

ALEXA Mini LF /ALEXA Mini /ALEXA LF / ALEXA SXT / ALEXA 65 / AMIRA

Metadata for

ALEXA XT SUP 11.1 / ALEXA SXT SUP 2.0 / ALEXA LF SUP 2.0

ALEXA 65 SUP 2.1 / ALEXA Mini & AMIRA SUP 6.1 /

ALEXA Mini LF SUP 7.0

WHITE PAPER

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Version History

Version	Author	Change Note
2012-01-20	Poetsch	Create new document with new structure, add Extended Metadata Content table
2012-02-07	Poetsch	Added DNxHD Metadata info
2012-11-26	Stangl	Restructuring, added SUP 7.0 extensions
2013-05-16	Stangl	Incorporated changes for ALEXA SUP 8.0
2014-01-17	Stangl Schwab Grafwallner	Incorporated changes for ALEXA SUP 9.0
2014-12-10	Stangl Grafwallner	Incorporated changes for ALEXA SUP 10.0 and AMIRA SUP 1.1
2015-03-06	Geissler	Checksum documentation.
2015-03-06	Grafwallner	Incorporated changes for ALEXA SUP 11.0 and ALEXA 65 SUP 1.0
2016-012-06	Grafwallner	Incorporated changes for ALEXA SXT SUP 1.0 & ALEXA Mini SUP 4.0
2018-24-05	Grafwallner	Incorporated changes for ALEXA SXT 2.0 ALEXA LF SUP 2.0 & ALEXA Mini SUP 5.3
2020-07-07	Grafwallner	Incorporated changes for ALEXA Mini LF SUP 6.0 & ALEXA Mini SUP 6.1
2021-04-23	Grafwallner	Incorporated changes for ALEXA Mini LF SUP 7.0
2022-08-22	Mann	Incorporated changes for RECORD START/STOP function

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1 Introduction

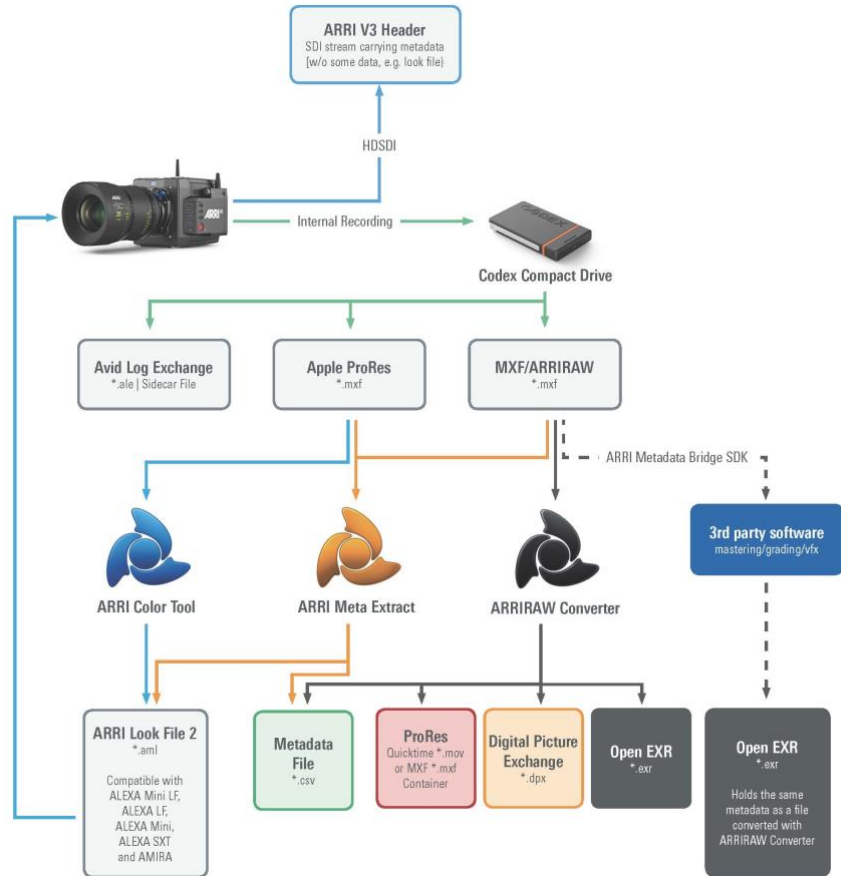
The ARRI ALEXA (LF), ALEXA Mini (LF), ALEXA 65 and AMIRA cameras provide metadata with their images. This additional information greatly simplifies the post workflow. This document reflects the support of metadata for all ARRI digital cameras running SUP 11.1 (ALEXA), SUP 2.1 (ALEXA SXT), SUP 2.1 (ALEXA 65), SUP 6.1 (AMIRA and ALEXA Mini), SUP 4.3 ALEXA LF and SUP 7.0 ALEXA Mini LF or later.

2 Metadata Overview for ARRI Cameras

The following graphic shows all camera output formats where metadata is available and the corresponding ARRI tools to extract the info. The green arrows refer to the new ARRIRAW Converter (export option to map original ARRIRAW metadata into OpenEXR, QuickTime and DPX processed files. (Available since ARC version 3.4 and higher) The dashed line refers to the new ARRI Metadata Bridge SDK (AMB) integrated in third party applications.

The AMB SDK can be used for the file export in dailies or color grading productions tools to ensure an ARRI equivalent metadata mapping.

Please see [Metadata in OpenEXR files](#) and [ARRI Metadata Bridge AMB SDK](#)



3 Release Notes for ALEXA Mini LF 7.0

The following table describes all metadata that have changed or that have been added with SUP 7 for ALEXA Mini LF.

For more information about single items, refer to the overview table in Section [Available Information](#), or to the output-specific sections below.

ID	Name	Note
LAI02	Model	New item to describe the mounted LDS converter model
LAI03	Serial Number	New item to describe the serial number of a LDS converter model
LAI04	Physical Length	New item to describe the physical length of an LDS converter model
LAI05	Light Loss Factor	New item to describe the light dissipation factor of an LDS converter model
LAI06	Focal Length Multiplier	New item to describe the focal length multiple of a LDS converter model
IDI02	Image Width	New MXF/ARRIRAW recording format ALEXA Mini LF S35 Open Gate 3.4K with Image Width of 3424 pixel.
IDI03	Image Height	New MXF/ARRIRAW recording format ALEXA Mini LF S35 Open Gate 3.4K with Image Height of 2202 pixel.
IDI06-1	Active Image Left	New MXF/ARRIRAW recording format ALEXA Mini LF S35 Open Gate 3.4K with Active Image Left offset = 0px
IDI06-2	Active Image Top	New MXF/ARRIRAW recording format ALEXA Mini LF S35 Open Gate 3.4K with Active Image Top offset = 0px
IDI06-3	Active Image Width	New MXF/ARRIRAW recording format ALEXA Mini LF S35 Open Gate 3.4K with Active Image Width of 3424 pixel.
IDI06-4	Active Image Height	New MXF/ARRIRAW recording format ALEXA Mini LF S35 Open Gate 3.4K with Active Image Height of 2202 pixel.
IDI07-3	Full Image Width	New MXF/ARRIRAW recording format ALEXA Mini LF S35 Open Gate 3.4K with Full Image Width of 3424 pixel.
IDI07-4	Full Image Height	New MXF/ARRIRAW recording format ALEXA Mini LF S35 Open Gate 3.4K with Full Image Height of 2202 pixel.

3.1 With ALEXA Mini LF a new MXF container format for ProRes was introduced.

The specification of the MXF/ProRes metadata for the Mini LF SUP 6.0 can be found in a separate document: *ARRI_Metadata_Specification_3.0.0.10_MXF/ProRes.pdf* under the following link: <https://www.arri.com/en/learn-help/learn-help-camera-system/tools/arri-meta-extract>

4 Available Information

The following table shows all available information as metadata, sorted by the different image output paths.

In the first column, the unique ID of each metadata is given.

The second column shows the character *D* whenever metadata is *dynamic metadata*, which means that the value may change from frame to frame. All other metadata is *static metadata* and carries the same value for a whole clip.

The third and fourth columns give the name and description of the metadata.

The fifth column determines in which camera model the metadata is available: ALEXA (including ALEXA XT, SXT, LF and ALEXA 65), ALEXA XT only, ALEXA SXT only, ALEXA 65 only, or AMIRA, Mini and Mini LF only.

The last six columns give an overview about whether the respective metadata is available in QuickTime MOV files, MXF files, ALE files, Final Cut XML files, ARRIRAW single files or wrapped as MXF/ARRIRAW, embedded in SDI and processed as Open EXR by using the AMB (ARRI Metadata Bridge 1.0) or ARC 3.4.5 or higher.

More information on how the metadata is stored in the various output paths is given in the subsequent sections.

* These output formats are only available in ALEXA or ALEXA XT. The recording format for ALEXA 65 is exclusively ARRIRAW.

Metadata selections marked with **grey background** are stored together as struct in one QuickTime key. For more details see ARRI Look File 2 (ALF-2) metadata or ARRI Frame Line.

† These values are not stored separately, but the complete ARRI Look File (in XML format) is stored in the Quicktime header. (atom name "com.arri.camera.LookFileXml"). For more information about ARRI Look Files, refer to the ARRI Look Files White Paper at http://www.arri.com/camera/digital_cameras/downloads.html.

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
Image Data Information											
ID102		Image Width	Total horizontal pixel count of the image area (e.g. including over scan and non-image pixels) that is stored in the file.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X		X	X	X	X
ID103		Image Height	Total vertical pixel count of the image area (e.g. including over scan and non-image pixels) that is stored in the file.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X		X	X	X	X
ID106-1		Active Image Left	Left coordinate in X of rectangle within the stored pixel data representing the active image (e.g. framing selected during record) in sensor photo sites.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65				X	X	X	
ID106-2		Active Image Top	Top coordinate in Y of rectangle within the stored pixel data representing the active image (e.g. framing selected during record) in sensor photo sites	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65				X	X	X	
ID106-3		Active Image Width	The Active Image Width pixel count describes the width of a rectangle that is representing the active image area (e.g. framing selected during record or for Open Gate format the used area for up or down scaling) in the stored ARRIRAW file.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65				X	X	X	X

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
IDI06-4		Active Image Height	The Active Image Height pixel count describes the height of a rectangle that is representing the active image area (e.g. framing selected during record or for Open Gate format the used area for up or down scaling) in the stored ARRIRAW file.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65				X	X	X	X
IDI07-3		Full Image Width	The Full Image Width pixel count describes the width of a rectangle that is representing the usable image area (e.g. without black borders from sensor caching) in the stored ARRIRAW file.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA				X	X	X	
IDI07-4		Full Image Height	The Full Image Height pixel count describes the height of a rectangle that is representing the usable image area (e.g. without black borders from sensor caching) in the stored ARRIRAW file.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65				X	X	X	
			Image Content Information								
ICI02		Color Processing Version	Version of the color processing. Version 4 ALEXA Classic and ALEXA XT from SUP 4.0 to SUP 11. Version 5 since ALEXA SXT SUP 1.0 and ALEXA Mini SUP 4.0 with ARRI Look File 2 (ALF 2 with 3D LUT).	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA				X	X	X	X
ICI03		White Balance	Value of the white balance in Kelvin, calculated from the R, G and B factors	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
ICI04		White Balance CC	Green Tint Factor	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
ICI05	D	WB Factor R	Value of the white balance R factor. Only for AMIRA and ALEXA Mini as dynamic red gain factor available when automatic White Balance tracking is activated.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
ICI06		WB Factor G	Value of the white balance G factor	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA				X	X	X	X
ICI07	D	WB Factor B	Value of the white balance B factor Only for AMIRA and ALEXA Mini as dynamic blue gain factor available when automatic White Balance tracking is activated.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
ICI08		WB Applied In Camera	Flag indicating whether the White Balance has been applied to the data or not.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65				X	X	X	
ICI09		Exposure Index ASA	Value of the exposure index in ASA rating	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
ICI16		Target Color Space	Describe the desired target color space. For ARRIRAW files it is always Log C Wide Gamut. For ProRes, DNxHD and OpenEXR the	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF	X	X	X	X	X	X	X

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
			"target color space" value represent the color space of the image content.	ALEXA 65 AMIRA							
ICI17		Sharpness	Value for ARRIRAW sharpening in RGB.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65				X	X	X	X
ICI18		Lens Squeeze Factor	The lens squeeze factor is settable in the camera GUI Project menu to display visual correct pixel aspect ratio of images recorded with anamorphic lenses.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65	X	X		X	X	X	X
ICI19		Image Orientation	Flag indicating whether the image is horizontally and/or vertically flipped.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65	X	X		X	X	X	X
ICI20		Look Name	Look Name for the ALEXA XT and ALEXA Classic ARRI Look file name (legacy Look file format .xml) or Look Name for ALEXA SXT, ALEXA Mini and AMIRA. (ALF-2 .aml file format)	ALEXA XT ALEXA SXT ALEXA 65	X	X		X	X	X	X
ICI21		Look LUT Mode	Describe which ALEXA Look LUT format is stored in the file. "No Look LUT" when no Look was activated. "Monochromatic Look LUT" for a custom ToneMap 1D LUT from classic ALEXA Looks (.xml) or "3D Look LUT" for 3D LUT from ALEXA SXT ALF-2 (.aml) Looks. The 3D LUT is always stored with the LUT target color space.	ALEXA XT ALEXA SXT ALEXA 65				X		X	X
ICI22		Look LUT Offset	Offset to the Look LUT data in bytes from start of file (defined by recorder)	ALEXA XT ALEXA SXT ALEXA 65				X		X	
ICI23		Look LUT Size	Size of the Look LUT data in bytes	ALEXA XT ALEXA SXT ALEXA 65				X		X	
ICI24		Look Live Grading Flags (ALF-2)	Identification whether the look has been changed from an external color grading (client) application. 0 = Look is unchanged 1 = The CDL values have been changed by a live grading application 2 = The 3D LUT or its color space has been changed by a live grading application 4 = Auxiliary data (such as comments and name) which do not affect colors have been changed by a live grading application	ALEXA SXT				X		X	X
ICI25		Look Saturation (ALEXA XT from xml Look file or ALEXA SXT from ALF-2 Look file)	Special CDL Saturation in ALEXA xml Look file. CDL Saturation Semantics: From ALEXA Look file In linear RGB or external from CDL Server in LogC RGB (ASC CDL conform) For ALEXA SXT Saturation is always in LogC RGB (ASC CDL conform)	ALEXA ALEXA XT ALEXA 65	X			X	X	X	X
ICI26-1-2-3		CDL Slope RGB (ALEXA XT from xml Look file or ALEXA SXT from ALF-2 Look file)	ASC conform Color Decision list parameters for slope	ALEXA ALEXA XT ALEXA 65	X			X	X	X	X

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
ICI27-1-2-3		CDL Offset RGB (ALEXA XT from xml Look file or ALEXA SXT from ALF-2 Look file)	ASC conform Color Decision list parameters for offset	ALEXA ALEXA XT ALEXA 65	X			X	X	X	X
ICI28-1-2-3		CDL Power RGB (ALEXA XT from xml Look file or ALEXA SXT from ALF-2 Look file)	ASC conform Color Decision list parameters for power	ALEXA ALEXA XT ALEXA 65	X			X	X	X	X
ICI29-1-2-3		Printer Lights RGB (ALEXA xml Look file)	Printerlights correction	ALEXA ALEXA XT ALEXA 65	X			X		X	X
ICI31		CDL Mode (ALEXA xml Look file)	Describes which CDL Mode is used (ARRI LOOK CDL or ASC CDL mode) and in which colorspace the CDL values are applied. 0 = "No Look"(No Look is active or CDL Server is on and no server connection is established), 1 = "Alexa Look Video" (in-camera ARRI Look File is active), 2 = "CDL Video"(ASC CDL-conform parameters applied to REC709 image), 3 = "CDL LogC" (ASC CDL-conform parameters applied to LogC image).	ALEXA XT ALEXA SXT ALEXA 65				X			X
ICI32-struct		Look CDL values in LogC (ALF-2)	Contain ASC CDL parameter Struct asc_cdl {version;flags;saturation;slope;offset;power}	ALEXA SXT ALEXA Mini AMIRA	X						
ICI32-3		CDL Saturation (ALF-2)	The value of the saturation parameter.	ALEXA SXT ALEXA Mini/LF AMIRA	X	X					
ICI32-4		CDL Slope (ALF-2)	The [3] values of the slope parameters for the red, green, and blue channels.	ALEXA SXT ALEXA Mini/LF AMIRA	X	X					
ICI32-5		CDL Offset (ALF-2)	The [3] values of the offset parameters for the red, green, and blue channels.	ALEXA SXT ALEXA Mini/LF AMIRA	X	X					
ICI32-6		CDL Power (ALF-2)	The [3] values of the power parameters for the red, green, and blue channels.	ALEXA SXT ALEXA Mini/LF AMIRA	X	X					
ICI33-a-struct		Look 3DLUT without ASC CDL (ALF-2)	Contains 3D LUT without ASC CDL parameter. Struct color_3dlut_header {type;size;crc;version;flag;scaling_factor;norm_gain;norm_offset;mesh_points;target_color_space_name_length;target_color_space_name[64]; }	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI33-b-struct		Look Master 3DLUT without ASC CDL (ALF-2)	Contains Master 3D LUT without ASC CDL parameter. Struct color_3dlut_header {type;size;crc;version;flag;scaling_factor;norm_gain;norm_offset;mesh_points;target_color_space_name_length;target_color_space_name[64]; }	ALEXA SXT ALEXA Mini/LF AMIRA	X						

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
			Please refer to chapter 10.6 ARRI Look Metadata in ARRI Look File 2 (ALF-2) for more details.								
ICI33-5		Scaling Factor	The factor that was applied to the values stored in the 3D LUT. For ALF-2-capable cameras this value is always 65535.	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI33-8		Mesh Points	The number of mesh points per channel. The length of the LUT array is mesh_points* mesh_points* mesh_points*3. For ALF-2-capable cameras the value is always 33.	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI33-10		Look Target Color Space Name	A variable length non-terminated UTF8 string that contains the name of the target color space. The 3D LUTs contained in the metadata atom com.arri.camera.look.lut3d have always the value com.apple.proapps.colorspace.rec1886 in this string. The 3D LUTs contained in the metadata atoms com.arri.camera.look.lut3d_with_cdl.master can have one of the following color space designators: com.apple.proapps.colorspace.rec2020.d65.gamma24 com.apple.proapps.colorspace.dci.p3.gamma26 com.apple.proapps.colorspace.dci.d65.gamma26 com.apple.proapps.colorspace.dci.d60.gamma26	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI33-11		3DLUT Array	The array of unsigned 16 bit integer values padded to a multiple of 4 bytes follows the header. For an ALF-2-capable camera this array has 107811 (33*33*33*3) elements and the total size of the buffer is 215624 bytes. The order of the array is R, G, B interleaved (in that order) with the blue channel changing first, then the green channel, and finally the red channel.	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI34-a struct		Look 3DLUT with ASC CDL (ALF-2)	Contains 3D LUT with ASC CDL parameter. Struct color_3dlut_header {type;size;crc;version;flag;scaling_factor;norm_gain;norm_offset;mesh_points;target_color_space_name_length;target_color_space_name[64]; }	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI34-b struct		Look Master 3DLUT with ASC CDL (ALF-2)	Contains Master 3D LUT with ASC CDL parameter. Struct color_3dlut_header {type;size;crc;version;flag;scaling_factor;norm_gain;norm_offset;mesh_points;target_color_space_name_length;target_color_space_name[64]; }	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI35 struct		Look Video Parameter with target	Contains look video parameter with color space. Struct amira_look_param	ALEXA SXT ALEXA Mini/LF AMIRA	X						

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
		color space (ALF-2)	{size;version;flag;knee;black_gamma;gamma;sat_red;sat_yel;sat_grn;sat_cyn;sat_blu;sat_mag;red_video_slope;green_video_slope;blue_video_slope;red_video_gamma;green_video_gamma;blue_video_gamma;red_video_pedestal;green_video_pedestal;blue_video_pedestal;target_color_space_name_length;target_color_space_name} Please refer to chapter 10.6 ARRI Look Metadata in ARRI Look File 2 (ALF-2) for more details.								
ICI35-2		Video Knee	Knee parameter controls the transition of mid-tones into highlights.	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI35-3		Video Black Gamma	Black gamma parameter controls the shadow detail in the image.	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI35-4		Video Gamma	Gamma control for brighten or darken the mid tones, while leaving the black and white level unchanged.	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI35-5		Video Saturation	Video Saturation parameter in video look parameter.	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI35-6		Video Saturation Red	Red hue saturation control of a six color vector.	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI35-7		Video Saturation Yellow	Yellow hue saturation control of a six color vector.	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI35-8		Video Saturation Green	Green hue saturation control of a six color vector.	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI35-9		Video Saturation Cyan	Cyan hue saturation control of a six color vector.	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI35-10		Video Saturation Blue	Blue hue saturation control of a six color vector.	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI35-23		Video Look Target Color Space Name	A variable length non-terminated UTF8 string that contains the name of the target color space.	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI36		Custom 3D LUT (ALF-2)	Indicating whether the selected look file contains a Custom 3DLUT.	ALEXA SXT ALEXA Mini/LF AMIRA	X	X					
ICI37		Look LUT Design Data	Contains vendor specific parameter used to create the Look LUT.	ALEXA SXT ALEXA Mini/LF AMIRA	X						
			Contains additional information about the look file. Struct look_file_information {version;lut_file_name_length;lut_file_name[64];look_note_length;look_note[128];modified}								
ICI38 struct		Look Information (ALF-2)	Please refer to chapter 10.6 ARRI Look Metadata in ARRI Look File 2 (ALF-2) for more details.	ALEXA SXT ALEXA Mini/LF AMIRA	X						
ICI38-5		Custom LUT File Name	The name of the LUT file if a user-defined 3DLUT is used for the look.	ALEXA SXT ALEXA Mini/LF AMIRA	X	X					
ICI39		White Balance Tracking	WB tracking indicates if white balance tracking is off or on	ALEXA Mini/LF AMIRA	X						
ICI40		Image Sharpness	Field represents which Image Sharpness was applied during recording.	ALEXA Mini/LF AMIRA	X	X					

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
ICI41		Image Detail	Field represents which Image Detail was applied during recording.	ALEXA Mini/LF AMIRA	X	X					
ICI43		Image Data Checksum	Value of image data checksum. Checksum calculation type is CRC32 C polynomial.	ALEXA XT ALEXA 65				X			
ICI44		Color Order	Type of Bayer pattern color order. For ALEXA/D21 sensor: GRBG and ALEXA 65 sensor: GBRG	ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65				X	X		X
Camera Device Information											
CDI02		Camera Type ID	Number defining the type of the camera (e.g. ARRI_CAM_TYPE_D21; ARRI_CAM_TYPE_ALEXA ALEXA_Mini or ARRI_CAM_TYPE_ALEXA65) This must match with the string specified hereunder in CameraType	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
CDI05		Camera Serial Number	Camera serial number	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CDI06		Camera ID	CameraID Prefix (L or R, R is default) plus camera serial number translated to Base36.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CDI07		Camera Index	User defined camera index A-Z	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X		X	X	X	X
CDI08-1	D	System Image Creation Date	Image creation date.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CDI08-2	D	System Image Creation Time	Image creation time.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CDI09-1		System Image Time Zone Offset	Offset to UTC Time. System Creation Time = UTC ± UTC Offset	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
CDI09-2		System Image Time Zone DST	Daylight saving time = System Creation Time + 1:00	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
CDI10		Exposure Time	Exposure time in microseconds (10 ⁻⁶ seconds)	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA				X	X	X	X
CDI11	D	Shutter Angle	Shutter angle in degree. Shutter Angle = (ExposureTime * SensorFps)/1E9 * 360.0	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF	X	X	X	X	X	X	X

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
				ALEXA 65 AMIRA							
CDI15	D	Sensor FPS	Sensor speed for this image in FPS.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CDI16		Project FPS	Playback/Time Code frame rate in FPS.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CDI17-1	D	Master TC	Time code SMPTE RP188	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CDI17-2	D	Master TC Frame Count	Time code translated to frame counter using the time base TimeBase	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
CDI17-3		Master TC Time Base	Time base in Fps.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CDI17-5	D	Master TC User Info	SMPTE 12M user bits	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X					X	
CDI26		Storage Media Serial Number	Storage media serial number.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA"	X	X	X	X	X	X	X
CDI28		SMPTE UMID	SMPTE 330M UMID	ALEXA ALEXA XT ALEXA SXT ALEXA 65		X		X	X	X	X
CDI29		Camera Family	Camera Family	ALEXA ALEXA XT ALEXA SXT ALEXA 65				X		X	
CDI30		Recorder Type	ARRIRAW Recorder name, internal ALEXA XT or external via T-Link.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65				X	X	X	X
CDI31		Mirror Shutter Running	For ALEXA Studio Flag telling if the mirror shutter of the camera was running.	ALEXA ALEXA XT	X		X	X		X	X
CDI32		Vari	Flag for variframe indication: valid image or duplicated image.	ALEXA ALEXA XT ALEXA SXT ALEXA 65				X		X	X
CDI32-1		Return In Active	Only for DTS fibre multicam systems the flag indicates whether SDI return in is activated.	ALEXA Mini/LF AMIRA						X	
CDI36		UUID	UUID created by camera for each clip.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF	X	X	X	X	X	X	X

