Shows status, direction and torque of the CLM connected to the IRIS socket.

Press the IRIS CLM screen button to access the iris CLM screen. This screen shows the type of motor connected to the IRIS socket, its direction and torque. Direction and torque can be changed by the screen buttons below and above the value. The upper left screen button calibrates only the iris motor.

Pressing the lower left screen button starts calibration of all connected lens motors.

ZOOM CLM

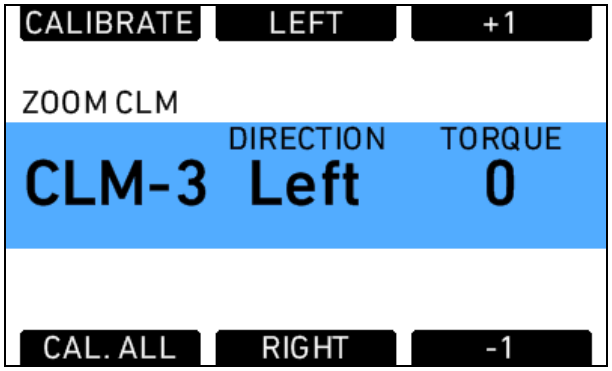


Figure 90: Zoom CLM screen

Shows status, direction and torque of the CLM connected to the ZOOM socket.

Press the ZOOM CLM screen button to access the zoom CLM screen. This screen shows the type of motor connected to the ZOOM socket, its direction and torque. Direction and torque can be changed by the screen buttons below and above the value. The upper left screen button calibrates only the zoom motor.

Pressing the lower left screen button starts calibration of all connected lens motors.

FOCUS CLM

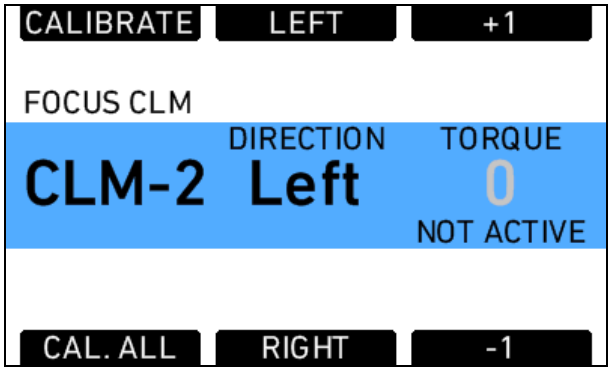


Figure 91: Focus CLM screen

Shows status, direction and torque of the CLM connected to the FOCUS socket.

Press the FOCUS CLM screen button to access the focus CLM screen. This screen shows the type of motor connected to the FOCUS socket, its direction and torque. Direction and torque can be changed by the screen buttons below and above the value. The upper left screen button calibrates only the focus motor.

Pressing the lower left screen button starts calibration of all connected lens motors.

3D Lens Sync

When two cameras are connected and their sensors are synced with via the EXT connectors, the slave camera will receive its motor commands from the master camera. Its radio module switches automatically off. Calibration of lens motors must happen individually for each camera.

14 RCU-4

Figure 92: RCU-4 remote control unit

The camera can be remote controlled with an RCU-4. This device mirrors the controls on the camera's right side. It is connected to the camera's Ethernet port. Power is supplied via the Ethernet cable.

To power the RCU-4, press the power button after connecting the device to a camera.

During boot-up, the RCU-4 compares its firmware version with the camera firmware version. If it detects a difference, it will update itself to match the camera's firmware version. When the update is completed, the RCU-4 will shut down automatically.

The power button of the RCU-4 only affects the RCU-4. It is not possible to power or to shut down the camera with the RCU-4. When the camera is powered down, the RCU-4 shuts down automatically as it loses its power supply.

The LOCK button of the RCU-4 locks only the RCU-4. It does not affect the camera lock.

For more info, please refer to the RCU-4 user manual.

Appendix

In this appendix

A.1 Appendix

Image Sensor	
Type	ALEV III CMOS sensor
Sensor frame rates	0.750 - 60.000 fps
Shutter angle	5.0° - 358.0°
Total active pixels (incl. surround view)	3112 x 1782
Pixels of recorded image	2880 x 1620
Aperture of recorded image	23.76 x 13.365 mm
Image aperture (incl. surround view)	25.674 x 14.701 mm
Pixel pitch	8.25 μm
Aspect ratio	1.78:1 (16:9)
Filters	optical low pass, UV, IR
Color filters	RGB primary colors
Lens	
Lens mount	Exchangeable lens mount, with PL mount LA-PL-1 installed
Flange focal depth	52.00 mm nominal
Image processing	
White balance	2000 - 11000 Kelvin
CC Shift	-8 to +8 (translates to full magenta/ full green gel correction)
EI rating	160-3200 ASA
Recorded image resolution	1920 x 1080 pixels (downscaled from 2880 x 1620)
Viewfinder	
Type	ARRI EVF-1
Technology	LCOS imaging device
Resolution	1280 x 784 pixels
Power	
Power supply	DC 11-34V
Power management	Active ORing between BAT connector and onboard battery adapters
Power consumption	ca. 85W w/o accessories
Power outputs	2 x RS (24V), 1x 12V
Recording	
Recording media	Sony **SxS-PRO** cards

