# AMIRA

## Software Update Package 5.4

USER MANUAL

**16 August 2018**

# Imprint

## Copyright

© 2018 Arnold & Richter Cine Technik GmbH & Co. Betriebs KG. All rights reserved. No portions of this document may be reproduced without prior written consent of Arnold & Richter Cine Technik GmbH & Co. Betriebs KG. Specifications are subject to change without notice. Errors, omissions, and modifications excepted.

AMIRA, ALEXA, ALEXA XT, ALEXA SXT, ALEXA LF and ALEXA Mini are trademarks or registered trademarks of Arnold & Richter Cine Technik GmbH & Co. Betriebs KG. All other brands or products are trademarks or registered trademarks of their respective holders and should be treated as such.

Original version.

## For further assistance

Arnold & Richter Cine Technik GmbH & Co. Betriebs KG
Tuerkenstr. 89
D-80799 Munich, Germany

E-mail: service@arri.com
www.arri.com/service

## Document revision history

Document ID: 10000464

| Version | Release | Date |
|---|---|---|
| 1.0 | K08608 | 12 Sep 2014 |
| 1.1 | K08658 | 19 Dec 2014 |
| 2.0 | K08781 | 31 Mar 2015 |
| 3.0 | K08941 | 02 Nov 2015 |
| 4.0 | K09036 | 23 May 2016 |
| 4.1 | K09090 | 07 June 2016 |
| 5.0 | K09396 | 21 June 2017 |
| 5.2 | K09599 | 08 Dec 2017 |
| 5.3 | K09696 | 30 May 2018 |
| 5.4 | K09800 | 16 August 2018 |

# Contents


**1 For Your Safety / 为了您的安全 ..... 9**
1.1 Risk Levels and Alert Symbols / 危险级别和警示标志 ..... 9
1.2 Vital Precautions / 重要安全措施 ..... 10
1.3 General Precautions / 般安全措施 ..... 11

**2 Sensor Related Information / 有关影像传感器的信息 ..... 13**

**3 Audience and Intended Use ..... 15**

**4 Scope of Delivery and Warranty ..... 16**

**5 Camera Layout ..... 17**
5.1 Front Connectors & Switches ..... 20
5.2 I/O Panel ..... 20
5.3 Audio Connector Panel ..... 22
5.4 Media Panel ..... 23
5.5 Operator Panel ..... 24
5.6 User Buttons Panel ..... 25
5.7 Audio Control Panel ..... 25
5.8 Rear Connectors ..... 26
5.9 Product Identification ..... 27

**6 Getting Started ..... 28**
6.1 Camera Preparation ..... 28
6.1.1 Mounting the Camera to a Bridge Plate ..... 28
6.1.2 Mounting the Camera to a Wedge Plate ..... 29
6.1.3 Mounting and Unmounting a Base Adapter Plate ..... 29
6.1.4 Mounting and Unmounting the Camera Handle ..... 30
6.1.5 Mounting and Unmounting the Microphone Bracket MHB-2 ..... 30
6.1.6 Mounting and Unmounting a Battery Adapter ..... 30
6.1.7 Connecting and Disconnecting Audio Devices ..... 31
6.1.8 Balancing the Camera ..... 32
6.2 Power Supply ..... 32
6.2.1 Powering Auxiliary Devices via the Camera ..... 32
6.2.2 Switching On and Off ..... 33
6.3 Multi Viewfinder MVF-1 ..... 34
6.3.1 User Monitor ..... 35
6.3.2 Connecting the MVF-1 ..... 36
6.3.3 Adjusting the Viewfinder ..... 36
6.3.4 Adjusting the Monitor ..... 36
6.4 Camera Control Panel CCP-1 ..... 37

6.5 Media Usage ... 38
6.5.1 Inserting and Removing a CFast 2.0 Card ... 38
6.5.2 Inserting and Removing USB Medium ... 38
6.6 Lens Mounts and Internal FSND Filters ... 39
6.6.1 Changing a Lens ... 41
6.6.2 Maximum Lens Mounting Depth ... 42
6.6.3 Changing the Lens Mount ... 42
6.6.4 Lens Iris Control ... 44
6.6.5 EF Lens Support ... 44
6.7 Starting Recording via REC button ... 44

**7 Home Screen and Camera Menu ... 46**
7.1 Home Screen ... 46
7.1.1 Status Section ... 48
7.1.2 Info Screens ... 50
7.1.3 ALERT Messages ... 53
7.2 Camera Menu ... 53
7.2.1 Working with Lists ... 54
7.2.2 Import of User Files ... 55
7.2.3 Using the On-screen Keyboard ... 56
7.3 Camera's Main Settings ... 56
7.3.1 Selecting the Recording Codec ... 56
7.3.2 Setting the Recording Resolution ... 57
7.3.3 Project Settings ... 58
7.3.3.1 Setting a Project Rate ... 58
7.3.3.2 Setting the Next Reel Count ... 59
7.3.3.3 Setting the Camera Index ... 59
7.3.3.4 Defining the Camera ID Prefix ... 59
7.3.3.5 Lens Squeeze Factor ... 59
7.3.4 Sensor Frame Rate ... 60
7.3.5 Shutter Settings ... 60
7.3.5.1 Setting a Shutter Value ... 61
7.3.5.2 Setting the Shutter Unit ... 61
7.3.6 Exposure Index ... 61
7.3.6.1 Setting the Exposure Index ... 62
7.3.6.2 Selecting the ND Filter ... 62
7.3.6.3 Adjusting the Iris (EF lenses) Manually ... 63
7.3.6.4 Defining the Auto Iris Calculation ... 63
7.3.7 White Balance ... 64
7.3.7.1 Setting the White Balance ... 64
7.3.7.2 Automatic White Balance ... 64
7.3.7.3 White Balance Options ... 65

7.3.8 Timecode ... 65
7.3.8.1 Setting the Timecode Manually ... 66
7.3.8.2 Changing the Project Rate ... 66
7.3.8.3 Timecode Options ... 66
7.3.9 Look Settings ... 68
7.3.9.1 Selecting a Look File ... 69
7.3.9.2 Configuring Processing and Color Spaces ... 69
7.3.9.3 Duplicating a Look File ... 71
7.3.9.4 Look Parameters ... 71
7.3.9.5 Editing Looks ... 74
7.3.9.6 Use of the ARRI Look Library ... 76
7.4 Recording ... 76
7.4.1 ARRIRAW ... 77
7.4.2 Record Mode ... 77
7.4.2.1 Normal Mode ... 77
7.4.2.2 Interval Recording ... 77
7.4.2.3 Stop Motion ... 78
7.4.3 Prerecording ... 79
7.4.3.1 Activating Prerecording ... 79
7.4.3.2 Setting the Prerecording Duration ... 79
7.4.4 Activating Rec Beeper and Tally ... 80
7.5 Media ... 81
7.5.1 Erasing Card A and B ... 81
7.5.2 Deleting Last Clip of CARD A and B ... 81
7.5.3 Preparing USB Medium ... 82
7.6 Monitoring ... 82
7.6.1 Status Info and Overlays ... 82
7.6.1.1 Live Monitor Status Bar ... 87
7.6.1.2 Setting EVF/Monitor/SDI Status Overlays ... 87
7.6.1.3 Setting EVF/SDI Status Info Components ... 88
7.6.2 Overlay Menu ... 89
7.6.3 Setting EVF/Monitor/SDI Surround View ... 89
7.6.4 Frame Lines ... 89
7.6.4.1 Setting Frame Lines ... 90
7.6.4.2 Setting Frame Line Color ... 90
7.6.4.3 Setting Frame Line Intensity ... 90
7.6.4.4 User Rectangles ... 91
7.6.5 Anamorphic Desqueeze ... 91
7.6.6 Peaking ... 92
7.6.6.1 Defining Peaking for EVF/Monitor/SDI ... 92
7.6.6.2 Activating Peaking ... 92
7.6.7 Exposure Tools ... 93
7.6.7.1 Exposure Tool Setup ... 93
7.6.7.2 Activating the Exposure Tool ... 95
7.6.8 Return In Path Configuration ... 96
7.6.9 EVF Zoom ... 96

