

ALEXA Software Update Packet 5.0

Release Notes, November 16, 2011

A large, dark, rounded rectangular graphic with a gradient from black to grey. The text "SUP 5.0" is written in a bold, white, sans-serif font in the center of the graphic.

SUP 5.0

Introduction

We are proud to announce the release of our latest software update for the ARRI ALEXA camera system. This Software Update Packet (SUP) provides a number of exciting new features and improvements for both ALEXA and ALEXA Plus models, based on our own R&D as well as feedback from film and television professionals working with ALEXA in the field. Epitomizing ARRI's ongoing commitment to future-proofing the system platform and delivering lasting value to our customers, this SUP further enhances ALEXA's versatility and usefulness.

All new ALEXA and ALEXA Plus cameras will have this SUP installed, and all existing cameras can be upgraded to this SUP.

This document contains a detailed description of the new features and changes, a list of known issues and instructions for upgrading. Please take some time to read through this document to familiarize yourself with everything.

New Features Overview

SUP 5.0 is a major update that enables the High Speed license for ALEXA cameras. Here is an overview of the most important new features in SUP 5.0. Each feature is described in detail further down.

The most important new features for ALEXA and ALEXA Plus

- Enables High Speed license
- 60 fps ARRIRAW over 3G Dual Link
- 60 fps HD-SDI 4:4:4 over 3G Dual Link
- ProRes 4444 with 60 fps when using SxS PRO 64 GB cards
- Horizontal Image Mirroring (3D)
- ARRI Look Files for playback of QuickTime/ProRes Log C files
- Reel & clip number on MON OUT
- Secure camera display dimming
- New default frameline names
- Active look indication
- Dual record error handling
- Open Camera Access (OCA) initiative

The most important new features for ALEXA Plus

- Support for Lens Data Display for Focus Puller (LDD-FP)

Update Recommendation

As this update contains important new features and improves stability, we highly recommend for all ALEXA owners to update to this Software Update Packet.

Feedback

Should you encounter any issues, please email your feedback to service@arri.de and our engineers will evaluate the issue and use your feedback to continuously improve the functionality and quality of the software.

Downgrading

Even though we do not recommend it, it is possible to downgrade back to 4.0.1 from a camera that has SUP 5.0 installed. Before and after the downgrade a 'reset to factory settings' should be performed.

Because there is an issue with the upgrade process in SUP 2.1, we strongly recommend not to downgrade from SUP 2.1.2 to SUP 2.1. It is not possible to downgrade back to SUP 2.0 or earlier software versions and should not be attempted.

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New Features for ALEXA and ALEXA Plus

Equipment/Accessories Supported

No changes

General

No changes

Imaging

No changes

Image Processing/Look Files

Active Look Indication

When an ARRI Look File is applied to the SxS/REC OUT image path, the "SxS" and "REC" text above the COLOR button in the HOME screen will have a blue background.

QuickTime/ProRes Recording

Dual Record Error Handling

MENU button > RECORDING > SXS CARDS > DUAL RECORDING

When recording the same data onto both SxS PRO cards (Dual Recording mode) with one card showing a fault and stopping to record, the other card will continue recording.

ProRes 4444 with 60 fps when using SxS PRO 64 GB cards

When using SxS PRO 64 GB cards, even without a High Speed license, it is possible to record in ProRes 4444 up to 60 fps.

QuickTime/ProRes Playback

Enables High Speed License

Once SUP 5.0 is installed, it is possible to purchase and install a High Speed license key that enables recording 60 to 120 fps with Apple ProRes codecs up to 422 (HQ) onto SONY SxS 64 GB cards. Please see the High Speed data sheet for more details. It can be downloaded from the ARRI website.

ARRI Look Files for Playback of QuickTime/ProRes Log C files

When QuickTime/ProRes Log C files are played back from an SxS PRO card, an ARRI Look File is selected and it is activated for a given output, it will be applied to the image from that output. This has been specifically developed for those who record in Log C, and use an ARRI Look File on the MON OUT output during recording. When playing back the Log C files with the same Look File selected and active on MON OUT, it will be applied to the Log C signal just as it was during recording.