Recording compression codec	Apple ProRes 422/4444 codec family
Frame rates	0.75-60 fps
Image Outputs	
Recording output	2x REC OUT configurable as: 2x 422 1.5G SL YCbCr @ frame rates: 23.976, 24, 25, 29.97 and 30 fps or 1x 444 1.5G DL RGB @ frame rates: 23.976, 24, 25, 29.97 and 30 fps or 1x 422 1.5G DL YCbCr @ frame rates: 48, 50, 59.94 and 60 fps or 2x 422 3G SL YCbCr @ frame rates: 48, 50, 59.94 and 60 fps or 1x ARRIRAW 1.5G DL @ frame rates: 23.976, 24, 25, 29.97 and 30 fps
Monitoring outputs	EVF out: proprietary signal for EVF-1 with delay <1 frame 1x MON OUT: 1x 422 1.5G @ frame rates: 23.976, 24, 25, 29.97 and 30 fps
Timecode	
Type	TC clock generator with crystal oscillator
TC input	LTC in
TC outputs	LTC out HD-SDI LTC/VITC out
Dimensions and weight	
Length x Width x Height (body)	332 x 153 x 158 mm 12.95" x 6.02" x 6.22"
Camera body weight	6.26 kg / 13.79 lb
Camera setup weight (incl. EVF-1, VMB-1, CCH-1)	7.65 kg / 16.85 lb
Others	
SD card	most SD cards with FAT/FAT32 up to 4 GB
Sound level	under 20 dB(A) @ 24 fps and ambient temperature < 25° C / 77° F
Environmental	-20° C to +45° C @ 95% relative humidity max, non condensing
ALEXA Plus	

Length x Width x Height (body)	332 x 175 x 158 mm 12.95" x 6.89" x 6.22"
Camera body weight	7.0 kg / 15.4 lb
Camera setup weight (incl. EVF-1, VMB-1, CCH-1)	8.4 kg / 18.5 lb
Lens mount	Exchangeable lens mount, with PL mount LA-PL-2 installed

A.2 Camera Dimensions

All measurements are given in mm.