7.6.10 SDI Configuration ... 96
7.6.10.1 Configuring SDI Processing ... 97
7.6.10.2 Setting SDI 1/2 Format ... 97
7.6.10.3 Setting SDI 1/2 Frame Rate ... 98
7.6.10.4 Setting SDI 1/2 3G Level ... 98
7.6.10.5 Setting SDI 1/2 Image ... 98
7.6.10.6 Cloning SDI 1 Settings to SDI 2 ... 99
7.6.11 EVF/Monitor Settings ... 99
7.6.12 Activating Color Bars ... 100
7.7 Playback ... 100
7.7.1 Starting Playback via the PLAY Button ... 100
7.7.2 Playback Controls ... 101
7.8 System ... 102
7.8.1 Sensor ... 103
7.8.1.1 Adjusting the Image Sharpness ... 103
7.8.1.2 Adjusting the Image Detail ... 103
7.8.1.3 Setting Noise Reduction ... 103
7.8.1.4 Setting Genlock Sync ... 103
7.8.1.5 Setting the Sync Shift ... 104
7.8.1.6 Mirroring the Sensor Image ... 104
7.8.1.7 Working with a User Pixel Mask ... 104
7.8.2 Setting the Fan Mode ... 106
7.8.3 Power Warnings for Batteries ... 106
7.8.3.1 Setting Bat Onboard (BAT1) Warning ... 106
7.8.3.2 Setting the BAT In (BAT2) Warning ... 106
7.8.3.3 Setting the BAT Unit Preference ... 106
7.8.4 Lens Mount Settings ... 106
7.8.5 Adjusting System Time and Date ... 107
7.8.6 Buttons and Display ... 107
7.8.6.1 Setting the Display Style ... 107
7.8.6.2 Setting the Button Brightness ... 107
7.8.6.3 Lock Configuration ... 107
7.8.7 Multicam ... 108
7.8.7.1 Required Hardware ... 108
7.8.7.2 Supported RCP Parameters ... 109
7.8.7.3 Multicam Setup and Configuration ... 110
7.8.7.4 Tally Control ... 111
7.8.8 Camera Access Protocol (CAP) ... 112
7.8.8.1 Activating CAP Server ... 112
7.8.8.2 Setting CAP Server Password ... 112
7.8.8.3 Displaying CAP Client List ... 112

7.8.9 Network / WiFi ... 112
7.8.9.1 Activating Camera WiFi Power ... 112
7.8.9.2 Setting WiFi Mode ... 113
7.8.9.3 Setting the WiFi Host Password ... 113
7.8.9.4 Selecting the WiFi Network ... 113
7.8.9.5 Setting the Region of the WiFi Interface ... 114
7.8.9.6 Setting LAN IP Mode ... 114
7.8.9.7 Setting LAN Static IP and Subnet ... 114
7.8.10 Licensing ... 115
7.8.10.1 License Bundles ... 115
7.8.10.2 Exporting *HW INFO* from the Camera ... 116
7.8.10.3 Installing a License File ... 116
7.8.10.4 Displaying Licensed Features ... 116
7.8.10.5 Deleting a License ... 117
7.8.10.6 Downgrading to Another License Model or Deleting UHD License ... 117
7.8.11 Updating the Camera ... 117
7.8.11.1 Updating the Camera via USB Memory Stick ... 117
7.8.11.2 Updating Camera Components ... 118
7.8.12 Setting the System Language ... 119
7.9 Setup ... 119
7.9.1 Saving User Setup ... 119
7.9.2 Loading Setups ... 120
7.9.3 User Setup Parameter Blocks ... 120
7.9.4 Resetting to Factory Defaults ... 123
7.10 User Buttons ... 123
7.10.1 Camera User Buttons ... 126
7.10.2 MVF-1 User Buttons *VF1 & VF2* ... 127
7.10.3 Setting the User Switch Function ... 127
7.10.4 Presetting the *US / EI / WB* Switches ... 127
7.10.5 WCU User Buttons ... 128
7.10.6 LBUS Device User Buttons ... 128
7.10.7 GPIO User Buttons ... 128
7.10.8 Lens RET User Button ... 128
7.10.9 Locking the Camera ... 128
7.11 Entering Metadata ... 129
7.12 Audio Menu ... 129
7.12.1 Adjusting the Headphone Volume ... 130
7.12.2 Audio INFO Screen ... 130
7.12.3 Configuring Recording Channels 1/2 and 3/4 ... 131
7.12.4 Adjusting Audio Settings ... 132
7.12.4.1 Switching the Maximum Line Levels ... 132
7.12.4.2 Setting Microphone Attenuation ... 133
7.12.5 Bluetooth ... 133
7.12.5.1 Connecting to and Disconnecting from a Bluetooth Device ... 134
7.12.6 Configuration of Channels 1 and 2 via the Camera Menu ... 134

**8 Web Remote....135**

**9 Transvideo Starlite HD5-ARRI Monitor....137**

**10 Appendix....141**

10.1 Supported CFast 2.0 Cards.... 141

10.2 Technical Data.... 142

10.3 Pin-outs....146

10.4 MPEG-2 Notice....147

10.5 Declarations of Conformity.... 148

10.6 Dimensional Drawings....150

# 1 For Your Safety / 为了您的安全

Before use, please ensure that all users read, understand and follow the instructions in this document fully. 使用前，请确保所有的用户都已经阅读、理解，并遵循本文档内的操作说明。

## 1.1 Risk Levels and Alert Symbols / 危险级别和警示标志

Safety warnings, safety alert symbols, and signal words in these instructions indicate different risk levels:

**⚠ DANGER!**

*DANGER* indicates an imminent hazardous situation which, if not avoided, **will result in** death or serious injury.

**⚠ WARNING!**

*WARNING* indicates a potentially hazardous situation which, if not avoided, **may result in** death or serious injury.

**⚠ CAUTION!**

*CAUTION* indicates a potentially hazardous situation which, if not avoided, **may result in** minor or moderate injury.

***NOTICE***

*NOTICE* explains practices not related to physical injury. No safety alert symbol appears with this signal word.

**Note:** Provides additional information to clarify or simplify a procedure.

本文档内的安全警告、安全警示标志和标识词语指示不同的危险级别：

**⚠ 危险**

危险表示危急、有危害的情景，若不防范，则会导致死亡或严重的伤害。

**⚠ 警告**

警告表示有潜在危害的情景，若不防范，则可能会导致死亡或严重的伤害。

**⚠ 小心**

小心表示有潜在危害的情景，若不防范，则可能会导致中等或较轻的伤害。

**提示**

注意表示此行为不会导致人身伤害。因此此标识词语中不含警告标志。

注：注意中会提供用于解释或简化工作的额外信息。

## 1.2 Vital Precautions / 重要安全措施

**⚠ DANGER!**

**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.

**⚠ 危险**

**高电压！有触电或起火风险！**

短路将引起致命危险。

使用之前，请仔细阅读所有未过期的使用说明，并严格遵循。

切勿打开机身。切入插入任何物体。

操作时，请务必使用说明中指出的电源。

断开电源时请握住电源插头，而不是电线。

切勿尝试自行维修。所有的维修工作必须由具备资质的ARRI 维修中心进行。

切勿移除或毁坏任何安全设施（例如警告贴纸或涂漆标示的螺丝）。

务必避免潮湿、寒冷、炎热、多尘、震动、冲击或严酷的使用环境。

切勿覆盖任何风扇开口。

**⚠ CAUTION!**

**Condensation! Risk of electric shock and fire!**

Condensation may form on the sensor and electrical connections when exposing the camera to sudden changes of temperature or humidity!

To avoid injury and damage, never operate the camera when condensation occurs.

**⚠ 小心**

**冷凝！有触电或火灾风险！**

当将摄影机暴露于温度或湿度迅速变化的环境中时，影像传感器和电子部件连接处可能会产 为了您的安全 6 生的冷凝。

为了避免受伤或设备损坏，在冷凝发生时切勿操作摄影机。

**⚠ CAUTION!**

**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.

**⚠ 小心**

**设备重量较大！有受伤或设备损坏风险！**

若安置于不稳定的位置，则摄影机可能会掉落，并造成严重的伤害。

务必将摄影机安装于适当的支撑设备上。请按照说明中所描述的方法来安全地安装摄影机。

## 1.3 General Precautions / 般安全措施

***NOTICE***

Even rugged cameras use components sensitive to improper use.

Direct sunlight can result in camera housing temperatures above 60 °C (140 °F). At ambient temperatures above 25 °C (77 °F), protect the camera from direct sunlight.

Protect the optical system and sensor: Never point the camera or viewfinder into direct sunlight.

Avoid permanent sensor damage: Never let any direct light or reflections from high-energy light sources (e.g. laser beams) enter the camera's optical path.

Protect the sensor: Always keep a lens or protective cap on the empty lens mount. Change lenses in dry, dust-free environments only.

Always clean the sensor cover glass according to ARRI instructions. Instructions can be downloaded from the ARRI website in the ALEXA download section.

Only use the tools, materials and procedures recommended in this document. For the correct use of other equipment, see the manufacturer's instructions.

