



ALEXA High Speed

Main Features

To ensure that our products enjoy a long and useful life we build them to the highest quality standards and continually develop new capabilities. After the Anamorphic De-squeeze license, the next such new development is High Speed mode, which allows the ALEXA family of cameras to run up to 120 fps for slow motion shots, using Apple ProRes or Avid DNxHD codecs and Sony 64 GB SxS PRO cards. This eliminates the expense of carrying a separate high speed camera.

Despite using a more efficient debayering algorithm, High Speed mode maintains ALEXA's unsurpassed 14 stops of exposure latitude, high sensitivity, natural colorimetry, low noise level and organic, film-like image quality. And since High Speed mode uses the same number of pixels and the same Super 35 sensor area as Regular Speed mode, the images keep the same cinematic shallow depth of field and the same angle of view for all lenses. A 50 mm lens in High Speed mode results in exactly the same image as a 50 mm lens in Regular Speed mode.

The High Speed capability is available as an online purchase of a license key at <http://alshop.arri.de>. Each license key is coded to a particular camera and can be enabled by copying the license to an SD card and loading it into the camera. Licenses can also be disabled, allowing rental facilities control over which cameras are sent out with High Speed mode.

To achieve the high frame rates, the camera outputs all images with 4:2:2 color sub-sampling. The REC OUT outputs the same signal as the MON OUT and ARRIRAW, ProRes 4444 and 4:3 sensor modes are not supported.

ALEXA High Speed license

- Shoot slow motion with ALEXA
- Eliminates the expense of a separate high speed camera
- 60 to 120 fps for Apple ProRes codecs up to 422 HQ or DNxHD 220x
- Requires Software Update Packet (SUP) 5.0
- License key available for purchase online at <http://alshop.arri.de>

Same exposure latitude, sensitivity, colorimetry and low noise level as Regular Speed mode

Same sensor area

- Same Super 35 cinematic depth of field
- Same Super 35 angle of view for all lenses

High Speed mode outputs 4:2:2 color sampling

- REC OUT = MON OUT
- ARRIRAW, ProRes 4444 and 4:3 sensor mode are not supported

Requires new SONY SxS PRO 64 GB card

- Twice the capacity and over twice the data rate of 32 GB cards
- Professional grade cards for a long card life with sustained high data rates
- One year manufacturer's warranty
- ProRes 422 HQ or DNxHD 220x at 120 fps in High Speed mode
- ProRes 4444 at 60 fps in Regular Speed mode with SUP 5.0
- Copies data over twice as fast to a computer

Recording such high data rates requires the use of SONY's new SxS PRO 64 GB cards. These cards are built to the same tough reliability and environmental standards as the SxS PRO 32 GB cards while offering twice the recording capacity and over twice the data rates. The blazingly fast write speed allows recording at 120 fps on the set, while the fast read speeds allows copying a full 64 GB card from the card slot of a 17" MacBook Pro to a Thunderbolt RAID in less than 7 minutes.

These cards maintain their high data rate during their entire life. This is essential for dependable on-set use. Even without the High Speed license, the SxS PRO 64 GB cards allow recording of ProRes 4444 at 60 fps (with SUP 5.0). The environmental robustness, high data rates, high reliability and small size of the SxS PRO 64 GB cards make them the perfect recording medium for the ALEXA family of cameras.

Having 120 fps functionality available on ALEXA cameras will be of tremendous benefit to a range of different production types. It gives directors and cinematographers the opportunity to create slow motion images without the cost, time and effort of having to get a specialized high speed camera to the set. In simple terms this means greater creative freedom, which is the guiding principle of the ALEXA system.



High Speed Mode - Technical Data

All technical data are the same as the respective camera's features in Regular Speed mode except for the following:

Requirements	ALEXA or ALEXA Plus with Software Update Packet (SUP) 5.0
Mode Switch	Power up into High Speed mode: about one minute. Switching from Regular Speed to High Speed mode or back: 40 seconds.
Sensor Area	1.5x oversampling (2880 x 1620) for 1920 x 1080 output. 16:9 sensor mode only, 4:3 sensor mode not supported.
Frame Rates	60 – 120 fps for recording; adjustable with 1/1000 fps precision. 23.976, 24, 25, 29.97 or 30 fps for HD-SDI monitoring.
Supported Codecs	ProRes 422 (Proxy), 422 (LT), 422 and 422 (HQ); DNxHD 145 and DNxHD 220x.
Shutter	Electronic rolling shutter, adjustable from 5.0° to 356.0° with 1/10 degree precision.
Viewfinder	Displays 60 fps in High Speed mode.
Recording Media	Recording at 60 – 120 fps requires use of SxS PRO 64 GB card. Recording ProRes 422 (LT) and ProRes Proxy at 120 fps is possible with SxS PRO 32 GB cards. Approximate recording time on a 64 GB card at 120 fps: 8 minutes using for ProRes 422 (HQ); 9 minutes using DNxHD 220x.
Recording Outputs	REC OUT BNC connectors shows the same signal as MON OUT. ARRIRAW and HD-SDI 4:4:4 are not available.
Monitor Output	MON OUT BNC connectors for uncompressed 1.5G HD-SDI video: 1920 x 1080, 4:2:2 YCbCr; legal range.
Processing	16 bit linear internal image processing, High Speed image debayering algorithm
Audio	No audio recording in High Speed mode
SD Card	No image grab in High Speed.

Please note that the image debayering, which is the process of reconstructing the raw sensor data into a full color image, is different for the High Speed mode than it is for Regular Speed mode.

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.

DNxHD recording requires SUP 6.0 (ALEXA and ALEXA Plus) or later (ALEXA M and ALEXA Studio) and a valid DNxHD license key, which can be ordered online at <http://alshop.arri.de>.

Avid uses a codec notation that includes the bit rate for a given frame rate. DNxHD 145 and DNxHD 220x show the bit rate [Mbit] at 29.97 fps. The correct notation for project frame rates of 23.976, 24, 25 and 29.97 fps would therefore be Avid DNxHD 115/120/145 and DNxHD 175x/185x/220x.

Notes: All technical data based on Software Update Packet (SUP) 5.0.