In order to avoid a double application of a Look File, this feature only works with Log C files and not with Rec 709 or DCI P3 files.

Outputs

60 fps ARRIRAW over 3G Dual Link

MENU button > RECORDING > REC OUT > HD-SDI FORMAT > ARRIRAW 3G DL

The camera can now output 48, 50, 59.94 or 60 fps ARRIRAW by using both REC OUT BNC connectors for a dual link 3G signal. We are utilizing an ARRI proprietary method of mapping images into the data stream, which we share with our partners in the ARRI Partner Program. A number of recorder manufacturers are already working on solution to record this signal. Please check with Codex Digital as well as S.two for their latest software for their Onboard and OB-1 recorder.

The latest Codex software (a release candidate that can handle 60 fps ARRIRAW and 50 fps HD-SDI 4:4:4) can be found at:

<http://www.codexdigital.com/software/downloads/onboard/onboard-2011.r2.4001.tgz>

<http://www.codexdigital.com/software/downloads/codexui-win-2011.r2.4001.zip>

<http://www.codexdigital.com/software/downloads/codexui-osx-2011.r2.4001.dmg>

60 fps HD-SDI 4:4:4 over 3G Dual Link

MENU button > RECORDING > REC OUT > HD-SDI FORMAT > 444 3G DL

The camera can now output 48, 50, 59.94 or 60 fps 1920 x 1080 RGB 4:4:4 by using both REC OUT BNC connectors for a dual link HD-SDI 3G signal. We are utilizing an ARRI proprietary method of mapping images into the data stream, which we share with our partners in the ARRI Partner Program. A number of recorder manufacturers are already working on solution to record this signal. Please check with Codex Digital as well as S.two for their latest software for their Onboard and OB-1 recorder.

The latest Codex software (a release candidate that can handle 60 fps ARRIRAW and 50 fps HD-SDI 4:4:4) can be found at:

<http://www.codexdigital.com/software/downloads/onboard/onboard-2011.r2.4001.tgz>

<http://www.codexdigital.com/software/downloads/codexui-win-2011.r2.4001.zip>

<http://www.codexdigital.com/software/downloads/codexui-osx-2011.r2.4001.dmg>

Inputs

No changes

Electronic Viewfinder and/or MON OUT

New Default Frameline Names

MENU button > MONITORING > FRAMELINES > FRAMELINE 1

ALEXA's default framelines have been renamed in order to bring them in line with the frameline names used in ARRI ground glasses. The word "ARRI" marks all default framelines.

- ARRI 1.33
- ARRI 1.66
- ARRI 1.78
- ARRI 1.85
- ARRI 2.39 Flat
- ARRI 2.39 Scope 2x
- ARRI 2.39 Scope 1.3x

Metadata/Timecode

No changes

Remote Control/3D

Horizontal Image Mirroring (3D)

MENU button > SYSTEM > SENSOR > MIRROR IMAGE HORIZONTAL

This function, also referred to as FLIP, provides a horizontally mirrored image for certain configurations of cameras on mirror/beam splitter 3D rigs. Mirroring the image horizontally is useful in the following configurations:

- Horizontal camera is right side up, vertical camera is above horizontal camera and vertical camera top is pointing away from the set.
- Horizontal camera is upside down, vertical camera is above horizontal camera and vertical camera top is pointing towards the set.
- Horizontal camera is right side up, vertical camera is below horizontal camera and vertical camera top is pointing towards the set.

- Horizontal camera is upside down, vertical camera is below horizontal camera and vertical camera top is pointing away from the set.



Mirror image horizontal OFF



Mirror image horizontal ON

User Interface

Reel & Clip Number on MON OUT

MENU button > MONITORING > MON OUT > FRAME LINES + STATUS INFO > SHOW REEL + CLIP NUMBER

Both reel and clip number can optionally be displayed on the MON OUT output.

Secure Camera Display Dimming

To prevent accidental dimming in the camera home screen, the BACK button now has to be pushed while turning the jog wheel to dim the camera display. The brightness of this display can also be set in the menu under:

MENU button > SYSTEM > DISPLAY + BEEPER > DISPLAY BRIGHTNESS

False Color Index Screen

MENU button > MONITORING > FALSE COLOR INDEX

The false color index screens contains a visual reference for the false color mode available for EVF and MON OUT. It shows which signal levels the colors are related to.