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
				ALEXA 65 AMIRA							
CDI37		Camera SUP Name	Name of installed camera software update package.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CDI38		Camera Model	Two numerical values ('CameraProduct' and 'CameraSubProduct') are added together with a text field 'CameraModel' to specify the name of the camera model. The text field is a combination of the fixed prefix 'Alexa' followed by possible combinations of the product type and product sub type as strings. A possible value is 'Alexa Studio XT'.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CDI39		Camera Product	Product Type A camera has only a single Product Type which can be combined with the Sub Product Type to describe the exact Camera Model. A value 'Alexa Plus 4:3 ' means the Product Alexa50_Plus (2) is combined with sub product types 4:3 (1).	ALEXA ALEXA XT ALEXA SXT ALEXA 65				X		X	X
CDI40		Camera Sub Product	Sub Product Type Sub product flags can be combined with the Product Type flag. A value 'Alexa Plus 4:3 XR' means the Product Alexa50_Plus (2) and the combination of the sub product types 4:3 (1) and XR (8). The result of the sub product is in this case 9.	ALEXA ALEXA XT ALEXA SXT ALEXA 65				X		X	X
			Lens Data Information								
LDI02		Lens Distance Unit	Lens Focus unit flag	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X		X	X	X	X
LDI03	D	Lens Focus Distance	Distance in the specified focus unit (1/1000 inch or mm).	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
LDI04	D	Lens Focal Length	Focal length in 1/1000 mm.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
LDI05		Lens Serial Number	Lens serial number	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X		X	X	X	X
LDI06-1	D	Lens Linear Iris	Aperture in units of 1/1000 in linear range (log of optical aperture indicated on lens ring)	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	
LDI06-2	D	Lens Iris	Calculated regular T stop value from the Lens Linear Iris value.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF	X			X	X	X	X

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
				ALEXA 65 AMIRA							
LDI07-1		ND Filter Type	ND filter is used and which type.	ALEXA ALEXA XT ALEXA Mini/LF AMIRA	X			X	X	X	X
LDI07-2		ND Filter Density	Optical density of ND filter.	ALEXA ALEXA XT ALEXA Mini/LF AMIRA	X	X		X	X	X	X
LDI11		Lens Model	Lens model	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X		X	X	X	X
LDI12-1	D	RawEncoder Focus RawLds	Raw LDS encoder value of focus axis	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	X
LDI12-2	D	RawEncoder Focus RawMotor	Raw motor encoder value of focus axis	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	
LDI13-1	D	RawEncoder Focal RawLds	Raw LDS encoder value of focal length	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	X
LDI13-2	D	RawEncoder Focal RawMotor	Raw motor encoder value of focal length	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	
LDI14-1	D	RawEncoder Iris RawLds	Raw LDS encoder value of iris	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	X
LDI14-2	D	RawEncoder Iris RawMotor	Raw motor encoder value of iris	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	
LDI15-1		EncoderLim FocusLdsMin	Lower limit of LDS encoder focus	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	X
LDI15-2		EncoderLim FocusLdsMax	Upper limit of LDS encoder focus	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	X
LDI16-1		EncoderLim FocalLdsMin	Lower limit of LDS encoder focal length	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	X
LDI16-2		EncoderLim FocalLdsMax	Upper limit of LDS encoder focal length	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	X
LDI17-1		EncoderLimIrisLdsMin	Lower limit of LDS encoder iris	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	X
LDI17-2		EncoderLimIrisLdsMax	Upper limit of LDS encoder iris	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	X
LDI18-1		EncoderLim FocusMotor Min	Lower limit of motor encoder focus	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	X

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
LDI18-2		EncoderLimFocusMotorMax	Upper limit of motor encoder focus	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	X
LDI19-1		EncoderLimFocalMotorMin	Lower limit of motor encoder focal length	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	X
LDI19-2		EncoderLimFocalMotorMax	Upper limit of motor encoder focal length	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	X
LDI20-1		EncoderLimIrisMotorMin	Lower limit of motor encoder iris	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	X
LDI20-2		EncoderLimIrisMotorMax	Upper limit of motor encoder iris	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X			X		X	X
LDI21	D	Lds Lag Type	Specifies the type of lag that is inherent to calibrated LDS values.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
LDI22	D	Lds Lag Value	Specifies the lag of the calibrated LDS values FocusDistance, FocalLength and Iris in frames. A value of +1 means the values have one frame delay (as it is in Alexa FW since 7.0). Thus the correct calibrated LDS values are found in the next frame. For AMIRA SUP 1.1 the lag value is constant 14 frames off for LDS and ENG zoom lenses.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
VFX Information											
VFX08	D	Camera Tilt	Camera tilt angle in degrees*10 (interpret 16 LSBs as signed short)	ALEXA ALEXA SXT ALEXA 65	X			X		X	X
VFX09	D	Camera Roll	Camera roll angle in degrees*10, positive rotating clockwise (interpret 16 LSBs as signed short)	ALEXA ALEXA SXT ALEXA 65	X			X		X	X
VFX10		Master Slave Setup Info	Flag for indicating if the camera is master or slave in a multi-camera setup.	ALEXA ALEXA SXT ALEXA 65	X	X		X		X	X
VFX11		3D Eye Info	Image channel information	ALEXA ALEXA SXT ALEXA 65	X	X		X		X	X
Clip Information Data											
CID02		Circle Take	Flag for marking good takes	ALEXA ALEXA XT ALEXA SXT ALEXA 65		X	X	X			X
CID03		Reel	Reel Name	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CID04		Scene	Scene Name	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CID05		Take	Take number/name	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF	X	X	X	X	X	X	X

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
				ALEXA 65 AMIRA							
CID06		Director	Director Name	ALEXA ALEXA 65 AMIRA	X	X	X	X	X	X	X
CID07		Cinematographer	Cinematographer Name	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CID08		Production	Production Name	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CID09		Production Company	Production Company Name	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X		X	X	X	X
CID10		Location	Location	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CID11		User Info 1	User Info 1 Note	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CID12		User Info 2	User Info 2 Note	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
CID14		Operator	Operator Name	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X		X	X	X	X
CID13		Camera Clip Name	Clip name as created by camera	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X	X	X	X	X	X
			Sound Information Data								
SID04		Sound Roll	Sound roll name	ALEXA ALEXA XT ALEXA SXT ALEXA 65	X	X	X	X		X	X
SID10 struct		Audio Configuration	Amira Audio configuration Struct for Input; Input Levels; Filter and Limiter for all channels A,B and C.	AMIRA	X						
SID10-1		Audio Meta Version	Version of the audio metadata struct	AMIRA							
SID10-2		Audio Enabled	Flag indicating if audio recording is enabled	AMIRA							
SID10-3		Channel 1-4 XLR Connector	Audio Channel 1-4 selection for XLR input connector.	AMIRA							

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
SID10-4		Channel 1-4 Input	Audio Channel 1-4 Input adjustment	AMIRA							
SID10-5		Channel 1-4 Level	Audio Channel 1-4 Level adjustment for Gain.	AMIRA							
SID10-6		Channel 1-4 Gain	Audio Channel 1-4 manual Gain adjustment in dB.	AMIRA							
SID10-7		Channel 1-4 Filter	Audio Channel 1-4 Filter selection.	AMIRA							
SID10-8		Channel 5 Mute	Audio Channel 1-4 Mute	AMIRA							
SID10-9		Channel 5 Input	Audio Channel 5 Input format.	AMIRA							
SID11		Bluetooth Enabled	flag if Bluetooth is enabled	AMIRA	X						
Additional Data											
ADD02		Look Burned In	Determines whether an ARRI Look File has been burned in during recording	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X	X					
ADD03		Name of the file	Source File	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA		X					
ADD04		Clip counter	Clip	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA		X					
ADD05		Duration	Duration	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA		X					
ADD06		Tracks	Tracks	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA		X					
ADD07		End timecode	End	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA		X					
ADD08		Codec	Original_video	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA		X					
ADD09		Audio format	Audio_format	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA		X					
ADD10		Audio SR	Audio_sr	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA		X					

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
ADD1 1		Audio Bit	Audio_bit	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA		X					
ADD1 2		Manufacturer	Manufacturer	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA		X					
Frame Line Information											
FLI03		Frame Line File 1	Name of Frame Line File 1. Frame lines from Frame Line File 1 creating "Frame Line 1A/1B/1C".	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X		X	X	X	X	X
FLI04		Frame Line File 2	Name of Frame Line File 1. Frame lines from Frame Line File 1 creating "Frame Line 2A/2B/2C".	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X		X			X	X
FLI05 struct		Frame Line Rectangle Frame Line 1A	Struct for Frame Line 1A. (Frame Line file 1 is loaded)	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X		X	X	X		
FLI05- 1		Frame Line 1A Type	Frame Line Type. Frame Line 1A is always Frame Line Type "Master". Frame Line 2A is Frame Line Type "Master" when Frame Line File 1 is not loaded into the camera.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X		X	X	X	X	X
FLI05- 2		Frame Line 1A Name	Name of frame line for Frame Line 1A	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X		X	X	X	X	X
FLI05- 3		Frame Line 1A Left	Pixel offset from the image left side. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X		X	X	X	X	X
FLI05- 4		Frame Line 1A Top	Pixel offset from the image top. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X		X	X	X	X	X
FLI05- 5		Frame Line 1A Width	Pixel count of rectangle width. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X		X	X	X	X	X
FLI05- 6		Frame Line 1A Height	Pixel count of rectangle height. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X		X	X	X	X	X

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
FLI06 struct		Frame Line Rectangle Frame Line 1B	Struct for Frame Line 1B. (Frame Line file 1 is loaded and Frame Line 1B is available)	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	
FLI06-1		Frame Line 1B Type	Frame Line Type. Frame Line 1B is always Frame Line Type "Aux".	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
FLI06-2		Frame Line 1B Name	Name of frame line for Frame Line 1B	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
FLI06-3		Frame Line 1B Left	Pixel offset from the image left side. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
FLI06-4		Frame Line 1B Top	Pixel offset from the image top. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
FLI06-5		Frame Line 1B Width	Pixel count of rectangle width. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
FLI06-6		Frame Line 1B Height	Pixel count of rectangle height. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
FLI07 struct		Frame Line Rectangle Frame Line 1C	Struct for Frame Line 1C. (Frame Line file 1 is loaded and Frame Line 1C is available)	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	
FLI06-1		Frame Line 1C Type	Frame Line Type. Frame Line 1C is always Frame Line Type "Aux".	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
FLI07-2		Frame Line 1C Name	Name of frame line for Frame Line 1C	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
FLI07-3		Frame Line 1C Left	Pixel offset from the image left side. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
FLI07-4		Frame Line 1C Top	Pixel offset from the image top. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT	X			X	X	X	X

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
				ALEXA Mini/LF ALEXA 65 AMIRA							
FLI07-5		Frame Line 1C Width	Pixel count of rectangle width. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
FLI07-6		Frame Line 1C Height	Pixel count of rectangle height. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X	X	X	X
FLI08 struct		Frame Line Rectangle Frame Line 2A	Struct for Frame Line 2A. (Frame Line file 2 is loaded)	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	
FLI08-1		Frame Line 2A Type	Frame Line Type. Frame Line 2A is Frame Line Type "Master" when Frame Line File 1 is not loaded into the camera.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI08-2		Frame Line 2A Name	Name of frame line for Frame Line 2A	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI08-3		Frame Line 2A Left	Pixel offset from the image left side. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI08-4		Frame Line 2A Top	Pixel offset from the image top. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI08-5		Frame Line 2A Width	Pixel count of rectangle width. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI08-6		Frame Line 2A Height	Pixel count of rectangle height. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI09 struct		Frame Line Rectangle Frame Line 2B	Struct for Frame Line 2B. (Frame Line file 2 is active and Frame Line 2B is available)	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	
FLI09-1		Frame Line 2B Type	Frame Line Type. Frame Line 2B is always Frame Line Type "Aux".	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
FLI09-2		Frame Line 2B Name	Name of frame line for Frame Line 2B	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI09-3		Frame Line 2B Left	Pixel offset from the image left side. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI09-4		Frame Line 2B Top	Pixel offset from the image top. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI09-5		Frame Line 2B Width	Pixel count of rectangle width. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI09-6		Frame Line 2B Height	Pixel count of rectangle height. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI10 struct		Frame Line Rectangle Frame Line 2C	Struct for Frame Line 2C. When Frame Line file 2 is active and Frame Line 2C is available.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	
FLI10-1		Frame Line 2C Type	Frame Line Type. Frame Line 2C is always Frame Line Type "Aux".	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI10-2		Frame Line 2C Name	Name of frame line for Frame Line 2C	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI10-3		Frame Line 2C Left	Pixel offset from the image left side. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI10-4		Frame Line 2C Top	Pixel offset from the image top. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI10-5		Frame Line 2C Width	Pixel count of rectangle width. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA	X			X		X	X
FLI10-6		Frame Line 2C Height	Pixel count of rectangle height. Pixel value is calculated in relation to recorded image resolution	ALEXA ALEXA XT ALEXA SXT	X			X		X	X

ID	Dynamic	Name	Description	Camera	QT	ALE	FCP XML	ARRIRAW	MXF/ARRI	SDI	OpenEXR
				ALEXA Mini/LF ALEXA 65 AMIRA							
			Noise Reduction Info								
NRI03		Noise Reduction Mode	Type of the noise reduction. Currently available only in ProRes files when they rendered with ARC 3.4.0 or higher.	ALEXA SXT	X		X				X
NRI04		Noise Reduction Strength	Strength value of the ANR noise reduction. Ranges from to 1.0 to 3.5, default value is 2.5. Currently available only in ProRes files are when rendered with ARC 3.4.0 or higher.	ALEXA SXT	X		X				X
NRI05		Noise Reduction applied	Noise reduction already applied or not and for ProRes the strength for Normal (2.5) and Strong (3.5).	ALEXA SXT	X	X	X				X
			Lens Converter Information								
LCI02		Model	Name and description of the mounted LDS converter model, empty if no converter is present.	ALEXA Mini LF			X	X	X		
LCI03		Serial Number	Serial number of the mounted LDS converter, empty if no converter is present.	ALEXA Mini LF			X	X	X		
LCI04		Physical Length	Physical length of the mounted LDS converter in µm, 0 if no converter is present.	ALEXA Mini LF			X	X	X		
LCI05		Light Loss Factor	Light loss factor * 1000, e.g. factor 1.7 = 1700, 0 if no converter is present.	ALEXA Mini LF			X	X	X		
LCI06		Focal Length Multiplier	Focal length multiplier * 1000, e.g. 1.7x = 1700, 0 if no converter is present.	ALEXA Mini LF			X	X	X		

5 Technical Details

Metadata is implemented in different ways for the different image output options. The following section explains the technical details for all options.

5.1 In-camera recording

When recording files in-camera, metadata is stored in several different ways: Final Cut Pro 7 XML file, Avid Log Exchange (ALE) file, QuickTime metadata atom, MXF metadata XML and the ARRIRAW V3 header.

5.1.1 FCP 7 XML

This XML file is stored in the reel folder on the media. It is compatible with Final Cut Pro (6 or 7) and can be used to batch import the whole set of clips into Final Cut Pro directly from the media. FCP 7 XML is not available for captured with AMIRA or ALEXA Mini/LF.

The XML contains the following set of metadata:

ID	Name	Tag
ICI03	White Balance	<mastercomment1>WhiteBalance:5600
ICI04	White Balance CC	<mastercomment1>CcShift:0
ICI09	Exposure Index ASA	<mastercomment1>ExposureIndexAsa:800
ICI16	Target Color Space	<mastercomment1>ColorGammaSxS:LOG-C
CDI05	Camera Serial Number	<mastercomment2>SerialNumber:4011
CDI06	Camera ID	<mastercomment2>CamID:R33F
CDI08-1	System Image Creation Date	<mastercomment2>Date:20120923

CDI08-2	System Image Creation Time	<mastercomment2>Time:10h09m28s
CDI11	Shutter Angle	<mastercomment1>,ShutterAngle:172.8
CDI15	Sensor FPS	<mastercomment1>SensorFps:24.000
CDI16	Project FPS	<rate> <timebase>24</timebase>
CDI17-1	Master TC	<timecode> <string>03:01:06:22</string>
CDI17-3	Master TC Time Base	<rate> <timebase>24</timebase>
CDI26	Storage Media Serial Number	<mastercomment2>SxS-SerialNumber:90000000000206
CDI31	Mirror Shutter Running	--
CDI36	UUID	<metadata> <storage>QuickTime</storage> <key>com.apple.finalcutstudio.media.uuid</key> <size>36</size> <type>UTF8</type> <value>84fb584e-0000-4000-b10f-66a300000000</value>
CDI37	Camera SUP Name	<mastercomment2>SupVersion:7.0beta:20640
CDI38	Camera Model	<mastercomment2>Camera:ARRI ALEXA PLUS
CID02	Circle Take	<logginginfo><scene /><shottake /><good>FALSE/TRUE</good>
CID03	Reel	<reel> <name>A001R33F</name>
CID04	Scene	<filmslate> <scene>220</scene>
CID05	Take	<filmslate> <take>10</take>
CID06	Director	<mastercomment3>Director: John Doe
CID07	Cinematographer	<mastercomment3>Cinematographer:Jane Roe
CID08	Production	<mastercomment3>Production:XY FILM PROD
CID10	Location	<mastercomment3>Location:Munich
CID11	User Info 1	<mastercomment3>User1:Filter ND GRAD .6
CID12	User Info 2	<mastercomment3>User2:Second unit
CID13	Camera Clip Name	<masterclipid>M998C001_121211_R23J</masterclipid>
SID04	Sound Roll	<source>sound</source> <reel> <name>DAY001</name>

5.1.2 ALE File

The Avid Log Exchange (ALE) file is a file that can be used to import camera specific metadata into the Avid Media Composer. It is stored in the reel folder together with the ProRes or DNxHD media clips.

For details on the ALE structure, please refer to the AVID documentation.

Most columns used by the ALEXA are custom columns matched to the specific camera metadata. The ALE file also contains some metadata that is only available in the ALE file. Information about this data is listed at the end of the table.

ID	Name	ALE Column Name	ALE Column Type	Value Range	Camera
IDI02	Image Width	Frame_width	Custom	1920; 2048	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
IDI03	Image Height	Frame_height	Custom	1080; 1152; 1536	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
ICI03	White Balance	White_balance	Custom	min ="2000" max ="11000" increment in 100k steps	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
ICI04	White Balance CC	Cc_shift	Custom	For ALEXA default="0" min ="-12" max ="12"	ALEXA ALEXA XT ALEXA SXT

ID	Name	ALE Column Name	ALE Column Type	Value Range	Camera
				For AMIRA default="0" min="-16.0" max="16.	ALEXA Mini/LF ALEXA 65 AMIRA
ICI09	Exposure Index ASA	Exposure_index	Custom	ASA rating: min =160; 200; 250; 320; 400; 500; 640; 800; 1000; 1280;1600; 2000; 2560; max =3200	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
ICI16	Target Color Space	Gamma	Custom	LOG-C/REC-709	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
ICI18	Lens Squeeze Factor	Pixelaspectratio	Custom	1.0; 1.3; 2.0	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65
ICI19	Image Orientation	Image_orientation	Custom	For ALEXA : 0 = No flip, 1 = H flip in camera, 12 = H+V flip by reader" For AMIRA 0= No flip, 1= H flip in camera, 8 = V flip by reader, 9 = H flip in camera and V flip by reader	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65
ICI20	Look Name	Look_name	Custom	32 characters for look file name (ALEXA XT) Look Name 128 characters max. (ALEXA SXT, Mini and AMIRA)	ALEXA XT ALEXA SXT ALEXA 65
ICI32-3	CDL Saturation	ASC_SAT	Standard	min ="0.000" max ="2.000" "1.000 = default"	ALEXA SXT ALEXA Mini/LF AMIRA
ICI32-4	CDL Slope	ASC_SOP	Standard	min ="0.500" max ="2.000" "1.000 = default"	ALEXA SXT ALEXA Mini/LF AMIRA
ICI32-5	CDL Offset	ASC_SOP	Standard	min ="-0.500" max ="0.500" "0.000 = default"	ALEXA SXT ALEXA Mini/LF AMIRA
ICI32-6	CDL Power	ASC_SOP	Standard	min ="-1.000" max ="1.000" "0.000 = default"	ALEXA SXT ALEXA Mini/LF AMIRA
ICI36	Custom 3D LUT (ALF-2)	Look_user_lut	Custom	Yes / No	ALEXA SXT ALEXA Mini/LF AMIRA
ICI38-5	Custom LUT File Name	Lut_file_name	Custom	LUT Name 64 characters max.	ALEXA SXT ALEXA Mini/LF AMIRA
ICI40	Image Sharpness	Image_sharpness	Custom	default="0" min ="-5" max ="+5"	ALEXA Mini/LF AMIRA
ICI41	Image Detail	Image_detail	Custom	default="0" min ="-5" max ="+5"	ALEXA Mini/LF AMIRA
CDI05	Camera Serial Number	Camera_sn	Custom	4 digit number	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CDI06	Camera ID	Camera_id	Custom	4 digit number	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CDI07	Camera Index	Camera_index	Custom	character A-Z	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CDI08-1	System Image Creation Date	Date_camera	Custom	Date as YYYYMMDD	ALEXA ALEXA XT

ID	Name	ALE Column Name	ALE Column Type	Value Range	Camera
					ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CDI08-2	System Image Creation Time	Time_camera	Custom	Time as HHMMmSS	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CDI11	Shutter Angle	Shutter_angle	Custom	min ="5.0" max ="358.0"	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CDI15	Sensor FPS	Sensor_fps	Custom	For ALEXA min ="0.750" max ="120.000" For AMIRA min ="0.750" max ="200.000"	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CDI16	Project FPS	Project_fps	Custom	For ALEXA: 23.976, 24.000,25.000,29.970 and 30.000 For AMIRA: 23.976, 24.000,25.000,29.970, 30.000, 48.000,50.000,59.940 and 60.000	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CDI17-1	Master TC	Start	Standard	Time code as HH:MM:SS:FF	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CDI17-3	Master TC Time Base	FPS	Standard	For ALEXA: 23.976, 24,25,29.97 and 30 For AMIRA: 23.976, 24, 25, 29.97, 30, 48,50,59.94 and 60	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CDI26	Storage Media Serial Number	Sxs_sn/Storage_sn	Custom	32 digit number	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA"
CDI28	SMPTE UMID	Umid	Custom	64 digit number	ALEXA ALEXA XT ALEXA SXT ALEXA 65
CDI36	UUID	Uuid	Custom	8-4-4-4-12 for a total of 36 characters (32 alphanumeric characters and four hyphens)	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CDI37	Camera SUP Name	Sup_version	Custom	24 alphanumeric characters	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CDI38	Camera Model	Camera_model	Custom	20 alphanumeric characters	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
LDI02	Lens Distance Unit	Focus_distance_unit	Custom	Metric or Imperial	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF

ID	Name	ALE Column Name	ALE Column Type	Value Range	Camera
					ALEXA 65 AMIRA
LDI05	Lens Serial Number	Lens_sn	Custom	32 digit number Only for AMIRA	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
LDI07-2	ND Filter Density	Nd_filterdensity	Custom	Clear = 0 ND 0.6 = 600 ND 1.2 = 1200 ND 2.1 = 2100"	ALEXA ALEXA XT ALEXA Mini/LF AMIRA
LDI11	Lens Model	Lens_type	Custom	32 letter string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
VFX10	Master Slave Setup Info	Master_slave	Custom	OFF/MASTER/SLAVE	ALEXA ALEXA SXT ALEXA 65
VFX11	3D Eye Info	Eye_index	Custom	SINGLE/LEFT /RIGHT	ALEXA ALEXA SXT ALEXA 65
CID02	Circle Take	Circle	Custom	yes/no	ALEXA ALEXA XT ALEXA SXT ALEXA 65
CID03	Reel	Reel_name	Custom	8 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CID04	Scene	Scene	Custom	max 16 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CID05	Take	Take	Custom	max 8 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CID06	Director	Director	Custom	max 24 characters string	ALEXA ALEXA 65 AMIRA
CID07	Cinematographer	Cinematographer	Custom	max 24 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CID08	Production	Production	Custom	max 24 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CID09	Production Company	Company	Custom	max 24 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CID10	Location	Location	Custom	max 24 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF

ID	Name	ALE Column Name	ALE Column Type	Value Range	Camera
					ALEXA 65 AMIRA
CID11	User Info 1	User_info1	Custom	max 24 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CID12	User Info 2	User_info2	Custom	max 24 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CID14	Operator	Operator	Custom	max 24 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
CID13	Camera Clip Name	Name	Standard	fix 20 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
SID04	Sound Roll	Soundroll	Standard	max 8 character string	ALEXA ALEXA XT ALEXA SXT ALEXA 65
ADD02	Look Burned In	Look_burned_in	Custom	Yes/No	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
ADD03	Name of the file	Source File	Standard	fix 20 characters "Clip Name" string plus file extension .mov or .mxf	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
ADD04	Clip counter	Clip	Custom	fix 4 characters counter for each Clip. C001; C002 ...	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
ADD05	Duration	Duration	Standard	Time code as HH:MM:SS:FF	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
ADD06	Tracks	Tracks	Standard	For ALEXA max. VA1A2 for AMIRA max. VA1A2A3A4A5	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
ADD07	End timecode	End	Standard	Time code as HH:MM:SS:FF	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
ADD08	Codec	Original_video	Custom	For ALEXA ProRes 422LT (1080p)/(2K 2048p) 422,422HQ,4444,4444 XQ DNxHD 444 (HD1080p) 115/120/145/175X/185X/220X For AMIRA in addition (1080i)	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA

ID	Name	ALE Column Name	ALE Column Type	Value Range	Camera
ADD09	Audio format	Audio_format	Custom	WAVE	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
ADD10	Audio SR	Audio_sr	Custom	48	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
ADD11	Audio Bit	Audio_bit	Custom	24	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
ADD12	Manufacturer	Manufacturer	Custom	ARRI	ALEXA ALEXA XT ALEXA SXT ALEXA Mini/LF ALEXA 65 AMIRA
NRI05	Noise Reduction applied	Image_denoising	Custom	0 = off, 1 = normal, 2 = strong	ALEXA SXT

5.1.3 QuickTime Metadata Atom

In each QuickTime file, a set of static metadata is stored in the QuickTime metadata atom. For ALEXA SXT, ALEXA Mini and AMIRA the new ARRI Look File 2 (ALF-2) can be stored in the QT header.

