

# How to Grade LogC4 Footage ARRI ALEXA 35 Camera

TECHNICAL NOTE

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## **Version History**

Version	Author/Editor	Change Note
2022-02-22	Florian Martin	Version 1.0
2022-03-01	Simon Duschl	Updated software
2022-07-20	Florian Martin	Screenshot update
2022-09-02	Simon Duschl	Added link to "Color workflows for mixing ARRI LogC3 and LogC4"

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#### 1. Note

Please note that these instructions will be constantly updated with changes in partner postproduction software.

### 2. Introduction

This document is designed to help you import and setup ARRI ALEXA 35 footage for grading in Filmlight Baselight and DaVinci Resolve.

#### 3. What's new

With the introduction of the ARRI ALEXA 35 camera in 2022, ARRI also introduced the completely new REVEAL Color Science, including a new debayer algorithm (ADA-7), new color engine (ACE4), new color space (AWG4) and a new logarithmic curve (LogC4).

REVEAL Color Science not only allows the storage of the great dynamic range of the ARRI ALEXA 35 camera into a logarithmic file, but also provides much better color reproduction with the ARRI ALEXA 35 camera for pleasing and natural skin tones, better color tracking across exposure levels as well as greatly improved reproduction of highly saturated colors like traffic lights, car brake lights, neon signs and tubes.

The new color space AWG4 was designed in cooperation with colorists for better grading results. Therefore it is the first camera color space which not only stores the captured colors of the camera efficiently, but also is designed for best grading results. This is achieved by having very little virtual colors inside and better placed RGB primeries for grading.

ARRI's Color Science REVEAL will also bring SDR and HDR grading deliveries much closer together and will save you time to work on trim passes for one or the other.

To make all this possible the new logarithmic curve (LogC4) is not backwards compatible with older versions e.g. LogC3. Therefore, it is very important to setup the workflow for ARRI S35 4K files according to this guide and not use existing LUTs or color management for other ARRI cameras. Using older LogC3 LUTs will make the image look underexposed and all colors will be off.

### 4. How to import ARRI ALEXA 35 footage into your software

Currently ARRI is working very closely with it's partners to enable a smooth workflow with ARRI ALEXA 35 ARRIRAW and ProRes files in all post production software. Please see the list with supporting software and versions on our website:

https://www.arri.com/en/learn-help/learn-help-camera-system/alexa-35-workflows

For sample projects and how to get mixed LogC3/LogC4 projects done, we refer to the "<u>ALEXA 35 – Color</u> workflows for mixing LogC3 and LogC4 footage & Sample Projects" document. Please check also our "<u>ALEXA 35 - Workflow & Post Guide</u>".

### 5. Setup Baselight using ARRI's Colormanagement REVEAL

Step 1. Please make sure that you are using Baselight Version 5.3.16163 or later.

Step 2. Download ARRI's ODT family ARRI ALF-4 if not present in your Baselight installation.

Step 3. Setup the "Working Colour Space" and the "Display Rendering Transform" on the "Format & Colour" page of your "Scene Settings" as shown below:

		-	Scene Settings		_	×
Settings for localhost:ALE	XA 35:A	RRI REVEA	L Colormanagement			
General Format & Colour	Stereo	Scene Audio	Default Image Transform	Container & Versioning	Metadata	Category Group
			Format			
Working Format:	UltraHD 3	840x2160 -				
Working Frame Rate:						
Working Field Order:	None (pro	gressive) -				
Processing Format:	Process In	n Viewing/Rend	ler Format			
Scene Format Update:	🔿 Auto U	pdate When Jo	b/Global Formats Change			
			Colour			
Working Colour Space:	🗃 ARRI: I	LogC4 / ARRI \	Wide Gamut 4 🚽 🔶			
Grade Result Colour Space:	From S	Stack -				
Display Rendering Transform:	ARRI A	LF-4	- Automatic -	◀	-	
			Advanced			
Default Input Colour Space:	(Use S	tack Colour Sp	ace) 👘 间 Prefer Automa	tic/From Metadata		
DRT Application:	🗇 Do not	apply DRT for	Display → Scene colour spac	ce conversions		
Mastering Colour Space:	Automa	atic From DRT	-	O		
Mastering Operation:	Set White	e & Clip				
Mastering White Point:						
			● ■ Dolby Vision ──			

