

ALEXA Mini LF SUP 6.0

Software Update Package SUP 6.0.16

RELEASE NOTES

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A. Introduction

This document describes new features and changes for all ALEXA Mini LF cameras with ALEXA Mini LF SUP 6.0.16 in contrast to ALEXA Mini cameras with Mini SUP 5.4.

We highly recommend that you take your time to go through these release notes, the known issues section of this document and the user manual before you start using the camera.

If you have not done so already, please make sure you register your ALEXA Mini LF using our online customer registration. Your registration ensures that you receive information about future software updates as soon as they are available. If you register your new ARRI ALEXA Mini LF camera within 1 month of purchase, you will get a 6-month extended warranty for free. You can find the registration [here](#).

For more information, please visit www.arri.com/alexaminilf.

For a listing of answers to frequently asked questions please visit the [ALEXA Mini LF FAQs](#).

Overview of Features and Changes Introduced with ALEXA Mini LF SUP 6.0

- **Large format recording formats**
Three different large format recording formats for ARRIRAW and Apple ProRes
- **Built-in microphones**
For reference audio track recording
- **Second WiFi antenna**
For better reception and range
- **Support for Multi Viewfinder MVF-2**
New MVF-2 with large flip out display and new viewfinder CoaXPress interface
- **Support for Codex Compact Drive 1 TB**
New recording bay that accepts Codex Compact Drives in 1 TB capacity
- **FSND filter slider**
Larger in size and FSND 1.8 instead of FSND 2.1 density

Update Information

Cameras should always run the latest SUP, so you can benefit from the latest improvements, features and bug fixes. However, we do not recommend installing a new SUP in the middle of a production.

ALEXA Mini LF SUP 6.0.16 can be installed on all previously shipped ALEXA Mini LF cameras: pre-production PP-1 (6.0.4), pre-production PP-2 (6.0.11) as well as production cameras (6.0.15). Mini LF SUP 6.0.16 has exactly the same features as Mini LF SUP 6.0.15 but fixes a bug that could render camera logs useless. For owners of cameras with Mini LF SUP 6.0.15, we recommend to eventually upgrade to Mini LF SUP 6.0.16.

Mini LF SUP 6.0.16 contains updates for all components, including the viewfinder. The viewfinder will switch off in the process and doesn't give a visual feedback of the update all the time. Make sure not to power off the camera during a SUP update. Detailed instructions for the update process can be found at the end of this document.

Downgrading

We strongly recommend to not downgrade cameras that have been shipped with Mini LF SUP 6.0.16 to any previous versions. It is possible to revert back from Mini LF SUP 6.0.15 to the pre-production release versions of Mini LF SUP 6.0.4 or Mini LF SUP 6.0.11, but since SUP 6.0.15 and later include important bug fixes and significantly enhanced usability and stability, we do not recommend downgrading to Mini LF SUP 6.0.4 or Mini LF SUP 6.0.11.

Software Compatibility Notes

Please update the ARRIRAW Converter (ARC) to version 4.1.1.0 and ARRI Meta Extract (AME) to version 4.1.0.0 to support files recorded with ALEXA Mini LF cameras with SUP 6.0. installed.

Please note, that macOS X version 10.14.4 or later is required to successfully transfer data from a Codex Compact Drive with the Codex USB-C Compact Drive Reader, or the SXR Capture Drive Dock with the Compact Drive Adapter. Using older versions of macOS will result in a copy error for files larger than 9.66 GB.

Please note, that macOS X version 10.15 with the Apple MXF plug-in installed (part of "Pro Video Formats 2.1") is required to play back downloaded MXF/Apple ProRes footage in Apple QuickTime Player.

An overview of postproduction tools that support files recorded with ALEXA Mini LF cameras can be found in the [download section](#) of the ALEXA Mini LF SUP 6.0.

Sample footage of the ALEXA Mini LF camera can be downloaded [here](#).

Important Notes

Audience and Intended Use

The product is solely and exclusively available for commercial customers and shall be used by skilled personnel only. Every user should be trained according to ARRI guidelines. Use the product only for the purpose described in this document. Always follow the valid instructions and system requirements for all equipment involved.

Vital Precautions

High voltage! Risk of electric shock and fire!

Short-circuits may entail lethal damage!

Before use, read and follow all valid instructions.

Use solely and exclusively as described in the instructions.

Never open. Never insert objects.