A detailed description of the ALF-2 Look metadata is available in section **Error! Reference source not found.** of this document.

The ALF-2 look can be created with the ARRI Look Tool (ACT).

http://www.arri.com/camera/alexas/tools/arri_color_tool/

The metadata atom contains the following set of metadata:

ID	Name	QT Header Key	Value Range	Camera
IDI02	Image Width	QuickTime atom 'tkhd' Track Header width	For ProRes files the Image Width is 16by9 HD 1920px 16by9 2K 2048px 16by9 3.2K 3164px 16by9 3.2K 3200px 16by9 UHD 3840px 4by3 2K 2048px 4by3 2.8K 2880px OG 3.4K 3424px OG 4K Cine 4096px	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
IDI03	Image Height	QuickTime atom 'tkhd' Track Header height	For ProRes files the Image Height is 16by9 HD 1080px 16by9 2K 1152px 16by9 3.2K 1778px 16by9 3.2K 1800px 16by9 UHD 2160px 4by3 2K 1536px 4by3 2.8K 2160px 6by5 2K ana. 858px 6by5 4K ana. 1716px OG 3.4K 3424px OG 4K Cine 2636px	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
ICI03	White Balance	com.arri.camera.WhiteBalanceKelvin	min ="2000" max ="11000" increment in 100k steps	ALEXA ALEXA XT

ID	Name	QT Header Key	Value Range	Camera
				ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
ICI04	White Balance CC	com.arri.camera.WhiteBalanceTintCc	For ALEXA default="0" min="-12" max="12" For AMIRA default="0" min="-16.0" max="16.0"	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
ICI09	Exposure Index ASA	com.arri.camera.ExposureIndexAsa	ASA rating: min =160; 200; 250; 320; 400; 500; 640; 800; 1000; 1280;1600; 2000; 2560; max =3200	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
ICI16	Target Color Space	com.arri.camera.ColorGammaSxS	TargetColorSpace or LOG-C = LogC Wide Gamut REC-709 = ITU BT Rec 709 RGB primaries, D65 white point, gamma 2.4 new in SUP 1.0 ALEXA SXT only. rec2020.d65.gamma24 = ITU BT Rec 2020 RGB primaries, D65 white point, gamma 2.4 dci.p3.gamma26 = DCI RGB primaries, P3 white point, gamma 2.6 dci.d65.gamma26 = DCI RGB primaries, D65 white point, gamma 2.6 dci.d60.gamma26 = DCI RGB primaries, D60 white point, gamma 2.6	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
ICI18	Lens Squeeze Factor	com.arri.camera.PixelAspectRatio	1.0 for spherical lenses 1.3 and 2 for anamorphic lenses Additional metadata info in QuickTime atoms: 'std' pasp (h spacing and v spacing) and 'tapt' clef (clean aperture w/h) 'tapt' prof (production aperture w/h) Enables automatic image de-squeeze in QT Player 7/ 10 and Final Cut Pro X.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65
ICI19	Image Orientation	com.arri.camera.ImageOrientation	For ALEXA : 0 = No flip, 1 = H flip in camera, 3= H+V flip for generated ProRes files, 12 = H+V flip by reader" Additional metadata info in QuickTime atom: 'tkhd' matrix Enables automatic image rotate in QT Player 7/10 and Final Cut Pro X. For AMIRA 0= No flip, 1= H flip in camera, 8 = V flip by reader, 9 = H flip in camera and V flip by reader	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65
ICI20	Look Name	com.arri.camera.LookFileActive for ALEXA XT and Classic com.arri.camera.look.name for ALEXA SXT, ALEXA Mini and AMIRA	For ALEXA: 32 characters for look file name For ALEXA SXT and ALEXA Mini ALF-2 Look Name 128 characters max.	ALEXA XT ALEXA SXT ALEXA 65
ICI25	Look Saturation (ALEXA xml Look file)	com.arri.camera.LookFileXml	min ="0" max ="2" "1.0 = default"	ALEXA ALEXA XT ALEXA 65
ICI26- 1-2-3	CDL Slope RGB (ALEXA xml Look file)	com.arri.camera.LookFileXml	min ="0.5" max ="2" "1.0 = default"	ALEXA ALEXA XT ALEXA 65
ICI27- 1-2-3	CDL Offset RGB (ALEXA xml Look file)	com.arri.camera.LookFileXml	min ="-0.5" max ="0.5" "0.0 = default"	ALEXA ALEXA XT ALEXA 65
ICI28- 1-2-3	CDL Power RGB (ALEXA xml Look file)	com.arri.camera.LookFileXml	min ="0.5" max ="2" "1.0 = default"	ALEXA ALEXA XT ALEXA 65
ICI29- 1-2-3	Printer Lights RGB (ALEXA xml Look file)	com.arri.camera.LookFileXml	min ="-1" max ="1" "0.0 = default"	ALEXA ALEXA XT ALEXA 65
ICI32 struct	Look CDL values in LogC (ALF-2)	com.apple.proapps.color.asc-cdl	For more details please refer to chapter 10.6.1.2 ASC CDL Parameter	ALEXA SXT ALEXA Mini AMIRA
ICI32-3	CDL Saturation		min ="0" max ="2" "1 = default"	ALEXA SXT ALEXA Mini AMIRA

ID	Name	QT Header Key	Value Range	Camera
ICI32-4	CDL Slope		min ="0.5" max ="2" "1.0 = default"	ALEXA SXT ALEXA Mini AMIRA
ICI32-5	CDL Offset		min ="-0.5" max ="0.5" "0.0 = default"	ALEXA SXT ALEXA Mini AMIRA
ICI32-6	CDL Power		min ="-1" max ="1" "0.0 = default"	ALEXA SXT ALEXA Mini AMIRA
ICI33-a struct	Look 3DLUT without ASC CDL (ALF-2)	com.arri.camera.look.lut3d	For more details please refer to chapter 10.6.1.3 3D LUT	ALEXA SXT ALEXA Mini AMIRA
ICI33-b struct	Look Master 3DLUT without ASC CDL (ALF-2)	com.arri.camera.look.lut3d.master	For more details please refer to chapter 10.6.1.3 3D LUT	ALEXA SXT ALEXA Mini AMIRA
ICI33-5	Scaling Factor		For ALF-2 always 65535	ALEXA SXT ALEXA Mini AMIRA
ICI33-8	Mesh Points		For ALF-2 the value is always 33.	ALEXA SXT ALEXA Mini AMIRA
ICI33-10	Look Target Color Space Name		com.apple.proapps.colorsapce.rec1886 For Master 3D LUT "com.apple.proapps.colorsapce.rec2020.d65.gam mma24 com.apple.proapps.colorsapce.dci.p3.gamma2 6 com.apple.proapps.colorsapce.dci.d65.gamma 26 com.apple.proapps.colorsapce.dci.d60.gamma 26	ALEXA SXT ALEXA Mini AMIRA
ICI33-11	3DLUT Array		The array of unsigned 16 bit integer values padded to a multiple of 4 bytes follows the header. For an ALF-2-capable camera this array has 107811 (33*33*33*3) elements and the total size of the buffer is 215624 bytes. The order of the array is R, G, B interleaved (in that order) with the blue channel changing first, then the green channel, and finally the red channel.	ALEXA SXT ALEXA Mini AMIRA
ICI34-a struct	Look 3DLUT with ASC CDL (ALF-2)	com.arri.camera.look.lut3d_with_cdl	For more details please refer to chapter 10.6.1.3 3D LUT	ALEXA SXT ALEXA Mini AMIRA
ICI34-b struct	Look Master 3DLUT with ASC CDL (ALF-2)	com.arri.camera.look.lut3d_with_cdl.mast er	For more details please refer to chapter 10.6.1.3 3D LUT	ALEXA SXT ALEXA Mini AMIRA
ICI35 struct	Look Video Parameter with target color space (ALF-2)	com.arri.camera.look.video_param_with_t arget_colorspace	For more details please refer to chapter 10.6.1.4 Video Look Parameter	ALEXA SXT ALEXA Mini AMIRA
ICI35-2	Video Knee		min ="0" max ="1" "0.5 = default"	ALEXA SXT ALEXA Mini AMIRA
ICI35-3	Video Black Gamma		min ="0" max ="1" "0.5 = default"	ALEXA SXT ALEXA Mini AMIRA
ICI35-4	Video Gamma		min ="0.5" max ="2" "1.0 = default"	ALEXA SXT ALEXA Mini AMIRA
ICI35-5	Video Saturation		min ="0" max ="2" "1.0 = default"	ALEXA SXT ALEXA Mini AMIRA
ICI35-6	Video Saturation Red		min ="0" max ="2" "1.0 = default"	ALEXA SXT ALEXA Mini AMIRA
ICI35-7	Video Saturation Yellow		min ="0" max ="2" "1.0 = default"	ALEXA SXT ALEXA Mini AMIRA

ID	Name	QT Header Key	Value Range	Camera
ICI35-8	Video Saturation Green		min ="0" max ="2" "1.0 = default"	ALEXA SXT ALEXA Mini AMIRA
ICI35-9	Video Saturation Cyan		min ="0" max ="2" "1.0 = default"	ALEXA SXT ALEXA Mini AMIRA
ICI35-10	Video Saturation Blue		min ="0" max ="2" "1.0 = default"	ALEXA SXT ALEXA Mini AMIRA
ICI35-23	Video Look Target Color Space Name		com.apple.proapps.colorsapce.rec2020.d65.gamma24 com.apple.proapps.colorsapce.dci.p3.gamma26 com.apple.proapps.colorsapce.dci.d65.gamma26 com.apple.proapps.colorsapce.dci.d60.gamma26	ALEXA SXT ALEXA Mini AMIRA
ICI36	Custom 3D LUT (ALF-2)	com.arri.camera.look.user_lut	0 = no custom LUT used and 1 = Look with custom LUT	ALEXA SXT ALEXA Mini AMIRA
ICI38 struct	Look Information (ALF-2)	com.arri.camera.look.information		ALEXA SXT ALEXA Mini AMIRA
ICI38-5	Custom LUT File Name		Name of LUT File e.g. AMIRA_looks_FilmStyle_Tobacco.lut	ALEXA SXT ALEXA Mini AMIRA
ICI39	White Balance Tracking	com.arri.camera.WbTracking	0 = off and 1 = on	ALEXA Mini AMIRA
ICI40	Image Sharpness	com.arri.camera.ImageSharpness	default="0" min ="-5" max ="+5"	ALEXA Mini AMIRA
ICI41	Image Detail	com.arri.camera.ImageDetail	default="0" min ="-5" max ="+5"	ALEXA Mini AMIRA
CDI02	Camera Type ID			ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI05	Camera Serial Number	com.arri.camera.CameraSerialNumber	4 digit number	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI06	Camera ID	com.arri.camera.CameraId	Camera ID Prefix R = default L = left eye and camera serial number translated to Base36.	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI07	Camera Index	com.arri.camera.CameraIndex	character A-Z	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI09-1	System Image Time Zone Offset	com.arri.camera.TimeZone	UTC offset time ±hh:mm from -12:00 to + 14:00	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI09-2	System Image Time Zone DST	com.arri.camera.Dst	DST time hh:mm is 0:00 or + 1:00	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI11	Shutter Angle	com.arri.camera.ShutterAngle	For ALEXA: min ="50" max ="3580"	ALEXA ALEXA XT ALEXA SXT

ID	Name	QT Header Key	Value Range	Camera
				ALEXA Mini ALEXA 65 AMIRA
CDI15	Sensor FPS	com.arri.camera.SensorFps	For ALEXA: min ="750" max ="120000" For AMIRA: min ="750" max ="200000"	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI16	Project FPS	com.arri.camera.ProjectFps	For ALEXA: 23976, 24000,25000,29970 and 30000 For AMIRA: 23976, 24000,25000,29970, 30000, 48000,50000,59940 and 60000	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI17-3	Master TC Time Base	com.arri.camera.ProjectFps	For ALEXA: 23976, 24000,25000,29970 and 30000 For AMIRA: 23976, 24000,25000,29970, 30000, 48000,50000,59940 and 60000	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI26	Storage Media Serial Number	com.arri.camera.SxsSerialNumber	64-bit value stored in two parts (U32 MagazineSerialNumber [2])	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA"
CDI31	Mirror Shutter Running	com.arri.camera.MirrorShutterRunning	0 = No, 1 = Yes	ALEXA ALEXA XT
CDI36	UUID	com.apple.finalcutstudio.media.uuid	8-4-4-4-12 for a total of 36 characters (32 alphanumeric characters and four hyphens)	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI37	Camera SUP Name	com.arri.camera.SupVersion	24 alphanumeric characters	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI38	Camera Model	com.arri.camera.CameraModel	20 alphanumeric characters	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
LDI02	Lens Distance Unit	com.arri.camera.UnitPreference	Metric or Imperial	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
LDI05	Lens Serial Number	com.arri.camera.LensSerialNumber	32 digit number	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
LDI07-1	ND Filter Type	com.arri.camera.NdFilterType	For ALEXA Studio No Filter ="0" Filter on ="1" For AMIRA always 1	ALEXA ALEXA XT ALEXA Mini AMIRA
LDI07-2	ND Filter Density	com.arri.camera.NdFilterDensity	For ALEXA Studio No Filter ="0" Filter on ="1400" For AMIRA Clear = 0 ND 0.6 = 600 ND 1.2 = 1200 ND 2.1 = 2100	ALEXA ALEXA XT ALEXA Mini AMIRA
LDI11	Lens Model	com.arri.camera.LensType	Lens model as a 32 letter string	ALEXA ALEXA XT

ID	Name	QT Header Key	Value Range	Camera
				ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
LDI15-1	EncoderLimFocusLdsMin	com.arri.camera.LdsEncFocusMin	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI15-2	EncoderLimFocusLdsMax	com.arri.camera.LdsEncFocusMax	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI16-1	EncoderLimFocusZoomMin	com.arri.camera.LdsEncZoomMin	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI16-2	EncoderLimFocusZoomMax	com.arri.camera.LdsEncZoomMax	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI17-1	EncoderLimIrisLdsMin	com.arri.camera.LdsEnclrisMin	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI17-2	EncoderLimIrisLdsMax	com.arri.camera.LdsEnclrisMax	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI18-1	EncoderLimFocusMotorMin	com.arri.camera.ClmEncFocusMin	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI18-2	EncoderLimFocusMotorMax	com.arri.camera.ClmEncFocusMax	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI19-1	EncoderLimFocusZoomMin	com.arri.camera.ClmEncZoomMin	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI19-2	EncoderLimFocusZoomMax	com.arri.camera.ClmEncZoomMax	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI20-1	EncoderLimIrisMotorMin	com.arri.camera.ClmEnclrisMin	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI20-2	EncoderLimIrisMotorMax	com.arri.camera.ClmEnclrisMax	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
VFX10	Master Slave Setup Info	com.arri.camera.MasterSlave	OFF/MASTER/SLAVE	ALEXA ALEXA SXT ALEXA 65
VFX11	3D Eye Info	com.arri.camera.EyeIndex	SINGLE/LEFT /RIGHT	ALEXA ALEXA SXT ALEXA 65
CID03	Reel	com.arri.camera.ReelName	max 8 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CID04	Scene	com.arri.camera.SceneName	max 16 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CID05	Take	com.arri.camera.TakeName	max 8 characters string	ALEXA ALEXA XT

ID	Name	QT Header Key	Value Range	Camera
				ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CID06	Director	com.arri.camera.ProductionInfoDirector	max 24 characters string	ALEXA ALEXA 65 AMIRA
CID07	Cinematographer	com.arri.camera.ProductionInfoCinematographer	max 24 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CID08	Production	com.arri.camera.ProductionInfoProduction	max 24 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CID09	Production Company	com.arri.camera.ProductionInfoCompany	max 24 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CID10	Location	com.arri.camera.ProductionInfoLocation	max 24 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CID11	User Info 1	com.arri.camera.ProductionInfoUser1	max 24 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CID12	User Info 2	com.arri.camera.ProductionInfoUser2	max 24 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CID14	Operator	com.arri.camera.ProductionInfoOperator	max 24 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CID13	Camera Clip Name	com.arri.camera.CameraClipName	20 characters fixed for CameraIndexReelCounter_YYMMDD_CameraID	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
SID04	Sound Roll	com.arri.camera.SoundReel	Only for ALEXA: max 8 character string	ALEXA ALEXA XT ALEXA SXT ALEXA 65
SID10	Audio Configuration	com.arri.camera.audio.Configuration		AMIRA
SID11	Bluetooth Enabled	com.arri.camera.audio.BluetoothEnabled	only AMIRA 0= off and 1 = on	AMIRA
ADD02	Look Burned In	com.arri.camera.LookFileBurnedIn	No or Yes	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI03	Frame Line File 1	com.arri.camera.FramelineFileName1	max 32characters string	ALEXA ALEXA XT ALEXA SXT

ID	Name	QT Header Key	Value Range	Camera
				ALEXA Mini ALEXA 65 AMIRA
FLI04	Frame Line File 2	com.arri.camera.FramelineFileName2	max 32characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI05 struct	Frame Line Rectangle Frame Line 1A			ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI05-1	Frame Line 1A Type	com.arri.camera.FramelineRect1A.Type	Type 0 = Inactive 1 = Master and 2 = Aux	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI05-2	Frame Line 1A Name	com.arri.camera.FramelineRect1A.Name	max 32 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI05-3	Frame Line 1A Left	com.arri.camera.FramelineRect1A.Left	Pixel range from minimum = 0 to maximum = rectangle Width	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI05-4	Frame Line 1A Top	com.arri.camera.FramelineRect1A.Top	Pixel range from minimum = 0 to maximum = rectangle height	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI05-5	Frame Line 1A Width	com.arri.camera.FramelineRect1A.Width	Pixel count from minimum = 0 to maximum = highest recording resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI05-6	Frame Line 1A Height	com.arri.camera.FramelineRect1A.Height	Pixel count from minimum = 0 to maximum = highest recording resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI06 struct	Frame Line Rectangle Frame Line 1B			ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI06-1	Frame Line 1B Type	com.arri.camera.FramelineRect1B.Type	Type 0 = Inactive 1 = Master and 2 = Aux	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI06-2	Frame Line 1B Name	com.arri.camera.FramelineRect1B.Name	max 32 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI06-3	Frame Line 1B Left	com.arri.camera.FramelineRect1B.Left	Pixel range from minimum = 0 to maximum = rectangle width	ALEXA ALEXA XT ALEXA SXT

ID	Name	QT Header Key	Value Range	Camera
				ALEXA Mini ALEXA 65 AMIRA
FLI06-4	Frame Line 1B Top	com.arri.camera.FramelineRect1B.Top	Pixel range from minimum = 0 to maximum = rectangle height	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI06-5	Frame Line 1B Width	com.arri.camera.FramelineRect1B.Width	Pixel count from minimum = 0 to maximum = highest recording resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI06-6	Frame Line 1B Height	com.arri.camera.FramelineRect1B.Height	Pixel count from minimum = 0 to maximum = highest recording resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI07 struct	Frame Line Rectangle Frame Line 1C			ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI06-1	Frame Line 1C Type	com.arri.camera.FramelineRect1C.Type	Type 0 = Inactive 1 = Master and 2 = Aux	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI07-2	Frame Line 1C Name	com.arri.camera.FramelineRect1C.Name	max 32 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI07-3	Frame Line 1C Left	com.arri.camera.FramelineRect1C.Left	Pixel range from minimum = 0 to maximum = rectangle width	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI07-4	Frame Line 1C Top	com.arri.camera.FramelineRect1C.Top	Pixel range from minimum = 0 to maximum = rectangle height	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI07-5	Frame Line 1C Width	com.arri.camera.FramelineRect1C.Width	Pixel count from minimum = 0 to maximum = highest recording resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI07-6	Frame Line 1C Height	com.arri.camera.FramelineRect1C.Height	Pixel count from minimum = 0 to maximum = highest recording resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI08 struct	Frame Line Rectangle Frame Line 2A			ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI08-1	Frame Line 2A Type	com.arri.camera.FramelineRect2A.Type	Type 0 = Inactive 1 = Master and 2 = Aux	ALEXA ALEXA XT ALEXA SXT

ID	Name	QT Header Key	Value Range	Camera
				ALEXA Mini ALEXA 65 AMIRA
FLI08-2	Frame Line 2A Name	com.arri.camera.FramelineRect2A.Name	max 32 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI08-3	Frame Line 2A Left	com.arri.camera.FramelineRect2A.Left	Pixel range from minimum = 0 to maximum = rectangle width	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI08-4	Frame Line 2A Top	com.arri.camera.FramelineRect2A.Top	Pixel range from minimum = 0 to maximum = rectangle height	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI08-5	Frame Line 2A Width	com.arri.camera.FramelineRect2A.Width	Pixel count from minimum = 0 to maximum = highest recording resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI08-6	Frame Line 2A Height	com.arri.camera.FramelineRect2A.Height	Pixel count from minimum = 0 to maximum = highest recording resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI09 struct	Frame Line Rectangle Frame Line 2B			ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI09-1	Frame Line 2B Type	com.arri.camera.FramelineRect2A.Type	Type 0 = Inactive 1 = Master and 2 = Aux	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI09-2	Frame Line 2B Name	com.arri.camera.FramelineRect2A.Name	max 32 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI09-3	Frame Line 2B Left	com.arri.camera.FramelineRect2A.Left	Pixel range from minimum = 0 to maximum = rectangle width	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI09-4	Frame Line 2B Top	com.arri.camera.FramelineRect2A.Top	Pixel range from minimum = 0 to maximum = rectangle height	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI09-5	Frame Line 2B Width	com.arri.camera.FramelineRect2A.Width	Pixel count from minimum = 0 to maximum = highest recording resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI09-6	Frame Line 2B Height	com.arri.camera.FramelineRect2A.Height	Pixel count from minimum = 0 to maximum = highest recording resolution	ALEXA ALEXA XT ALEXA SXT

ID	Name	QT Header Key	Value Range	Camera
				ALEXA Mini ALEXA 65 AMIRA
FLI10 struct	Frame Line Rectangle Frame Line 2C			ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI10-1	Frame Line 2C Type	com.arri.camera.FramelineRect2A.Type	Type 0 = Inactive 1 = Master and 2 = Aux	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI10-2	Frame Line 2C Name	com.arri.camera.FramelineRect2A.Name	max 32 characters string	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI10-3	Frame Line 2C Left	com.arri.camera.FramelineRect2A.Left	Pixel range from minimum = 0 to maximum = rectangle width	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI10-4	Frame Line 2C Top	com.arri.camera.FramelineRect2A.Top	Pixel range from minimum = 0 to maximum = rectangle height	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI10-5	Frame Line 2C Width	com.arri.camera.FramelineRect2A.Width	Pixel count from minimum = 0 to maximum = highest recording resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
FLI10-6	Frame Line 2C Height	com.arri.camera.FramelineRect2A.Height	Pixel count from minimum = 0 to maximum = highest recording resolution	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
NRI03	Noise Reduction Mode	com.arri.camera.NR.Mode	--	ALEXA SXT
NRI04	Noise Reduction Strength	com.arri.camera.NR.Strength	--	ALEXA SXT
NRI05	Noise Reduction applied	com.arri.camera.ImageDenoising	0 = off 1 = normal 2= strong (only for AMIRA and ALEXA Mini) 3= custom (only for QT files processed with ARC)	ALEXA SXT

5.1.4 MXF Metadata XML

The mxf recording format DNxHD is **discontinued** for ALEXA SXT SUP 1.0. The DNxHD codec is only in ALEXA classic and ALEXA XT available as recording format. ARRI DNxHD conforms to SMPTE 379M-2004 "MXF Generic Container" including timecode, picture, sound and metadata, video conforms to SMPTE 2019-4-2008 "Mapping VC-3 Coding Units into the MXF Generic Container".