Open Cameras Access (OCA) Initiative

We started this initiative to provide remote control access to ALEXA cameras to partners. We are aware that this is a big and complex but important task, so we are approaching it carefully. Some parts of this initiative will be included in a beta test stage in SUP 5.0 and later made available to all ARRI partners in SUP 6.0. OCA deliverables consists of:

1. ALEXA Application Programming Interface (API) with documentation. This is a list of commands third party developers can use to command and communicate with ALEXA.
2. ALEXA iOS Software Developer Kit (SDK). A sample application and specific instructions on how to develop an app for the iPhone, iPad or iPod Touch that commands or communicates with ALEXA.
3. Wireless Network Adapter (WNA-1) beta test units

Please contact M. Shipman-Mueller (msmueller@arri.de) if you want to participate in OCA beta program.

Accessories Behavior

No changes

Service/Manufacturing

No changes

New Features for ALEXA Plus Only

Equipment/Accessories Supported

Lens Data Display for Focus Puller (LDD-FP)

All Lens Data System (LDS) information can be shown on the LDD-FP in addition to basic camera status information. The LDD-FP can be connected to the camera via a cable or used wirelessly on the Wireless Main Unit (WMU-3).

General

No changes

Imaging

No changes

Image Processing/Look Files

No changes

QuickTime/ProRes Recording

No changes

QuickTime/ProRes Playback

No changes

Outputs

No changes

Inputs

No changes

Electronic Viewfinder and/or MON OUT

No changes

Metadata/Timecode

No changes

Remote Control/3D

No changes

Wireless Remote System/LDS/LDA

No changes

User Interface

No changes

Accessories Behavior

No changes

Service/Manufacturing

No changes

Known Issues

This is a list of known issues for this particular software update packet. For a listing of answers to frequently asked questions please visit our website at <http://www.arrydigital.com/alexa/faq>.

Equipment/Accessories Supported

No known issues

General

No known issues

Imaging

Extreme Overexposure

An area that is overexposed more than eight stops above clipping can appear darker than its surroundings.

Pin Hole Effect

This effect is caused by small highlights, like a pin hole. These highlights activate only a small region of about 2x2 pixels and are reproduced under certain circumstances (like high contrast & high sharpness) by the sensor as colored highlights. If this spot is moving slowly, it will change colors between cyan, magenta and white.

Shooting with Low Fps and Wide Open Shutter

ALEXA currently allows the setting of exposure times in excess of 1 second (i.e. 358° shutter at 0.75f ps = 1.25 seconds exposure). At those exposure times an increase in noise can be observed. To achieve optimum image quality at slow frame rates, the exposure time should be limited by selecting a shutter angle of 180 degrees or less.

Image Processing/Look Files

ARRI Look Files Inactive after Reboot

After a reboot the loaded ARRI Look Files may not get applied to the image paths anymore.

Look File is not Applied Automatically from User Setup

The ARRI Look File name is not recalled by the User setup - the Look file is not loaded/applied although present in camera - the "routing" for Look files is not recalled

QuickTime/ProRes Recording

High Speed Debayering Artifacts

While our tests have shown that the High Speed debayering delivers images with the same exposure latitude, sensitivity, colorimetry and low noise level as Regular Speed debayering, we have also noticed that in some saturated red and blue colors a checkerboard pattern can be visible. We are working on improving this, and even though we consider it a minor issue, we want to be up front about it.

High Speed License when Downgrading to 4.0

If an ALEXA that had SUP 5.0 and a High Speed license installed is downgraded to SUP 4.0, the High Speed feature still remains accessible, but in an earlier, unstable condition. In this case the High Speed function should not be used.

Deleting High Speed License in High Speed Mode

Do not delete High Speed license from camera while in High Speed mode as unexpected behavior could result. Only delete High Speed license in Regular Speed mode.

