     Colour 1     Immer       -     Colour     -     Colour 1     Immer       -     Colour     -     Colour 1     Immer       -     Colour     -     Colour 2     Colour 2       -     Colour Macro     Colou     Colour 3     Colour 3	^
⊕17 DMX ⊕25 DMX ⊕26 Cell Master	Manufacturer Prolight Name Equinox Fue	sion 260ZR
Cells     Compatibility Attributes     Gel     Macros	Name Name of this fixture Properties DMX Values Channels Wheel Mapping Lo	ocate Values Cells
III. Macros	rioponea	

 finally the Cell mode is the one which is only referenced in the 25 DMX mode. proof for this is the Hidden attributes set to true: left, click on the mode Cell itself, and in the properties section (bottom right) you'll find Hidden set to True:



In order to make the selected modes exportable they each need a distinct Classic Pearl Reference. While it is possible to use up to 11 characters life is much easier if you restrict this to 8 characters. It is good practice to use the first 2 characters for an abbreviation for the manufacturer, characters 3~6 for the fixture name, and the last two for the DMX mode. Here let's use **EQ**uinox **FU**sion **26**0ZR **08** (DMX), or **EQFU2608**, and **EQFU2617** respectively. In PersoBuilder, left, click on the mode, in the properties tab (bottom-right) find Classic Pearl Reference, and enter the references we have found.



Do so for each mode which you plan to export as R20.

# 5. Check Wheel Mapping

Unlike Titan consoles classic only features 2 encoder wheels, and the attribute banks are structured differently. Obviously wee need to check the wheel mapping – the way how the attributes are laid out on the wheels and banks. In order to do this click on the Wheel Mapping tab on the bottom, enlarge the program window so that you have a good overview, select a mode on the left (pro tip: start with bigger modes, than smaller ones may also fit), then select the Classic Pearl tab on top-right, and tick the Filter by Mode checkbox. It will look like this:

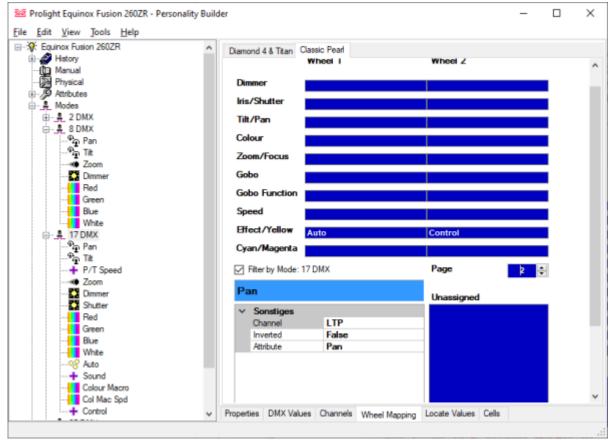
3 Prolight Equinox Fusion 260ZR - Personality Bui	lder	- 2		-		×
<u>File Edit View Tools H</u> elp		─ 3.				
Equinox Fusion 260ZR	Diamond 4 & Than	Classic Pearl				
🕀 🥔 History		t for B29 rile Export				^
- 🛄 Manual	wheel Assignme					
D Physical		Wheel 1	Wheel 2			
⊕-∬9 Attributes ⊟	Dimmer					
e-≞ 2DMX	Lanninga	Dimmer				
	Iris/Shutter					
Pan Pan	Tilt/Pan	1971 H	0			
92 Tit		Tilt	Pan			
	Colour	Col Mac Spd				
🔛 Dimmer	Zoom/Focus	Zoom				
Red	Caba	20011				
Green	Gobo					
Blue	Gobo Function					
- £ 17 DMX	Speed	D77.0				
		P/T Speed	Sound			
- Pa Tit	Effect/Yellow		Blue			
+ P/T Speed	Cyan/Magenta	Red	Green			
Zoom				_		
🔛 Dimmer	Filter by Mode:	DMX	Page		1 🚔	
Shutter	Pan					
Red	ran		Unassigned			
Green	<ul> <li>Sonstiges</li> </ul>		Shutter			
Blue 	Channel	LTP	Auto Colour Macro			
	Inverted	False	Control			
+ Sound	Attribute	Pan				
Colour Macro						~
	Properties DMX Val	ues Channes Wheel Mappin	a Locat plues	Cels		
	District of the	wheel Mappin	g constructs	0010		