ALEXA

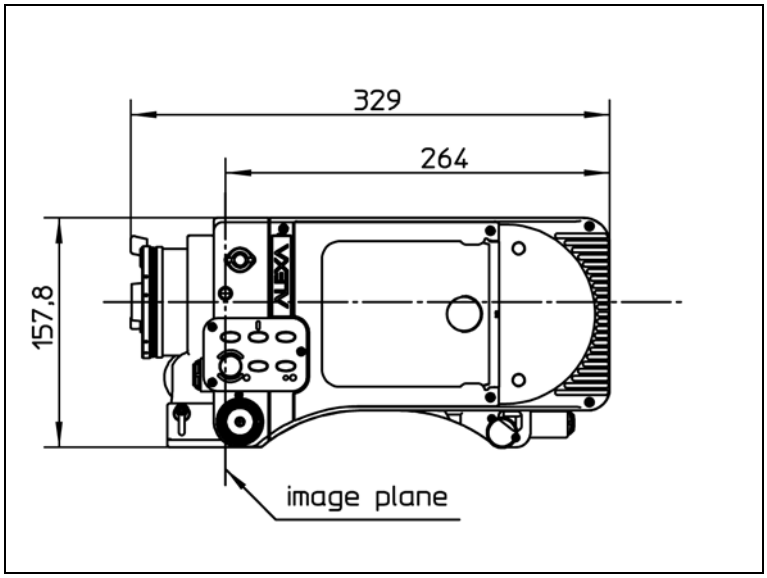


Figure 93: ALEXA left

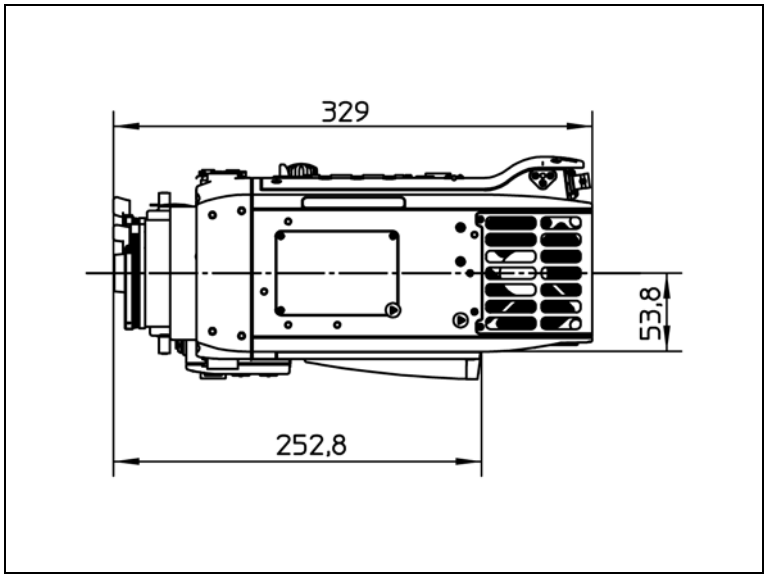


Figure 94: ALEXA top

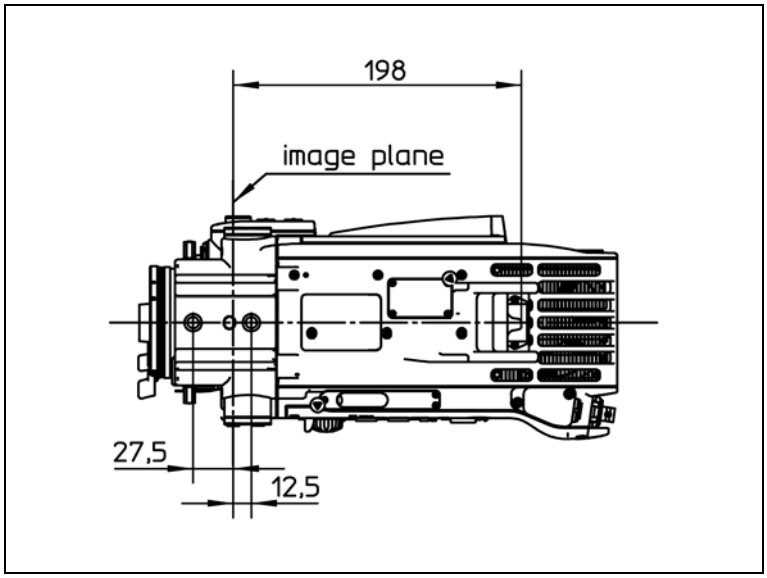


Figure 95: ALEXA bottom

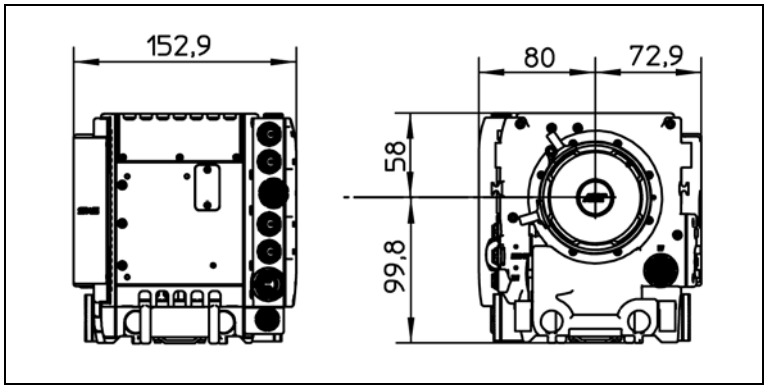


Figure 96: ALEXA front and back

ALEXA Plus