**提示**

即使本摄影机非常坚固，也是由敏感的组件所组成的，请谨慎使用。

当改变摄影机安装支撑设备或系统时（特别是更换电缆），请务必断开摄影机电源。

注意保护光学系统和影像传感器：切勿将摄影机或取景器直接面朝直射阳光。

避免对影像传感器造成永久性伤害：切勿让任何来自高能量光源（例如激光）的直射光或反 射光进入摄影机的光路系统。

注意保护影像影像传感器：空镜头卡口上务必安装镜头或保护盖。更换镜头时，务必在干燥、 无尘的环境中进行。

请完全并仅按照用户手册中所描述的方法来清洁影像传感器保护玻璃。若清洁不成功，请咨 询ARRI 维修中心。切勿尝试打开保护玻璃。

清洁影像传感器保护玻璃时，务必遵守ARRI说明书中描述的方法。

仅使用本文档中建议使用的工具、材料和操作方法。若要正确地使用其他设备，请参阅其制 造商的说明书。

# 2 Sensor Related Information / 有关影像传感器的信息

### Single Frame Spots of Various Shape – also known as “Digital Dust” or “White Flecks”

Natural and/or artificial radiation may cause a “false exposure” on the image sensor. The shape of these spots may vary from dots to lines or other, sometimes irregular shapes. These spots occur in random locations of the image, last only for a single frame and are more visible in dark images. This is a principle issue of all image sensors and not a malfunction.

### 单帧画面出现斑点，可能是多种形状——也被称为“数字尘埃”或“白斑”

自然和/或人工的辐射可能会引起影像传感器的非正常曝光。这些斑点的形状可能是点状、线状或其他不规则形状。

这些点可能会随机出现在画面的任何地方，仅持续一帧，并在画面暗部更易显现。这是影像传感器的工作原理导致的，并非故障。

### Flicker

Some light sources (i.e. discharge tubes or LEDs) may cause an interference with sensor exposure. This may result in image flickering or “bands” of different brightness moving up or down the image. Please note that at higher frame rates (100 fps in 50Hz countries, 120 fps in 60Hz countries) even tungsten light may flicker. A short recording and playback will show this flicker.

For information on how to reduce flicker when filming a monitor please see "Setting a Shutter Value".

### 频闪

有些光源（例如灯管或LED灯）可能会引起对影像传感器曝光的干扰。这会导致画面频闪，或者在画面里不同亮度、上下运动的条纹。

请注意在某些高帧率下（在50Hz国家拍摄100 fps，在60Hz国家拍摄120 fps），甚至钨丝灯也会发生频闪。拍摄并回放一个短视频可以检查这种频闪。

### Rolling Shutter

Due to the rolling shutter design principle of the sensor the following effects can be observed in certain situations:

- Skewed/slanted vertical lines: fast panning or fast-moving objects may result in vertical structures to appear "skewed/slanted”. The intensity of the effect depends on the relative speed of panning/object.
- Partial exposure: very short light effects (i.e. a photographer’s flash or strobe light) may result in the upper part of the image showing the light effect whereas the lower part does not or vice versa.

### 滚动快门

由于影像传感器的滚动快门工作原理，某些特定场合下会出现以下现象：

- 歪曲/倾斜的垂直线条：快速横摇或快速移动的物体会导致垂直线条呈现出“歪曲/倾斜”的状态。其程度取决对横摇/物体运动的相对速度。
- 不完整曝光：非常短的灯光效果（例如照相机闪光灯或频闪灯）会导致仅有画面的上半部分被照明而下半部分未被照明，反之亦然。

### "Black Sun"

Very bright lights (i.e. the sun, or a photographer's flash) may result in a black/ magenta spot. Note: pointing the camera directly into the sun may damage the sensor.

### "黑太阳"

非常明亮的光源（例如太阳，或照相机闪光灯）可能会成为黑色/洋红色的斑点。注意：将摄影机直接对准太阳可能会损坏影像传感器。

### Stuck Pixels at Long Exposure Times

At longer exposure times (longer than the standard 1/50th of a second), stuck pixels may become visible in darker image areas. The longer the exposure time the more pixels will be affected. When using exposure times longer than 1/24th of a second, carefully check your image whether the quality meets your requirements.

### 长曝光时间的驻留像素

在曝光时间较长时（比常规的1/50秒更长），画面中较暗的区域可能会出现驻留像素。曝光时间越长，这些像素会变得越多。当曝光时间长于1/24秒时，请仔细检查画面是否符合您的要求。

# 3 Audience and Intended Use

**NOTICE**

The product is solely and exclusively available for commercial costumers 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.

The AMIRA is a 35mm digital camera solely and exclusively for recording images at various resolutions suitable for a variety of distribution formats:

- ProRes 422 LT, ProRes 422, ProRes 422 HQ*, ProRes 4444*, ProRes 4444 XQ*, MPEG-2 HD 422 and ARRIRAW* codecs
- Rec 709 and Rec 2020 encoding (through use of look files), Log C or ARRIRAW* encoding
- CFast 2.0 card recording
- Up to 200 fps* in HD/2K with full image quality
- 35mm CMOS sensor
- EVF with OLED eyepiece
- Fold-away monitor for both live view and user interface access
- Ready out-of-the-box for single-user-centric workflow
- Slim, ruggedly built for high mobility

* Feature requires licensing.

# 4 Scope of Delivery and Warranty

**NOTICE**

Product and packaging contain recyclable materials. Always store, ship and dispose according to local regulations.

ARRI is not liable for consequences from inadequate storage, shipment or disposal.

## Delivery

On delivery, please check if package and contents are intact. Never accept a damaged/incomplete delivery. A complete delivery includes:

- AMIRA camera with lens mount according to order: PL, EF, B4
- Multi-viewfinder MVF-1 with AMIRA EVF cable
- Gold Mount or V-Lock battery adapter (if ordered)
- Camera handle with viewfinder adapter
- Four XLR connector caps (one spare; keep all four for later use)
- Four BNC connector caps
- WPA-1 or BPA-3 base adapter (if ordered)
- WiFi antenna
- Bluetooth antenna
- USB memory stick
- 3.0 mm Allen key
- Quick Guide
- Original packaging incl. drying agent

Usually, the camera comes fully assembled. In the unlikely case that a handle, viewfinder, adapter or antenna (etc.) is not assembled, see page 28 for instructions.

**NOTICE**

ARRI offers an increasing variety of product bundles and additional accessories.

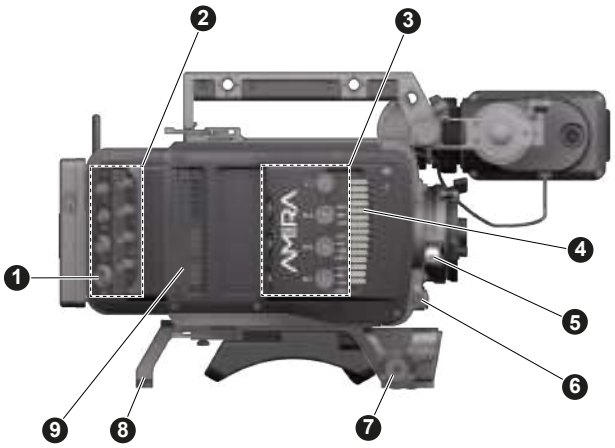
For details, please consult our website or your local ARRI Service Partner.

## Warranty

For scope of warranty, please ask your local ARRI Service Partner. ARRI is not liable for any consequences of inadequate shipment, improper use or third-party products.

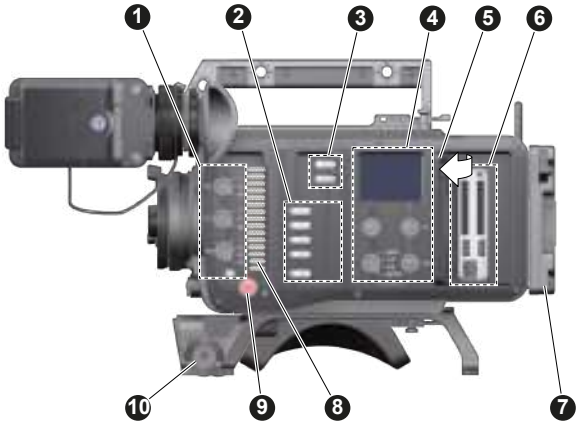
# 5 Camera Layout

## Camera Right



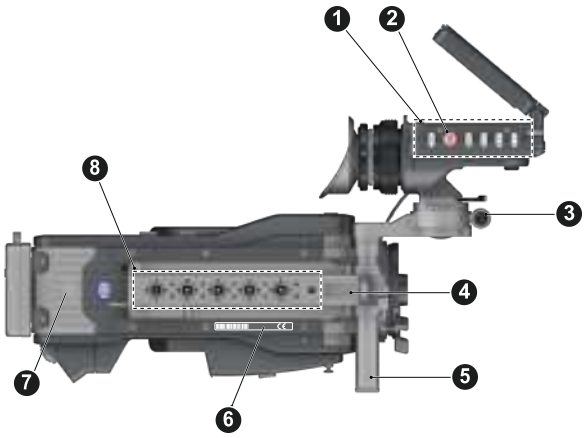

| | | | |
|---|---|---|---|
| **1** | BAT Main Power Connector | **6** | RS Connector |
| **2** | I/O Panel | **7** | WPA-1 Bracket Rosette |
| **3** | Audio Connector Panel | **8** | WPA-1 with Quick Release Connectors |
| **4** | Fan Intake | **9** | Fan Outlet |
| **5** | 12-pin Hirose for ENG type lenses | | |