Step 3. If you are using the "Automatic" option for the "Input Colour Space" of the ARRIRAW strip, please check that Baselight uses the "ARRI: LogC4 / ARRI Wide Gamut 4" colour space using your "Colour Space Journey"

Name: /Volume	s/dws/220118_ARRI_S35_4K_Testfiles/A001R	084/A001C002_220118_R084.mxf		₿ С
		quence	Actions -	Layer: 0 Customise T
File Name:	/Volumes/dws/220118_ARRI_S35_4K_Te	stfiles/A001R084/A001C002_22011	8_R084.mxf C	Categories: None -
		ometry		
Input Format:	(4608×3164) Convert Basic	Format 🖸 Alway	rs Decode At Max Quality	
Orientation:	Normal			
	Colo	ur Space		
Input:	Automatic T			
Stack:	Working Colour Space ARRI: LogC4 / ARRI Wit	de Gamut 4 🔻		Sequence
Input DRT:	(Not Required)			Audio
	F	rames		ARRIRAW Params
Frame Rate:	24 - Offset: 0	Increment: 1.00000	Reverse	Image Transform Settings
Repeat Count:	1	Range	e: 0–124	
Resampling:	Use Scene Setting Snap To Frame T	1	Handles: Start & End 🔻	B 🔾 Edit Blur
	Interlaci	ng/Pulldown		
Field Order:	None (progressive) -	Treatment: Progressi	ive	
Pulldown:	Detect Pulldown			
N/A 🔻		Keyframes		Auto Edit 🚽 🕥 Stripe KFs
IN/A				Auto Edit 🦷 🕥 Stripe KFs
		Colour Space Journey		×
Desktop/ALE	XA35 TechTalk/02_Media/01_ALEXA	35/02_ARRI_Encounters/ARRI AL	EXA 35 Encounters_Ch	nina/B001C011_220314_R07I.m>
0 Sequence	Automatic Input C	olour Space 🖜 ARRI: LogC4 / AF	RRI Wide Gamut 4	
0 Stack		Graded in 油 ARRI: LogC4 / AF	RRI Wide Gamut 4	
Cursor		🖌 converted with fa	mily DRT ARRI ALF-4 [\	/ideo 100 nits]
		olour Space 🖵 Rec.1886: 2.4 Ga		
	Mastering C	Colour Space 🖵 Rec.1886: 2.4 Ga		
		Mastering White	Point: From Colour Spac	ce
Colour Space	At Cursor: 🖜 ARRI: LogC4 / ARRI W	/ide Gamut 4		
- obiodi - opace	Al Cursol. A ARTA. E0904 / ARTA W			

Your resulting "Colour Space Journey" should look like this:

	Colour Space Journey	X			
Desktop/ALEXA35 TechTalk/0	2_Media/01_ALEXA35/02_ARRI_Encounters/ARRI ALEXA 35 Encounters_China/B001C011_220314_R07I.mv	$\prec \vdash$			
0 Sequence	Automatic Input Colour Space ъ ARRI: LogC4 / ARRI Wide Gamut 4				
0 Stack	Graded in ъ ARRI: LogC4 / ARRI Wide Gamut 4				
Cursor	🖉 converted with family DRT ARRI ALF-4 [Video 100 nits]	_			
	Viewing Colour Space 🖵 Rec.1886: 2.4 Gamma / Rec.709				
	Mastering Colour Space 🖵 Rec.1886: 2.4 Gamma / Rec.709				
	Mastering White Point: From Colour Space				
Colour Space At Cursor: 🍽 ARRI: LogC4 / ARRI Wide Gamut 4					

### 6. Setup Baselight using ACES Colormanagement

# Using this workflow you will not get all the benefits of the REVEAL Color Science, since the image is not rendered using ARRI's REVEAL Color Science but ACES Color Science to the selected Output-Device.