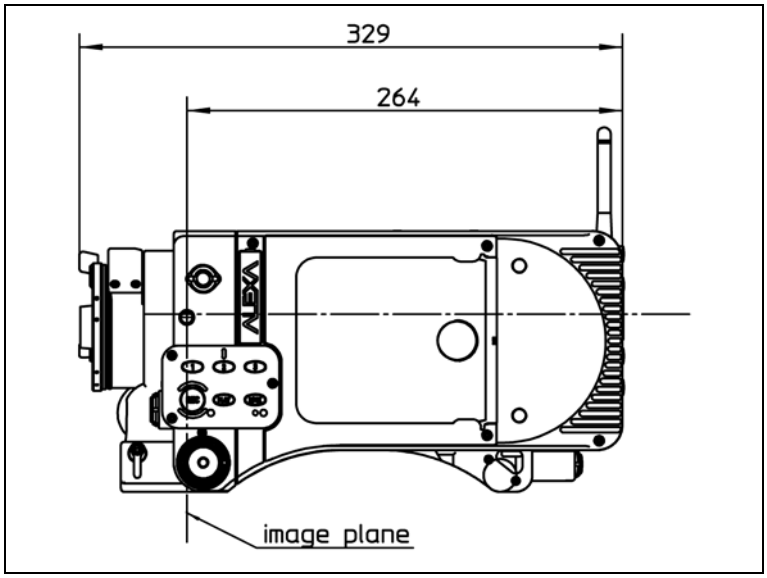


Figure 97: ALEXA Plus left

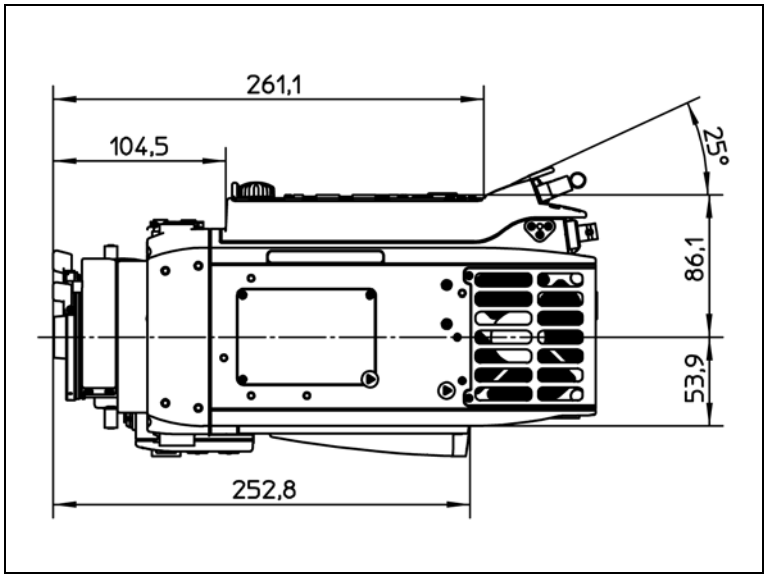


Figure 98: ALEXA Plus top

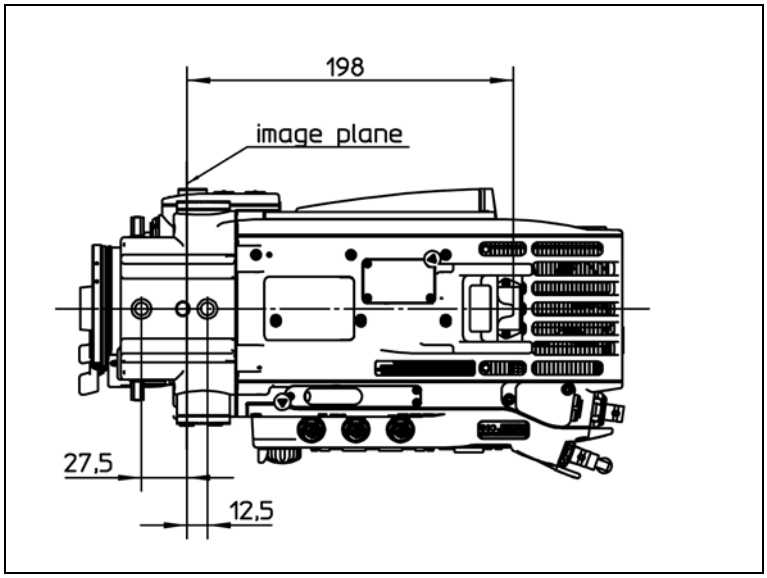


Figure 99: ALEXA Plus bottom

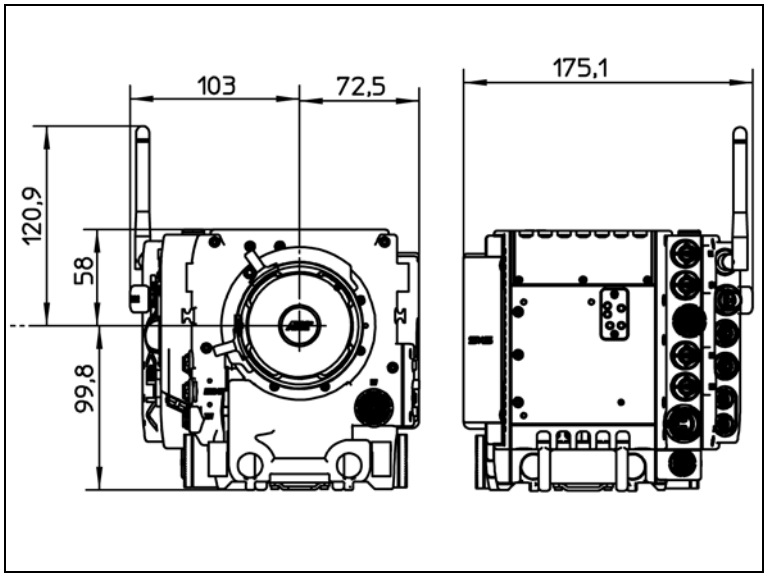
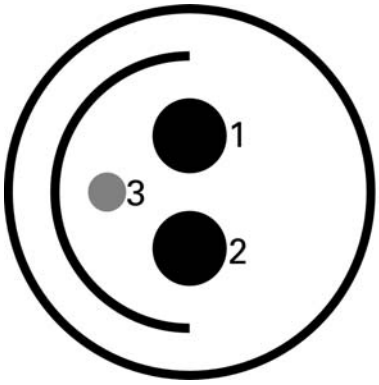