## Camera Left



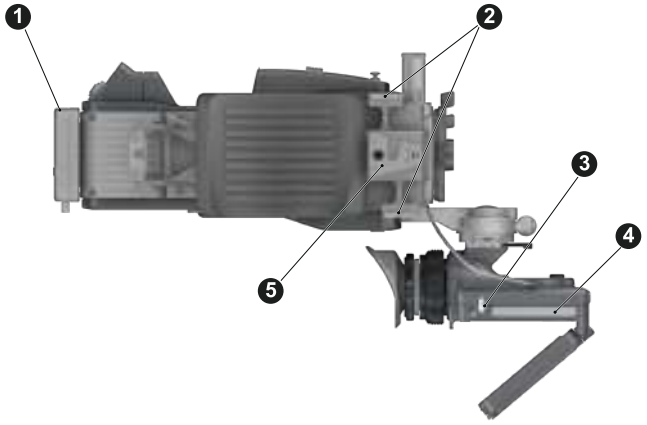

| | | | |
|---|---|---|---|
| **1** | Operator Panel | **6** | Media Panel |
| **2** | User Buttons 1-8 | **7** | Battery Adapter Plate |
| **3** | Power Button & Camera Lock | **8** | Fan Intake |
| **4** | Audio Control Panel | **9** | Recording Button |
| **5** | Media Lid | **10** | WPA-1 Bracket Rosette |

## Camera Top



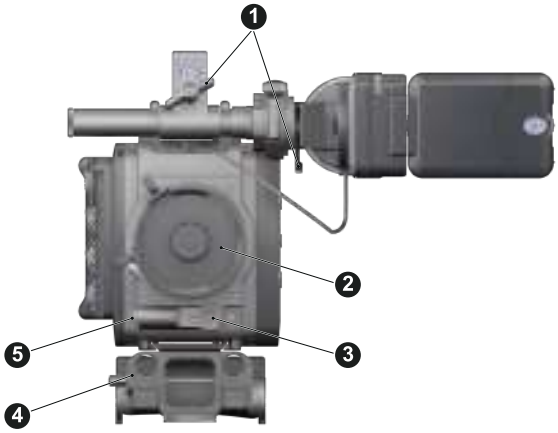

| | | | |
|---|---|---|---|
| **1** | MVF-1 Top Buttons | **5** | Adjustable Beam |
| **2** | MVF-1 Recording Button | **6** | Camera Type Label |
| **3** | Viewfinder Hinge with Clamp | **7** | Level |
| **4** | Accessory Shoe | **8** | 3/8" Accessory Threads on Camera Handle |

## Camera Bottom



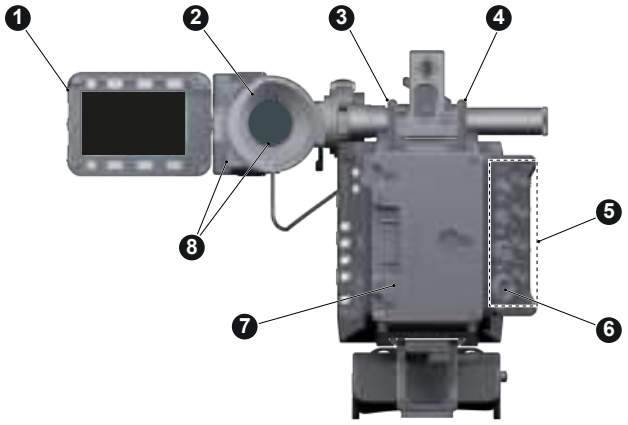

| | | | |
|---|---|---|---|
| **1** | Battery Adapter Plate | **4** | MVF-1 Type Label |
| **2** | Bracket Rosettes | **5** | WPA-1 Quick-lock Bracket |
| **3** | MVF-1 PLAY Button | | |

## Camera Front



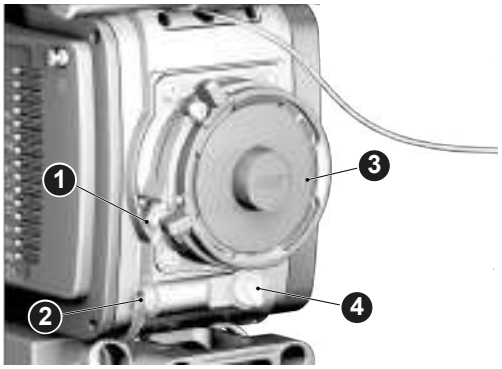

| | | | |
|---|---|---|---|
| **1** | Clamps | **4** | WPA-1 15mm Rod Receptacles |
| **2** | Lens Mount (here: PL Mount with Hirose Connector) | **5** | RS Connector |
| **3** | ND Filter Switch | | |

## Camera Back




| | | | |
|---|---|---|---|
| **1** | MVF-1 Fold-away Monitor | **5** | I/O Panel |
| **2** | Viewfinder OLED Eyepiece | **6** | BAT Main Power Connector |
| **3** | Bluetooth Antenna | **7** | Battery Adapter Plate (here: Gold Mount) |
| **4** | WiFi Antenna | **8** | Proximity Sensor for OLED Eyepiece |

## 5.1 Front Connectors & Switches




1 ENG 12-pin Hirose Connector
2 3-pin Fischer RS Connector
3 Lens Mount (PL mount with Hirose)
4 ND Filter Switch

### ENG (12-pin Hirose)

Supplies lens servos with power and provides access to lens servo functions.

### RS (3-pin Fischer)

This 3-pin Fischer socket supplies external accessories with 24 V power (2.0 A). It also carries a frame pulse output and accepts an ARRI remote start/stop trigger.

### ND Filter Switch

The ND filter switch controls the internal ND filter module. Filter densities of CLEAR, 0.6, 1.2 and 2.1 allow quick exposure changes and compensation over a range of seven stops.

## 5.2 I/O Panel

1 **BAT** Main Power Connector
2 **EXT** External Connector
3 D-Tap (optional)
4 **AUX** 12V Power Out
5 **SDI 1&2** SDI Outputs
6 **RET / SYNC IN** Connector
7 **TC I/O** Timecode Connector

### BAT (8-pin LEMO)

The BAT connector is the main power input of the AMIRA and accepts an input voltage range from 10.5 to 34 V DC.

### EXT (6-pin LEMO)

A multi-pin accessory connector for communication with various accessories, carrying two CAN buses and accessory power output at camera voltage level (2.0 A max.).

### D-Tap

A D-tap on the battery adapter supplies accessories with 12 V DC from the camera.

### 12V (4-pin Hirose)

Supplies 12 V auxiliary power with a maximum power of 2.0 A (combined output of 4-pin Hirose and 2-pin LEMO).

### 12V (2-pin LEMO)

Supplies 12 V auxiliary power with a maximum power of 2.0 A (combined output of 4-pin Hirose and 2-pin LEMO).

### SDI 1 & 2 (BNC)

Both SDI BNC connectors are carrying SDI signals in 1920 x 1080 (422 1.5G, 422 3G, 444 3G) as well as 3840 x 2160 (DL 422 3G, 422 6G, DL 422 6G).

### RET/SYNC IN (BNC)

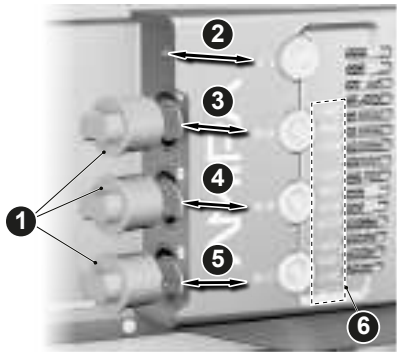
A BNC socket for Genlock input, or HD-SDI return image signal (configurable). Supports Black Burst signals, Tri-Level signals and HD-SDI genlock signals.

You can feed HD-SDI return signals from another image source to the camera RET connector. The signal must be a 1920x1080 422 1.5G SL according to SMPTE 274M and 292M. Via the camera menu, you can set the output routing of the RET in signal.

### TC I/O (BNC)

The TC connector is a BNC socket. It accepts and distributes LTC (Longitudinal Time Code) signals.