Step 1. Please make sure that you are using Baselight Version 5.3.16163 or later.

Step 2. Setup the "Working Colour Space" and the "Display Rendering Transform" on the "Format & Colour" page of your "Scene Settings" as shown below:

	-		Scene Settings			×
Settings for localhost:ALE	XA 35:A	ACES Colorm	nanagement			
General Format & Colour	Stereo	Scene Audio	Default Image Transform	Container & Versioning	Metadata	Category Group
			Format			
, Working Format:	UltraHD	3840x2160 -				
Working Frame Rate:						
Working Field Order:	None (pr	ogressive) -				
Processing Format:	Process	In Viewing/Rend	ler Format –			
Scene Format Update:	🔾 Auto L	Jpdate When Jo	b/Global Formats Change			
			Colour			
Working Colour Space:	ACES	Scct: ACEScct / A	AP1	-		
Grade Result Colour Space:	From	Stack -				
Display Rendering Transform:	ACES	S RRT 1.1+	Automatic			
			Advanced			
Default Input Colour Space:	(Use s	Stack Colour Sp	ace) – 🔵 Prefer Automati	c/From Metadata		
DRT Application:	🔿 Do no	t apply DRT for	Display → Scene colour spac	e conversions		
Mastering Colour Space:	Auton	natic From DRT	- ◆			
Mastering Operation:	Set Whit	te & Clip				
Mastering White Point:						
			■ Dolby Vision			

Step 3. If you are using the "Automatic" option for the "Input Colour Space" of the ARRIRAW strip, please check that Baselight uses the "ARRI: LogC4 / ARRI Wide Gamut 4" color space using your "Colour Space Journey"

Name: /Volume	s/dws/220118_ARRI_S35_4K_Testfiles/A001R084/A001C002_220118_R084.mxf	B C =
	Sequence	Layer: 0 Customise
File Name:	/Volumes/dws/220118_ARRI_S35_4K_Testfiles/A001R084/A001C002_220118_R084.mxf 🕻 🕻	Categories: None
		Categories. None
Input Format:	Geometry (4608×3164) Convert Basic Format CAlways Decode At Max Quality	
· ·		
Orientation:	Normai	
	Colour Space	
Input:	Automatic 🕆	
Stack:	Working Colour Space ACEScct ACEScct / AP1 T	Sequence
Input DRT:	(Not Required)	Audio
· ·		ARRIRAW Params
	Frames	
Frame Rate:	24 Offset: 0 F Increment: 1.00000 Reverse	Image Transform Settings
Repeat Count:	1 Range: 0–124	
Resampling:	Use Scene Setting Snap To Frame THandles: Start & End	B C Edit Blur
	Interlacing/Pulldown	
Field Order:		
Pulldown:	Detect Pulldown Keyframes	
N/A 🗉		Auto Edit 🗾 🕥 Stripe KFs
		* b
	Colour Space Journey	×
	ws/220118_ARRI_S35_4K_Testfiles/A001R084/A001C002_220118_R084.mxf	
0 Sequence	Automatic Input Colour Space 🖿 ARRI: LogC4 / ARRI Wide Gamut 4 📃 🔫	
0	▼ converted	
0 Stack	Working Colour Space 🍋 ACEScct: ACEScct / AP1 Graded in 🍋 ACEScct: ACEScct / AP1	
Cursor	Graued III ■ ACEStot ACEStot / AFT	- [Video 100 nits]
Cursor	Viewing Colour Space 🖵 Rec.1886: 2.4 Gamma / Rec.709	
	Mastering Colour Space 🖵 Rec.1886: 2.4 Gamma / Rec.709	
	Mastering White Point: From Colour Space	
SDI Card	SDI Output ► 4:4:4 RGB No Scale/Clip	