Figure 100: ALEXA Plus front and back

A.3 Connector Pin Outs

Note: The drawings of the connectors are not to scale.

BAT

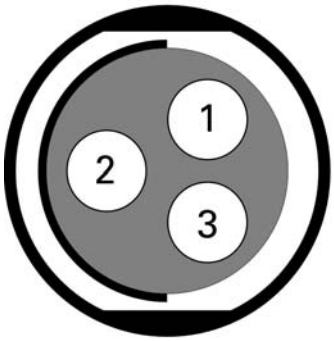


1 GND

2 +24V

3 BAT-COM

RS

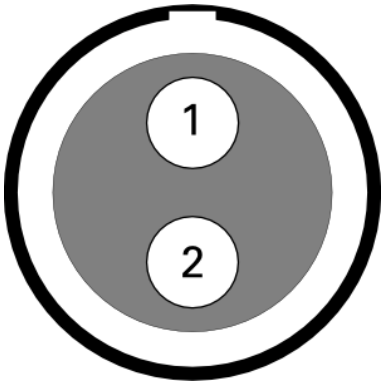


1 GND

2 24V-AUX

3 R/S

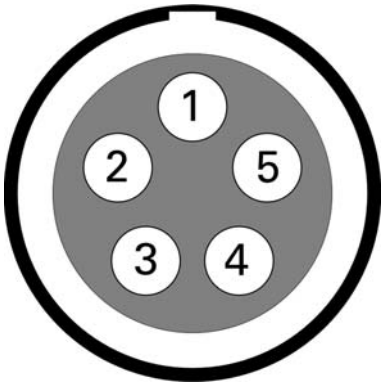
12V



1 GND

2 12V-AUX

TC



1 GND

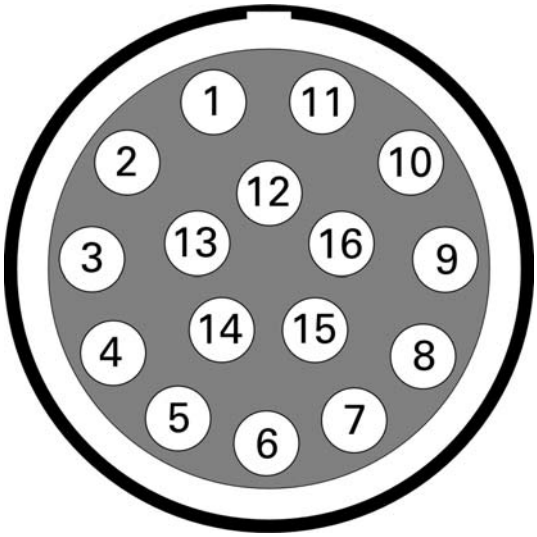
2 LTC IN

3 ASCII

4 TUNE OUT

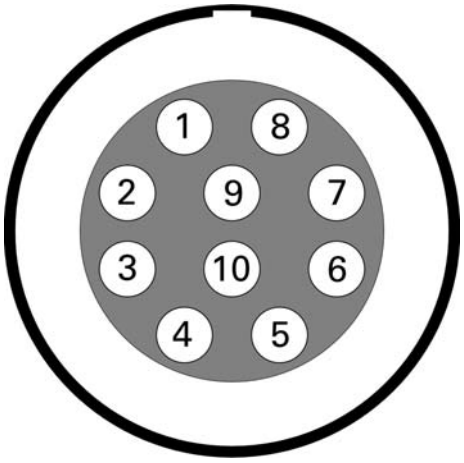
5 LTC OUT

EXT



1	RS422-TXD(+)
2	RS232-TXD
3	CAN1-L
4	CAN1-H
5	CAN2-L
6	CAN2-H
7	24V-AUX
8	RS232-RXD
9	RS422-RXD(-)
10	RS422-RXD(+)
11	RS422-TXD(-)
12	GND
13	TTL-IN1
14	TTL-IN2
15	24V-AUX
16	GND