Exiting High Speed Mode does not Restore Previous Regular Speed Settings

Exiting High Speed mode does not restore sensor, REC OUT and MON OUT frame rates to previous applied normal speed settings.

QuickTime/ProRes Playback

No known issues

Outputs

Playback in 3D mode is not Synchronous

When playing back from two ALEXAs that are in 3D sync, they will not playback in sync. 3D sync is so far only for recording, not playback.

ARRIRAW Recording/Playback

On some occasions, when playing back QuickTime/ProRes clips from the SxS PRO cards and repeatedly pushing the "Live" button, the camera will not switch back to providing the live image to the ARRIRAW output afterwards. In this case an external recorder still receives a signal, but the signal only contains black frames. This can be alleviated by power cycling the camera. It is always a good idea and highly recommended to monitor the output of the external ARRIRAW recorder, to ensure that a signal is actually being recorded.

Inputs

No known issues

Audio

Input routing changes when Audio record is toggled

When Audio record is on and routing right input to channel 1 and left input to channel 2 (swapping inputs) the routing changes to mono-mix for both channels when Audio record is set off -> on. We recommend not to change the input routing.

Electronic Viewfinder and/or MON OUT

No known issues

Metadata/Timecode

Timecode out on TC OUT

TC out will only output a proper TC signal during Free Run and when sensor speed equals project speed.

Problems with Some SD Cards

With some types of SD cards image grabs in DPX, TIFF, or ARRIRAW formats may be corrupted. Please test new SD cards before using them for image grabs.

Display of COUNTER/JAM SYNC Menu Item

Even though jam syncing is not possible in Int TC mode, 'Generator: Jam Sync' is shown as an option in the menu. This has no influence on the camera functions.

Clip Numbering Is Sometimes Wrong After Changing SxS Card

Please check the clip numbering after inserting a new SxS card. There have been reports by users that the numbering sometimes gets mixed up after a card is inserted.

Timecode int. free run is lost when running off-speed and swapping battery

With asynchronous recording, i.e. "Project frame rate" NOT EQUAL to "Sensor fps" and timecode set to INT FRERUN, the timecode will be reset to 00:00:00 after reboot.

Remote Control/3D

EXT Sync Only Works Above 9 fps

The sensors of two cameras can only be synchronized via an EXT sync cable down to 9 fps.

EXT Sync with Asynchronous Frame Rates

If the sensor is set to a different frame rate than the HD output (REC OUT or MON OUT) a manual sync trigger (from the System > EXT Sync menu) may be required to get the HD outputs of both cameras synchronized.

Web Remote Control

The web remote GUI that is part of the 5.0 software release is still under development and is not for general use. This functionality is currently for development and demonstration purposes.

Recording in Master/Slave Mode with two cards with Different Capacity

Trying to record on two SxS cards with Master/Slave setup and different free capacity is not possible.

Sync Glitch

Two cameras in external sync mode may re-sync after some time, briefly losing HD-SDI signal.

Wireless Remote System/LDS/LDA

3D lens sync with non-LDS lenses and different focus ring classes

3D lens sync with non-LDS lenses and different focus ring classes may have problems.

LDA Table is not Activated after Reboot

Selected LDA table will be deactivated and deleted after reboot.

Not all LDD-FP Information is Displayed

Some information, like shutter angle, is not displayed on the LDD-FP.

Lens Chosen in LDA is not visible after Switching to High Speed Mode

Calibrate ALL in Master/Slave mode does not work on "Slave Camera"

Calibration of all lens motors in a Master/Slave setup is only possible from the master camera.

LDS Lens Sync Focus is Asynchronous

When trying to lens-sync two cameras focus settings may differ.

LDS Data is not Detected by Changing Lenses

In very rare cases the lens detection over the LDS contacts does not detect the lens correctly. Previous Lens is still shown in GUI.

User Interface

Frame Lines, Look Files and LDA User Data are not Stored in User Setups

When saving the camera's settings through MENU > USER SETUPS > SAVE CURRENT SETUP, ARRI Look Files, frame lines and Lens Data Archive user data are currently not stored.

Changing Fps

Changing Fps can briefly result in a flickering in the EVF.

REC Button Does not Work

Under some rare circumstances the REC button will not function.