For operation, always use a power source as indicated in the instructions.

Always unplug the power cable by gripping the power plug, not the cable.

Never try to repair. All repair work should be done by a qualified ARRI Service Center.

Never remove or deactivate any safety equipment (incl. warning stickers or paint-marked screws).

Always protect from moisture, cold, heat, dirt, vibration, shock, or aggressive substances.

Never cover any fan openings.

Heavy weight! Risk of injury and damage!

If placed on an unstable surface, the camera can fall and cause serious harm!

Always place the camera on proper support devices. Safely attach it as described in the instructions.

For further important safety information, please refer to the user manual.

B. New Features and Changes in ALEXA Mini LF SUP 6.0

Recording

ALEXA Mini LF cameras offer the same three large format recording resolutions as ALEXA LF to provide the most efficient recording options for any production. All sensor modes are available in ARRIRAW and Apple ProRes.

To see which lenses cover the different sensor modes, go to the online Frame Line & Lens Illumination Tool at: <https://www.arri.com/en/learn-help/learn-help-camera-system/tools/frame-line-lens-illumination-tool>

Recording Resolution LF Open Gate

LF Open Gate recording resolution provides the maximum sensor area and maximum resolution. This recording resolution is covered by full frame lenses and some Super 35 lenses, most notably some longer focal lengths and the Master Macro 100. The maximum frame rate is 40 fps.

Recording Resolution LF 16:9

LF 16:9 recording resolution is covered by full frame lenses, but the use of many Super 35 lenses is also possible, maximizing lens options. This sensor mode allows recording ARRIRAW and Apple ProRes in 3840 x 2160 resolution (UHD), but also a down-sampled recorded resolution of 2K (2048 x 1152 pixels) and HD (1920 x 1080 pixels) in Apple ProRes. Surround view (4144 x 2332 pixels for LF 16:9 UHD, 4064 x 2286 pixels for LF 16:9 2K and LF 16:9 HD) is available. The maximum frame rate is 90 fps.

Recording Resolution LF 2.39:1

LF 2.39:1 sensor mode is for all who want to shoot cinematic widescreen with spherical full format lenses. The maximum frame rate is 60 fps.

Recording Resolution Overview



Codecs, Frame Rates and Capacities for Internal Recording of ARRIRAW and Apple ProRes

Codec	ALEXA Mini LF Mini LF SUP 6.0			Sensor Photosites		Recorded Image Pixels	
	Recording Formats	Max. fps (1)	Compact Drive 1 TB (h:m) (2)	h	v	h	v
ARRIRAW	LF Open Gate 4.5K	40	0:32	4448	3096	4448	3096
	LF 16:9 UHD	60	0:54	3840	2160	3840	2160
	LF 2.39:1 4.5K	60	0:54	4448	1856	4448	1856
Apple ProRes	LF Open Gate 4.5K	40	1:13	4448	3096	4448	3096
	LF 16:9 UHD	60	2:01	3840	2160	3840	2160
	LF 16:9 2K	90	7:00	3840	2160	2048	1152
	LF 16:9 HD	90	7:57	3840	2160	1920	1080
	LF 2.39:1 4.5K	60	2:01	4448	1856	4448	1856

(1) = All Apple ProRes flavors have the same maximum frame rate on ALEXA Mini LF

(2) = Record durations given for Apple ProRes 4444

MXF – Material eXchange Format

Both ARRIRAW and Apple ProRes files are recorded in an MXF (Material eXchange Format) container. An MXF container file can "wrap" different types of video and audio material along with associated metadata. Please refer to the camera user manual for more information.

Built-in microphones

ALEXA Mini LF cameras have built-in microphones located at the camera front, protected by waterproof membranes to keep water out. They can be used to record a scratch audio track. The audio signal from these microphones is recorded to audio channels 3 (left mic) and 4 (right mic) of the recorded clips. The audio recording level of the internal microphones is fixed, with the left microphone (channel 3) using a +18dB higher gain than the right microphone in order to cover a wider range of audio levels. Per factory default, the built-in microphones are disabled.



Second WiFi antenna

In addition to the internal WiFi antenna underneath the model name sign on the camera right side, the ALEXA Mini LF is equipped with a second WiFi antenna on the left side above the media bay. This external antenna can be turned on and off in MENU > System > Network / WiFi > External Antenna.