Your resulting "Colour Space Journey" should look like this:

	Colour Space Journey	×
/Volumes/dws/220118_A	ARRI_S35_4K_Testfiles/A001R084/A001C002_220118_R084.mxf	
0 Sequence	Automatic Input Colour Space 🖿 ARRI: LogC4 / ARRI Wide Gamut 4	
0	▼ converted	
	Working Colour Space 🖿 ACEScct: ACEScct / AP1	
0 Stack	Graded in 🏊 ACEScct: ACEScct / AP1	
Cursor	🔎 converted with family DRT ACES RRT 1.1+ [Video 100 nits] 🛛 🚄	
	Viewing Colour Space 🖵 Rec.1886: 2.4 Gamma / Rec.709	
	Mastering Colour Space 🖵 Rec.1886: 2.4 Gamma / Rec.709	
	Mastering White Point: From Colour Space	
SDI Card	SDI Output ► 4:4:4 RGB No Scale/Clip	
Colour Space At Cursor: 🖿	ACEScct: ACEScct / AP1	

### 7. Setup Baselight using Filmlight's Colormanagement

# Using this workflow, you will not get all the benefits of the REVEAL Color Science, since the image is not rendered using ARRI's REVEAL Color Science but Filmlight's Color Science to the selected Output-Device.

Step 1. Please make sure that you are using Baselight Version 5.3.16163 or later.

Step 2. Setup the "Working Colour Space" and the "Display Rendering Transform" on the "Format & Colour" page of your "Scene Settings" as shown below:

		_	Scene Settings			×
Settings for localhost:ALE	XA 35:F	ilmlight Colc	ormanagement			
General Format & Colour	Stereo	Scene Audio	Default Image Transform	Container & Versioning	Metadata	Category Group
			Format			
, Working Format:	UltraHD 3	3840x2160 -				
Working Frame Rate:						
Working Field Order:	None (pro	ogressive) -				
Processing Format:	Process	In Viewing/Rend	ler Format –			
Scene Format Update:	🔾 Auto L	Jpdate When Jo	b/Global Formats Change			
			Colour			
Working Colour Space:	🕞 FilmLi	ght: T-Log / E-G	amut			
Grade Result Colour Space:	From	Stack -				
Display Rendering Transform:	F Truelig	ght CAM v2	Automatic	-	_	
			Advanced			
Default Input Colour Space:	(Use s	Stack Colour Sp	ace) 👘 🕜 Prefer Automat	ic/From Metadata		
DRT Application:	🗇 Do not	t apply DRT for	Display → Scene colour spac	e conversions		
Mastering Colour Space:	Autom	natic From DRT				
Mastering Operation:	Set Whit	e & Clip				
Mastering White Point:						
			■ Dolby Vision			

Step 3. If you are using the "Automatic" option for the "Input Colour Space" of the ARRIRAW strip, please check that Baselight uses the "ARRI: LogC4 / ARRI Wide Gamut 4" color space using your "Colour Space Journey"