The camera specific static metadata inside the MXF file is stored as an XML file. It contains the same fields as the QuickTime metadata atom and the ALE file, except for those that are generated from the file itself and are not camera specific metadata. The XML tags are equivalent to the ALE column names. This metadata set is imported into the Avid Media Composer automatically by the ARRI ALEXA AMA volume plugin. The Avid Bin column name changed in SUP 9.0 from medial capitals into capital letters only for the first character, e. g. White_Balance is replaced by White_balance. The key of the XML inside the MXF file is:
06.0e.2b.34.01.01.01.05.03.01.02.20.01.00.00.00

ID	Name	MXF Header Key	AVID Column	Value Range
ICI03	White Balance	<com.arri.camera.WhiteBalanceKelvin value="5600" column="White_balance"/>	White_balance	min ="2000" max ="11000" increment in 100k steps
ICI04	White Balance CC	<com.arri.camera.WhiteBalanceTintCc value="-1" column="Cc_shift"/>	Cc_shift	default="0" min ="-12" max ="12"
ICI09	Exposure Index ASA	<com.arri.camera.ExposureIndexAsa value="800" column="Exposure_index"/>	Exposure_index	ASA rating: min =160; 200; 250; 320; 400; 500; 640; 800; 1000; 1280;1600; 2000; 2560; max =3200
ICI16	Target Color Space	<com.arri.camera.ColorGammaSxS value="LOG-C" column="Gamma"/>	Gamma	TargetColorSpace REC-709 or LOG-C.
ICI18	Lens Squeeze Factor	<com.arri.camera.PixelAspectRatio value="2" column="Pixelaspectratio"/>	Pixelaspectratio	1.0 for spherical lenses 1.3 and 2 for anamorphic lenses
ICI20	Look	<com.arri.camera.LookFileActive value="BWnoLUT" column="Look_name"/>	Look_name	32 characters for look file name
CDI05	Camera Serial Number	<com.arri.camera.CameraSerialNumber value="4011" column="Camera_sn"/>	Camera_sn	4 digit number
CDI06	Camera ID	<com.arri.camera.CameraId value="R33F" column="Camera_id"/>	Camera_id	Camera ID Prefix R = default L = left eye and camera serial number translated to Base36.
CDI07	Camera Index	<com.arri.camera.CameraIndex value="A" column="Camera_index"/>	Camera_index	character A-Z
CDI09-1	System Image Time Zone Offset	<com.arri.camera.TimeZone value="+06:30" column="TimeZone"/>	--	UTC offset time ±hh:mm from -12:00 to + 14:00
CDI09-2	System Image Time Zone DST	<com.arri.camera.Dst value="+01:00" column="Dst"/>	--	DTS time hh:mm is 0:00 or + 1:00
CDI11	Shutter Angle	<com.arri.camera.ShutterAngle value="1728" column="Shutter_angle"/>	Shutter_angle	min ="50" max ="3580"
CDI15	Sensor FPS	<com.arri.camera.SensorFps value="24000" column="Sensor_fps"/>	Sensor_fps	min ="750" max ="120000"
CDI16	Project FPS	<com.arri.camera.ProjectFps value="24000" column="Project_fps"/>	Project_fps	23976, 24000,25000,29970 and 30000
CDI17-3	Master TC Time Base	MXF native metadata field	FPS	23976, 24000,25000,29970 and 30000
CDI26	Storage Media Serial Number	<com.arri.camera.SxsSerialNumber value="900000000000206" column="Sxs_sn"/>	Sxs_sn/Storage_sn	32 digit number
CDI31	Mirror Shutter Running	<com.arri.camera.MirrorShutterRunning value="0" column="Mirrorshutter_running"/>	Mirrorshutter_running	0 = No, 1 = Yes
CDI36	UUID	<com.apple.finalcutstudio.media.uuid value="84fb584e-0000-4000-b10f-66a300000000" column="UUID"/>	Uuid	8-4-4-4-12 for a total of 36 characters (32 alphanumeric characters and four hyphens)
CDI37	Camera SUP Name	<com.arri.camera.SupVersion value="7.0beta:20640" column="Sup_version"/>	Sup_version	24 alphanumeric characters
CDI38	Camera Model	<com.arri.camera.CameraModel value="ARRI ALEXA PLUS" column="Camera_model"/>	Camera_model	20 alphanumeric characters
LDI02	Lens Distance Unit	<com.arri.camera.UnitPreference value="Metric" column="Focus_unit_lens"/>	Focus_distance_unit	Metric or Imperial
LDI05	Lens Serial Number	<com.arri.camera.LensSerialNumber value="0" column="Lens_sn"/>	Lens_sn	32 digit number

ID	Name	MXF Header Key	AVID Column	Value Range
LDI07-1	ND Filter Type	<com.arri.camera.NdFilterType value="1" column="Nd_filtertype"/>	Nd_filtertype	For ALEXA Studio No Filter ="0" Filter on ="1" For AMIRA always 1
LDI07-2	ND Filter Density	<com.arri.camera.NdFilterDensity value="1400" column="Nd_filterdensity"/>	Nd_filterdensity	No Filter ="0" Filter on ="1400"
LDI11	Lens Model	<com.arri.camera.LensType value="" column="Lens_type"/>	Lens_type	Lens model as a 32 letter string
LDI15-1	EncoderLimFocusLdsMin	<com.arri.camera.LdsEncFocusMin value="0" column="Focus_abs_min"/>	Focus_abs_min	0 to 65535 (uint16)
LDI15-2	EncoderLimFocusLdsMax	<com.arri.camera.LdsEncFocusMax value="0" column="Focus_abs_max"/>	Focus_abs_max	0 to 65535 (uint16)
LDI16-1	EncoderLimFocalLdsMin	<com.arri.camera.LdsEncZoomMin value="0" column="Zoom_abs_min"/>	Zoom_abs_min	0 to 65535 (uint16)
LDI16-2	EncoderLimFocalLdsMax	<com.arri.camera.LdsEncZoomMax value="0" column="Zoom_abs_max"/>	Zoom_abs_max	0 to 65535 (uint16)
LDI17-1	EncoderLimIrisLdsMin	<com.arri.camera.LdsEnclrisMin value="0" column="Iris_abs_min"/>	Iris_abs_min	0 to 65535 (uint16)
LDI17-2	EncoderLimIrisLdsMax	<com.arri.camera.LdsEnclrisMax value="0" column="Iris_abs_max"/>	Iris_abs_max	0 to 65535 (uint16)
LDI18-1	EncoderLimFocusMotorMin	<com.arri.camera.ClmEncFocusMin value="0" column="Focus_mot_min"/>	Focus_mot_min	0 to 65535 (uint16)
LDI18-2	EncoderLimFocusMotorMax	<com.arri.camera.ClmEncFocusMax value="0" column="Focus_mot_max"/>	Focus_mot_max	0 to 65535 (uint16)
LDI19-1	EncoderLimFocalMotorMin	<com.arri.camera.ClmEncZoomMin value="0" column="Zoom_mot_min"/>	Zoom_mot_min	0 to 65535 (uint16)
LDI19-2	EncoderLimFocalMotorMax	<com.arri.camera.ClmEncZoomMax value="0" column="Zoom_mot_max"/>	Zoom_mot_max	0 to 65535 (uint16)
LDI20-1	EncoderLimIrisMotorMin	<com.arri.camera.ClmEnclrisMin value="0" column="Iris_mot_min"/>	Iris_mot_min	0 to 65535 (uint16)
LDI20-2	EncoderLimIrisMotorMax	<com.arri.camera.ClmEnclrisMax value="0" column="Iris_mot_max"/>	Iris_mot_max	0 to 65535 (uint16)
VFX10	Master Slave Setup Info	<com.arri.camera.MasterSlave value="OFF" column="Master_slave"/>	Master_slave	OFF/MASTER/SLAVE
VFX11	3D Eye Info	<com.arri.camera.EyeIndex value="SINGLE" column="Eye_index"/>	Eye_index	SINGLE/LEFT /RIGHT
CID03	Reel	<com.arri.camera.ReelName value="A001R33F" column="Reel_name"/>	Reel_name	max 8 characters string
CID04	Scene	<com.arri.camera.SceneName value="220" column="Scene"/>	Scene	max 16 characters string
CID05	Take	<com.arri.camera.TakeName value="10" column="Take"/>	Take	max 8 characters string
CID06	Director	<com.arri.camera.ProductionInfoDirector value="John Doe" column="Director"/>	Director	max 24 characters string
CID07	Cinematographer	<com.arri.camera.ProductionInfoCinematographer value="Jane Roe" column="Cinematographer"/>	Cinematographer	max 24 characters string
CID08	Production	<com.arri.camera.ProductionInfoProduction value="XY FILM PROD" column="Production"/>	Production	max 24 characters string
CID09	Production Company	<com.arri.camera.ProductionInfoCompany value="XY Company" column="Company"/>	Company	max 24 characters string
CID10	Location	<com.arri.camera.ProductionInfoLocation value="Munich" column="Location"/>	Location	max 24 characters string
CID11	User Info 1	<com.arri.camera.ProductionInfoUser1 value="Filter ND GRAD .6" column="User_info1"/>	User_info1	max 24 characters string
CID12	User Info 2	<com.arri.camera.ProductionInfoUser2 value="Second unit" column="User_info2"/>	User_info2	max 24 characters string
CID14	Operator	<com.arri.camera.ProductionInfoOperator value="Jack Foo" column="Operator"/>	Operator	max 24 characters string
CID13	Camera Clip Name	<com.arri.camera.CameraClipName value="A001C001_121212_R33F" column="Name"/>	Name	20 characters fixed for CameraIndexReelCounter_YYMMDD_CameralD
SID04	Sound Roll	<com.arri.camera.SoundReel value="" column="Soundroll"/>	Soundroll	Only for ALEXA: max 8 character string

ID	Name	MXF Header Key	AVID Column	Value Range
ADD02	Look Burned In	<com.arri.camera.LookFileBurnedIn value="No" column="Look_burned_in"/>	Look_burned_in	No or Yes
FLI03	Frame Line File 1	<com.arri.camera.FramelineFileName1 value="ARRI 2.39 Flat" column="FramelineFileName1"/>	--	max 32characters string
FLI04	Frame Line File 2	<com.arri.camera.FramelineFileName2 value="ARRI 1.85" column="FramelineFileName2"/>	--	max 32characters string
FLI05-1	Frame Line 1A Type	<com.arri.camera.FramelineRect1A.Type value="1" column="FramelineRect1A.Type"/>	--	Type 0 = Inactive 1 = Master and 2 = Aux
FLI05-2	Frame Line 1A Name	<com.arri.camera.FramelineRect1A.Name value="2.39:1anamorphic2x_scaling100_" column="FramelineRect1A.Name"/>	--	max 32 characters string
FLI05-3	Frame Line 1A Left	<com.arri.camera.FramelineRect1A.Left value="0" column="FramelineRect1A.Left"/>	--	Pixel range from minimum = 0 to maximum = rectangle Width
FLI05-4	Frame Line 1A Top	<com.arri.camera.FramelineRect1A.Top value="138" column="FramelineRect1A.Top"/>	--	Pixel range from minimum = 0 to maximum = rectangle height
FLI05-5	Frame Line 1A Width	<com.arri.camera.FramelineRect1A.Width value="1920" column="FramelineRect1A.Width"/>	--	Pixel count from minimum = 0 to maximum = highest recording resolution
FLI05-6	Frame Line 1A Height	<com.arri.camera.FramelineRect1A.Height value="804" column="FramelineRect1A.Height"/>	--	Pixel count from minimum = 0 to maximum = highest recording resolution
FLI06 struct	Frame Line Rectangle Frame Line 1B			
FLI06-1	Frame Line 1B Type	<com.arri.camera.FramelineRect1A.Type value="1" column="FramelineRect1A.Type"/>	--	Type 0 = Inactive 1 = Master and 2 = Aux
FLI06-2	Frame Line 1B Name	<com.arri.camera.FramelineRect1B.Name value="1.85:1_scaling100_" column="FramelineRect1B.Name"/>	--	max 32 characters string
FLI06-3	Frame Line 1B Left	<com.arri.camera.FramelineRect1B.Left value="0" column="FramelineRect1B.Left"/>	--	Pixel range from minimum = 0 to maximum = rectangle width
FLI06-4	Frame Line 1B Top	<com.arri.camera.FramelineRect1B.Top value="21" column="FramelineRect1B.Top"/>	--	Pixel range from minimum = 0 to maximum = rectangle height
FLI06-5	Frame Line 1B Width	<com.arri.camera.FramelineRect1B.Width value="1920" column="FramelineRect1B.Width"/>	--	Pixel count from minimum = 0 to maximum = highest recording resolution
FLI06-6	Frame Line 1B Height	<com.arri.camera.FramelineRect1B.Height value="1038" column="FramelineRect1B.Height"/>	--	Pixel count from minimum = 0 to maximum = highest recording resolution
FLI07 struct	Frame Line Rectangle Frame Line 1C			
FLI06-1	Frame Line 1C Type	<com.arri.camera.FramelineRect1C.Type value="1" column="FramelineRect1C.Type"/>	--	Type 0 = Inactive 1 = Master and 2 = Aux
FLI07-2	Frame Line 1C Name	<com.arri.camera.FramelineRect1C.Name value="1.78:1_scaling91_" column="FramelineRect1C.Name"/>	--	max 32 characters string
FLI07-3	Frame Line 1C Left	<com.arri.camera.FramelineRect1C.Left value="0" column="FramelineRect1C.Left"/>	--	Pixel range from minimum = 0 to maximum = rectangle width
FLI07-4	Frame Line 1C Top	<com.arri.camera.FramelineRect1C.Top value="21" column="FramelineRect1C.Top"/>	--	Pixel range from minimum = 0 to maximum = rectangle height
FLI07-5	Frame Line 1C Width	<com.arri.camera.FramelineRect1C.Width value="1920" column="FramelineRect1C.Width"/>	--	Pixel count from minimum = 0 to maximum = highest recording resolution
FLI07-6	Frame Line 1C Height	<com.arri.camera.FramelineRect1C.Height value="1038" column="FramelineRect1C.Height"/>	--	Pixel count from minimum = 0 to maximum = highest recording resolution
FLI08 struct	Frame Line Rectangle Frame Line 2A			

ID	Name	MXF Header Key	AVID Column	Value Range
FLI08-1	Frame Line 2A Type	<com.arri.camera.FramelineRect2A.Type value="1" column="FramelineRect2A.Type"/>	--	Type 0 = Inactive 1 = Master and 2 = Aux
FLI08-2	Frame Line 2A Name	<com.arri.camera.FramelineRect2A.Name value="2.39:1_scaling100_" column="FramelineRect2A.Name"/>	--	max 32 characters string
FLI08-3	Frame Line 2A Left	<com.arri.camera.FramelineRect2A.Left value="0" column="FramelineRect2A.Left"/>	--	Pixel range from minimum = 0 to maximum = rectangle width
FLI08-4	Frame Line 2A Top	<com.arri.camera.FramelineRect2A.Top value="339" column="FramelineRect2A.Top"/>	--	Pixel range from minimum = 0 to maximum = rectangle height
FLI08-5	Frame Line 2A Width	<com.arri.camera.FramelineRect2A.Width value="2048" column="FramelineRect2A.Width"/>	--	Pixel count from minimum = 0 to maximum = highest recording resolution
FLI08-6	Frame Line 2A Height	<com.arri.camera.FramelineRect2A.Height value="858" column="FramelineRect2A.Height"/>	--	Pixel count from minimum = 0 to maximum = highest recording resolution
FLI09 struct	Frame Line Rectangle Frame Line 2B			
FLI09-1	Frame Line 2B Type	<com.arri.camera.FramelineRect2B.Type value="1" column="FramelineRect2B.Type"/>	--	Type 0 = Inactive 1 = Master and 2 = Aux
FLI09-2	Frame Line 2B Name	<com.arri.camera.FramelineRect2B.Name value="1.85:1_scaling100_" column="FramelineRect2B.Name"/>	--	max 32 characters string
FLI09-3	Frame Line 2B Left	<com.arri.camera.FramelineRect2B.Left value="0" column="FramelineRect2B.Left"/>	--	Pixel range from minimum = 0 to maximum = rectangle width
FLI09-4	Frame Line 2B Top	<com.arri.camera.FramelineRect2B.Top value="214" column="FramelineRect2B.Top"/>	--	Pixel range from minimum = 0 to maximum = rectangle height
FLI09-5	Frame Line 2B Width	<com.arri.camera.FramelineRect2B.Width value="2048" column="FramelineRect2B.Width"/>	--	Pixel count from minimum = 0 to maximum = highest recording resolution
FLI09-6	Frame Line 2B Height	<com.arri.camera.FramelineRect2B.Height value="1108" column="FramelineRect2B.Height"/>	--	Pixel count from minimum = 0 to maximum = highest recording resolution
FLI10 struct	Frame Line Rectangle Frame Line 2C			
FLI10-1	Frame Line 2C Type	<com.arri.camera.FramelineRect2C.Type value="1" column="FramelineRect2C.Type"/>	--	Type 0 = Inactive 1 = Master and 2 = Aux
FLI10-2	Frame Line 2C Name	<com.arri.camera.FramelineRect2C.Name value="2.39:1anamorphic2x_scaling100_" column="FramelineRect2C.Name"/>	--	max 32 characters string
FLI10-3	Frame Line 2C Left	<com.arri.camera.FramelineRect2C.Left value="107" column="FramelineRect2C.Left"/>	--	Pixel range from minimum = 0 to maximum = rectangle width
FLI10-4	Frame Line 2C Top	<com.arri.camera.FramelineRect2C.Top value="0" column="FramelineRect2C.Top"/>	--	Pixel range from minimum = 0 to maximum = rectangle height
FLI10-5	Frame Line 2C Width	<com.arri.camera.FramelineRect2C.Width value="1834" column="FramelineRect2C.Width"/>	--	Pixel count from minimum = 0 to maximum = highest recording resolution
FLI10-6	Frame Line 2C Height	<com.arri.camera.FramelineRect2C.Height value="1536" column="FramelineRect2C.Height"/>	--	Pixel count from minimum = 0 to maximum = highest recording resolution

5.1.5 Dynamic Metadata in Proprietary ARRI Atom

For dynamic metadata, a block of 256 bytes is stored for every image in both QuickTime and MXF files. In the QuickTime file, this atom is labeled 'admd' (ARRI Digital MetaData) and contains 256 bytes of binary data.

In the MXF files, it is stored with each frame as a KLV structure with a total size of 303 bytes. The key is: 06.0e.2b.34.02.43.01.01.0d.01.03.01.04.01.03.02

As the layout of the dynamic metadata might change over time, both Quicktime and MXF contain a static metadata field *com.arri.camera.DynamicMetadataVersion* that determines the layout version of the dynamic metadata.

The following list shows the dynamic metadata block for ALEXA **dynamic metadata version 3** and for AMIRA **dynamic metadata version XXX**.

ID	Name	Offset (Bytes)	Size (Bytes)	Value Range	Camera
CDI17-5	Master TC User Info	8	4	6 digits 0-9 A-F	ALEXA ALEXA XT ALEXA SXT ALEXA 65
CDI08-1	System Image Creation Date	64	4	Date as YYYYMMDD	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI08-2	System Image Creation Time	68	4	Time as HHMMmSS	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI11	Shutter Angle	84	4	For ALEXA: min ="50" max ="3580"	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI15	Sensor FPS	96	4	For ALEXA: min ="750" max ="120000" For AMIRA: min ="750" max ="200000"	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI17-1	Master TC	100	4	Time code as HH:MM:SS:FF (BCD: 1 digit -> 4 bits)	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
CDI17-2	Master TC Frame Count	104	4	7 digit number min = 0 max = 2591999 for TC base 30 fps	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
LDI03	Lens Focus Distance	164	4	Distance in the specified focus unit (1/1000 inch or mm). Special values for: 0 = Focus distance invalid (or not available yet) -1 = Focus distance infinite	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
LDI04	Lens Focal Length	168	4	Focal length in 1/1000 mm or 0 if no value is available	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA

ID	Name	Offset (Bytes)	Size (Bytes)	Value Range	Camera
LDI06-1	Lens Linear Iris	172	4	Aperture in units of 1/1000 in linear range	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
LDI06-2	Lens Iris	172	4	Conversion of Aperture linear range into T-Stop int16 n = (Aperture/1000)-1; Tstop = 2^(n/2); T-Stop T0.7 T1.0 T 1.4 T2.0 T2.8 T4.0 T5.6 T8 T11 T16 T22 T32 T45 T64 T90 NearClose Close Invalid Aperture Value 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 12000 13000 14000 -3 -2 -1 "	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
LDI12-1	RawEncoderFocus RawLds	176	2	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI12-2	RawEncoderFocus RawMotor	178	2	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI13-1	RawEncoderFocal RawLds	180	2	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI13-2	RawEncoderFocal RawMotor	182	2	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI14-1	RawEncoderIris RawLds	184	2	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI14-2	RawEncoderIris RawMotor	186	2	0 to 65535 (uint16)	ALEXA ALEXA XT ALEXA SXT ALEXA 65
LDI21	Lds Lag Type	188	1	0 = no lag, 1 = constant lag 2 = unknown lag	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
LDI22	Lds Lag Value	189	1	For ALEXA lag value of frames delay = 1 For AMIRA SUP 1.1 the lag value is constant 14 frames off for LDS and ENG zoom lenses	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
VFX08	Camera Tilt	224	4	min="-90.000" max="90.000"	ALEXA ALEXA SXT ALEXA 65
VFX09	Camera Roll	228	4	min="-180.000" max="180.000"	ALEXA ALEXA SXT ALEXA 65
ICI05	WB Factor R	232	4	min ="0.67" max ="3,20"	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA
ICI07	WB Factor B	236	4	min =1,02" max ="3,6"	ALEXA ALEXA XT ALEXA SXT ALEXA Mini ALEXA 65 AMIRA

5.1.6 Regular iris values

How to calculate regular Iris values from linear iris values:

```
int16 n = (LinearIris + 50) / 1000;
// now n equals the index + 1 of the correct T-stop without fraction (because n is an integer value)
// +50 is just because of rounding
n -= 1;
// subtract an offset of -1 to get the correct index
double FullAperture = exp2((double)n / 2);
// now calc 2^(n/2). n/2 has to be calculated float, result FullAperture is also floating point
```

To get the [1/10] of Aperture Stop out of the fraction do the following:

```
int16 FractionAperture = (LinearIris + 50) % 1000; // get the fraction
int16 ApertureTenth = FractionAperture / 100; // get the Aperture Tenth
```

While the above code is mathematically correct, it does not match the rounding conventions established in film and photography for centuries. A tabled approach prints the more familiar values:

```
void printApertureValue(U32 apertureValue)
{
    // Standard full-stop f-number scale
    // (conventional rounding of sqrt(2.0^N) N=-1,0,1,2,...,16)
    double fNumberScale[18] = {0.7,1.0,1.4,2,2.8,4,5.6,8,11,16,22,32,45,64,90,128,180,256};

    int linearIris = apertureValue + 50; // + 50 for rounding

    int fullApertureIdx = linearIris / 1000;
    int fractionAperture = linearIris % 1000;
    int apertureTenth = fractionAperture / 100;

    if(0 <= fullApertureIdx && fullApertureIdx < 18)
    {
        if(apertureTenth == 0)
        {
            printf("%.1f\n", fNumberScale[fullApertureIdx]);
        }
        else
        {
            printf("%.1f + %d/10\n", fNumberScale[fullApertureIdx], apertureTenth);
        }
    }
    else
    {
        printf("out of bounds\n");
    }
}
```

Example list

T-Stop	T0.7	T1.0	T1.4	T2.0	T2.8	T4.0	T5.6	T8.0	T11.0	T16.0	T22.0	T32.0	T45.0	T64.0	T90.0	Near Close	Close	Invalid
Aperture Value	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	13000	14000	-3	-2	-1

5.1.7 ARRIRAW Files

When recording ARRIRAW to a Codex Capture Drive with ALEXA LF, SXT, XT or external Codex recorder, images and metadata are stored in a Codex proprietary format on the Capture Drive. Upon offloading, the Codex Production Suite software creates ARRIRAW files, which contain both images and metadata. For more information about ARRIRAW workflows, please refer to the “ALEXA XR Module Workflows White Paper”, available at <http://www.arri.com/camera/alexas/downloads/>

For correct metadata handling during offloading of ALEXA SXT SUP 1.0 material, use Codex Production Suite software version 4.1.0-04284 or higher for Capture Drive Dock (USB 3.0/Thunderbolt 1 and 2) and for Codex Vault S/XL 4.1.0 or higher.

For ALEXA 65 please consult with ARRI Rental for the most recent version.

For ALEXA LF SUP 2.0 use Codex Production Suite software version 4.6.6-04931 or higher.

A detailed description of the data that can be extracted from ARRIRAW files can be found in Chapter 5.3.