ETHERNET



1 MX-1P

2 MX-1N

3 MX-2P

4 MX-2N

5 MX-3P

6 MX-3N

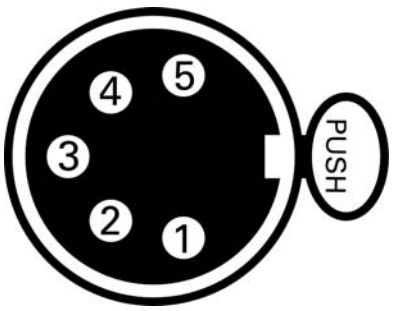
7 MX-4P

8 MX-4N

9 GND

10 24V-ETH

AUDIO IN



1 AGND

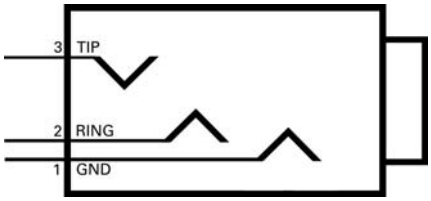
2 L-IN(+)

3 L-IN(-)

4 R-IN(+)

5 R-IN(-)

AUDIO OUT



1 GND

2 R-OUT

3 L-OUT

A.4 False Color Display

The false color display is a tool to check correct exposure. It can be activated in the EVF and the MON OUT image. When active, the image is turned into a greyscale image with important luminance ranges shown in signal colors.

Color Encoding

Six different colors are used to show the important luminance ranges.

What	Signal Level	Color
White clipping	100% - 99%	red
Just below white clipping	99% - 97%	Yellow
One stop over medium gray (Caucasian skin)	56% - 52%	pink
18% medium gray	42% - 38%	green
Just above black clipping	4.0% - 2.5%	blue
Black clipping	2.5% - 0.0%	purple

Figure 101: False Color Encoding

The following example illustrates the behavior of the false color display.

Figure 102: Night scene captured with ALEXA

Figure 103: ALEXA night shot with false color active

A.5 Infos and Warnings

If anything unwanted occurs in the camera, it will give a message to the user.

These states, that require attention from the user, are indicated by icons in the main display, the viewfinder and the MON OUT.

Warnings are message that inform the user that a state has changed or that an error might occur soon. Anyway, recording is still possible.

If the camera goes into error state, recording is no longer possible, as it cannot be guaranteed that images are acquired as the user intended, or recording is simply not possible.

The messages give a compact info what has happened. if more information is required, please refer to the following tables.

Special warnings and errors: Sensor temperature

ALEXA has a Peltier element that keeps the image sensor at a stable temperature. This is important to achieve constant image quality. Under some occasions, the camera might not be able to keep this temperature, or it might take some time to reach the correct level. This can be the case right after booting, or with very hot or cold ambient temperatures.

A red temperatrue icon indicates that the sensor temperature is too far off to guarantee a high image quality, while a white temperature icon indicates that image quality is still in the (very high set) quality limits required by ARRI.

The related messages in the INFO screen are shown in the following tables.

ALEXA status message

System state: Good	Camera works properly.

ALEXA warning messages and meanings

Warning message	**Meaning**
Main Bat: Power warning	The battery attached to the BAT connector has reached its warning level. Battery power is about to end, and a replacement battery should be prepared.
Onboard Bat: Power warning	The battery attached to the onboard battery adapter has reached its warning level. Battery power is about to end, and a replacement battery should be prepared.
Card 1: Low capacity	The **SxS-PRO** card in slot 1 has less than 3 minutes recording time left. Prepare a new card for recording.
Card 2: Low capacity	The **SxS-PRO** card in slot 2 has less than 3 minutes recording time left. Prepare a new card for recording.