## 5.3 Audio Connector Panel




| | |
|---|---|
| **1** | Protective Caps |
| **2** | Headphone Out & Volume Control |
| **3** | **IN A** XLR 5-pin Audio Input |
| **4** | **IN B** XLR 3-pin Audio Input |
| **5** | **IN C** XLR 3-pin Audio Input |
| **6** | Input Signal Selector |

### Headphone Out

Headphone 3.5 mm stereo TRS (“Mini-jack”) output for monitoring audio channels.

### IN A (5-pin XLR)

XLR input for microphone signals (including 48V phantom power supply) and line level signals.

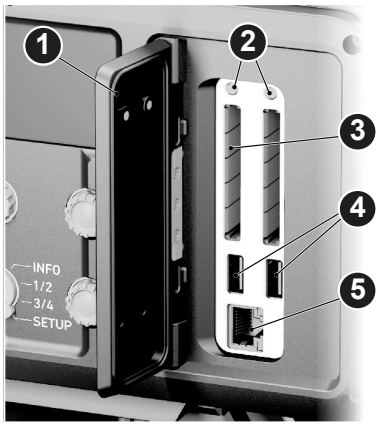
### IN B & C (3-pin XLR)

XLR input for microphone signals (including 48V phantom power supply), line level signals and AES3 digital signals.

**NOTICE**

Rubber caps protect the XLR connectors from dirt and moisture. Always cap unused XLR connectors.

## 5.4 Media Panel




| | |
|---|---|
| **1** | Media Lid |
| **2** | Card Status LEDs |
| **3** | CFast Card Slots A & B |
| **4** | USB Connectors 1 & 2 |
| **5** | Ethernet Connector |

### Card Status LEDs

The card status LEDs allow for a quick check of the card status:

| Status LED | Card State |
|---|---|
| Off | No card inserted |
| Green | Ready to record |
| Flashing red | Recording |
| Solid red | Not ready to record, card full or card invalid |

### CFast Card Slots A & B

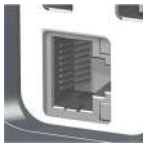
Storage media slots for CFast 2.0 recording cards.

### USB Connectors 1 & 2

Interface for USB memory sticks with FAT file system. The camera saves data such as user setups, frame grabs and system logs to the USB memory sticks. The USB ports can also be used to charge USB devices and supplies 5V with a maximum current of 500mA.

**Note:** Only one USB memory stick can be used at a time. Independent of the slot, the first stick connected becomes active. The other slot can still be used to charge a device.

### Ethernet Connector



RJ45 LAN interface for remote control of the camera, for multicam control and for service access.

## 5.5 Operator Panel

1 **US** User Switch
2 **EI** Exposure Index Switch
3 **WB** White Balance Switch
4 **AW** Auto White Balance Button
5 **REC** Recording Button & LED

The operator panel consists of the AW auto white balance button and three switches that offer quick adjustments to important camera parameters such as exposure index or white balance.

Each switch position can be assigned with an individual preset. See "Setting the User Switch Function" for full instructions.

### US Switch

The user switch can be assigned to control either FPS, SHUTTER or LOOK presets. Per factory default the user switch is not assigned (setting NONE).

### EI Switch

The exposure index switch offers quick access to three exposure index presets. The factory default presets for the three positions are 400, 800 and 1600 ASA.

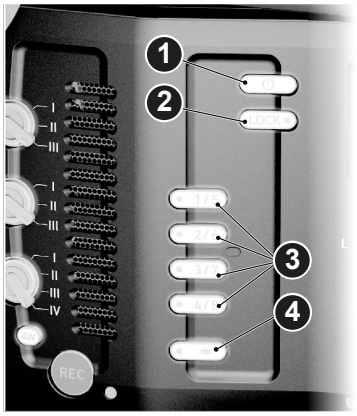
### WB Switch

The WB switch offers quick access to four white balance presets. The factory default presets for the four positions are 3200K, 4300K, 5600K and 7000K.

### AW Button

Press the AW button twice in one second to trigger automatic white balance calculation. Based on the camera's live image, AW calculates an automatic white balance and overwrites the active WB setting. The result is also stored as the preset value of the active WB switch position and in the first entry of the WB preset list.

## 5.6 User Buttons Panel




1 Power Button
2 Lock Button
3 User Buttons
4 SHIFT Button

### Lock Button

Press and hold the lock button to lock camera and viewfinder buttons. The camera menu offers a lock configuration defining which buttons and switches are affected by the camera lock.

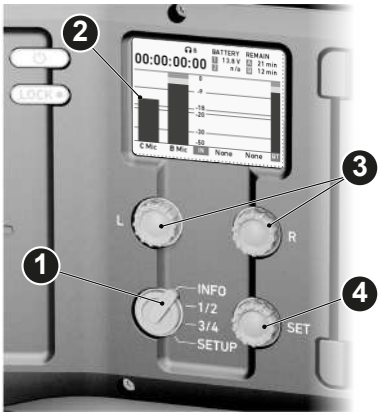
Please see "Lock Configuration" for full information.

### User Buttons & SHIFT button

Eight configurable user buttons offer quick access to frequently used functions. A blue LED indicates an active button function. Each button can be assigned with two functions, e.g. user button 1 becomes user button 5 when pressed in combination with the SHIFT button.

Please see "Assigning functions to camera user buttons" for full information.

## 5.7 Audio Control Panel




1 Audio Function Switch
2 Audio Display
3 **L** & **R** Gain Controls
4 **SET** Jogwheel

### Audio Function Switch

The audio function switch toggles the audio display between the *INFO* screen, the configuration screen for channels *1/2*, the configuration screen for channels *3/4* and the *SETUP* menu.

### Audio Display

A second display to the user monitor, the audio display offers full control over all audio settings. The content of the display depends on the position of the audio function switch.

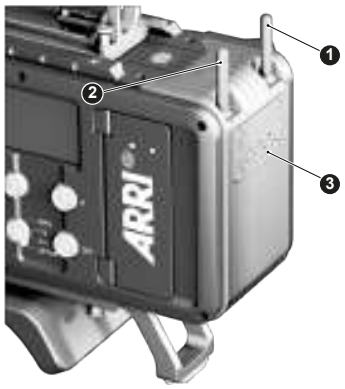
### L & R Gain Controls

Use the gain control dials to adjust the gain of the left and right audio channels.

### SET Jogwheel

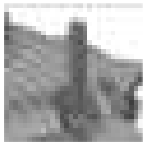
The jogwheel is used to modify settings within the audio display. Rotate the jogwheel to move through screen content, press the jogwheel to access settings and confirm changes.

## 5.8 Rear Connectors




1 WiFi
2 Bluetooth
3 Battery Adapter Mount

### WiFi



Connector for antenna for WiFi signal according to 802.11g. Used for remote camera access.

### Bluetooth

Connector for antenna for Bluetooth signal. Used for wireless audio monitoring and comment channel return with Bluetooth headset. Supports Handsfree and A2DP protocols.

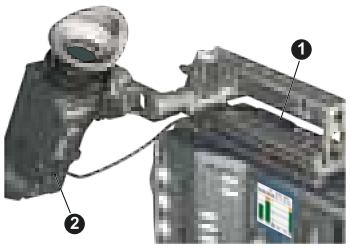
**NOTICE**

Bluetooth usage has been disabled for all cameras sold to and used in mainland China due to certification issues of the Bluetooth module.

### Battery Adapter Mount

The camera can be equipped with an adapter plate for either V-Lock or Gold Mount batteries.

## 5.9 Product Identification




CE type labels with serial number are on the camera top (1) and on the bottom of the viewfinder (2). The serial number consists of the last 5 digits of the equipment number K1.71700.0-XXXXX. An FCC conformity label can be found on the bottom of the camera.

# 6 Getting Started

The next section gives you information on the basics of how to prepare the camera for use.

## 6.1 Camera Preparation

The following chapters provide information on how to attach commonly used accessories to the camera. ARRI offers a wide range of electronic and mechanical accessories, please see our Camera and Accessories Configuration Overviews.

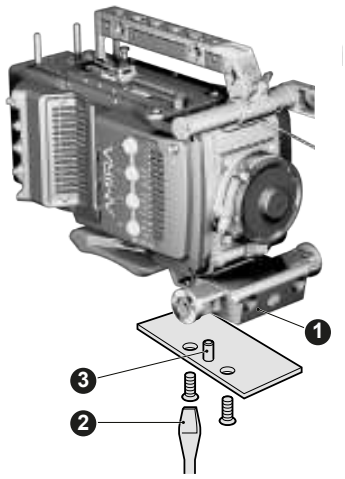
**NOTICE**

To avoid damage while assembling and retrofitting, always place the camera on a padded, firm, flat and level surface.