5.2 SDI

Different types of metadata are embedded into the HD-SDI. Metadata refers to all data besides image content. This data is located in the HANC and VANC space of the HD-SDI signal. The following table gives an overview of the insert positions in the HD-SDI.

Line	Position	Stream	Link	P / Psf	Content
Line 9 (571)	HANC after EAV	Y	A	P + Psf	Audio Control
Line 9 (571)	HANC after Audio	Y	A + B	P + Psf	HD-SDI Record Start/Stop
Line 9 (571)	HANC after Start/Stop	C	A	P + Psf	Timecode ATC_VITC (incl. Vari-Frame)
All Lines but not 8 (570)	HANC	Y	A + B	P + Psf	Audio Data
Line 10 (572)	HANC after EAV	Y	A + B	P + Psf	Payload ID
Line 10 {572}	HANC after Payload ID	Y	A	P + Psf	Timecode ATC_LTC (incl. Vari-Frame)
Line 9 {571}	VANC	Y	A	P + Psf	Extended Metadata 4K
Line 10 {572}	VANC	Y	A	P + Psf	Extended Metadata 4K, c'd -1-
Line 11 {573}	VANC	Y	A	P + Psf	Extended Metadata 4K, c'd -2-
Line 13 {575}	VANC	Y	A	P + Psf	Extended Metadata LUT
Line 14 {576}	VANC	Y	A	P + Psf	Extended Metadata LUT, c'd -1-
Line 15 {577}	VANC	Y	A	P + Psf	Extended Metadata LUT, c'd -2-
Line 16 {578}	VANC	Y	A	P + Psf	Extended Metadata LUT, c'd -3-

Remarks:

Line numbers with an ()-addition, e.g. (571), indicate that in all cases of Psf-transport (not P-transport) a second insert shall take place in the second field in the given line (offset is 562).

Line numbers with an { }-addition, e.g. {572}, indicate that in cases of Psf-transport where the first and second field carry different sensor frames (e.g. Dual Link 60p) a second insert shall take place in the second field in the given line, otherwise not.

The presence of some items is dependent on user settings. If an item is not available the insert position of the remaining items is shifted towards EAV. There are no gaps between different items in HANC space.

For some external recording devices (e.g. Sony SRW-1), the line numbers for the Extended Metadata (default 9-11, 13-16 in VANC space) can be changed by the user.

Preferably the recording device is set to the default values given here. E.g. for Sony SRW-1 via: <System> and <Home> / Others / Meta Data / Data 1, 2, 3 = 9, 10, 11.

5.2.1 Extended Metadata

Extended metadata is camera specific information, which is embedded into the HD-SDI as ANC packets.

It has the same length and structure as the ArriFileV3 header, split into several packets.

KLV Encoding of the Metadata Block

The ARRI metadata block is wrapped into a KLV structure according to SMPTE 336M-2007.

Key	Length of Value	Value
Key	is a 16 byte SMPTE Universal Label (UL) that allows identifying data. All Extended Metadata are registered under a class 14 node as ARRI Metadata. The key is: 06 0E 2B 34 02 05 01 0D 0E 17 00 00 00 11 01 01 (hex)	
Length of Value	is a 4 byte field that gives the byte length of "Value" ("BER Coding") Length of Value is 4096 (dec) and represents the length of the ARRI Metadata block. The coded value is: 83 00 10 00 (hex)	
Value	is the "payload". It represents the ARRI Metadata block consisting of 4096 bytes. It is defined in the document "ArriFileV3.h".	

KLV Encoding of a LUT

Key	The key is: 06 0E 2B 34 02 05 01 0D 0E 17 00 00 00 A1 01 01 (hex)																									
Length of Value	for a 12 bit LUT is 6144 (dec). (4096 entries each 12 bit wide and packed without gaps) The coded value is: 83 00 18 00 (hex)																									
Value	is the LUT in binary format. It is packed in a byte array as follows: E0/11 is the MSB of the first element, E4095/0 is the LSB of the last element; the relation o(i) for even and odd i is as follows:																									
	<table border="1"> <thead> <tr> <th>LUT index i</th> <th>Byte offset o</th> <th>Byte content</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>E0/11 _____ E0/4</td> </tr> <tr> <td>0, 1</td> <td>1</td> <td>E0/3 _ _ E0/0, E1/11 _ _ E1/8</td> </tr> <tr> <td>1</td> <td>2</td> <td>E1/7 _____ E1/0</td> </tr> <tr> <td>2</td> <td>3</td> <td>E2/11 _____ E2/4</td> </tr> <tr> <td>2, 3</td> <td>4</td> <td>E2/3 _ _ E2/0, E3/11 _ _ E3/8</td> </tr> <tr> <td>...</td> <td>...</td> <td>...</td> </tr> <tr> <td>4095</td> <td>6143</td> <td>E4095/7_ _____ E4095/0</td> </tr> </tbody> </table>		LUT index i	Byte offset o	Byte content	0	0	E0/11 _____ E0/4	0, 1	1	E0/3 _ _ E0/0, E1/11 _ _ E1/8	1	2	E1/7 _____ E1/0	2	3	E2/11 _____ E2/4	2, 3	4	E2/3 _ _ E2/0, E3/11 _ _ E3/8	4095	6143	E4095/7_ _____ E4095/0
LUT index i	Byte offset o	Byte content																								
0	0	E0/11 _____ E0/4																								
0, 1	1	E0/3 _ _ E0/0, E1/11 _ _ E1/8																								
1	2	E1/7 _____ E1/0																								
2	3	E2/11 _____ E2/4																								
2, 3	4	E2/3 _ _ E2/0, E3/11 _ _ E3/8																								
...																								
4095	6143	E4095/7_ _____ E4095/0																								
	The LUT is referenced by the accompanying Metadata block (see before).																									

KLV Key Structure

The 16 byte Key (K1.. K16, left to right) has a structure according SMPTE 336M-2007.

K1..K4	06 0E 2B 34	SMPTE
K5..K7	02 05 01	Data structure = Defined Length Pack (4K Block and LUT)
K8..K10	0D 0E 17	SMPTE definition for ARRI
K11..K16		ARRI
K11..K13	00 00 00	Reserved for future extension
K14 / K15		Main-category / Sub-category of ARRI Metadata
	11 / 01	General Metadata / Universal 4K Metadata Block
	A1 / 01	Look and LUT Metadata / Tonemap LUT
K16	01	Version of the ARRI Metadata definition. Incremented only if no more downwards compatible.

ANC Packet Assembly for Metadata

The complete KLV encoded Metadata block (length = 16 + 4 + 4096 = **4116** bytes) is packed into SMPTE 291M Ancillary Data packets (ANC packets). Since ANC packets have a maximal payload size of 255 bytes the Metadata block has to be segmented. This is done according to SMPTE RP 214-2002, "Packing KLV Encoded Metadata and Data Essence into SMPTE 291M Ancillary Data Packets". 18 ANC packets are needed.

ANC Packet Structure for Metadata

ANC Packet #1

ADF (3)	DID, SDID(2)	DC(1)	MID(1)	PSC(2)	Key(16)	Length(4)	Value, first part (210)	CS(1)
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ANC Packets #2 ... #17

ADF (3)	DID, SDID(2)	DC(1)	MID(1)	PSC(2)	Value, subsequent parts(230)		CS(1)
---------	--------------	-------	--------	--------	------------------------------	--	-------

ANC Packet #18

ADF (3)	DID, SDID(2)	DC(1)	MID(1)	PSC(2)	Value, last part(206)	„0-padding“(24)	CS(1)
---------	--------------	-------	--------	--------	-----------------------	-----------------	-------

ANC Packet Parameters for Metadata

ADF (3)	= 000, 3FF, 3FF (hex)	Ancillary Data Flag (packet header)
DID, SDID (2)	= 44, 04 (hex)	Packet Id for VANC space (vertical ancillary data space)
DC (1)	= 233 (dec)	length of “User Data Words” (UDW) is 233 for all packets
MID (1)	= e.g. 1 (dec)	Message ID for all metadata packets; it is an arbitrary but identical number for all packets of this KLV object.
PSC (2)	= 1 .. 18 (dec)	18 packets are needed, numbered from 1 to 18.
payload (230)		each ANC packet has a segmented payload of 230 bytes. 18 packets are needed for the 4116 bytes KLV block.
	packet #1	carries “Key”, “Length of Value” and the first part of “Value” (as shown above)
	packet #2 ... #17	carry subsequent parts of “Value”. Key and Length is not repeated. Identification just by MID, PSC.
	packet #18	carries the last part of “Value” and “zero padding” (24) up to the packet end
CS (1)		checksum to be calculated according to SMPTE 291M

ANC Packet Assembly for LUT

The complete KLV encoded LUT (length = 16 + 4 + 6144 = **6164** bytes) is packed into SMPTE 291M Ancillary Data packets (ANC packets). The segmentation is done in the same way as for Metadata. 27 ANC packets are needed here.

ANC Packet Parameters for LUT

The structure and length of each ANC packet is the same as before (see previous page). The parameters are given below.

ADF (3)	= 000, 3FF, 3FF (hex)	Ancillary Data Flag (packet header)
DID, SDID (2)	= 44, 04 (hex)	Packet Id for VANC space (vertical ancillary data space)
DC (1)	= 233 (dec)	Length of “User Data Words” (UDW) is 233 for all packets
MID (1)	= e.g. 2 (dec)	Message ID for all LUT packets; it is an arbitrary but identical number for all packets of this KLV object.
PSC (2)	= 1 ... 27 (dec)	27 packets are needed, numbered from 1 to 27.
payload (230)		each ANC packet has a segmented payload of 230 bytes. 27 packets are needed for the 6164 bytes KLV block.
	packet #1	carries “Key”, “Length of Value” and the first part of “Value”
	packet #2 ... #26	carry subsequent parts of “Value”
	packet #27	carries the last part of “Value” and “zero padding” (46) up to the packet end
CS (1)		checksum to be calculated according to SMPTE 291M

ANC Packet Insert

The Extended Metadata packets are inserted in the same way in all modes of the camera (YUV / RGB / Raw, Single Link / Dual Link, progressive / segmentedframe, ..).

All ANC packets are inserted in the VANC space (vertical ancillary data space). Seven VANC lines are needed if a LUT is included, else three lines. The user can give the lines for insert. For compatibility with some recording devices only the Y-stream is used (corresponds to G in case of Dual Link). Packets are inserted just into one link. In case of Dual Link, Link B is unused.

On the next page the content and the position of each ANC packet within the VANC space is given.

Length of KL-Header (*1)	Length of ANC packet complete (*2)	Length of ANC packet payload (*3)
20	240	230

Packet No. PSC	Link ID Of HD-SDI	Stream ID	Line No.	Sample No. at start of ANC Packet	Sample No. at end of ANC Packet	Data Index in KLV wrapped object at start of packet	Data Index in stripped object at start of packet
[1 ... 18]	[A B] (*4)	[Y C] (*5)	[9 ... 20 for psf] [9 ... 41 for p] (*6)	[~ 0 ... 1919] (*7)	[~ 0 ... 1919] (*8)	[~ 0 ... 4115] (*9)	[~ 0 ... 4095] (*10)
Metadata (4kb, MID = 1)							
1	A	Y	9	0	239	0	-20
2	A	Y	9	240	479	230	210
3	A	Y	9	480	719	460	440
4	A	Y	9	720	959	690	670
5	A	Y	9	960	1199	920	900
6	A	Y	9	1200	1439	1150	1130
7	A	Y	9	1440	1679	1380	1360
8	A	Y	9	1680	1919	1610	1590
9	A	Y	9	0	239	1840	1820
10	A	Y	10	240	479	2070	2050
11	A	Y	10	480	719	2300	2280
12	A	Y	10	720	959	2530	2510
13	A	Y	10	960	1199	2760	2740
14	A	Y	10	1200	1439	2990	2970
15	A	Y	10	1440	1679	3220	3200
16	A	Y	10	1680	1919	3450	3430
17	A	Y	11	0	239	3680	3660
18	A	Y	11	240	479	3910	3890
LUT (6kb, MID = 2)							
1	A	Y	13	0	239	0	-20
2	A	Y	13	240	479	230	210
3	A	Y	13	480	719	460	440
4	A	Y	13	720	959	690	670
5	A	Y	13	960	1199	920	900
6	A	Y	13	1200	1439	1150	1130
7	A	Y	13	1440	1679	1380	1360
8	A	Y	13	1680	1919	1610	1590
9	A	Y	14	0	239	1840	1820
10	A	Y	14	240	479	2070	2050
11	A	Y	14	480	719	2300	2280
12	A	Y	14	720	959	2530	2510
13	A	Y	14	960	1199	2760	2740
14	A	Y	14	1200	1439	2990	2970
15	A	Y	14	1440	1679	3220	3200
16	A	Y	14	1680	1919	3450	3430
17	A	Y	15	0	239	3680	3660
18	A	Y	15	240	479	3910	3890
19	A	Y	15	480	719	4140	4120
20	A	Y	15	720	959	4370	4350
21	A	Y	15	960	1199	4600	4580
22	A	Y	15	1200	1439	4830	4810
23	A	Y	15	1440	1679	5060	5040
24	A	Y	15	1680	1919	5290	5270
25	A	Y	15	0	239	5520	5500
26	A	Y	15	240	479	5750	5730
27	A	Y	15	480	719	5980	5960
						6210	6190

Remarks:

- (*1) UL Label = 16 Bytes, Length = 4 Bytes
- (*2) total length of ANC Packet
- (*3) total length – 10 (ADF(3) + DID(2) + Data Count(1) + Segment Message ID(1) + Segment Packet Count(2) + Checksum(1))
- (*4) relevant in case of Dual-Link
- (*5) Stream Y in Single-Link corresponds to stream G in Dual Link, Link A
- (*6) default values are 9-11, 13-16; effective values depend on user settings

! In case of Psf-transport of 2 sensorframes a second inserttakes place in the second field. For Details see appendix A1.

(*7) Sample No. at ANC packet ADF Flag (000)

(*8) Sample No. at ANC packet checksum

(*9) Index pointer in the complete KLV encoded block [0 ... 4115] on the 1st byte of the “UDW-payload”

(*10) Index pointer in the “Value” field of the KLV encoded block [0 ... 4095] on the 1st byte of the “UDW-payload”

Extended metadata content

Not all fields of the 4 KB block are filled with content by the camera. The table in Chapter 5.3 gives an overview which data the camera provides.

5.2.2 Timecode

Timecode (ATC) is embedded in the HD-SDI stream according to SMPTE 12M. It represents the timecode of the camera. This timecode is also available in the Extended Metadata as “Master TC” with identical content.

The camera can also deliver additional timecode with different content. These are part of the ARRI Extended Metadata (see below).

Timecode is inserted as “ATC_LTC” and “ATC_VITC” at the preferred locations in HANC space.

This is line 9 for ATC_VITC and line 10 for ATC_LTC [SMPTE 12M-2, page 15], in case of Psf-transport additionally in line 571 and 572. For further details, see appendix A1.

Every sensor image has an ATC_LTC and ATC_VITC packet. For camera frame rates above 30 fps the implementation follows the “preferred implementation” in paragraph 12.1 of SMPTE 12M-1. This basically says: the frame counter should increment every second image. ATC_LTC and ATC_VITC also carry the “Vari-Frame” flag.

Panasonic Vari-Frame

A so-called “Vari-Frame Flag” or “Active Frame Flag” is generated according to the Panasonic Specification for Vari-Frame. This flag is inserted into the User Data Words (UDW) of the timecode ATC_LTC and ATC_VITC packet, as specified before.

Vari-Frame allows running the camera imager at frames rates below the frame rate of the HD-SDI link. In this case the cameras internal frame buffer delivers “duplicated” frames to meet the HD-SDI link speed. All duplicated frames are marked as “inactive” and shall not be recorded.

The Vari-Frame Flag consists of two bits that can indicate the status separately for both fields of a frame. Since ARRI cameras always deliver progressive captured sensor frames just two states appear.

This is also true for Psf-transport modes where both transport fields carry different sensor images (e.g. Dual Link 60p). Every sensor image is attended by a timecode packet that identifies the image as active or inactive.

UDW2	UDW2	Interpretation of the Vari-Frame Flag Bits
Bit 5	Bit 4	Status
0	0	Frame is inactive
0	1	Not defined
1	0	Not defined

1	1	Frame is active
---	---	-----------------

The Vari-Frame Flag is also part of the ARRI Extended Metadata. From SUP 7.0 on, the Vari-Frame Flag is always active in the UDW.

ANC Insert

Inserted into bit 4 and 5 of Timecode User Data Word 2 (UDW2) in ATC_LTC and ATC_VITC (see Basic Metadata)

The Vari-Frame Flag is also included in the ARRI Extended Metadata. This can be used to determine any cloned frames that have been captured accidentally.

5.2.3 Payload Identifier

Payload identification, according to SMPTE 252M-2002, gives information regarding frame rate, kind of sampling, bit quantization and number of links. In case the imager frame rate is not equal to the HD-SDI frame rate, the HD-SDI frame rate is indicated.

In case of “ARRI T-Link”, the RGBA 10 Bit container format is indicated irrespective of the 12 bit payload that is carried in the 10 bit container.

The “Dynamic Range” field in Dual Link [SMPTE 352, page 16] is set to zero.

Payload identification is inserted in the Y-stream in HANC space immediately after EAV of line 10 and 572 for “Psf” and line 10 for progressive [SMPTE 352, page 8, 9].

5.2.4 Recorder Control

For a very basic remote RECORD START/STOP function with the ARRI DIGITAL CAMERAS, the recorder should recognize a flag in the HD-SDI signal.

This flag is inserted in the HANC data space according to SMPTE 291 as a type 2 acillary data packet with DID=0x52 and SDID=0x4D. The data count of the packet is DC=0x0B and the RECORD START/STOP flag is located in data word 11, at bit position LSB+1. In REC PAUSE or STOP the bit is ‘0’, in RECORD the bit is ‘1’.

Note: The data packet position in the HANC data space may shift, depending on SDI mode and enabled/disabled embedded audio. Therefore, identifying the packet by the DID/SDID values is highly recommended instead of decoding by fixed line/sample numbers.

Requirements for the recorder

The recorder should immediately go into RECORD when the RECORD trigger (column 3) is received and go into REC PAUSE or STOP when the STOP trigger (column 2) is received. When in REC PAUSE/STOP mode the recorder **must** deliver an EE signal on the output (viewing through recorder). In the recorders setup (menu system etc.) this RECORD START/STOP function should be referred to as “**SDI REMOTE**” with the options ON and OFF (ignore RECORD START/STOP trigger if present).

The recorder should support this RECORD START/STOP function in all ARRI DIGITAL CAMERAS output modes it is able to record, i.e. HD 1920x1080 422, 444, 422 dual stream (Highspeed and D-21 Mscope), ARRI RAW T-Link. The recorder **must** be transparent to the ANC data packet; it should be present on all outputs in order to have more slave recorders connected behind it. This should be true in STOP/EE and RECORD. The recorder should **not** record the ANC data packet to prevent unwanted recording on slave recorders when playing back material.

Note: Ideally the recorder features a MON OUT with status information (RECORD and TIMECODE) burn-in and bright TALLY lights, which will act as a confirmation of i.e. recording

ANC data packets and code values (cv)

ANC data	ANC OFF smpl:cv Y, cv Cb/Cr	ANC ON, STOP smpl:cv Y, cv Cb/Cr	ANC ON, RECORD smpl:cv Y, cv Cb/Cr
ADF	1928:0001000000,1000000000	1928:0000000000,1000000000	1928:0000000000,1000000000
ADF	1929:0001000000,1000000000	1929:1111111111,1000000000	1929:1111111111,1000000000
ADF	1930:0001000000,1000000000	1930:1111111111,1000000000	1930:1111111111,1000000000
DID	1931:0001000000,1000000000	1931:0101010010,1000000000	1931:0101010010,1000000000
SDID	1932:0001000000,1000000000	1932:1001001101,1000000000	1932:1001001101,1000000000
DC	1933:0001000000,1000000000	1933:0100001011,1000000000	1933:0100001011,1000000000
UDW	1934:0001000000,1000000000	1934:1000000001,1000000000	1934:1000000001,1000000000
UDW	1935:0001000000,1000000000	1935:1000000000,1000000000	1935:1000000000,1000000000
UDW	1936:0001000000,1000000000	1936:1000000000,1000000000	1936:1000000000,1000000000
UDW	1937:0001000000,1000000000	1937:1000000001,1000000000	1937:1000000001,1000000000
UDW	1938:0001000000,1000000000	1938:1000000000,1000000000	1938:1000000000,1000000000
UDW	1939:0001000000,1000000000	1939:1000000000,1000000000	1939:1000000000,1000000000
UDW	1940:0001000000,1000000000	1940:1000000001,1000000000	1940:1000000001,1000000000
UDW	1941:0001000000,1000000000	1941:1000000000,1000000000	1941:1000000000,1000000000
UDW	1942:0001000000,1000000000	1942:1000000000,1000000000	1942:1000000000,1000000000
UDW	1943:0001000000,1000000000	1943:1000100000,1000000000	1943:1000100000,1000000000
UDW	1944:0001000000,1000000000	1944:1000000000,1000000000	1944:1000000010,1000000000
CS	1945:0001000000,1000000000	1945:1011001101,1000000000	1945:1011001111,1000000000

Note: The positions of the samples given are only valid without audio in the HD-SDI. When audio is embedded in the HD-SDI, the horizontal position is shifted.

5.2.5 Audio

When audio is active on the ALEXA camera, two audio channels (48 KHz, 24 Bit) are embedded in the HD-SDI stream as a stereo pair in channel 1 and 2 of the Audio Group 1. Channel 1 is left, for AMIRA cameras 4 audio channels (48 KHz, 24 Bit) are embedded in the HD-SDI stream as channel 1; 2; 3 and 4 of the Audio Group 1.

The insert positions of the audio data and audio control packets are compliant with the SMPTE specification [SMPTE 299, page 18 and 24].

5.3 ARRIRAW/SDI Metadata

The ARRIRAW file format .ari stores metadata in the ARRI V3 header and has a size of 4 KB. Details on the header fields and how it shall be represented by software is embedded into the file ArriFileV3.h, which can be found on the ARRI Partner Program FTP in the ARRIRAW section.

The new wrapped MXF/ARRIRAW format from the ALEXA Mini is using the identical ARRI V3 header.

Not all fields of the 4 KB block are filled with content by the camera. The following table gives an overview which data the camera provides.

The ALEXA Classic, XT, SXT and Mini transmit metadata via its HD-SDI MON OUT and REC OUT connectors.

The metadata on MON OUT is not always identical to the recorded metadata. In some cases like image width and height (IDI02 and IDI03), target color space (ICI 16) or frame line dimension (FLI 05 – FLI 10) the values refer to the HD-SDI OUT image.