Name: /Volume	s/dws/220118_ARRI_S35_4K_Testfiles/A001R084/A001C002_220118_R084.mxf	B C -
	Sequence Q Actions	Layer: 0 Customise -
File Name:	/Volumes/dws/220118_ARRI_S35_4K_Testfiles/A001R084/A001C002_220118_R084.mxf	Categories: None
	Geometry	Categores. None
Input Format:	(4608×3164) Convert Basic Format CAlways Decode At Max Quality	
Orientation:	Normal	
	O churc O ca ca	
Input:	Colour Space	
Stack:	working Colour Space FilmLight: T-Log / E-Gamut	Sequence
Input DRT:	(Not Required)	Audio
input DK1.		
Frame Rate:	Frames 24 Offset: 0 F Increment: 1.00000 Reverse	ARRIRAW Params
		Image Transform Settings
Repeat Count:		B C Edit Blur
Resampling:	Use Scene Setting Snap To Frame T Handles: Start & End T	
	Interlacing/Pulldown	
Field Order:	None (progressive) - Treatment. Progressive -	
Pulldown:	Detect Pulldown Keyframes	
N/A 🔻		Auto Edit 👘 🔵 Stripe KFs
D (alumaa)	Colour Space Journey	×
0 Sequence	ws/220118_ARRI_S35_4K_Testfiles/A001R084/A001C002_220118_R084.mxf Automatic Input Colour Space 🖿 ARRI: LogC4 / ARRI Wide Gamut 4	
0	▼ converted	
	Working Colour Space 🖿 FilmLight: T-Log / E-Gamut	
0 Stack	Graded in 🏊 FilmLight: T-Log / E-Gamut	
Cursor	converted with family DRT Truelight CAM v Viewing Colour Space تا Rec.1886: 2.4 Gamma / Rec.709	
	Mastering Colour Space 🖵 Rec.1886: 2.4 Gamma / Rec.709	
(	Mastering White Point: From Colour Space	
SDI Card	SDI Output ► 4:4:4 RGB No Scale/Clip	
Colour Cross	At Cursor: 📷 FilmLight: T-Log / E-Gamut	

Your resulting "Colour Space Journey" should look like this:

	Colour Space Journey	×
/Volumes/dws/220118_A	xRRI_S35_4K_Testfiles/A001R084/A001C002_220118_R084.mxf	
0 Sequence	Automatic Input Colour Space 🖿 ARRI: LogC4 / ARRI Wide Gamut 4	
0	▼ converted	
	Working Colour Space 🗃 FilmLight: T-Log / E-Gamut	
0 Stack	Graded in 🏊 FilmLight: T-Log / E-Gamut	
Cursor	🖉 converted with family DRT Truelight CAM v2 [Video 100 nits]	
	Viewing Colour Space 🖵 Rec.1886: 2.4 Gamma / Rec.709	
	Mastering Colour Space 🖵 Rec.1886: 2.4 Gamma / Rec.709	
0	Mastering White Point: From Colour Space	
SDI Card	SDI Output 🕨 4:4:4 RGB No Scale/Clip	
8		
Colour Space At Cursor: 🖜	FilmLight: T-Log / E-Gamut	

### 8. Setup DaVinci Resolve using ARRI's Colormanagement REVEAL

Step 1. Please make sure that you are using DaVinci Resolve Version 17.4.7 or later.

Step 2. Setup the "Color science" option to "DaVinci YRGB" and select the right Output lookup table for your grading monitor you are using on the "Color Management" page in your "Project Settings". This will ensure that all grade settings are applied in the LogC4/AWG4 color space and the image is rendered as a last step using ARRI's Color Science REVEAL.

Project Settings: ARRI_Colorm	nanagement		
Presets	Color Space & Transforms		ĺ
Master Settings	Color science	DaVinci YRGB 🗸	<b></b>
Image Scaling		Use separate color space and gamma	
Color Management	Timeline color space	ARRI LogC4 V	
General Options	Output color space	Rec.709 Gamma 2.4 V	
Camera RAW			
Capture and Playback	Dolby Vision®		
Subtitles Fairlight	Dolby Vision version Mastering display	Enable Dolby Vision 4.0 V 4000-nit, P3, D65, ST.2084, Full V Use external CMU	
	HDR10+		
		Enable HDR10+	
	Lookup Tables		
	Input lookup table	No LUT selected	
	Output lookup table	ARRI_LogC4-to-gamma24_Rec709-D65	
	Video monitor lookup table	No LUT selected V	
	Color viewer lookup table	Use video monitoring selection V	
	Scopes lookup table	Use video monitoring selection V	
	3D lookup table interpolation	Tetrahedral v	
		Update Lists	
		Open LUT Folder	
	Broadcast Safe		
	Broadcast safe IRE levels	-20 - 120 🗸	
			Cancel Save

### 9. Setup DaVinci Resolve using ACES Colormanagement

Using this workflow you will not get all the benefits of the REVEAL Color Science, since the image is not rendered using ARRI's REVEAL Color Science but ACES Color Science to the selected Output-Device.