### 6.1.1 Mounting the Camera to a Bridge Plate

**Required Tools**

- Flat screwdriver

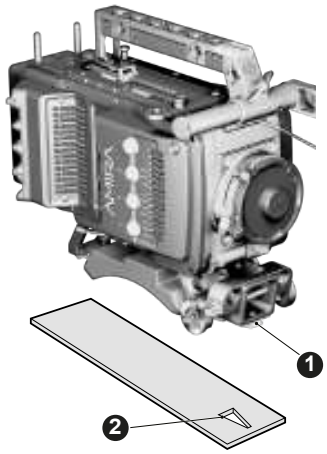



1. For mounting to a bridge plate, use the BPA-3 bridge plate adapter.
2. Place the bridge plate unter the adapter (1).
3. Adjust the bridge plate's nose (3) to the adapter's aperture.
4. With a flat screwdriver, attach the screws to the adapter and tighten (2).
5. **Note:** Always ensure a proper lock.

**NOTICE**

Always use a flat screwdriver to connect the BPA-3 to a bridge plate. Never use a coin. A coin does not deliver enough force to ensure a proper lock.

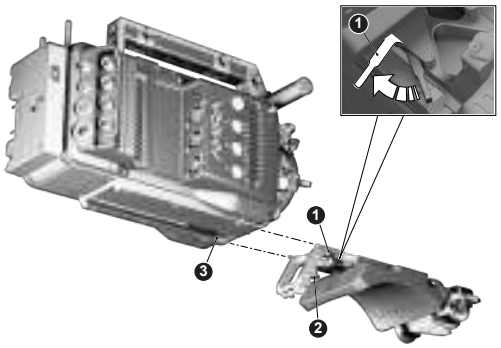
## 6.1.2 Mounting the Camera to a Wedge Plate




1. For mounting to a wedge plate, use the WPA-1 wedge plate adapter.
2. Open the quick-release base plate.
3. Place the adapter (1) into the quick-lock plate slighty behind the connection points.
4. Slide the camera forward until the quick-lock audibly locks (2).
5. **Note:** The lock must be closed.

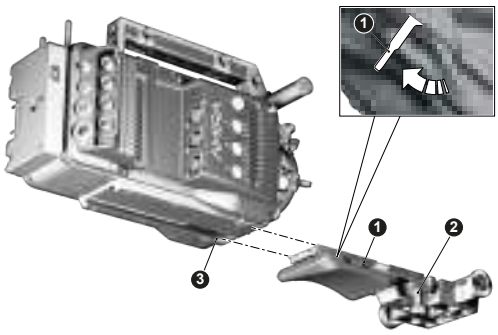
## 6.1.3 Mounting and Unmounting a Base Adapter Plate

### Mounting (here: Wedge Plate Adapter WPA-1)



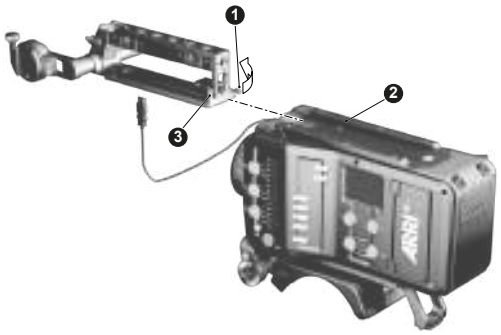

1. Open the clamp (1).
2. Slide the adapter under the camera (3).
3. **Note:** The safety pin (2) must audibly lock.
4. Close the clamp (1).

### Unmounting (here: Bridge Plate Adapter BPA-3)




1. Open the clamp (1).
2. With the safety pin pulled (2), slide the adapter off the camera (3).

### 6.1.4 Mounting and Unmounting the Camera Handle

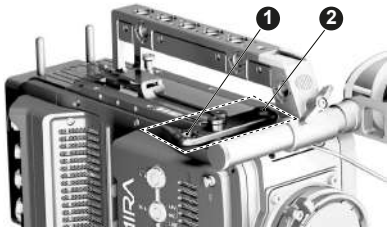



1. Open the clamp (1).
2. Slide the handle onto the camera (2).
3. **Note:** The safety pin (3) must audibly lock.
4. Close the clamp (1).
5. **To unmount:** Open the clamp (1).
6. With the safety pin pulled (3), slide the handle off the camera (2).

### 6.1.5 Mounting and Unmounting the Microphone Bracket MHB-2

**Required Tools**

- 3.0 mm Allen key



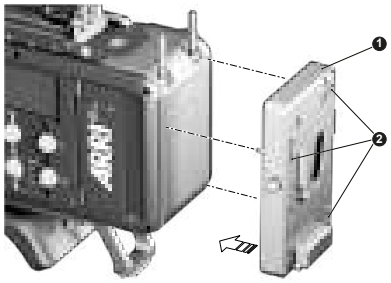

1. With a 3.0 mm Allen key, attach the microphone bracket (1) to the handle (2).
2. **To unmount:** Loosen the screw (2); remove the bracket (1).

### 6.1.6 Mounting and Unmounting a Battery Adapter

**Required Tools**

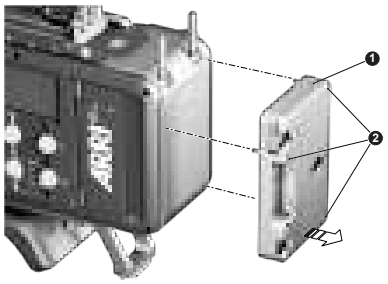
- 2.5 mm Allen key

**Mounting (here: V-Lock Battery Adapter)**




1. Switch off; interrupt the power supply.
2. Pin the battery adapter (1) to the camera.
3. With a 2.5 mm Allen key, fasten all three screws (2) handtight until the adapter fits tightly.

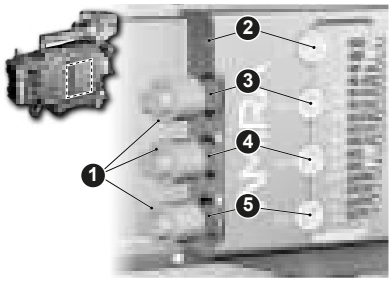
### Unmounting (here: Gold Mount Battery Adapter)



1. Switch off; interrupt the power supply.
2. With a 2.5 mm Allen key, unfasten all three screws (2).
3. Remove the battery adapter (1).

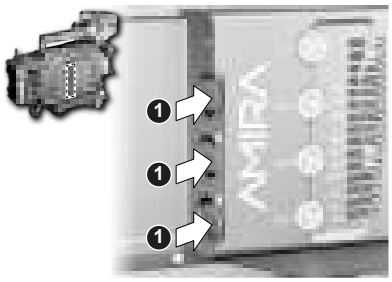
## 6.1.7 Connecting and Disconnecting Audio Devices

### Connecting Audio Devices



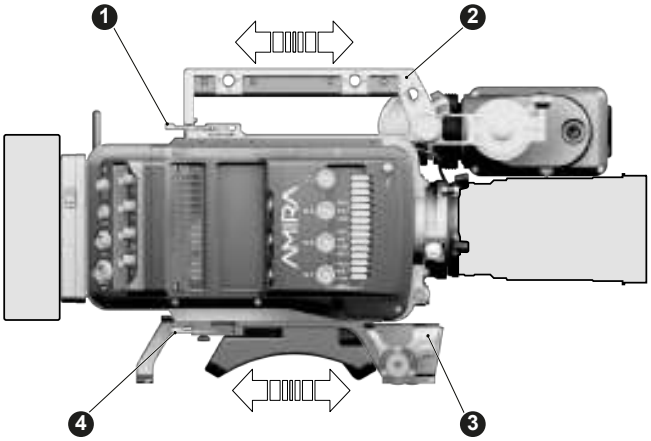
1. Uncap the needed connectors only (1).
2. Connect the headphone (2).
3. Set the headphone volume by turning the wheel (2).
4. Alternatively, you can use the *SET* wheel on the camera's left. See "Adjusting the Headphone Volume", page 130.
5. Via switches (3 to 5), select the appropriate setting for your audio device:
   - *48V:* Analog microphone level signals with phantom power supply
   - *MIC:* Analog microphone level signals
   - *LINE:* Analog line level signals
   - *AES3:* Digital AES/EBU signals
6. Connect each device (3 to 5) until the connector audibly locks.

### Disconnecting Audio Devices



1. Press the *PUSH* button to unlock (1).
2. Remove the cable by pulling on the connector.
3. Replace with another cable.
4. Or: Cap the connector for protection.

### 6.1.8 Balancing the Camera




1. Unlock (4) and slide the base adapter (3) until the camera is balanced.
2. Close the clamp (4).
3. Unclock (1) and slide the handle (2) until the camera is balanced.
4. Close the clamp (1).