No Frame Grabs Possible in High Speed Mode

MENU > FRAME GRABS screen states "Grabbed images inherit MON OUT settings!". Frame grabs are currently completely disabled in High Speed mode.

Image Compare Artifacts with Surround View On

Comparing an image with surround view mode switched on may show artifacts in the top surround view area.

Image Grab with Identical File Name and Different File Content

If a grab with the same filename but different content is loaded again the first grab will still be used in MENU > FRAME GRABS > COMPARE GRAB 2 LIVE IMAGE > COMPARE. Camera has to be repowered to clear the internal frame storage.

Long User Supplied Filenames will not be Fully Displayed

File names (Look File, LDA user Setups and Frame Lines) with too many characters will not be fully displayed in the camera display. This has no influence on the camera functions.

Pressing Immediately REC after Switching Rapidly between Playback and LIVE

This sometimes results in "Unexpected stop recording 62"

Sensor Stays At Project FPS When Pressing LIVE Button In PLAY Screen

When pressing the LIVE button in the PLAY screen the HD outputs show the live image from the sensor, however the sensor does not run at the frame rate selected in the home screen but at the project frame rate. This is of course only noticeable when the sensor is set to a different frame rate than the HD outputs.

Accessories Behavior

No known issues

Service/Manufacturing

No known issues

Updating Instructions

Download and Registration Process

You have to register your ALEXA camera by serial number to download Software Update Packets (SUP). SUPs can then be uploaded to the camera either from an SD card (described in detail below), or from a computer via the ALEXA Ethernet/RJ-45 Cable KC 153-S (3.00m/9.8ft, order number K2.72021.0).

Registration

- If you have not registered yet, go to the ALEXA downloads web page at <http://www.arri.com/goto/alexa-dl>. When the page loads there will be a selection of downloads. Please go to section 'ALEXA Software Update Packet X.Y' (where 'X.Y' is the version number of the desired Software Upgrade Packet) and click on 'Please -> register to get an account.' The ALEXA customer registration page will be opened.
- Fill in the relevant data and make sure to put in the serial number(s) of your camera(s) in the format of K1.71000.0-2xxx. Don't forget to agree to the registration terms at the end of the page
- When you hit the 'create account' button the system will send you an acknowledgement email with a link for the activation of your account. After following the link a welcome mail is sent to you containing the login credentials. Please login at <http://www.arri.com/login/login.html> and navigate to the downloads again.
- Most of the downloads, such as technical information and manuals, are downloadable now. To access the software package downloads you have to apply for the activation to be entitled to download software by clicking on '-> Apply for activation to access this file'. A pop-up window will ask you to 'Apply for activation' - please do so.
- The activation process is a manual procedure so this might take up to one workday. You will receive a mail when your software download has been activated.
- Upon access of the software package download you will be asked to agree to the terms and conditions of this download. If you agree to these terms the download link is released.

Camera Update Procedure via SD Card

Using the SD card for updating is the easiest method. This method updates the ALEXA camera as well as the Electronic Viewfinder (EVF-1), as long as the viewfinder is connected to the camera.

Precautions

- Make sure the power supply of the camera is stable. The best way to achieve this is by using a mains power supply attached to the battery socket. We strongly recommend against updating an ALEXA that is powered through a battery.

Preparing the SD Card

- Have a FAT16 or FAT32 formatted SD-Card ready
- Create the following folder structure on the SD-Card:
 - a folder named 'ARRI' in root of SD card
 - a folder named 'ALEXA' inside the 'ARRI' folder
 - inside the 'ALEXA' folder should be the following folders:
 - Firmware
 - Framelines
 - Grabs
 - LDA
 - Licenses
 - LookFiles
 - Setups

Note: From SUP 4.0 on this can be achieved through the 'Format + prepare SD card' or the 'Prepare SD card' command in MENU > SYSTEM > SD CARD.

- Take the update package 'xxx.pkg' file and copy it to the 'Firmware' folder on the SD card.