ID	Name	Offset (Bytes)	Size (Bytes)	Value Range	ARI	SDI	MXF
IDI02	Image Width	0x0014	4	ARRIRAW Pixel Image Width in sensor mode: 16by9 2880px 16by9 3.2k 3168px SXT only 4by3 2880px 4by3 cropped 2592px Open Gate 3424px Open Gate 65 6560px ALEXA65 only 1:78 5K 65 5120px ALEXA65 only 1:50 4K 65 4320px ALEXA65 only for MXF/ARRIRAW 16by9 2880px Open Gate 3.4K 3424px Open Gate 16by9 HD Ana. 3424px Open Gate 2.39 2K Ana. 3424px Open Gate 4by3 2.8K 3424px ALEXA Mini LF OpenGate 4.5K 4448 pixel. ALEXA Mini LF 2.39 4.5K 4448 pixel. ALEXA Mini LF UHD 3840 pixel. ALEXA Mini LF S35 Open Gate 3.4K 3424 pixel For HD-SDI out Pixel Image Width is in all sensor modes: 1920px	X	X	X
IDI03	Image Height	0x0018	4	ARRIRAW Pixel Image Height in sensor mode 16by9 1620px 16by9 3.2k 1782px 4by3 2160px 4by3 cropped 2160px Open Gate 2202px Open Gate 65 3100px 1:78 5K 65 2880px 1:50 4K 65 2880px for MXF/ARRIRAW 16by9 1620px Open Gate 3.4K 2202px Open Gate 16by9 HD Ana. 2202px Open Gate 2.39 2K Ana. 2202px Open Gate 4by3 2.8K 2202px ALEXA Mini LF OpenGate 4.5K 3096 pixel. ALEXA Mini LF 2.39 4.5K1856 pixel. ALEXA Mini LF UHD 2160 pixel ALEXA Mini LF S35 Open Gate 3.4K 2202 pixel. For HD-SDI out Pixel Image Height is in all sensor modes: 1080px	X	X	X
IDI06-1	Active Image Left	0x0024	4	ARRIRAW Active Image Left pixel in sensor mode: 16by9 0px 16by9 3.2k 0px 4by3 0px 4by3 cropped 7px Open Gate 5px Open Gate 65 0px 1:78 5K 65 720px 1:50 4K 65 1120px for MXF/ARRIRAW 16by9 0px Open Gate 3.4K 0px Open Gate 16by9 HD Ana. 752px Open Gate 2.39 2K Ana. 432px Open Gate 4by3 2.8K 272px For HD-SDI Pixel Active Image Left is in all sensor modes: 0px	X	X	X

ID	Name	Offset (Bytes)	Size (Bytes)	Value Range	ARI	SDI	MXF
IDI06-2	Active Image Top	0x0028	4	ARRIRAW Active Image Top pixel in sensor mode: 16by9 0px 16by9 3.2k 0px 4by3 0px 4by3 cropped 0px Open Gate 2px Open Gate 65 0px 1:78 5K 65 110px 1:50 4K 65 110px for MXF/ARRIRAW 16by9 0px Open Gate 3.4K 0px Open Gate 16by9 HD Ana. 21px Open Gate 2.39 2K Ana. 28px Open Gate 4by3 2.8K 21px For HD-SDI Pixel Active Image Top is in all sensor modes: 0px	X	X	X
IDI06-3	Active Image Width	0x002C	4	Active Image Pixel Width in sensor mode: 16by9 2880px 16by9 3.2k 3168px 4by3 2880px 4by3 cropped 2578px Open Gate 3414px Open Gate 65 6560px 1:78 5K 65 5120px 1:50 4K 65 4320px for MXF/ARRIRAW 16by9 0px Open Gate 3.4K 0px Open Gate 16by9 HD Ana. 1920px Open Gate 2.39 2K Ana. 2560px Open Gate 4by3 2.8K 2880px ALEXA Mini LF OpenGate 4.5K 4448 pixel. ALEXA Mini LF 2.39 4.5K 4448 pixel. ALEXA Mini LF UHD 3840 pixel ALEXA Mini LF S35 Open Gate 3.4K 3424 pixel For HD-SDI Pixel Active Image Width is in all sensor modes: 1920px	X	X	X
IDI06-4	Active Image Height	0x0030	4	Active Image Pixel Height in sensor mode: 16by9 1620px 16by9 3.2k 1782px 4by3 2160px 4by3 cropped 2160px Open Gate 2198px Open Gate 65 3100px 1:78 5K 65 2880px 1:50 4K 65 2880px for MXF/ARRIRAW 16by9 0px Open Gate 3.4K 0px Open Gate 16by9 HD Ana. 2160px Open Gate 2.39 2K Ana. 2145px Open Gate 4by3 2.8K 2160px ALEXA Mini LF OpenGate 4.5K 3096 pixel. ALEXA Mini LF 2.39 4.5K 1856 pixel. ALEXA Mini LF UHD 2160 pixel ALEXA Mini LF S35 Open Gate 3.4K 2202 pixel. For HD-SDI Pixel Active Image Width is in all sensor modes: 1920px	X	X	X

ID	Name	Offset (Bytes)	Size (Bytes)	Value Range	ARI	SDI	MXF
				Full Image Width in sensor mode: 16by9 2880px 16by9 3.2k 3168px 4by3 2880px 4by3 cropped 2592px Open Gate 3420px Open Gate 65 6560px 1:78 5K 65 5120px 1:50 4K 65 4320px for MXF/ARRIRAW 16by9 2880px Open Gate 3.4K 3424px Open Gate 16by9 HD Ana. 3424px Open Gate 2.39 2K Ana. 3424px Open Gate 4by3 2.8K 3424px ALEXA Mini LF OpenGate 4.5K 4448 pixel. ALEXA Mini LF 2.39 4.5K 4448 pixel. ALEXA Mini LF UHD 3840 pixel ALEXA Mini LF S35 Open Gate 3.4K 3424 pixel For HD-SDI Pixel Full Image Width is in all sensor modes:			
IDI07-3	Full Image Width	0x003C	4	1920px	X	X	X
				Full Image Width in sensor mode: 16by9 1620px 16by9 3.2k 1782px 4by3 2160px 4by3 cropped 2160px Open Gate 2198px Open Gate 65 3100px 1:78 5K 65 2880px 1:50 4K 65 2880px for MXF/ARRIRAW 16by9 1620px Open Gate 3.4K 2202px Open Gate 16by9 HD Ana. 2202px Open Gate 2.39 2K Ana. 2202px Open Gate 4by3 2.8K 2202px ALEXA Mini LF OpenGate 4.5K 3096 pixel. ALEXA Mini LF 2.39 4.5K 1856 pixel. ALEXA Mini LF UHD 2160 pixel ALEXA Mini LF S35 Open Gate 3.4K 2202 pixel. For HD-SDI Pixel Full Image Height is in all sensor modes:			
IDI07-4	Full Image Height	0x0040	4	1080px	X	X	X
ICI02	Color Processing Version	0x0058	4	1.0/2.0/4.0/5.0	X	X	X
ICI03	White Balance	0x005C	4	min ="2000" max ="11000" increment in 100k steps	X	X	X
ICI04	White Balance CC	0x0060	4	default="0" min ="-12" max ="12"	X	X	X
ICI05	WB Factor R	0x0064	4	min ="0.67" max ="3,20"	X	X	X
ICI06	WB Factor G	0x0068	4	always ="0"	X	X	X
ICI07	WB Factor B	0x006C	4	min ="1,02" max ="3,6"	X	X	X
ICI08	WB Applied In Camera	0x0070	4	0 =No 1 = Yes	X	X	X
ICI09	Exposure Index ASA	0x0074	4	ASA rating: min =160; 200; 250; 320; 400; 500; 640; 800; 1000; 1280;1600; 2000; 2560; max =3200	X	X	X
ICI16	Target Color Space	0x00BC	4	TargetColorSpace 0x2 = LogCWGam	X	X	X
ICI17	Sharpness	0x00C0	4	Sharpness always default = 100 (no sharpening)	X	X	X
ICI18	Lens Squeeze Factor	0x00C4	4	1.0 for spherical lenses 1.3 and 2.0 for anamorphic lenses	X	X	X
ICI19	Image Orientation	0x00C8	4	0 = No flip, 1 = H flip (in camera), 12 = H+V flip by reader	X	X	X
ICI20	Look Name	0x00CC	32	32 characters for look file name	X	X	X
ICI21	Look LUT Mode	0x00EC	4	No Look LUT " ARRI_LOOK_LUT_NOLUT" = 0x0000 Monochromatic Look LUT " ARRI_LOOK_LUT_MONO" = 0x0001 3D Look LUT " ARRI_LOOK_LUT_3D" = 0x0002	X	X	
ICI22	Look LUT Offset	0x00F0	4	9335296 (defined by recorder)	X	X	
ICI23	Look LUT Size	0x00F4	4	6144	X	X	

ID	Name	Offset (Bytes)	Size (Bytes)	Value Range	ARI	SDI	MXF
ICI24	Look Live Grading Flags (ALF-2)	0x00F4	4	0x0 = Look is unchanged 0x1 = ARRI_LOOK_CHANGED_CD 0x2 = ARRI_LOOK_CHANGED_3DLUT 0x4 = ARRI_LOOK_CHANGED_AUX	X	X	
ICI25	Look Saturation (ALEXA XT from xml Look file or ALEXA SXT from ALF-2 Look file)	0x00F8	4	min ="0" max ="2" "1.0 = default"	X	X	X
ICI26-1-2-3	CDL Slope RGB (ALEXA XT from xml Look file or ALEXA SXT from ALF-2 Look file)	0x00FC	12	min ="0.5" max ="2" "1.0 = default"	X	X	X
ICI27-1-2-3	CDL Offset RGB (ALEXA XT from xml Look file or ALEXA SXT from ALF-2 Look file)	0x0108	12	min ="-0.5" max ="0.5" "0.0 = default"	X	X	X
ICI28-1-2-3	CDL Power RGB (ALEXA XT from xml Look file or ALEXA SXT from ALF-2 Look file)	0x0114	12	min ="0.5" max ="2" "1.0 = default"	X	X	X
ICI29-1-2-3	Printer Lights RGB (ALEXA xml Look file)	0x0120	12	min ="-1" max ="1" "0.0 = default"	X	X	
ICI31	CDL Mode (ALEXA xml Look file)	0x012C	4	0 = "No Look" 1 = "Alexa Look Video" 2 = "CDL Video" 3 = "CDL LogC"	X		
ICI43	Image Data Checksum	0x0134	4	U32	X		
ICI44	Color Order	0x0138	4	Bayer color order field is unset, shall be interpreted as Alexa/D21 bayer order GRBG: 0xFFFFFFFF = ARRI_CO_NONE Bayer color order of Alexa/D21 images GRBG: 0x47524247 = ARRI_CO_D21_ALEXA Bayer color order of Alexa65 images GBRG: 0x47425247 = ARRI_CO_ALEXA65	X		X
CDI02	Camera Type ID	0x0164	4	1 = ARRI_CAM_TYPE_D21; 2 = ARRI_CAM_TYPE_ALEXA 3 = ARRI_CAM_TYPE_ALEXA65 4 = ARRI_Mini	X	X	X
CDI05	Camera Serial Number	0x0170	4	4 digit number	X	X	X
CDI06	Camera ID	0x0174	4	Camera ID Prefix R = default L = left eye and camera serial number translated to Base36.	X	X	X
CDI07	Camera Index	0x0178	4	character A-Z	X	X	X
CDI08-1	System Image Creation Date	0x017C	4	Date as YYYYMMDD (BCD: 1 digit -> 4 bits) (Dynamic)	X	X	X
CDI08-2	System Image Creation Time	0x0180	4	Time as HHMMSScc (BCD: 1 digit -> 4 bits) (Dynamic) The last byte 'cc' are centiseconds.	X	X	X
CDI09-1	System Image Time Zone Offset	0x0184	4	UTC offset time ±hh:mm from -12:00 to + 14:00	X	X	X
CDI09-2	System Image Time Zone DST	0x0188	4	DST time hh:mm is 0:00 or + 1:00	X	X	X
CDI10	Exposure Time	0x018C	4	min = "0,579 ms" max = "41,435 ms"	X	X	X
CDI11	Shutter Angle	0x0190	4	min ="50" max ="3580"	X	X	X
CDI15	Sensor FPS	0x01A0	4	min ="750" max ="120000"	X	X	X
CDI16	Project FPS	0x01A4	4	0=23.976fps, 1=24.000fps, 2=25.000fps, 3=29.970fps and 4=30.000fps	X	X	X
CDI17-1	Master TC	0x01A8	4	Time code as HH:MM:SS:FF (BCD: 1 digit -> 4 bits)	X	X	X
CDI17-2	Master TC Frame Count	0x01AC	4	7 digit number min = 0 max = 2591999 for TC base 30 fps	X	X	X
CDI17-3	Master TC Time Base	0x01B0	4	0=23.976fps, 1=24.000fps, 2=25.000fps, 3=29.970fps and 4=30.000fps	X	X	X
CDI17-5	Master TC User Info	0x01B4	4	6 digits 0-9 A-F		X	
CDI26	Storage Media Serial Number	0x0268	8	32 digit number	X	X	X

ID	Name	Offset (Bytes)	Size (Bytes)	Value Range	ARI	SDI	MXF
CDI28	SMPTE UMID	0x027C	32	64 digit number	X	X	X
CDI29	Camera Family	0x029C	8	always Alexa	X	X	
CDI30	Recorder Type	0x02A4	32	32 digit e.g. 'Codex Digital;2013.SIM2.2723 0 = No, 1 = Yes	X	X	X
CDI31	Mirror Shutter Running	0x02C4		Bit 0 in a bit field of 32 bits at offset 0x2c4 0 = Valid Image, 1 = Duplicate Image	X	X	
CDI32	Vari	0x02C4		Bit 1 in a bit field of 32 bits at offset 0x2c4	X	X	
CDI32-1	Return In Active	0x02C4		Bit 2 in a bit field of 32 bits at offset 0x2c4 0 = SDI Return In inactive, 1 = SDI Return In active		X	
CDI36	UUID	0x02D0	16	8-4-4-4-12 for a total of 36 characters (32 alphanumeric characters and four hyphens)	X	X	X
CDI37	Camera SUP Name	0x02E0	24	24 alphanumeric characters	X	X	X
CDI38	Camera Model	0x02F8	20	The text field is a combination of the fixed prefix 'Alexa' followed by possible combinations of the product type and product sub type as strings. 1 = Alexa50 2 = Alexa50_Plus / Product String: Plus 3 = Alexa50_Rcu / Product String: Rcu 4 = Alexa_Studio / Product String: Studio 5 = Alexa_M / Product String: M	X	X	X
CDI39	Camera Product	0x030C	2	6 = ALEXA	X	X	
CDI40	Camera Sub Product	0x030E	2	0 = No sub product 1 = 4:3 2 = HD 4 = XT 8 = XR 16 = B&W 32 = SXR 64 = SXT	X	X	
LDI02	Lens Distance Unit	0x0374	4	0=Inch, 1=Meter, 2=Default Unit.	X	X	X
LDI03	Lens Focus Distance	0x0378	4	Distance in the specified focus unit (1/1000 inch or mm). Special values for: 0 = Focus distance invalid (or not available yet) -1 = Focus distance infinite	X	X	X
LDI04	Lens Focal Length	0x037C	4	Focal length in 1/1000 mm or 0 if no value is available	X	X	X
LDI05	Lens Serial Number	0x0380	4	32 digit number	X	X	X
LDI06-1	Lens Linear Iris	0x0380	4	Aperture in units of 1/1000 in linear range	X	X	X
LDI06-2	Lens Iris	0x0384	4	Conversion of Aperture linear range into T-Stop $\text{int}16 n = (\text{Aperture}/1000)-1;$ $T_{\text{stop}} = 2^{(n/2)};$ T-Stop T0.7 T1.0 T1.4 T2.0 T2.8 T4.0 T5.6 T8 T11 T16 T22 T32 T45 T64 T90 NearClose Close Invalid Aperture Value 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 12000 13000 14000 -3 -2 -1	X	X	X
LDI07-1	ND Filter Type	0x0388	2	For ALEXA Studio No Filter ="0" Filter on ="1"	X	X	X
LDI07-2	ND Filter Density	0x038A	2	(0) no Filter (1) ALEXA STUDIO Filter on ="1400" (2) ALEXA MINI (LF) ND 0.6 (3) ALEXA MINI (LF) ND 1. (4) ALEXA MINI ND 2.1 (5) ALEXA MINI LF ND 1.8	X	X	X
LDI11	Lens Model	0x0398	32	Lens model as a 32 letter string	X	X	X
LDI12-1	RawEncoderFocus RawLds	0x03B8	2	0 to 65535 (uint16)	X	X	
LDI12-2	RawEncoderFocus RawMotor	0x03BA	2	0 to 65535 (uint16)	X	X	
LDI13-1	RawEncoderFocal RawLds	0x03BC	2	0 to 65535 (uint16)	X	X	
LDI13-2	RawEncoderFocal RawMotor	0x03BE	2	0 to 65535 (uint16)	X	X	
LDI14-1	RawEncoderIris RawLds	0x03C0	2	0 to 65535 (uint16)	X	X	
LDI14-2	RawEncoderIris RawMotor	0x03C2	2	0 to 65535 (uint16)	X	X	

ID	Name	Offset (Bytes)	Size (Bytes)	Value Range	ARI	SDI	MXF
LDI15-1	EncoderLimFocusLdsMin	0x03C4	2	0 to 65535 (uint16)	X	X	
LDI15-2	EncoderLimFocusLdsMax	0x03C6	2	0 to 65535 (uint16)	X	X	
LDI16-1	EncoderLimFocalLdsMin	0x03C8	2	0 to 65535 (uint16)	X	X	
LDI16-2	EncoderLimFocalLdsMax	0x03CA	2	0 to 65535 (uint16)	X	X	
LDI17-1	EncoderLimIrisLdsMin	0x03CC	2	0 to 65535 (uint16)	X	X	
LDI17-2	EncoderLimIrisLdsMax	0x03CE	2	0 to 65535 (uint16)	X	X	
LDI18-1	EncoderLimFocusMotorMin	0x03D0	2	0 to 65535 (uint16)	X	X	
LDI18-2	EncoderLimFocusMotorMax	0x03D2	2	0 to 65535 (uint16)	X	X	
LDI19-1	EncoderLimFocalMotorMin	0x03D4	2	0 to 65535 (uint16)	X	X	
LDI19-2	EncoderLimFocalMotorMax	0x03D6	2	0 to 65535 (uint16)	X	X	
LDI20-1	EncoderLimIrisMotorMin	0x03D8	2	0 to 65535 (uint16)	X	X	
LDI20-2	EncoderLimIrisMotorMax	0x03DA	2	0 to 65535 (uint16)	X	X	
LDI21	Lds Lag Type	0x03DC	1	0 = no lag, 1 = constant lag 2 = unknown lag	X	X	X
LDI22	Lds Lag Value	0x03DD	1	The lag value is 1 frame delay	X	X	X
VFX08	Camera Tilt	0x045C	4	min="-90.000" max="90.000"	X	X	
VFX09	Camera Roll	0x0460	4	min="-180.000" max="180.000"	X	X	
VFX10	Master Slave Setup Info	0x0464	4	0=independent 1=master 2=slave	X	X	
VFX11	3D Eye Info	0x0468	4	0 = single, 1 = left eye, 2 = right eye Only for ALEXA XT	X	X	
CID02	Circle Take	0x04F4	4	invalid FF = No, 1 = Yes	X		
CID03	Reel	0x04F8	8	max 8 characters string	X	X	X
CID04	Scene	0x0500	16	max 16 characters string	X	X	X
CID05	Take	0x0510	8	max 8 characters string	X	X	X
CID06	Director	0x0518	32	max 24 characters string	X	X	X
CID07	Cinematographer	0x0538	32	max 24 characters string	X	X	X
CID08	Production	0x0558	32	max 24 characters string	X	X	X
CID09	Production Company	0x0578	32	max 24 characters string	X	X	X
CID10	Location	0x0598	256	max 24 characters string	X	X	X
CID11	User Info 1	0x0598	0	max 24 characters string	X	X	X
CID12	User Info 2	0x0598	0	max 24 characters string	X	X	X
CID14	Operator	0x0598	0	max 24 characters string	X	X	X
CID13	Camera Clip Name	0x0698	24	20 characters fixed for CameraIndexReelCounter_YYMMDD_CameraID	X	X	X
SID04	Sound Roll	0x074C	32	max 8 character string	X	X	
FLI03	Frame Line File 1	0x0850	32	max 32characters string or 32 x 0xFF if not set	X	X	X
FLI04	Frame Line File 2	0x0870	32	max 32characters string or 32 x 0xFF if not set	X	X	
FLI05 struct	Frame Line Rectangle						
FLI05-1	Frame Line 1A	0x0870	48		X	X	X
FLI05-1	Frame Line 1A Type	0x0890	8	Type 0 = Inactive 1 = Master and 2 = Aux	X	X	X
FLI05-2	Frame Line 1A Name	0x0898	16	max 32 characters string	X	X	X
FLI05-3	Frame Line 1A Left	0x08A8	4	Pixel range from minimum = 0 to maximum = rectangle Width	X	X	X
FLI05-4	Frame Line 1A Top	0x08AC	4	Pixel range from minimum = 0 to maximum = rectangle height	X	X	X
FLI05-5	Frame Line 1A Width	0x08B0	4	Pixel count from minimum = 0 to maximum = highest recording resolution	X	X	X
FLI05-6	Frame Line 1A Height	0x08B4	4	Pixel count from minimum = 0 to maximum = highest recording resolution	X	X	X
FLI06 struct	Frame Line Rectangle						
FLI06-1	Frame Line 1B	0x08C0	48		X	X	X
FLI06-1	Frame Line 1B Type	0x08C0	8	Type 0 = Inactive 1 = Master and 2 = Aux	X	X	X
FLI06-2	Frame Line 1B Name	0x08C8	16	max 32 characters string	X	X	X
FLI06-3	Frame Line 1B Left	0x08D8	4	Pixel range from minimum = 0 to maximum = rectangle Width	X	X	X

ID	Name	Offset (Bytes)	Size (Bytes)	Value Range	ARI	SDI	MXF
FLI06-4	Frame Line 1B Top	0x08DC	4	Pixel range from minimum = 0 to maximum = rectangle height	X	X	X
FLI06-5	Frame Line 1B Width	0x08E0	4	Pixel count from minimum = 0 to maximum = highest recording resolution	X	X	X
FLI06-6	Frame Line 1B Height	0x08E4	4	Pixel count from minimum = 0 to maximum = highest recording resolution	X	X	X
FLI07 struct	Frame Line Rectangle Frame Line 1C	0x08F0	48		X	X	X
FLI06-1	Frame Line 1C Type	0x08F0	8	Type 0 = Inactive 1 = Master and 2 = Aux	X	X	X
FLI07-2	Frame Line 1C Name	0x08F8	16	max 32 characters string	X	X	X
FLI07-3	Frame Line 1C Left	0x0908	4	Pixel range from minimum = 0 to maximum = rectangle Width	X	X	X
FLI07-4	Frame Line 1C Top	0x090C	4	Pixel range from minimum = 0 to maximum = rectangle height	X	X	X
FLI07-5	Frame Line 1C Width	0x0910	4	Pixel count from minimum = 0 to maximum = highest recording resolution	X	X	X
FLI07-6	Frame Line 1C Height	0x0914	4	Pixel count from minimum = 0 to maximum = highest recording resolution	X	X	X
FLI08 struct	Frame Line Rectangle Frame Line 2A	0x0920	48		X	X	
FLI08-1	Frame Line 2A Type	0x0920	8	Type 0 = Inactive 1 = Master and 2 = Aux	X	X	
FLI08-2	Frame Line 2A Name	0x0928	16	max 32 characters string	X	X	
FLI08-3	Frame Line 2A Left	0x0938	4	Pixel range from minimum = 0 to maximum = rectangle Width	X	X	
FLI08-4	Frame Line 2A Top	0x093C	4	Pixel range from minimum = 0 to maximum = rectangle height	X	X	
FLI08-5	Frame Line 2A Width	0x0940	4	Pixel count from minimum = 0 to maximum = highest recording resolution	X	X	
FLI08-6	Frame Line 2A Height	0x0944	4	Pixel count from minimum = 0 to maximum = highest recording resolution	X	X	
FLI09 struct	Frame Line Rectangle Frame Line 2B	0x0950	48		X	X	
FLI09-1	Frame Line 2B Type	0x0950	8	Type 0 = Inactive 1 = Master and 2 = Aux	X	X	
FLI09-2	Frame Line 2B Name	0x0958	16	max 32 characters string	X	X	
FLI09-3	Frame Line 2B Left	0x0968	4	Pixel range from minimum = 0 to maximum = rectangle Width	X	X	
FLI09-4	Frame Line 2B Top	0x096C	4	Pixel range from minimum = 0 to maximum = rectangle height	X	X	
FLI09-5	Frame Line 2B Width	0x0970	4	Pixel count from minimum = 0 to maximum = highest recording resolution	X	X	
FLI09-6	Frame Line 2B Height	0x0974	4	Pixel count from minimum = 0 to maximum = highest recording resolution	X	X	
FLI10 struct	Frame Line Rectangle Frame Line 2C	0x0980	48		X	X	
FLI10-1	Frame Line 2C Type	0x0980	8	Type 0 = Inactive 1 = Master and 2 = Aux	X	X	
FLI10-2	Frame Line 2C Name	0x0988	16	max 32 characters string	X	X	
FLI10-3	Frame Line 2C Left	0x0998	4	Pixel range from minimum = 0 to maximum = rectangle Width	X	X	
FLI10-4	Frame Line 2C Top	0x099C	4	Pixel range from minimum = 0 to maximum = rectangle height	X	X	
FLI10-5	Frame Line 2C Width	0x09A0	4	Pixel count from minimum = 0 to maximum = highest recording resolution	X	X	
FLI10-6	Frame Line 2C Height	0x09A4	4	Pixel count from minimum = 0 to maximum = highest recording resolution	X	X	
				ARRI_NOISE_REDUCTION_OFF : no noise reduction ARRI_NOISE_REDUCTION_ANR : ARRI Noise Reduction 0xFFFFFFFF : same as ARRI_NOISE_REDUCTION_OFF			
NRI03	Noise Reduction Mode	0x09D8	4		X		
NRI04	Noise Reduction Strength	0x09DC	4		X		

ID	Name	Offset (Bytes)	Size (Bytes)	Value Range	ARRI	SDI	MXF
				0xFFFFFFFF or 0x0: noise reduction not yet applied or off			
NRI05	Noise Reduction applied	0x09E0	4	0x1: noise reduction already applied	X		
LCI02	Model	0x0A0C	64	empty if no converter is present	X	X	X
LCI03	Serial Number	0x0A4C	64	empty if no converter is present	X	X	X
LCI04	Physical Length	0x0A8C	4	0 if no converter is present Physical length in µm	X	X	X
LCI05	Light Loss Factor	0x0A90	4	0 if no converter is present Light loss factor * 1000,	X	X	X
LCI06	Focal Length Multiplier	0x0A94	4	0 if no converter is present Focal length multiplier * 1000,	X	X	X

6 Reading Metadata

6.1 ARRI Meta Extract

ARRI provides a software tool called ARRI Meta Extract (AME), which runs on Mac OS X and PC Win 7. It is available as a GUI and CMD command line application for metadata extraction of ALEXA Mini LF, ALEXA LF, ALEXA SXT, ALEXA XT, ALEXA 65, ALEXA Mini and AMIRA.