## 6.2 Power Supply

The AMIRA accepts an input voltage range from 10.5 to 34 V DC. The camera can be powered through the 8-pin LEMO BAT connector located at the back of the camera or through a battery adapter plate. Do not supply power outside the specified voltage range.

You can use a KC50-S (K2.75007.0) or KC50-SP-S (K2.0001275) power cable or one of the various on-board adapter plates for V-mount and Gold Mount batteries to supply the camera with power.

The camera will display a warning message as soon as the supply voltage drops below a defined value.

If the power supply is interrupted with the camera switched on, the camera will automatically repower and boot-up on reconnection.

**NOTICE**

For maximum operation time, always use fully charged batteries with 10.5 to 34 V DC (50 W minimum).

Always keep the BAT connector accessible so that the cable can be unplugged quickly in case of emergency. Do not use power cables longer than 4m.

### 6.2.1 Powering Auxiliary Devices via the Camera

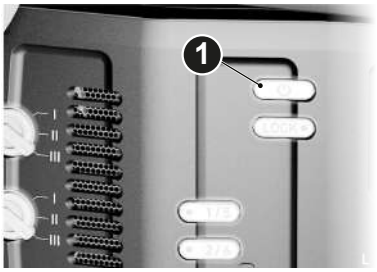
You can supply power to auxiliary devices from the camera using several connectors (2.0 A max):

- **12 V** via 2-pin LEMO connector, 4-pin Hirose connector or via the D-tap connector on the battery adapter

- **24 V** via the RS connector
- **Camera voltage** via the EXT connector

**Note:** For connector pin-out information, see appendix. When the power supply level is critical, the camera switches off all auxiliary power supplies first.

## 6.2.2 Switching On and Off




The power button (1) is located on the user panel on the left side of the camera.

### Switching On the Camera

► Press the power button (1).

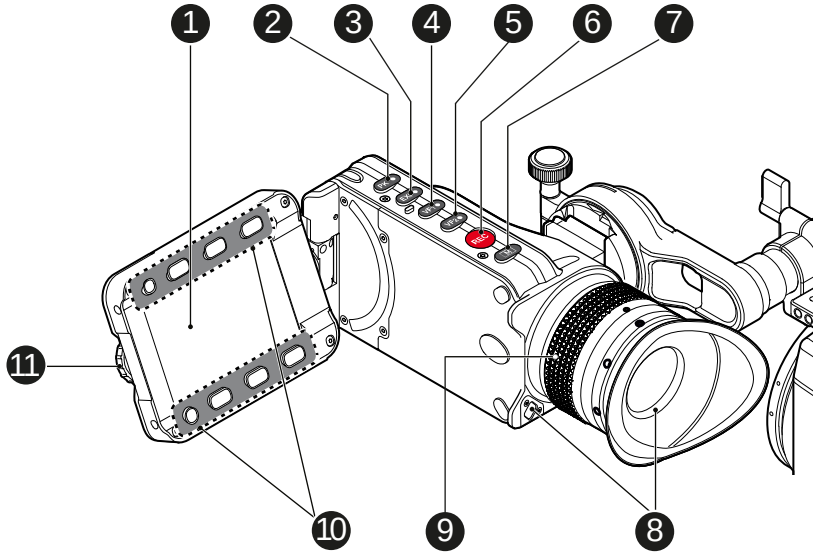
The camera starts booting. While the camera is booting up, the ARRI logo is shown in the monitor of the MVF-1 and the CCP-1 (if connected) and an AMIRA logo is shown on the audio display.

### Switching Off the Camera

► Press and hold the power button (1) until the camera has switched off.

On the monitor of the MVF-1 and CCP-1 as well as in the viewfinder and the SDI outputs, a countdown appears while you press and hold the power button. On reaching zero, the camera switches off.

## 6.3 Multi Viewfinder MVF-1




| | | | |
|---|---|---|---|
| **1** | User Monitor (Live & UI) | **7** | **M** Monitor Button |
| **2** | **PK** Peaking Button | **8** | Proximity Sensor |
| **3** | **EXP** Exposure Tool Button | **9** | Diopter Adjustment |
| **4** | **VF-1** User Button | **10** | Screen Buttons |
| **5** | **VF-2** User Button | **11** | Jogwheel |
| **6** | **REC** Recording Button | | |

### User Monitor (Live View and User Interface)

The 3.2" fold-away 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. Use the monitor button (7) to toggle between live view and user interface.

### PK (Peaking Button)

The peaking button activates and deactivates the peaking tool on the viewfinder and the monitor.

### EXP (Exposure Tool Button)

The EXP button activates and deactivates the exposure tool for the viewfinder and the monitor.

### VF-1 and VF-2 User Buttons

The MVF-1 has two user buttons, VF1 and VF2 (4, 5). You can assign frequently used functions to each button.

### REC Button

The recording button starts and stops recording to the CFast 2.0 card. With no CFast 2.0 card inserted, the button is inactive.

### M (Monitor Button)

Press the M (Monitor) button (7) to change the monitor mode between live view and user interface.

### Proximity Sensor

This infrared sensor automatically deactivates the MVF-1's internal OLED panel when you withdraw your eye. The sensor is placed either on the bottom left-hand side of the viewfinder (generation 1), or it is integrated into the eye cup (generation 2).

### Diopter Adjustment

With the camera switched on and looking into the viewfinder, twist the ring (9) left or right to adapt the viewfinder image to your visual acuity. The diopter adjustment can compensate from -5 to +5 diopters.

### Screen Buttons

The functionality of the screen buttons (10) depends on the monitor mode. With the monitor in live view mode, press the lower screen buttons to toggle the status bar content. When the monitor is set to show the user interface, the screen buttons give quick access to main camera settings and allow for various other adjustments in the camera menu.

### Jogwheel

Using the jogwheel (11), you can scroll or navigate through lists and menus to change and confirm settings.

### PLAY Button

The PLAY button is located on the bottom side of the MVF-1. Press and hold the PLAY button for two seconds to start in-camera playback from the CFast 2.0 card.

**NOTICE**

Constantly covering the proximity sensor of the MVF-1 can cause an irreversible burn-in on the viewfinder OLED display. If you need to cover the viewfinder, please disable the EVF OLED first using the EVF power setting:

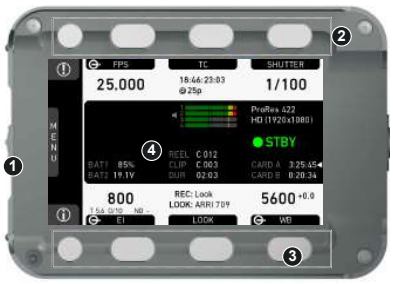
*MENU > Monitoring > EVF/MONITOR > Settings > EVF Power*.

**NOTICE**

Heated Eyecup HE-6 is not compatible with the MVF-1 viewfinder. When using the heated eyecup HE-6, the proximity sensor that activates the OLED display will always be covered. In this state, the OLED display will not switch off when not in use, this can cause an irreversible burn-in on the OLED display.

Please use the Heated Eyecup HE-7 instead. This is compatible with all MVF-1 viewfinders starting with serial number 2151, or viewfinders with the eyepiece upgrade installed (proximity sensor is located at the eyepiece).

## 6.3.1 User Monitor




| | |
|---|---|
| **1** | Jogwheel |
| **2** | Upper Screen Buttons |
| **3** | Lower Screen Buttons |
| **4** | HOME Screen |

The MVF-1 user monitor has eight screen buttons, four above (2) and four below (3) the screen (4). Their function depends on the screen content and is labeled directly above or below each button. Unlabeled buttons do not have a function for that screen. A grayed-out label indicates that the function is currently not available. Using the jogwheel (1), you can do the following:

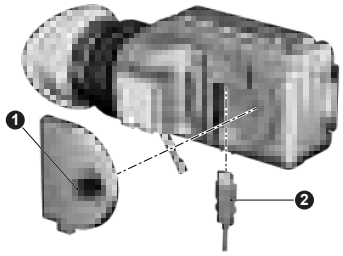
- Scroll or navigate through lists and menus
- Change values (by scrolling up or down)
- Access and confirm settings (by pressing the jogwheel)

## 6.3.2 Connecting the MVF-1

### Required Tools

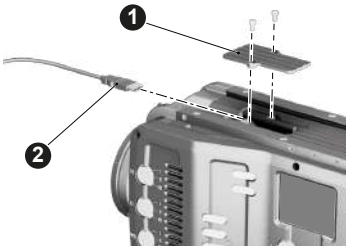
- 2.0 mm Allen key

### Connecting the EVF Cable to the MVF-1



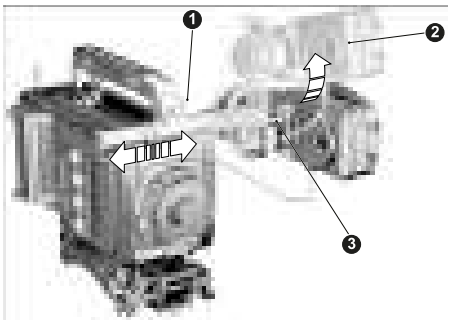

1. With your fingers, unscrew and remove the viewfinder's lid (1).
2. Connect the viewfinder cable (2) to the EVF port.
3. Or: Disconnect the cable (2).
4. Reattach the lid (1).