Support for Multi Viewfinder MVF-2

The new Multi Viewfinder MVF-2 is equipped with an ARRICAM eyepiece (as in ALEXA LF EVF-2) with built-in eyepiece heater and an HD, high-contrast OLED display for best judging of focus, dynamic range and color. The display provides the newest ARRI color science for best color rendition and match to on-set monitors; using a temperature-controlled display unit for stable color balance.

The 4" flip-out monitor with up-and-down tilt function can display the camera live image or the main user interface, providing full access to camera functions and menus.

CoaXPress VF Cable

The ALEXA Mini LF uses an industrial CoaXPress interface to connect the MVF-2 viewfinder with the camera. The interface transmits power, video and control data and supports cable lengths of up to 10 m (33 ft). Cables are available in 0.35 m (1.15 ft), 0.5 m (1.5 ft), 2 m (6.5 ft) and 10 m (33 ft). The viewfinder connector comes without a key, so the VF cables plug in regardless of their orientation and support hot plugging of the viewfinder.



Support for Codex Compact Drive 1 TB

The sealed media bay on the camera left side accepts Codex Compact Drives in 1 TB capacity. Compact Drives have been specifically designed for the small form factor of the ALEXA Mini LF, using new flash technology in a miniaturized casing. The drives offer data rates of up to 8 Gb/s and support all image and recording formats of the camera. The full recording capacity is available for both ARRIRAW and Apple ProRes recording. The Codex Compact Drive is a high-performance solid-state drive with 1 TB (960 GB usable) capacity in a compact, rugged aluminum casing.

Recorded material can be accessed directly with the USB-C Codex Compact Drive Reader on macOS or Windows at up to 8 Gb/s. Mac users can benefit from up to 2.7x faster file transfers using the Thunderbolt 3 Codex SXR Capture Drive Dock with a Codex Compact Drive adapter.

Using Codex Device Manager, a simple free macOS menu bar application, Codex media is available directly on the macOS Desktop and in Finder. Recorded files can be copied with various data wrangling applications or directly in the Finder/Explorer.



Image Outputs*

The ALEXA Mini LF is equipped with one proprietary signal output for MVF-2 viewfinder on a VF CoaXPress connector and two SDI outputs on BNC connectors. Both SDI outputs carry uncompressed video with embedded audio and metadata.

- SDI 1:
 - 1.5G 422 HD (SMPTE ST292-1, up to 30 fps)
 - 3G 422 HD (SMPTE ST425-1, up to 60 fps)
 - 3G 444 HD (SMPTE ST425-3, up to 30 fps)
- SDI 2:
 - 1.5G 422 HD (SMPTE ST292-1, up to 30 fps)
 - 3G 422 HD (SMPTE ST425-1, up to 60 fps)
 - 3G 444 HD (SMPTE ST425-3, up to 30 fps)
 - 6G 422 UHD (SMPTE ST2081-10, up to 30 fps)

Notes:

SDI 1 - HD only, processed or clean, with or without a look file applied

SDI 2 - HD or UHD, clean only, with or without a look file applied or SDI1 clone

“Clean” is an image without any overlays (status, false color, zebra, frame lines, etc.), “processed” is an image with overlays.

* = Note: The details of this feature have changed since ALEXA Mini LF SUP 6.0.11

FSND filter slider

The ALEXA Mini LF is equipped with an internal, motorized large-format Full Spectrum Neutral Density (FSND) filter slider. The Clear, ND 0.6, ND 1.2 and ND 1.8 division is different from the ALEXA Mini (Clear, ND 0.6, ND 1.2 and ND 2.1). Having each setting be two stops from the next makes it a lot easier to calculate exposures on set. In comparison to IRNDs, which have an uneven spectral behavior, or to an ordinary ND, which opens up at about 675 nm, the FSNDs offer a true, even exposure reduction over the whole spectrum. This prevents artifacts from infrared wavelengths and the need for additional IR filters.

Additional user buttons on camera left side

The ALEXA Mini LF is equipped with three additional user buttons on the camera left side.

Additional and changed connectors

AUDIO (6-pin LEMO)

The audio connector is a 2-channel +24 dBu line level audio input with an additional regulated 12 V power output with a current of 0.5 A. Use the ALEXA Mini LF audio connector with cable (K2.0023988) to connect audio sources.

12V (2-pin LEMO)

The 12 V output with a 2-pin LEMO connector supplies accessories with regulated 12 V with a current of 1.0 A.