The GUI and command line application extracts both static and dynamic metadata from a clip and writes it to a comma separated value (CSV) file. The CSV file can be used to feed metadata into other applications or to view it directly, either in plain text or with help of a spreadsheet application. Whenever an ALEXA, ALEXA SXT or AMIRA Look has been applied in an ARRIRAW or ProRes recording, it will be dumped to a separate .xml or .aml file.

The latest ARRI Meta Extract is available at the ARRI webpage

http://www.arri.com/camera/alexatools/arri_meta_extract

6.2 QuickTime Files

6.2.1 ALE in AVID Media Composer

When using the standard ProRes AVID AMA plugin, static metadata can also be added to Media Composer Bin by importing the ALE file, which is written by the camera together with QuickTime files.

AVID Shot Log Import Setting must be set to "Merge events with known master clips".

The ALE file can be opened with any text editor.

6.2.2 Apple specific metadata flag in QT Track Header for Image Orientation

When an ALEXA camera is mounted up side down or UWZ lenses are used, the new option Image Rotate 180° in Image transform can correct the image orientation (H+V flip) on all SDI Outs and Electric Viewfinder.

When this option is in use, the recorded image is not flipped in QuickTime, DNxHD or ARRIRAW files only the metadata key **image orientation** (ICI19) refers to the correct image orientation. 0 = No flip, 1 = H flip in camera, 12 = H+V flip by reader

For clips with “H+V flip by reader” an additional flagging is in the track header ‘tkhd’ matrix available (-0.01 top left and middle), to enable a correct image orientation in QuickTime Player 7/10 and FCP X.

matrix	-0.01	0.00	0.00
	0.00	-0.01	0.00
	0.02048	0.01536	0.01

ATTENTION:

AMIRA files have a different behavior when mirror image H+V is selected.

The AMIRA ProRes files have the H flip already applied by camera only the V-flip must have been applied by reader.

matrix	0.01	0.00	0.00
	0.00	-0.01	0.00
	0.00	0.01080	0.01

6.2.3 Apple specific metadata flag in QT Track Header for Pixel Aspect Ratio (ALEXA only)

For productions with anamorphic lenses a new camera project setting “lens squeeze factor” allows to flag the recording formats ProRes, DNxHD and ARRIRAW with the correct lens de-squeeze factor. The factor is in the metadata field **aspect ratio** (ICI18) stored and can have the factor 1.0, 1.3 and 2.0.

To playback ProRes clips in QuickTime Player and FCP X with correct pixel aspect ratio, the files have additional flags in the Apple atom ‘tapt’ Track Aperture Dimension and ‘stds’ Sample Descriptions.

‘clef’ Clean Aperture Height and ‘prof’ Production Aperture Height describe the correct image pixel height. In this sample the recorded image height was 1536 (see encoded Pixel Height) divided by 2 for de-squeeze factor 2.0.

```

'tapt' - Track Aperture Mode Dimensions
'clef' - Track Clean Aperture Dimensions
  flags          $00000000
  cleanApertureWidth 0.02048
  cleanApertureHeight 0.0768
'prof' - Track Production Aperture Dimensions
  flags          $00000000
  productionApertureWidth 0.02048
  productionApertureHeight 0.0768
'enof' - Track Encoded Pixels Dimensions
  flags          $00000000
  encodedPixelsWidth 0.02048
  encodedPixelsHeight 0.01536

```

and in 'pasp' (pixel aspect ratio) the hSpacing and vSpacing for 2/1 for factor 2.0 or 13/10 for factor 1.3.

```

'pasp'
  hSpacing 2
  vSpacing 1

```

6.2.4 Apple specific metadata flag for oversized container dimensions

Technical limitations of camera hardware implementation producing for ProRes recording formats in none standard aspect formats like 4by3 2.8K; 16by9 3.2K and Open Gate3.4K an image container which is not equal to the image essence dimension.

This mismatch between container and image dimension leads to black lines around the image during playback.

For correct image cropping in the viewer the width and height dimension in "clef" *Clean Aperture Dimension* should be used.

```

'tapt' - Track Aperture Mode Dimensions
'clef' - Track Clean Aperture Dimensions
  flags          $00000000
  cleanApertureWidth 0.02880
  cleanApertureHeight 0.02160
'prof' - Track Production Aperture Dimensions
  flags          $00000000
  productionApertureWidth 0.02944
  productionApertureHeight 0.02176
'enof' - Track Encoded Pixels Dimensions
  flags          $00000000
  encodedPixelsWidth 0.02944
  encodedPixelsHeight 0.02176

```

6.2.5 AVID specific metadata flag for oversized container dimensions

To display the image without black border in Avid Media Composer the Frame Flex function is using the AVRI atom xml to crop the valid image correct for the viewer.

This xml sample of the AVRI atom (located in QT header stsd Sample description) describe for full container dimension (pixel) 3456 x 2202 and the Active Area of 3424x2202 pixels for Open Gate 3.4K ProRes.

XML-Code:

```
<Bounds>
  <Framing>
    <positionX>
      <Numerator>0</Numerator>
      <Denominator>1</Denominator>
    </positionX>
    <positionY>
      <Numerator>0</Numerator>
      <Denominator>1</Denominator>
    </positionY>
    <Width>
      <Numerator>0</Numerator>
      <Denominator>1</Denominator>
    </Width>
    <Height>
      <Numerator>0</Numerator>
      <Denominator>1</Denominator>
    </Height>
  </Framing>
  <Valid>
    <positionX>
      <Numerator>-4280</Numerator>
      <Denominator>3</Denominator>
    </positionX>
    <positionY>
      <Numerator>-1835</Numerator>
      <Denominator>2</Denominator>
    </positionY>
    <Width>
      <Numerator>8560</Numerator>
      <Denominator>3</Denominator>
    </Width>
    <Height>
      <Numerator>1835</Numerator>
      <Denominator>1</Denominator>
    </Height>
  </Valid>
  <Essence>
    <positionX>
      <Numerator>-1440</Numerator>
      <Denominator>1</Denominator>
    </positionX>
    <positionY>
      <Numerator>-1835</Numerator>
      <Denominator>2</Denominator>
    </positionY>
    <Width>
      <Numerator>2880</Numerator>
      <Denominator>1</Denominator>
    </Width>
    <Height>
      <Numerator>1835</Numerator>
      <Denominator>1</Denominator>
    </Height>
  </Essence>
  <Source>
    <positionX>
      <Numerator>-1440</Numerator>
      <Denominator>1</Denominator>
    </positionX>
    <positionY>
      <Numerator>-1835</Numerator>
      <Denominator>2</Denominator>
    </positionY>
  </Source>
</Bounds>
```

```
<Width>
  <Numerator>2880</Numerator>
  <Denominator>1</Denominator>
</Width>
<Height>
  <Numerator>1835</Numerator>
  <Denominator>1</Denominator>
</Height>
</Source>
</Bounds>
```

6.3 MXF Files

6.3.1 ARRI AMA Plugin

The ARRI AMA plugin 1.5 for AVID Media Composer Mac/Win reads static metadata from the MXF files and adds it as Bin columns to the Media Composer Bin.

When using the standard AMA plugin, static metadata can also be added to Media Composer by importing the ALE file, which is written by the ALEXA camera together with the MXF files.

<http://www.arri.com/camera/alexa/downloads>

6.4 ARRIRAW Files

The ARRIRAW Converter (ARC) version 3.5.3.5 and higher shall be used for camera metadata of ALEXA LF and SXT SUP 2.0 ARRIRAW (.ari) and ALEXA Mini / AMIRA SUP 5.3 MXF/ARRIRAW files.

Download link at ARRI webpage

http://www.arri.com/camera/alexa/tools/arriraw_converter/

6.5 DPX Multichunk data

Starting with the new ARC 3.0 release, we support the Codex DPX Multichunk data-embedding scheme. This data scheme allows multiple parties to store data independently in the DPX User Data area without overwriting each other's content. DPX files exported from ARC 3.0 use this scheme to provide the ARRIRAW header embedded in 'chunk' form.

If the raw conversion was done without overriding any fields in the ARRIRAW header data, the header data are provided unmodified; if fields were overridden, both the unmodified and modified header data are provided as separate chunks. An additional chunk carries any data about the conversion (such as the debayering parameters selected by the user) to provide complete traceability from the DPX file back to the original ARRIRAW data.

Detailed descriptions of the Codex DPX Multichunk data embedding scheme and the way it is used by ARRI are available at:

http://www.arri.com/camera/alexa/tools/arri_meta_extract/

6.6 ARRI Look File 2 (ALF-2) metadata

The ARRI Look File 2 (ALF-2) provided by ARRI Color Tool 1.6.0 and higher is compatible for ARRI camera model AMIRA, ALEXA Mini and ALEXA SXT, ALEXA LF, ALEXA 65 and is embedded as ASC CDL and 3D LUT metadata in each recorded QuickTime™, MXF/ARRIRAW and .ari ARRIRAW file.

6.6.1 ALF-2 Look in ProRes files

To transport the entire ALF-2 look metadata information the following QT keys are necessary.

6.6.1.1 Color Space

When the ALF-2 look is burned-in the target color space of the look will be represented in key **com.ari.camera.ColorGammaSxS**.

The value atom contains until now either the string **LOG-C** or the string **REC-709**. For SUP 2.0 in ALEXA SXT ALEXA LF and SUP 5.3 in AMIRA and ALEXA Mini the ALF-2 Look file can transport also a Look for wide gamut target color spaces: Rec2020, Rec2100, P3 DCI, P3 D60 and P3 D65.

The new wide gamut Color Spaces values are:

- **rec2020.d65.gamma24**
- **p3.dci.gamma26**
- **p3.d65.gamma26**
- **p3.d60.gamma26**
- **rec2100.d65.hlg**
- **rec2100.d65.pq**

6.6.1.2 ASC CDL Parameter

The ASC Parameters are stored in a QuickTime™ Metadata Atom. The key for the atom is **com.apple.proapps.color.asc-cdl**. The value atom has a type indicator of 0 and contains the following data structure.

```
struct asc_cdl {
    uint16_t    version;
    uint16_t    flags;
    float32_t   saturation;
    float32_t   slope[3];
    float32_t   offset[3];
    float32_t   power[3];
}
```

};

The floating point numbers are in binary IEEE-754 format (32 bit).

version

The current version of the data structure is 1.

flags

This field indicates whether the CDL transforms are applied to logarithmic data (before the conversion LUT) or to video data (after the conversion LUT). The former is indicated by the value 0, the latter by the value 1.

In ALF-2 capable cameras the CDL transforms are always applied to the Log C data.

saturation

The value of the saturation parameter.

slope

The values of the slope parameters for the red, green, and blue channels.

offset

The values of the offset parameters for the red, green, and blue channels.

power

The values of the power parameters for the red, green, and blue channels.

The parameters for the red, green, and blue channels are stored in this order.

6.6.1.3 3D LUT

The QuickTime™ file contains up to four 3D LUTs.

The key for the first LUT **com.arri.camera.look.lut3d** contains the 3D LUT originated from ALF-2 Video Look Parameter or a user-defined Custom 3D LUT.

The key for the second LUT **com.arri.camera.look.lut3d_with_cdl** contains the 3D LUT originated from ALF-2 Video Look Parameter or a user-defined Custom 3D LUT combined with ASC CDL Parameter.

The 3D LUTs contained in these atoms are always targeted for a standard video monitor. Even when a look is designed for a wide gamut (P3 or Rec 2020) display, the camera will still create and embed these two 3D LUTs to allow a correct representation of the look on a standard video monitor.

If (and only if) the target color space is one of the wide gamut color spaces, two additional metadata atoms are created and embedded. The Log C conversion 3D LUT for the wide gamut is stored in the metadata atom **com.arri.camera.look.lut3d.master** and the corresponding 3D LUT concatenated with the CDL processing is stored with the key **com.arri.camera.look.lut3d_with_cdl.master**.

The LUTs are stored in a binary format in the value atom, which has a type indicator of 0 (zero). Each LUT starts with the following header structure.

```
struct color_3dlut_header {  
    uint32_t  size;
```

```

uint32_t  type;
uint16_t  version;
uint16_t  flags;
uint32_t  scaling_factor;
float     norm_gain;
float     norm_offset;
uint16_t  mesh_points;
uint16_t  target_color_space_name_length;
uint8_t   target_color_space_name[];
};

```

size

The total size of the header including the variable length text string.

type

A four byte manufacturer ID. For ALF-2-capable cameras this value will be ‘ALOK’

version

The current version of the header structure is 1.

flags

Reserved for future use.

scaling_factor

The factor that was applied to the values stored in the 3D LUT. For ALF-2-capable cameras this value is always 65535.

norm_gain and norm_offset

The offset and gain used to normalize the video signal level values after the 3DLUT transformation. The values depend on the selected exposure index. The normalization is performed by

$$V_n = Vg + o,$$

where V is the value transformed by the 3DLUT and Vn is the normalized value. The normalization gain and offset are designated by g and o, respectively. The video signal values are processed as floating point numbers in the range from 0.0 (minimum signal value) to 1.0 (maximum signal value).

mesh_points

The number of mesh points per channel. The length of the LUT array is mesh_points* mesh_points* mesh_points*3. For ALF-2-capable cameras the value is always 33.

target_color_space_name_length

The length of the target color space name. The maximum value is 64.

target_color_space_name

A variable length non-terminated UTF8 string that contains the name of the target color space.

The 3D LUTs contained in the metadata atoms **com.arri.camera.look.lut3d** and **com.arri.camera.look.lut3d_with_cdl** will always have the value `com.apple.proapps.colorspace.rec1886` in this string.

The 3D LUTs contained in the metadata atoms **com.arri.camera.look.lut3d.master** and **com.arri.camera.look.lut3d_with_cdl.master** can have one of the following color space designators:

- `com.apple.proapps.colorspace.rec2020.d65.gamma24`
- `com.apple.proapps.colorspace.p3.dci.gamma26`
- `com.apple.proapps.colorspace.p3.d65.gamma26`
- `com.apple.proapps.colorspace.p3.d60.gamma26`
- `com.apple.proapps.colorspace.rec2100.d65.hlg`
- `com.apple.proapps.colorspace.rec2100.d65.pq`

3DLUT Array

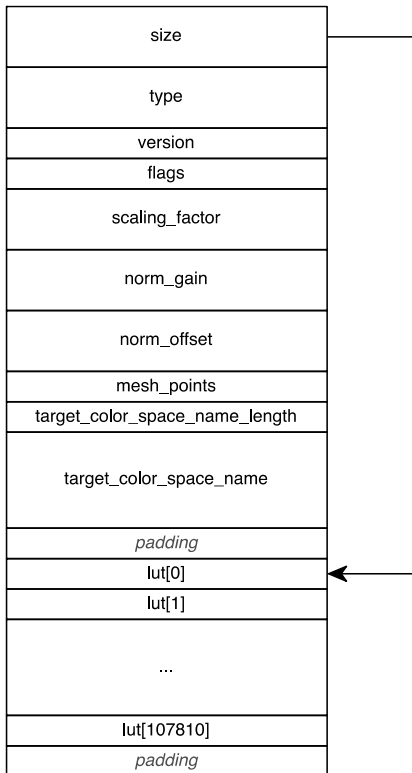
The array of unsigned 16 bit integer values padded to a multiple of 4 bytes follows the header. For the AMIRA camera this array has 107811 ($33 \times 33 \times 33 \times 3$) elements and the total size of the buffer is 215624 bytes. The order of the array is R, G, B interleaved (in that order) with the blue channel changing first, then the green channel, and finally the red channel.

A unit cube would be stored as shown in the example below.

Index	R	G	B
0	0	0	0
3	0	0	2048
6	0	0	4096
9	0	0	6144
...
93	0	0	63487
96	0	0	65535
99	0	2048	0
102	0	2048	2048
...
3261	0	65535	63487
3264	0	65535	65535
3267	2048	0	0
3270	2048	0	2048
...
107706	65535	63487	63487
107709	65535	63487	65535
107712	65535	65535	0
107715	65535	65535	2048
...
107799	65535	65535	59391
107802	65535	65535	61439
107805	65535	65535	63487
107808	65535	65535	65535

All values are in big endian byte order.

The memory layout of the metadata atom is depicted below.



6.6.1.4 Video Look Parameter

These parameters control the video rendering when no user-defined Custom 3DLUT is present. They are stored in binary form in a QuickTime™ metadata atom using the key **com.arri.camera.look.video_param**. This data is not present when a look based on a user-defined Custom 3DLUT is selected in the camera.

```
struct amira_look_param {
    uint16_t  version;
    uint16_t  flags;
    float     knee;
    float     black_gamma;
    float     gamma;
    float     saturation;
    float     sat_red;
    float     sat_yel;
    float     sat_grn;
    float     sat_cyn;
    float     sat_blu;
    float     sat_mag;
};
```

Most applications will not need to access this data.

6.6.1.5 Video Look Parameter with target color space

This metadata atom is an extension of described above Video Look Parameter metadata atom. This metadata atom will replace the old one in QuickTime™ file.

These parameters control the video rendering when no user-defined 3D LUT is present. Also information about target color space is stored in this metadata atom. They are stored in binary form in a QuickTime™ metadata atom using the key **com.arri.camera.look.video_param_with_target_colorspace**. This data is not present when a look based on a user-defined 3D LUT is selected in the camera.

```
struct arri2_look_param_v2 {
    uint32_t size;
    uint16_t version;
    uint16_t flags;
    float knee;
    float black_gamma;
    float gamma;
    float saturation;
    float sat_red;
    float sat_yel;
    float sat_grn;
    float sat_cyn;
    float sat_blu;
    float sat_mag;
    float red_video_slope;
    float grn_video_slope;
    float blu_video_slope;
    float red_video_gamma;
    float grn_video_gamma;
    float blu_video_gamma;
    float red_video_pedestal;
    float grn_video_pedestal;
    float blu_video_pedestal;
    uint16_t target_color_space_name_length;
    uint8_t target_color_space_name[];
};
```

size

The total size of the header including the variable length text string.

version

The current version of the header structure is 1.

flags

Reserved for future use.

target_color_space_name_length

The length of the target color space name. The maximum value is 64.

target_color_space_name

A variable length non-terminated UTF8 string that contains the name of the target color space.

User 3DLUT

Flag indicating whether the look file selected in the camera when the clip was recorded contains a user-defined custom 3DLUT. The key is **com.arri.camera.look.user_lut**. The

flag is written as a 4-byte signed integer (type indicator 21). A value of 0 means no user-defined Custom 3DLUT is used.

In this case the metadata atom **com.arri.camera.look.video_param** or **com.arri.camera.look.video_param_with_target_colorspace** (see above) is present. Any other value means a user-defined Custom 3DLUT is used and the video look parameter metadata isn't present.

6.6.1.6 Look File Name

The name of the look file selected in the camera when the clip was recorded is stored in a metadata atom having the key **com.arri.camera.look.name**. This information may be displayed by a software reading the QuickTime™ file.

6.6.1.7 Look File Information

A data record that contains additional information about the look file is stored in a metadata atom having the key **com.arri.camera.look.information**. This information may be displayed by a software reading the QuickTime™ file.

```
struct look_file_information {
    uint32_t size;
    uint16_t version;
    uint16_t modified;
    uint16_t lut_file_name_length;
    uint8_t lut_file_name[64];
    uint16_t look_note_length;
    uint8_t look_note[];
};
```

size

The total size of the structure including the variable length string.

version

The current version of the structure is 1.

lut_file_name_length

The length of the lut file name. The maximum value is 64.

lut_file_name

The name of the LUT file if a user-defined 3DLUT is used in the look.

look_note_length

The length of the look note field. The ARRI color tool will limit the size of the notes to approximately 1000 characters.

look_note

When a look is created in the ARRI color tool, the user can add a note.

modified

This flag indicates if any parameter was changed in the camera after the look was loaded.

6.6.1.8 The Look LUT design Data

The key **com.arri.camera.look.lut_design_data** contains vendor specific parameter used to create the LUT.

The data has to start with unique identifier such as “yourdomain.yourcompany.yourdata”.(i.g. com.arri.arc) The length of the key must be precisely 64bytes. If its shorter it must be filled with zeros.

6.6.1.9 The Look Live grading flag

The key **com.arri.camera.look.live_grading** can flag if a Look was changed from external via CAP protocol. For instance a live grading software

0 = **Unchanged** (string UTF8) The look has not been changed by a living grad application.

1 = **CDL Changed** (string UTF8) The CDL values have been changed by a live grading application

2 = **3DLUT Changed** (string UTF8) The 3D LUT or its color space has been changed by a live grading application.

3 = **CDL+3DLUT Changed** (string UTF8) The CDL values and 3D LUT or its color space has been changed by a live grading application.

4 = **AUX Changed** (string UTF8) Auxiliary data (such as comments and name) which do not affect colors have been changed by a live grading application

6.6.2 ALF-2 Look in ARRIRAW files

6.6.2.1 3D-LUT metadata format

The Data Format for 3D LUTs embedded in ARRIRAW Files consists of a small header, followed by variable length chunks holding the 3D LUT and auxiliary data.

It is not identical to the ALF-2 Look file to avoid redundant (and possibly inconsistent) CDL metadata.

The byte order is Little Endian.

ARRIRAW 3D-LUT Header	
U8[8] magic	ARILUT3D
U32 version;	Currently 1
U32 revision	Currently 0. Increase in revision but not in version indicates that additional chunks had been added. The 3D LUT section is compatible otherwise.

U32 size;	Size of the complete data including header
U8 hash[16]	MD5 hash of the data excluding magic, version, revision, size and hash.
U8[64] LutFileName	File name of 3D Lut as defined in AFL-2 Look files. (This is the name of a custom 3D Lut imported into an ALF-2 file by ACT).
U8[64] Colorspace	The colorspace identifier.
ChunkRef LutData	The 3D Lut Data
6.6.2.1.1.1.1.1.1 ChunkRef LutDesignData	The LUT Design Data
ChunkRef LookNote	Optional comment.

Whereby a Chunk consists of an offset and a length.

Chunk	
U32 offset	Offset from begin of data set. Set to 0xFFFFFFFF if chunk does not exists
U32 length;	Length of chunk in bytes. Set to 0x0 or 0xFFFFFFFF if chunk does not exists

NOTE: Chunks LutData, LutDesignData are always available. The length of all chunks except LutDesignData is a 4-multiple number >= length

Each chunk or entry has its individual contents:

6.6.2.2 Look Target Color Space

3D LUTs can be designed for various output spaces, such as Rec709, P3 and Rec 2020.

U8[64] Colorspace	<p>The color space id as described in "ALEXA SXT Color Processing" without the "com.apple.proaps.colorspace." prefix. Currently the following values are supported:</p> <ul style="list-style-type: none"> • rec1886 • rec2020.d65.gamma24 • p3.dci.gamma26 • p3.d65.gamma26 • p3.d60.gamma26 • rec2100.d65.hlg • rec2100.d65.pq
-------------------	---

LutData Chunk	
U32 meshp	Number of meshpoints per dimension in 3D LUT. Typically 33.
U32 scaling_factor	The factor that was applied to the values stored in the 3D LUT. For ALF-2-capable cameras this value is always 65535.
U16 badlut;	A flag indicates if user 3D LUT does not satisfies some criteria like non-monotonic values along the gray axis of one of the color channels, wrong white or black values
U16 storageformat	Storage format of the 3D LUT data. 0 = RGB 16 bit interleaved as in ALF2 files, 1 = planar
U16 []	Lut data itself. In storage format 0 or 1 its size is $3*(meshp^3)*2$ bytes.

LUT Design Data Chunk	
U8[64]	Identification of the design software in the format domain.company.* For 3D LUTs designed with the ARRI Color Tool the identifier is currently " com.arri.camera.look.video_param_with_target_colorspace ".
void []	Vendor specific LUT design data. For 3D LUTs created with the ARRI Color Tool this are the video parameters in binary form (as they are stored in the QuickTime atom com.arri.camera.look.video_param_with_target_colorspace), namely as the following structure: <pre> struct arri2_look_param_v2 { uint32_t size; uint16_t version; uint16_t flags; float knee; float black_gamma; float gamma; float saturation; float sat_red; float sat_yel; float sat_grn; float sat_cyn; float sat_blu; float sat_mag; float red_video_slope; float grn_video_slope; float blu_video_slope; float red_video_gamma; float grn_video_gamma; float blu_video_gamma; float red_video_pedestal; float grn_video_pedestal; float blu_video_pedestal; uint16_t target_color_space_name_length; uint8_t target_color_space_name[]; }; </pre>

LookNote Chunk	
U8[] text	Arbitrary human readable text. The text is not '\0' terminated. Maximal size of array is 1024 (if exist)

The complete ALF-2 Look documentation is available from the ARRI Partner Program.

6.7 ARRIRAW Checksum

Starting with ALEXA XT/XR SUP 11.0 ARRIRAW files contain a checksum of the image essence data.