Card 1: Rec protected	The **SxS-PRO** card in slot 1 is Rec protected. Remove the card from the camera, slide the switch located on the camera back end to the Rec enable position and re-insert the card.
Card 2: Rec protected	The **SxS-PRO** card in slot 2 is Rec protected. Remove the card from the camera, slide the switch located on the camera back end to the Rec enable position and re-insert the card.
Card 1: Full	**SxS-PRO** card in slot 1 is selected, but the **SxS-PRO** card is full. Use a new card. Card in other slot can still record.
Card 2: Full	**SxS-PRO** card in slot 2 is selected, but the **SxS-PRO** card is full. Use a new card. Card in other slot can still record.
Card 1: Wrong file system	The **SxS-PRO** card in slot 1 is not formatted in the file system required by the camera. Format the card.
Card 2: Wrong file system	The **SxS-PRO** card in slot 2 is not formatted in the file system required by the camera. Format the card.
Card 1: Card is too slow	The write speed of **SxS-PRO** card in slot 1 is insufficient for the sensor fps set on the camera. Use a card with a higher write speed.
Card 2: Card is too slow	The write speed of **SxS-PRO** card in slot 2 is insufficient for the sensor fps set on the camera. Use a card with a higher write speed.
Camera overheating	The camera system's temperature is reaching a critical level. this can either be due to a blocked camera fan or ambient temperature exceeding the system's limits. Apply additional cooling or switch of the camera to prevent hardware damage.
Low sensor temperature	The sensor temperature is lower than it should be. High image quality is still guaranteed.
High sensor temperature	The sensor temperature is higher than it should be. High image quality is still guaranteed.
External TC: Different frame rate	The external TC signal's time base differs from the project fps of the camera. Syncing is still possible.
Re-jam Timecode soon	Accuracy of jammed Timecode can soon expire. Re-jam camera with external Timecode soon.
Re-jam Timecode now	Accuracy of jammed Timecode has expired. Re-jam camera with external Timecode.
TC source forced to internal	Sensor fps does not match Project fps. External Free Run TC cannot be used, camera has switched to Int Rec Run TC.
Interface bit error	Reboot camera. If error continues to occur, contact ARRI service.

Internal processing problem	Reboot camera. If error continues to occur, contact ARRI service.
Internal battery error	The internal battery which powers the real-time clock must be replaced. Contact an ARRI service center near you.
System problem	Reboot the camera. If error continues to occur, contact ARRI service.
External TC: Incompatible frame rate	The external TC signal's time base is not accepted by the camera.
HD outs not synced. Trigger now!	Appears on slave cam with Ext sync activated, but not using settings sync. Send trigger from Ext sync master camera to ensure the REC OUTs of both cameras are in sync.
Connect with Ethernet slave!	Camera is set to Settings sync: Enet master, but is not connected with slave camera via Ethernet
Connect with Ethernet master!	Camera is set to Settings sync: Enet slave, but is not connected with master camera via Ethernet
External TC: Jamming. Please wait!	Camera jams to external TC signal. Do not disconnect TC source from camera until warning disappears.
External TC: Signal missing!	Camera is set to Ext LTC regen, but external TC signal is missing.
External TC: Incompatible frame rate!	The external TC signal has a time base that does not match the project fps of the camera.
Framegrab: Grabbing image failed	A problem occured in the camera. The frame grab failed.
Framegrab: Storing image failed	A problem occured with the SD card. The frame grab failed.
Playback failed	The camera could not play back the internally recorded clips.
EVF smooth mode not possible	Smooth mode is set to "On", but either sensor fps is higher then 30.000, or shutter angle is higher than 180.0
Ext LTC: Forced to JAM sync!	Ext LTC had to be switched to Jam sync by camera system.
Playback failed!	A problem with playback occured. Camera had to abort playback.
Card removed! Playback failed!	Camera had to abort playback, as SxS card was removed.
Calibrate lens motors	New lens motors are attached to the camera. Prior to use they must be calibrated.

Temperature at limit. Fan RPM raised.	With camera fan is in "Rec low" mode, fan noise might exceed silent level because camera is becoming too hot.
Master/slave: Focus unit mismatch	With ALEXA Plus and 3D lens sync, both cameras must have same focus unit activated, which is not the case here.
Slave: No lens table active.	With ALEXA Plus and 3D lens sync, select lens table on slave when using LDA.
REC OUT: Switch on Vari flag!	When SxS recording is off and sensor fps does not match REC OUT fps, switch on Vari flag to prohibit duplicate frames.

ALEXA error messages and meanings

Main Bat: Low power	The battery attached to the BAT connector has reached its low level (10% below warning level). Battery must be replaced.
Onboard Bat: Low power	The onboard battery has reached its low level (10% below warning level). Battery must be replaced.
All Bats: Low power	Batteries on both BAT connector and onboard battery(s) have to be replaced.
Card 1: End of lifetime	The **SxS-PRO** card in slot 1 has reached the end of its life cycle and has become read-only. Use a new card.
Card 2: End of lifetime	The **SxS-PRO** card in slot 2 has reached the end of its life cycle and has become read-only. Use a new card.
Card 1: Write speed error	The current write speed could not be handled by the **SxS-PRO** card in slot 1
Card 2: Write speed error	The current write speed could not be handled by the **SxS-PRO** card in slot 2
Cards 1&2: Full	Both **SxS-PRO** cards are full. Use fresh cards.
Cards 1&2: End of lifetime	Both **SxS-PRO** cards have reached the end of their life cycle and has become read-only. Use fresh cards.
Cards 1&2: Wrong file system	Both **SxS-PRO** cards are not formatted in the file system required by the camera. Format the cards.
Cards 1&2: Rec protected	Both **SxS-PRO** cards are rec-protected. Eject the cards, switch off the protection and re-insert the cards.
Camera overheating	The camera is getting too warm. Apply additional cooling or shut down to prevent hardware damage.