Step 1. Please make sure that you are using DaVinci Resolve Version 17.4.7 or later.

Step 2. Setup the "Color science" option to "ACEScc" or "ACEScct" and select "ARRI LogC4/AWG4" for the "ACES Input Transform".

Project Settings: ACES_Colormanagement						
Presets	Color Space & Transforms					
Master Settings	Color science	ACEScct ~				
Image Scaling	ACES version	ACES 1.3 V				
Color Management	ACES Input Transform	ARRI LogC4 V	◀────			
General Options		Apply ACES reference gamut compress				
Camera RAW	ACES Output Transform	Rec.709 ~				
Capture and Playback	Process node LUTs in	ACEScc AP1 timeline space V	]			
Subtitles		Use color space aware grading tools				
Fairlight	Apply resize transformations in	Timeline v				
rainign	Graphics white level	100 nits				
	Delbulfeiee®					
	Dolby Vision®		]			
		Enable Dolby Vision				
	Dolby Vision version	4.0 ~				
	Mastering display	4000-nit, P3, D65, ST.2084, Full V				
	HDR10+					
		Enable HDR10+				
	Lookup Tables					
	Input lookup table	No LUT selected V				
	Output lookup table	No LUT selected V				
	Video monitor lookup table	No LUT selected V				
	Color viewer lookup table	Use video monitoring selection $\sim$				
	Scopes lookup table	Use video monitoring selection $$				
	3D lookup table interpolation	Tetrahedral V				
			Cancel Save			

### **10.** Setup DaVinci Resolve using DaVinci's Colormanagement

# Using this workflow you will not get all the benefits of the REVEAL Color Science, since the image is not rendered using ARRI's REVEAL Color Science but Blackmagic's Color Science to the selected Output-Device.

Step 1. Please make sure that you are using DaVinci Resolve Version 17.4.7 or later.

Step 2. Setup the "Color science" option to "DaVinci YRGB Color Managed" and select "ARRI LogC4/AWG4" for the "Input color space".

Project Settings: DaVinci_Colormanagement							
Presets	Color Space & Transforms			ĺ			
Master Settings	Color science	DaVinci YRGB Color Managed		4			
Image Scaling		Automatic color management					
Color Management	Color processing mode	Custom					
General Options		Use separate color space and gamma					
Camera RAW	Input color space	ARRI LogC4		┥────			
Capture and Playback	Timeline color space	DaVinci WG/Intermediate					
Subtitles	Timeline working luminance	HDR 4000 ~					
	Output color space	Rec.709 Gamma 2.4					
Fairlight	Limit output gamut to	Output color space					
	Input DRT	DaVinci					
	Output DRT	DaVinci					
		✓ Use inverse DRT for SDR to HDR conversion					
		<ul> <li>Use white point adaptation</li> </ul>					
		<ul> <li>Use color space aware grading tools</li> </ul>					
	Apply resize transformations in	Gamma					
	Graphics white level	100 nits					
	Dolby Vision®						
		Enable Dolby Vision					
	Dolby Vision version	4.0 ~					
	Mastering display	4000-nit, P3, D65, ST.2084, Full					
	HDR10+						
		Enable HDR10+					
	Lookup Tables						
				Cancel Save			

#### 11. Contact

In case you have questions or recommendations, please contact the Digital Workflow Solutions group within ARRI via email: <u>digitalworkflow@arri.de</u>