If available the checksum type and value are stored in `ImageContentInformation.ImageDataChecksumType` and `ImageContentInformation.ImageDataChecksum`. Valid values of the checksum type are

Value	Constant in ArriFileV3.h	
0xFFFFFFFF	ARRI_CT_NONE	Checksum is not available
0x00000001	ARRI_CT_CRC32C	Checksum is calculated using the CRC32C polynomial

Prior to SUP 11.0 both fields have been marked as unused (value 0xFFFFFFFF).

6.7.1 Computation of the Checksum type CRC32C:

The checksum value is the Castagnoli CRC computed over the image essence data only. Header and look LUTs do not contribute to the checksum value.

This variant of 32 bit cyclic redundancy checks differs from the conventional IEEE 802.3 checksum only by its different polynomial of 0x1EDC6F41. It has been chosen due to its good error detection quality as well as due to hardware support in newer Intel CPUs with SSE 4.2 instruction set.

The following basic C/C++ implementation demonstrates the computation the checksum:

The following basic C++ implementation demonstrates the computation the checksum:

```
uint32_t crc_table[256];

// generates the CRC table. Must be called once before calling crc32c().
void
generate_table()
{
    uint32_t r;
    for (int i = 0; i < 256; i++)
    {
        r = i;
        for (int j = 0; j < 8; j++)
        {
            if (r & 1)
```

```

    {
        r >>= 1;
        r ^= 0x82F63B78; // bit reversal of CRC32C polynom 0x1EDC6F41
    }
    else
    {
        r >>= 1;
    }
}
crc_table[i] = r;
}
}

// Reference implementation of the CRC32-C computation.
uint32_t
crc32c(uint8_t* data, size_t bytes)
{
    uint32_t crc = 0xFFFFFFFF;
    while (bytes--)
    {
        int i = (crc ^ *data++) & 0xFF;
        crc = (crc_table[i] ^ (crc >> 8));
    }
    return crc ^ 0xFFFFFFFF;
}

```

The ArriRawCRCCheck tool features a performance-optimized implementation, including hardware acceleration if SSE 4.2 is available. Its source code can be found at the ARRI partner program ftp server.

6.8 ARRI Frame Line

In ALEXA Classic, XT, SXT and ALEXA Mini the metadata information of up to six frame lines can be stored in the header of ARRIRAW, MXF/ARRIRAW, ProRes and DNxHD MXF files as well as embedded metadata in the HD-SDI signal of the ALEXA Mon Out. Each frame line rectangle is described in pixel width and height and for positioning in pixel offset from image left- and topside.

The frame line size is always adjusted to the respective out put resolution. (Open Gate, 2K, HD)

As frame line can be used the default frame lines from the camera (1: 1,66 ARRI, ...) or frame line files created with the new ARRI Frame Line Composer.

http://www.arri.com/camera/alexatools/arri_frameline_composer/

Each frame line xml file can keep up to 3 frame lines (format A/B/C) and two frame line xml files can be loaded into the camera as Frame line 1 and/or 2.

Frame lines loaded as Frame line 1 are stored in metadata as frame line 1A/1B/1C respectively as 2A/2B/2C when loaded as Frame Line 2.
 Frame Line 1A is always the Master frame line (type).
 The frame line metadata information can be extracted with ARRI Meta Extract 3.3 or higher. http://www.arri.com/camera/alexa/tools/arri_meta_extract/

7 Metadata in OpenEXR files

The ARRIRAW converter has rendered scene-linear OpenEXR files with all the information present in the ARRIRAW header since ARC GUI and ARC_CMD release 3.4. This makes metadata, especially dynamic lens metadata (LDS), available in sophisticated VFX tools like NUKE. The following table shows the available metadata in .exr files rendered by ARC 3.4 and higher.

ID and Name columns provide a cross-reference to existing ARRI metadata documentation. A value in the column labeled “SMPTE ST 2065-4:2013” indicates this attribute’s name was established by the SMPTE ACES container specification; we use these names whether the scene-linear data in the file are ACES, ALEXA wide-gamut or ALEXA camera native relative scene exposure values. A value in the “ARRI Key” column indicates that the attribute name was established by ARRI. If the ARRI key begins with “interim.clip”, this means that if a standards body issues an ACES clip metadata specification, and it contains metadata with the same key, the clip metadata should take precedence.

In the “Value Range” column, values in the form “n (desc)” indicate that the value corresponds to C/C++ enumerated constant integer with value n carried over from the ARRIRAW header definition, and its meaning is noted here with the description “desc”. Values in the form “n = “value””, on the other hand, indicate such a C/C++ enumerated constant has been remapped to a string with value “value”. Boolean values are represented as such, and so “true” and “false” are not quoted as they would be were they strings.

ID	Name	SMPTE ST 2065-4:2013	ARRI Key	Value Range
IDI02	Image Width	dataWindow	input/width	
IDI03	Image Height	dataWindow	input/height	
IDI06-3	Active Image Width	displayWindow		
IDI06-4	Active Image Height	displayWindow		
ICI02	Color Processing Version		com.arri.camera.ColorVersion	4 or 5
ICI03	White Balance		interim.camera.wbKelvin	min = 2000 max = 11000 (in degrees Kelvin, incremented in 100 degree steps)
ICI04	White Balance CC		com.arri.camera.WbTintCc	Between -12 and +12
ICI05	WB Factor R		com.arri.camera.WbFactor	
ICI06	WB Factor G		com.arri.camera.WbFactor	
ICI07	WB Factor B		com.arri.camera.WbFactor	
ICI09	Exposure Index ASA	isoSpeed		ASA/ISO rating, one of 160; 200; 250; 320; 400; 500; 640; 800; 1000; 1280; 1600; 2000; 2560; or 3200
ICI16	Target Color Space		com.arri.camera.ColorGamma	LOG-C
ICI17	Sharpness		com.arri.camera.Sharpness	0.0 to 300.0, with 100.0 the default
ICI18	Lens Squeeze Factor	pixelAspectRatio		One of 1.0, 1.3 or 2.0, for spherical lenses, lenses with a

ID	Name	SMPTE ST 2065-4:2013	ARRI Key	Value Range
				1.3 squeeze or lenses with a 2.0 squeeze
ICI19	Image Orientation	imageRotation	com.arri.camera.ImageOrient	0 = "No flip" 1 = "H flip in camera" 8 = "V flip by reader" 9: = "H flip in camera and V flip by reader" 12 = "H+V flip by reader"
ICI20	Look Name		com.arri.camera.LookFileName	
ICI21	Look LUT Mode		com.arri.camera.LookLutMode	0 = ARRI_LOOK_LUT_NOLUT 1 = ARRI_LOOK_LUT_MONO 2 = 3D Look LUT
ICI24	Look Live Grading Flags (ALF-2)		com.arri.camera.LookLiveGrading	0 = "Unchanged" 1-7 are combinations of three bit flags: 1 (ARRI_LOOK_CHANGED_CD L) = "+CDL" 2 = ARRI_LOOK_CHANGED_3DLU T = "+3DLUT" 4 = ARRI_LOOK_CHANGED_AUX = "+AUX" If any of those three bits are set, the LookLiveGrading flag has "Changed" appended. So a value of 5 would result in "+CDL+AUX Changed"
ICI25	Look Saturation (ALEXA XT from xml Look file or ALEXA SXT from ALF-2 Look file)		com.arri.camera.LookSaturation	
ICI26-1-2-3	CDL Slope RGB (ALEXA XT from xml Look file or ALEXA SXT from ALF-2 Look file)		com.arri.camera.LookCdlSlope	
ICI27-1-2-3	CDL Offset RGB (ALEXA XT from xml Look file or ALEXA SXT from ALF-2 Look file)		com.arri.camera.LookCdlOffset	
ICI28-1-2-3	CDL Power RGB (ALEXA XT from xml Look file or ALEXA SXT from ALF-2 Look file)		com.arri.camera.LookCdlPower	
ICI29-1-2-3	Printer Lights RGB (ALEXA xml Look file)		com.arri.camera.LookPrintLight	
ICI31	CDL Mode (ALEXA xml Look file)		com.arri.camera.LookCdlMode	0 = "No Look" 1 = "Alexa Look Video" 2 = "CDL Video" 3 = "CDL LogC"
ICI44	Color Order	Color Order	com.arri.camera.BayerColorOrder	Bayer color order of Alexa/D21 images = "GRBG" Bayer color order of Alexa65 images = "GBRG"
CDI02	Camera Type ID	cameraModel		The text field is a combination of the fixed prefix 'Alexa' followed by possible combinations of the product type and product sub type as strings.
CDI05	Camera Serial Number	cameraSerialNumber		
CDI06	Camera ID	cameraIdentifier		The text field is a combination of the fixed prefix "Alexa" followed by possible combinations of the product type and product sub type as strings.

ID	Name	SMPTE ST 2065-4:2013	ARRI Key	Value Range
CDI07	Camera Index	cameraLabel		
CDI08-1	System Image Creation Date	capDate		
CDI08-2	System Image Creation Time	capDate		
CDI09-1	System Image Time Zone Offset	utcOffset		UTC offset time ±hh:mm from -12:00 to +14:00
CDI09-2	System Image Time Zone DST		com.arri.camera.Dst	DST time h is 0 or (+) 1 in = "0,579 ms" max = "41,435 (in ms)" min = "50" max = "358"
CDI10	Exposure Time	expTime		
CDI11	Shutter Angle		interim.camera.shutterAngle	
CDI15	Sensor FPS	captureRate		min = "0.750" max = "120.000"
CDI16	Project FPS	framesPerSecond		For ALEXA: 23.976, 24.000, 2.5000, 29.970 and 30.000 For ALEXA Mini: 23.976, 24.000, 2.5000, 29.970, 30.000, 48.000, 50.000, 59.940 and 60.000
CDI17-1	Master TC	timecode		
CDI17-2	Master TC Frame Count	imageCounter		
CDI17-3	Master TC Time Base	timecodeRate	com.arri.camera.TimeBase	For ALEXA: 23.976, 24.000, 2.5000, 29.970 and 30.000 For ALEXA Mini: 23.976, 24.000, 2.5000, 29.970, 30.000, 48.000, 50.000, 59.940 and 60.000
CDI26	Storage Media Serial Number	storageMediaSerialNumber		
CDI28	SMPTE UMID		com.arri.camera.SmpteUuid	
CDI30	Recorder Type	recorderMake recorderModel recorderSerialNumber recorderFirmwareVersion		If recorderMake is "Codex Digital" then recorderModel will be either "SIM2" or "Outboard"
CDI31	Mirror Shutter Running		com.arri.camera.MirrorShutterOn	true, false
CDI32	Vari		com.arri.camera.Variframe	0
CDI36	UUID	uuid	com.arri.camera.ArriUuid	84fb584e-0000-4000-b10f-66a300000000
CDI37	Camera SUP Name		com.arri.camera.SupVersion	
CDI38	Camera Model	cameraModel cameraIdentifier		The text field is a combination of the fixed prefix 'Alexa' followed by possible combinations of the product type and product sub type as strings.
CDI39	Camera Product		com.arri.camera.Product	1 (EV) 2 (Plus) 3 (RCU) 4 (Studio) 5 (M) 6 (ALEXA 65) 0 (No sub product)
CDI40	Camera Sub Product		com.arri.camera.SubProduct	1 (4:3) 2 (HD) 4 (XT) 8 (XR) 16 (Monochrome) 32 (SXT) 64 (SXR)
LDI02	Lens Distance Unit		com.arri.camera.UnitPref	0 = "Imperial" 1 = "Metric"
LDI03	Lens Focus Distance	focalLength		
LDI04	Lens Focal Length	focus		
LDI05	Lens Serial Number	lensSerialNumber		

ID	Name	SMPTE ST 2065-4:2013	ARRI Key	Value Range
				0 (T 0.7) 1000 (T 1.0) 2000 (T 1.4) 3000 (T 2.0) 4000 (T 2.8) 5000 (T 4.0) 6000 (T 5.6) 7000 (T8) 8000 (T11) 9000 (T16) 10000 (T22) 11000 (T32) 12000 (T45) 13000 (T64) 14000 (T90)
LDI06-2	Lens Iris	aperture		
				For ALEXA Studio camera variants 0 = "No Filter" 1 = "ALEXA Studio ND Type 1"
				For the AMIRA or ALEXA Mini 0 = "No Filter" 2 = "Alexa Mini camera ND Type 1 Filter 1" 3 = "Alexa Mini camera ND Type 1 Filter 2" 4 = "Alexa Mini camera ND Type 1 Filter 3"
LDI07-1	ND Filter Type		com.arri.camera.NdFilterType	
				For ALEXA Studio No Filter = 0.0 Filter on = 1400 .0 For AMIRA and ALEXA Mini Clear = 0.0 ND 0.6 = 600.0 ND 1.2 = 1200.0 ND 2.1 = 2100.0
LDI07-2	ND Filter Density		com.arri.camera.NdFilterDensity	
LDI11	Lens Model	lensMake lensModel		
LDI12-1	RawEncoderFocus RawLds		com.arri.camera.LdsEncFocusRaw	
LDI13-1	RawEncoderFocal RawLds		com.arri.camera.LdsEncZoomRaw	
LDI14-1	RawEncoderIris RawLds		com.arri.camera.LdsEncIrisRaw	
LDI15-1	EncoderLimFocusLdsMin		com.arri.camera.LdsEncFocusMin	
LDI15-2	EncoderLimFocusLdsMax		com.arri.camera.LdsEncFocusMax	
LDI16-1	EncoderLimFocalLdsMin		com.arri.camera.LdsEncZoomMin	
LDI16-2	EncoderLimFocalLdsMax		com.arri.camera.LdsEncZoomMax	
LDI17-1	EncoderLimIrisLdsMin		com.arri.camera.LdsEncIrisMin	
LDI17-2	EncoderLimIrisLdsMax		com.arri.camera.LdsEncIrisMax	
LDI18-1	EncoderLimFocusMotorMin		com.arri.camera.ClmEncFocusMin	
LDI18-2	EncoderLimFocusMotorMax		com.arri.camera.ClmEncFocusMax	
LDI19-1	EncoderLimFocalMotorMin		com.arri.camera.ClmEncZoomMin	
LDI19-2	EncoderLimFocalMotorMax		com.arri.camera.ClmEncZoomMax	
LDI20-1	EncoderLimIrisMotorMin		com.arri.camera.ClmEncIrisMin	
LDI20-2	EncoderLimIrisMotorMax		com.arri.camera.ClmEncIrisMax	
LDI21	Lds Lag Type		com.arri.camera.LdsLagType	0 = "NONE" 1 = "CONSTANT" anything else = "UNKNOWN"
LDI22	Lds Lag Value		com.arri.camera.LdsLagValue	1
VFX08	Camera Tilt		com.arri.camera.Tilt	
VFX09	Camera Roll		com.arri.camera.Roll	
VFX10	Master Slave Setup Info		com.arri.camera.MasterSlave	0 = "OFF" 1 = "MASTER" 2 = "SLAVE"

ID	Name	SMPTE ST 2065-4:2013	ARRI Key	Value Range
VFX11	3D Eye Info		com.arri.camera.EyeIndex	0 = "SINGLE" 1 = "LEFT" 2 = "RIGHT" 3 = "MULTI"
CID02	Circle Take		interim.clip.circleTake	true, false
CID03	Reel	reelName		
CID04	Scene		interim.clip.sceneName	
CID05	Take		interim.clip.takeName	
CID06	Director		interim.clip.director	
CID07	Cinematographer		interim.clip.cinematographer creator	
CID08	Production		interim.clip.production owner	
CID09	Production Company		interim.clip.company	
CID10	Location		com.arri.camera.Location	
CID11	User Info 1		com.arri.camera.CameraOperator	
CID12	User Info 2		com.arri.camera.UserInfo1	
CID14	Operator		com.arri.camera.UserInfo2	
CID13	Camera Clip Name		interim.clip.cameraClipName	None" if no camera clip name set. (Note that it is thus impossible to have a clip named "None")
SID04	Sound Roll		com.arri.camera.SoundReel	SoundTape
FLI03	Frame Line File 1		com.arri.camera.FrmLnFilename1	
FLI04	Frame Line File 2		com.arri.camera.FrmLnFilename2	
FLI05-1	Frame Line 1A Type		com.arri.camera.FrmLn1AType	
FLI05-2	Frame Line 1A Name		com.arri.camera.FrmLn1AName	
FLI05-3	Frame Line 1A Left		com.arri.camera.FrmLn1ALeft	
FLI05-4	Frame Line 1A Top		com.arri.camera.FrmLn1ATop	
FLI05-5	Frame Line 1A Width		com.arri.camera.FrmLn1AWidth	
FLI05-6	Frame Line 1A Height		com.arri.camera.FrmLn1AHeight	
FLI06-1	Frame Line 1B Type		com.arri.camera.FrmLn1BType	
FLI06-2	Frame Line 1B Name		com.arri.camera.FrmLn1BName	
FLI06-3	Frame Line 1B Left		com.arri.camera.FrmLn1BLeft	
FLI06-4	Frame Line 1B Top		com.arri.camera.FrmLn1BTop	
FLI06-5	Frame Line 1B Width		com.arri.camera.FrmLn1BWidth	
FLI06-6	Frame Line 1B Height		com.arri.camera.FrmLn1BHeight	
FLI06-1	Frame Line 1C Type		com.arri.camera.FrmLn1CType	
FLI07-2	Frame Line 1C Name		com.arri.camera.FrmLn1CName	
FLI07-3	Frame Line 1C Left		com.arri.camera.FrmLn1CLeft	
FLI07-4	Frame Line 1C Top		com.arri.camera.FrmLn1CTop	
FLI07-5	Frame Line 1C Width		com.arri.camera.FrmLn1CWidth	
FLI07-6	Frame Line 1C Height		com.arri.camera.FrmLn1CHeight	
FLI08-1	Frame Line 2A Type		com.arri.camera.FrmLn2AType	
FLI08-2	Frame Line 2A Name		com.arri.camera.FrmLn2AName	
FLI08-3	Frame Line 2A Left		com.arri.camera.FrmLn2ALeft	
FLI08-4	Frame Line 2A Top		com.arri.camera.FrmLn2ATop	
FLI08-5	Frame Line 2A Width		com.arri.camera.FrmLn2AWidth	
FLI08-6	Frame Line 2A Height		com.arri.camera.FrmLn2AHeight	
FLI09-1	Frame Line 2B Type		com.arri.camera.FrmLn2BType	
FLI09-2	Frame Line 2B Name		com.arri.camera.FrmLn2BName	
FLI09-3	Frame Line 2B Left		com.arri.camera.FrmLn2BLeft	
FLI09-4	Frame Line 2B Top		com.arri.camera.FrmLn2BTop	
FLI09-5	Frame Line 2B Width		com.arri.camera.FrmLn2BWidth	
FLI09-6	Frame Line 2B Height		com.arri.camera.FrmLn2BHeight	
FLI10-1	Frame Line 2C Type		com.arri.camera.FrmLn2CType	
FLI10-2	Frame Line 2C Name		com.arri.camera.FrmLn2CName	
FLI10-3	Frame Line 2C Left		com.arri.camera.FrmLn2CLeft	
FLI10-4	Frame Line 2C Top		com.arri.camera.FrmLn2CTop	
FLI10-5	Frame Line 2C Width		com.arri.camera.FrmLn2CWidth	
FLI10-6	Frame Line 2C Height		com.arri.camera.FrmLn2CHeight	
NRI03	Noise Reduction Mode		com.arri.camera.NR.Mode	ANR-1
NRI04	Noise Reduction Strength		com.arri.camera.NR.Strength	1.0 to 3.5, default is 2.5
NRI05	Noise Reduction applied		com.arri.camera.NR.Applied	0 (noise reduction off) 1 (noise reduction already applied)

8 ARRI Metadata Bridge AMB SDK

To ensure a proper mapping of ARRI specific metadata also in third party applications, ARRI provides the new ARRI Metadata Bridge (AMB) SDK to embed metadata from ARRIRAW files into various file formats like DPX and Open EXR.

The AMB SDK is used in ARRIRAW Converter (ARC release 3.4 and higher) and is available for third party companies through the ARRI Partner Program APP.

9 Metadata in ARC processed QuickTime files

Since ARC release 3.4 it is possible to render ARRIRAW files as QuickTime files with the entire ARRIRAW metadata header info. The metadata is stored identical to the existing schema of in-camera recorded QT files. *Please refer to chapter 10.1.3 QuickTime Metadata Atom.*

For the downstream post-production process this feature should allow the transport of ARRI specific metadata into production tools for editing and grading.

10 Known Issues

Please be aware:

In rare cases it could happen that only the first frame of a MXF clip contains no valid dynamic metadata information. That implies the Master TC for the first frame could be 00:00:00:00, with the second frame the TC values are valid.

ID	Name	Note
ICI03	White Balance	For AMIRA the White Balance value is always static whether WB tracking is on or off. The stored Kelvin value is from the start of the recording.
ICI04	White Balance CC	1. For AMIRA the White Balance Tint value is always static whether WB tracking is on or off. The stored cc shift value is from the start of the recording. 2. The White Balance Tint is only integer, the decimal place is truncated and not rounded.
ICI16	Target Color Space	For ALEXA Mini and AMIRA SUP 4.0 HD SDI Out and ProRes files with Look burnin the Target Color Space will be always REC-709 no matter what Look Target Color Space was applied.
ICI19	Image Orientation	For AMIRA Image Rotate 180° H flip is already applied by camera. For AVID workflow: AMA linked ALEXA MXF files will not have an Image Orientation Bin Column. Please use ALE import.
ICI29-1-2-3	Printer Lights RGB (ALEXA xml Look file)	Printer Lights in ALEXA SXT not longer available
ICI31	CDL Mode (ALEXA xml Look file)	CDL Server is not supported in ALEXA Classic models, therefore CDL Mode is invalid with these cameras.
CDI02	Camera Type ID	redundant in CDI29 and swap from Basic to Internal
CDI08-1	System Image Creation Date	For ARRIRAW files the System Creation Date is still a static metadata value.
CDI08-2	System Image Creation Time	For ARRIRAW files the System Creation Time is still a static metadata value.
CDI17-5	Master TC User Info	In SDI out, the bytes of the user bits are swapped. AME is correcting the user bits for ProRes and DNxHD files.
CDI26	Storage Media Serial Number	1. When ARRIRAW is the recording format, the Storage Media Number is a globally unique number (GUID) associated with the backplane in the drive and the actual serial number is not stored electronically. When the drive is UDF-formatted for ProRes and MXF capturing, the same storage medium has a different Storage Media Number. 2. When SxS Dual recording is activated, the metadata info on both SxS cards is identical. The SxS serial number from card 1 is used for card 2 as well.
CDI28	SMPTE UMID	The SMPTE UMID for ALE and ARRIRAW is different formatted. The ARRIRAW SMPTE UMID has for better human readability dashes between the components.
CDI29	Camera Family	Camera Type name label was renamed to Camera Family and is always ALEXA for ARRIRAW files.

ID	Name	Note
CDI31	Mirror Shutter Running	Mirror Shutter Running is valid for ProRes, DNxHD in all Studio camera models and for ARRIRAW files only when captured with Studio XT or XR. For ARRIRAW files recorded from external recorder via T-link, Mirror Shutter Running is always ""N/A"" (not available).
CDI40	Camera Sub Product	Camera identifier for black & white ALEXA is not set correctly by the B/W camera SUP software version. The ARRIRAW SDK is using alternative for identification the camera serial numbers.
LDI02	Lens Distance Unit	Serial numbers 8760; 8761; 8762 will be detected as black and white camera. KI Lens Distance Unit is inconsistent in ALE files, Meter/Inch is displayed as Metric/Imperial
LDI06-2	Lens Iris	The calculated aperture T-Stop value as described in Section 4.1.6 "Regular iris values" is shown in-camera in the LENS Data menu and in the column 'Lens Iris' in ARC and AME.
LDI07-2	ND Filter Density	ALE column ND Filter Density is not available for ALEXA only for AMIRA
CID02	Circle Take	Circle is a column in the ALE file and is user-settable via Circle Clip in the camera play menu. Only for ARRIRAW clips from the internal capture drive can be circled with yes in the file header, for all other recording formats the circle clip info is undefined "--" no matter if circle clip is yes or no.
CID04	Scene	The Camera Scene Name is not updated in the Final Cut Pro xml file. Scene is always "none". In ARRIRAW, the field Take is set to the clip counter (e.g. C001) when no take name has been defined in-camera.
CID05	Take	In the SDI signal and frame grabs, Take is always set to the clip counter, even when take name has been entered. The Camera Take Name is not updated in the Final Cut Pro xml files. Take is always "none".
SID10-5	Channel 1-4 Level	The dB value ranges for audio gain level are different in the audio interface of the camera and the stored metadata values in the recorded clips. The camera audio display shows for LINE and MIC signals always a gain level range from 0 to +30 dB but the stored metadata value range for LINE input is -6 to +24dB and for MIC +20 to +50dB.
ADD02	Look Burned In	Only valid for recording formats ProRes and DNxHD. In T-link, HD-SDI REC OUT and ARRIRAW files, Look Burned In is always set to No.

11 Contact

If you have any questions regarding metadata in the ALEXA, please feel free to contact us via email at digitalworkflow@arri.de.