In the righthand area you can now drag and drop each attribute, in order to move it to another bank and wheel. Usually the suggested mapping is a good starting point. The most important thing is to move attributes from the 'Unassigned' area (bottom right) onto a valid blue rectangle (defined by Wheels and attribute group). Also using the Page select box with arrow buttons you can toggle to more pages. My result looks this:

2025/09/10	21:15
------------	-------

201 Prolight Equinox Fusion 260ZR - Personality Build	er			_		×
File Edit View Tools Help						
Equinox Fusion 260ZR	Diamond 4 & Titan	Classic Pearl				
🖲 🥔 History						
- 🛄 Manual	Wheel Assignme	nt for R20 File Export				<u>^</u>
- Physical		Wheel 1	Wheel 2			
⊕-∯ Attributes ⊖- ♣ Modes	Dimmer					
⊡- <u>–</u> , modes ⊕ <u>–</u> , 2 DMX		Dimmer				
⊡- <u> </u>	Iris/Shutter		Shutter			
- Man Pan	Tilt/Pan					
-9 Tit		Tilt	Pan			
Zoom	Colour	Col Mac Spd	Colour Macro			
🚺 Dimmer	Zoom/Focus	Zoom				
Red	Gobo					
Green						
Blue White	Gobo Function					
IT DMX	Speed	P/T Speed	Sound			
- Pan			sound			
-9° Tit	Effect/Yellow	White	Blue			
+ P/T Speed	Cyan/Magenta	Red	Green			
Zoom						
Dimmer	Filter by Mode:	17 DMX	Page	1 🖨	-	
Shutter	Pan					
Red			Unassigned		_	
Green	<ul> <li>Sonstiges</li> </ul>					
White	Channel	LTP				
	Inverted	False				
+ Sound	Attribute	Pan				
Colour Macro						
Col Mac Spd						~
+ Control V	Properties DMX Val	ues Channels Wheel Mapping	Locate Values Cells			
• • • • • • • • • • • • • • • • • • • •						

- Shutter was moved from Unassigned to Iris/Shutter, Wheel 2
- Colour Macro was moved from Unassigned to Colour, Wheel 2
- White was on page 2. There I moved it to Unassigned, toggled to page 1, and moved it to Effect/Yellow, Wheel 1.



• Auto and Control are good candidates for page 2, Effect/YelloW attribute bank.

Please note that the Classic Pearl wheel mapping is not stored in the d4 file. If you made any changes which you want to store separately for future use then you need to export it using File -> Export -> Pearl Mapping. This will export the mapping onyl as xml file which you need to store and keep track of separately.

Your work on this page is done when nothing is in the Unassigned area, and nothing in the top boxes is red - on every page!

### 6. Export R20

After having entered the references and checked/adjusted the wheel mapping it is time to have a go on creating R20 files: click File -> Generate R20 Files.... Here are some prompts and solutions which might happen.

Question × Generate Visualiser files? Ja Nein	most likely you will answer No - generating visualiser files is explained in Creating vis files from d4 personalities
	here it complains about the missing reference for the 2 DMX
Error × The pearl reference, "", for the mode "2 DMX" is invalid. Skip mode and continue?	mode. We left this one empty intentionally. Thus click OK here to
OK Abbrechen	continue. You'd click Cancel if you'd decide to add a reference for this mode as well.

AVOSUPPORT - https://avosupport.de/wiki/

						now it's getting closer: we are prompted for name and location of the first mode (have a look at this prompt's title bar, it reads Save "8
🚾 Save "8 DMX" (EC	FU2608)				×	DMX" (EQFU2608).
$\leftarrow \rightarrow \neg \uparrow$	> Dieser PC > Dokumente > Titan > Personalities		×	O Personaliti	es durchsuchen	The location
Organisieren 🔻	Neuer Ordner				iii • 🔞	is completely
Desktop	* Name	Änderungsdatum	Тур	Größe		up to you
Avo_SB_BK	*	Es wurden keine Sucherge	bnisse gefunden.			(personally I'd prefer the
E Bilder	1					desktop). The
Produkte	*					file name is a
icke	*					little special:
<ul> <li>OneDrive</li> </ul>						while for the
Dieser PC						moment the
3D-Objekte Bilder						suggested
Desktop						name would
🕆 Dokumente						be okay it
Dateiname:	prolight_equinox_fusion_260zr.R20				~	would be impossible to
Dateityp:	Azure/Pearl/Sapphire Personality (*.R20)				~	import this
<ul> <li>Ordner ausblende</li> </ul>	_			Speichern	Abbrechen	into a real
A Ordner ausbiende	en			aperenent	Abbrechen	Classic
						console.
						Hence I'd
						recommend
						to change the
						file name to
						the 8 char name which
						we defined as
						reference for
						this mode, in
						this case
						EQFU2608.