RS (3-pin Fischer)

The RS connector outputs regulated 24 V accessory power and can supply external devices with a load of up to 3.0 A. Besides powering accessories, the RS connector also carries a shutter pulse signal and can be used to send a remote start/stop signal to the camera.

SYNC IN (BNC)

A BNC socket for reference signal input that accepts analog Black Burst signals and Tri-Level HD signals.

Accessories

ALEXA Mini LF cameras are not compatible with the following electrical products:

- Camera Control Panel CCP-1
- ALEXA Mini Viewfinder MVF-1
- CFast 2.0 recording media

Since the ALEXA Mini LF has the same size and the same mounting points as the ALEXA Mini, almost all mechanical ALEXA Mini accessories will fit. There are three exceptions:

- Mini Side Bracket MSB-3: While the MSB-1 and MSB-2 still fit on the ALEXA Mini LF right side, they do not fit on the ALEXA Mini LF left side because of the new media bay. Use the new MSB-3 instead, which fits the ALEXA Mini LF and the ALEXA Mini on the left side and which offers extra mounting points.
- Clamp 2 for RAB-1: In addition to updated mechanics and a new safety release, Clamp 2 moves battery adapters a small distance to the left in order to make room for the second row of ALEXA Mini LF connectors. Clamp 2 also works well on ALEXA Mini.
- Vertical Top Plate for ALEXA Mini LF: This new top plate is part of the Vertical Adapter Set for ALEXA Mini LF, which allows 9:16 portrait filming—a growing demand in the fields of commercials and visual effects. Configurations can be built to allow quick changes between classic landscape and portrait image capture.

New software features

Anamorphic monitoring

Like the ALEXA LF, the ALEXA Mini LF supports all currently existing anamorphic de-squeeze ratios for viewing on SDI or Viewfinder: 1.25x, 1.30x, 1.50x, 1.65x, 1.80x and 2.00x.

Outside shading for frame lines

Applies a shading in different strengths (Off, 25%, 50%, 75% or 100%) outside of the frame line.

Magnification for SDI and EVF

EVF image rotation

Independent configuration of SDI color space

Features not present in ALEXA Mini LF SUP 6.0

- ARRI Look Library
- Look parameter
- Interval, stop motion, pre-recording
- Tilt & roll Information recording
- Broadcast multicam (real-time adjustment of color parameters)
- Waveform on MVF-2
- Sharpness & detail adjustment
- Interlaced recording
- SDI dual link 3G and SDI dual link 6G
- Delete last clip
- Change of WiFi region
- Apple ProRes 422 and 422 LT recording codec
- Image flip in Apple ProRes
- Recording with a look file in Apple ProRes ('Baking in')
- Framegrabs in Rec 709 or with a look file applied
- The User Manual is not included in the SUP file and cannot be exported to a USB stick. To get the latest manual, download it from the ARRI website [here](#).

Features in beta stage

- Webremote

C. Known Issues - Mechanical Accessories

RAB-1 Clamp 2 may experience poor clamping performance

Some early RAB-1 Clamp 2 units (K2.0023406) ran into assembly issues leading to poor clamping performance or the inability to release adequately. If RAB-1 Clamp 2 are found to slip on the Rear Accessory Bracket RAB-1 (K2.0013937) or not release correctly, please contact ARRI Service to get the part repaired or exchanged.

Gold Mount Power Splitting Box Mk II, attached batteries may show excessive slack

Gold Mount Power Splitting Box Mk II (K2.0014532) went through an update of their pressure spring to allow compatibility to a greater range of batteries. If Gold Mount batteries show excessive slack when attached on the battery mount, please contact ARRI Service.

D. Known Issues – Software

Image Processing

No Image Flip for MXF/Apple ProRes

The "Image Flip" function does not work for MXF/Apple ProRes. However, it will work with ARRIRAW.

Monitoring

Internal microphones are always audible on headphones

When the internal microphones are turned on, their sound is always audible on headphones that are connected to the MVF-2 headphones connector and there is no possibility to turn them off.

Magnification is reset after Recording Resolution change

The Magnification setting is reset to 100% when changing Recording Resolution. So it needs to be re-adjusted after each Recording Resolution change.

MVF-2 eyepiece image flickering

The top lines of the image in the MVF-2 eyepiece flicker when switching magnification on or off.