Low sensor temperature	Sensor temperature is out of range. Wait until error message disappears before continuing to shoot.
High sensor temperature	Sensor temperature is out of range. Wait until error message disappears before continuing to shoot.
System error	Reboot the camera.
Codec error - Reboot!	An error in the compression module has occured, and recording was aborted. Reboot the camera before you continue to record!
Sensor error. Reboot!	The image sensor has a problem. reboot the camera.
Sensor boot error!	The sensor has not booted. Reboot the camera.
Fan error. Contact service!	The fan module is not working properly. Either install an SFM-1, or contact the ARRI service.
Fatal system error! Reboot camera now!	Camera has to be rebooted. If this error continues to occur, a hardware problem might be the reason. Contact the ARRI service.
Sync clock out of range	The sync signal clock does not match the camera setting. Make sure the settings match!
Syncing sensor. Please wait!	Slave camera syncs to master camera. Wait until message disappears before starting to shoot!
A slave is not ready	One of the slave cameras is not ready for recording.
Software error - reboot camera!	A part of the camera software has stopped functioning properly and requires a camera reboot.
SxS: Audio recording failed	Audio recording on SxS card failed
REC OUT: Frame drops. Set frame rate!	Frame rate of REC OUT is smaller than sensor fps. Make sure REC OUT frame rate matches sensor fps.
SxS cards differ. Recording prohibited!	With dual recording active, the two **SxS** cards must have identical file structure. Use two fresh **SxS** cards and analyze the not matching ones.

If any error that requires rebooting continues to occur regularly, contact the ARRI service.

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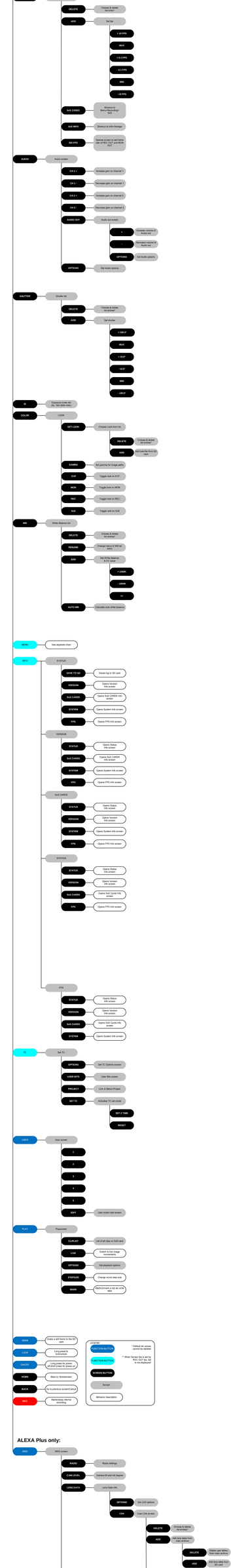
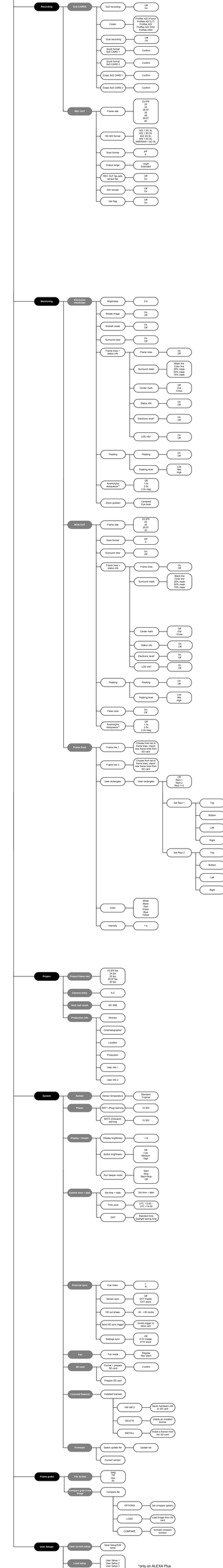
ALEXA UI Tree Version SUP 4.0



ALEXA MENU Version SUP 4.0



*only on ALEXA Plus
**only with anamorphic desqueeze license installed