32 Save "8 DMX" (EQFU2608)				>	<
← → × ↑ 🔜 > Dieser PC > W7_System (E:) > Benutzer > Adr	ministrator > Desktop	~	õ 🔎 Desktop	durchsuchen	
Organisieren 👻 Neuer Ordner				III • 🔞	
	Änderungsdøtum Es wurden keine Sucherge	Typ ebnisse gefunden.	Größe		
Image: Second secon					Here location and name are as suggested.
<ul> <li>OneDrive</li> <li>Dieser PC</li> <li>3D-Objekte</li> <li>Rilder</li> </ul>					
Dateiname: EQFU2608.R20					-
Dateityp: Azure/Pearl/Sapphire Personality (*.R20)				,	~
∧ Ordner ausbienden			Speichern	Abbrechen	-11
					Pretty much self explanatory: there is a macro defined which uses an attribute which is not
Question The attribute, Control, is not included the macro Reset. Write macro anyway?	in this mode but is i la Nein				included in this mode. Maybe you want to cancel here, go back, and check which macros and attributes are
					defined. In this case it is 100% correct, and we do not include the macro in this mode: click No.

11/13

998 Save "17 DMX" (E	QFU2617	n					$\times$	Now we are
← → ∽ ↑ 🗖	> Dies	ser PC > Desktop >		~	Ö 🔎 Desktop o	lurchsuchen		about to save
Organisieren 🔻	Neuer	Ordner				l∷ •	?	the next mode's
Schnellzugriff Desktop Avo_SB_BK Dokumente Bilder Produkte icke OneDrive Dieser PC Bilder Dieser PC Bilder Dateinant Dateinant Dateinant	* * * *	Name  EQFU2608.R20  ESVbb/Desktop/EQFU2608.R20  Raad/Sapphire Personality (* 830)	Änderungsdetum 30.05.2022 10:30	Typ Visualiser.R20File	Größe 7 KB		~ ~	personality file. Please note that it did not change the suggested filename to the new mode. You need to manually change the filename
∧ Ordner ausblend					Speichern	Abbrechen		again, here to EQFU2617.

				This is quite common, in particular for attributes like Shutter, Gobo or Colour: in this case e.g. the shutter has a value range from 0~15 for
Question The channels assigned to wheel part of the DMX range. Note: Visualiser will require com Adjust limits to match?				Open, but it is only 0 in the d4 file - and then the strobe range starts at 16, leaving the values 115 not defined.
Prolight Equinox Fusion 260ZR - Personali	ty Builder		- 🗆	This is okay for d4 (Titan)
File Edit View Tools Help	Start At DMX Value 0 End At DMX Value 255 Assign One Value Auto Assign	End from Start	Pad text to	as well as R20 (Classic) files but is a problem for visualiser
B Pan B Pan B Tilt B + P/T Speed B - ■ Zoom	Shutter Functions	art At DMX   End At DMX	Wheel Displa	files. However
Dimmer     Shutter     Shutter     Point 1) Open     Substantial 2) Strobe %	2 Strobe % 16		Strobe	to adjust the values manually if required (see Creating vis files from d4 personalities).
				The Image below shows where the ranges are set in this example.

Error	×	Here again a Pearl reference is missing - this is the 25ch mode which we cannot export
8	The pearl reference, "", for the mode "25 DMX" is invalid. Skip mode and continue?	because it contains cells. Hit 0K.
	OK Abbrechen	Similar prompts may show up for more nodes which you don't need as R20, e.g. the Cell mode.

# What you should have learned by now: if a prompt occurs then don't just click 0K. Read it, and decide!

If everything goes well then you end up with these files:

- prolight\_equinox\_fusion\_260zr.d4
  - eqfu2608.r20
  - eqfu2617.r20