Post

Apple ProRes Clips shot in LF Open Gate or LF 2.39:1 have black borders

Many postproduction applications including DaVinci Resolve will show black borders when playing back MXF/Apple ProRes clips shot with the ALEXA Mini LF in LF Open Gate or LF 2.39:1 recording resolutions. This is a metadata issue. The proper active image area for LF Open Gate is 4448 x 3096 and for LF 2.39:1 is 4448 x 1856.

Recording

Wrong Apple ProRes 4444 and 4444 XQ Bit Depth Metadata

The bit depth metadata information for Apple ProRes 4444 and 4444 XQ is erroneously recorded as 10 bit while it should be 12 bit.

Recording Media

Inserting Media leads to camera reboot

On rare occasions, inserting the recording media may result in a reboot of the camera and the warning message 'Camera has restarted due to a technical problem. (#200)' will be shown. After the reboot, it is fine to continue shooting on that recording media.

Remote Control

ARRI lens motor not recognized

When using an EF Lens without internal motors, it is possible, that the camera thinks there are internal lens motors and will therefore not recognize external ARRI lens control motors. Workaround: disable the lens mount in MENU > SYSTEM > LENS MOUNT SETTINGS.

LPL lens mount disabled

When transferring an LDA lens file from the WCU-4 to the camera, LDS will get disabled and it is not possible to enable again, until a factory reset is performed. This does not affect the functionality of the LBUS connector on the lens mount.

Sync

SDI out of sync

If two cameras are being synchronized by syncing one of them to timecode, the recorded images will be in sync, but the SDI outputs will be slightly out of sync.

Slave shows error (#88)

When the master camera enters playback mode, the slave cameras display active alert #88 (Camera synchronization is still pending). The alert disappears after a few seconds when the master camera has exited playback mode.

Updating

MVF-2 flip-out display turns black during camera update

Sometimes, when updating the camera SUP, the flip-out display of the attached MVF-2 turns black and stays black until the camera is rebooted at the end of the update.

Usability

MONITOR status defaults to "lens" page

The status bar of the flip-out MONITOR defaults to the "lens data" page after a reboot or an update.

Switching from ARRIRAW to Apple ProRes or changing Recording Resolution may take longer than expected

Switching from ARRIRAW to Apple ProRes or changing the recording resolution in Apple ProRes may take longer than expected.

E. Update Procedure

Where to download ALEXA Mini LF SUP 6.0.16

You can find the Software Update Package in the ALEXA Mini LF SUP [download section](#). A SUP can be installed on the camera by using a USB stick as described in detail below.

Camera Update Procedure

The ALEXA Mini LF software is updated from USB memory stick. The SUP will update the ALEXA Mini LF camera along with the Viewfinder (MVF-2) and the lens mount – provided they are connected to the camera.

- After the download, please double click the downloaded file (*.zip) to unpack it or unpack it manually. This will place two update files (*.SUP and *.lic) and the SUP release notes onto your computer.
- If not done beforehand, prepare the USB memory stick for use with ALEXA Mini LF by connecting it to the camera. Then choose *Media > Prepare USB Medium* in the camera's menu on the MVF-2 flip-out monitor and press CONFIRM. This will create the required folder structure on the USB stick.
- Connect the USB stick to your computer and place the downloaded *.SUP file in the folder ARRI/A-MINI-LF/SUP on the USB stick. Then place the downloaded *.lic file in the folder ARRI/A-MINI-LF/LICENSES on the USB stick.
- SUPs contain not only updates for the camera body but also for the MVF-2 viewfinder, the LPL lens mount and LBUS accessories. Therefore, the MVF-2 viewfinder, the LPL lens mount and LBUS accessories should be attached to the camera when performing an update.
- Make sure the camera is connected to a cable power source or is powered with a full battery to avoid power loss during the update process.
- Perform a factory reset.
- Remove the recording media from camera.
- Connect the USB stick to the camera and navigate to the menu item *System > Update Camera*.
- Select the SUP file from the list and click the item.
- In the following message, press INSTALL to start the installation.
- Press CONFIRM to start the installation.
- The camera will present a screen presenting the update progress. Please do not shutdown camera or unplug power until camera reboots.
- After the update process has finished, a success message is displayed.
- Make sure you set the correct time zone in the System Time configuration.
- If the MVF-2 viewfinder, LPL lens mount or LBUS accessories were not connected to the camera during the update process, the camera will still store the new software for those devices. The next time those devices are connected and have an older software than the one stored in the camera, the camera will offer to update those devices.