Performing the Update

- Turn the camera on.
- Perform a factory reset in MENU > USER SETUPS > FACTORY RESET.
- Insert the SD card into the SD card slot of the camera. The slot is located below the display on the bottom of the camera. The direction how the SD card has to be inserted is shown on the camera housing.
- A card icon will show up in the notification area of the camera display. If not, the card is not recognized by the camera.
- Go into the INFO screen by pressing the 'INFO' button on the camera's right side.
- Save a camera log file onto the SD-Card by pressing 'SAVE TO SD'.
- Press the MENU button.
- Choose SYSTEM and then FIRMWARE.
- The FIRMWARE screen shows you which packet is currently installed (Current version: xxx).
- Press the jog wheel to select the update file.
- The list shows you all firmware files that are available on the SD card.
- Choose the desired packet and press the two lower outer screen buttons simultaneously to start the update.
- **DO NOT REMOVE THE SD CARD WHILE THE PACKET IS BEING COPIED TO THE CAMERA!**
- When the copy dialogue screen disappears, you can remove the SD card if desired.
- The update process will take 10 to 20 minutes. Wait until the update process has finished. This is indicated by a green screen informing you that the update process is completed.
- If the update process fails, which will be indicated by a red screen, repeat the update procedure.
- After the update, turn the camera off and on again. The camera firmware is now updated and you can use the camera.

Please note that User Setup files cannot be used across software packet updates, i.e. a User Setup file created with SUP 2.1 is not compatible with SUP 3.0.

Please note that when updating from software package 1.0 to any later package, the camera's display shows 'Success' for APIC, CMC, and ACOM at the end of the update process. The camera must then be rebooted manually even though the screen still says 'Update in progress – do not power off the camera!' This is done by pressing the ON/OFF button until the camera switches off, then pressing the button again. This is not necessary anymore when updating from SUP 2.0 or later versions.

Updating only the Electronic Viewfinder EVF-1 with a Computer

In case that the ALEXA electronic viewfinder (EVF-1) has not been updated with the camera, it is possible to update the EVF-1 separately by using a computer.

- Download the Software Update Package and place it in a folder on your computer. For information on how to obtain the SUP see 'Download and Registration Process' above.
- Connect the Ethernet port of the computer to the camera with the ALEXA Ethernet/RJ-45 Cable KC 153-S (3.00m/9.8ft, order number K2.72021.0).
- Connect the EVF-1 to the camera.
- Open a web browser on the computer and enter the following URL: <http://alexaXXXX.local/update.cgi> (where XXXX is the camera's serial number) to access the update web page.
- In the 'Camera Update' section select the Software Update Package by clicking the 'browse' button and selecting the path to the downloaded package on your computer.
- Click the 'Update EVF' button in the 'EVF Update' section.
- You can watch the progress of the update on the screen.
- When the update is done, the last line on the screen reads `successfully updated Evf`. The update is now finished even though the web browser continues to refresh the page. This is normal. The viewfinder is up to date.
- Depending on its software version the camera will state a 'software error – reboot camera' on the camera display. This is normal. Please reboot the camera.

Updating the V-Mount Top and/or Back Battery Adapter with a Computer

To update the firmware of the V-mount battery adapters please perform the following steps:

- Update the camera with SUP 4.0 or later.
- Place the SUP in a folder on your computer.
- Connect the Ethernet port of the computer to the camera with the ALEXA Ethernet/RJ-45 Cable KC 153-S (3.00m/9.8ft, order number K2.72021.0).
- Attach a charged V-Mount battery to the mount.
- Open a web browser on the computer and enter the following URL: <http://alexaXXXX.local/update.cgi> (where XXXX is the camera's serial number) to access the update web page.
- In the 'Camera Update' section select the Software Update Package by clicking the 'browse' button and selecting the path to the downloaded package on your computer.
- Click the 'Update VMOUNT' button in the 'V-Mount Update' section.
- The update will take approximately three minutes. You can watch the progress of the update on the screen.
- If you get an error, you have an old style V-mount battery adapter, which can only be updated by ARRI in Munich.
- When the update is done, the last line on the screen reads `successfully updated VMount Adapter` and the battery mount is up to date.
- If your V-mount battery adapter cannot be updated, please contact ARRI Service <http://www.arri.com/service>.