### Connecting the EVF Cable to the Camera




1. Place the camera bottom-down.
2. Remove the camera handle.
3. With a 2.0 mm Allen key, unscrew and remove the lid (1).
4. Connect the viewfinder cable (2) to the EVF port.
5. Reattach lid (1) and camera handle.

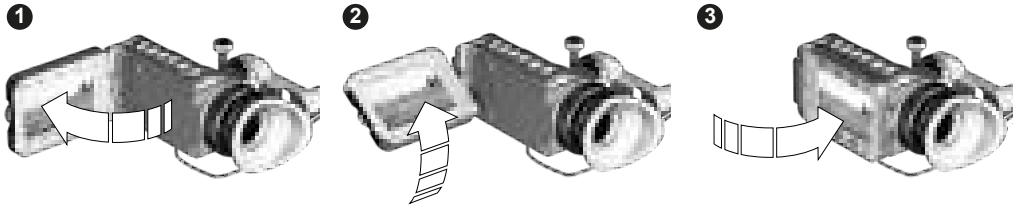
## 6.3.3 Adjusting the Viewfinder




1. Slightly loosen the clamp (1) to move the viewfinder (2) left/right and up/down.
2. Unclamp the hinge (3) to swivel the viewfinder horizontally.
3. Close all clamps (1, 3) when the viewfinder is in the desired position (2).

## 6.3.4 Adjusting the Monitor

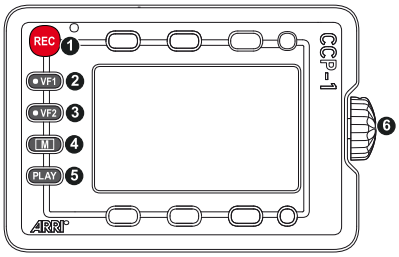
The 3.2" monitor of the MVF-1 is a fold-away monitor with an up-and-down tilt function.




► Fold out (1), swivel (2) and fold in (3) the monitor to put the display visible in the folded-in position.

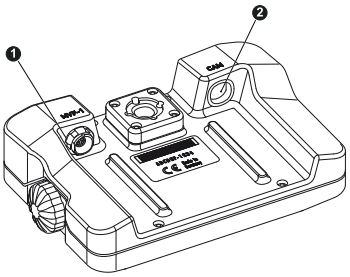
## 6.4 Camera Control Panel CCP-1

The Camera Control Panel 1 (CCP-1) is a standalone control panel, containing the display and a subset of the buttons of the MVF-1. Like the MVF-1, it can display the camera's live image or the main user interface, and the buttons reflect the behavior of the equivalent buttons of the MVF-1. It can be used as the only control panel or with a MVF-1 daisy-chained to it.




| | |
|---|---|
| **1** | **REC** Recording Button |
| **2** | **VF-1** User Button |
| **3** | **VF-2** User Button |
| **4** | **M** Monitor Button |
| **5** | **PLAY** Button |
| **6** | Jogwheel |

### Connecting the CCP-1




| | |
|---|---|
| **1** | MVF-1 Connector |
| **2** | CAM Connector |

Connect the CCP-1 CAM connector with the HDMI connector on camera top side, located underneath the camera handle.

When it is used alone with the camera, the CCP-1 always shows an image.

When a MVF-1 is daisy-chained to the CCP-1, the MVF-1 will show an image in the EVF, but only one of the two monitors, either of the MVF-1 or the CCP-1 is active.

If the monitor of the MVF-1 is closed, the CCP-1 is activated.

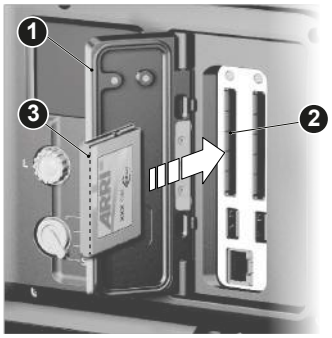
If the monitor of the MVF-1 is opened, the monitor will be activated.

- Activate the MVF-1 by pressing a screen button on the MVF-1.
- Activate the CCP-1 by pressing any button except the *REC* button on the CCP-1.

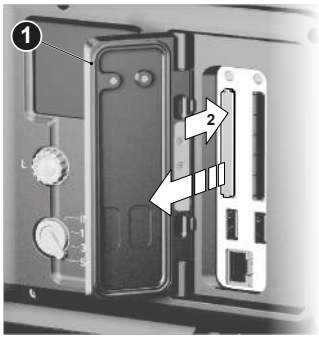
## 6.5 Media Usage

The following chapter explains how to insert and remove CFast 2.0 cards and USB sticks.

### 6.5.1 Inserting and Removing a CFast 2.0 Card




1. To insert the card, open the media lid (1).
2. Align the card's positive edge (3) facing the camera rear.
3. With the contact pins first, gently insert the card until it audibly locks (2).
4. Close the lid gently (1). **Never** force it closed on an unlocked card.




1. To remove the card, open the media lid (1).
2. Gently push on the card until it audibly unlocks (2).
3. Remove the card.

A list of supported CFast 2.0 cards can be found in the appendix of this document.

**NOTICE**

AMIRA does not accept ALEXA-formatted CFast 2.0 cards, and vice versa.

Before using a CFast 2.0 card with AMIRA, you **must** erase it in-camera to create the required file system.

Avoid damage to the contacts of both camera and card. Always insert cards as described in this document.

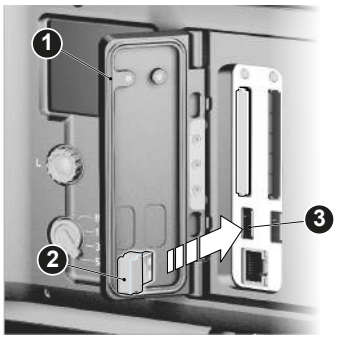
Never change memory cards when recording - this may damage the recorded clip.

### 6.5.2 Inserting and Removing USB Medium

The AMIRA saves data such as user setups, frame grabs and system logs to an USB memory stick. Firmware, additional frame lines and ARRI Look File 2 files are loaded onto the camera from the USB memory stick. The two USB slots are located below the CFast 2.0 card slots. To access the USB slot, open the media lid.

The USB memory stick needs to be FAT-formatted and requires a special folder structure in order to work with the camera. This folder structure can be prepared in camera and the folder preparation will not alter existing folders and files on the USB medium.

The USB icon in the status section on the HOME screen of the user interface reflects the USB medium status (useable, read/write, write-protected, invalid).




1. Open the media lid (1).
2. Connect a FAT-formatted USB stick (2) to the camera's USB slot (3).

You can remove the stick from the camera without unmounting it.

For information on preparing the ARRI folder structure on the USB memory stick for use with the camera, see "Preparing USB Medium", page 82.

**NOTICE**

The camera only supports USB memory sticks or pendrives, FAT-formatted with MBR partition table and with a maximum capacity of 16GB. Hard drives or similar can not be recognized.

## 6.6 Lens Mounts and Internal FSND Filters

### Lens Mounts

The AMIRA is equipped with an interchangeable lens mount allowing the use of PL lenses, EF lenses or B4 lenses.

The Titanium PL LDS mount with LBUS connector supports a variety of LBUS devices such as cforce-type lens motors. Fits both, ALEXA Mini and AMIRA, but only ALEXA Mini supports the LBUS connector.

The PL LDS mount with Hirose connector includes a 12 pin Hirose connector for ENG style lenses and can be used with a huge variety of PL lenses.

With the EF mount, users can benefit from the huge range of available EF mount stills lenses, electronically controlling the iris and focus in these lenses through the camera's user interface or accessories like the ARRI Master Grips.

B4-type lenses with an integrated servo module gain support for the auto iris function, while one other servo button can also be used as an assignable user button.

All lens mounts can be used on AMIRA and ALEXA Mini.

1 PL LDS lens mount for PL mount lenses (K2.0001107). Includes 12pin Hirose connector for ENG style lenses.
2 EF Lens Mount with interface for iris control (K2.0001103).
3 B4 lens mount with optical, mechanical and electronic interfaces for B4 mount lenses (K2.0001237).
4 PL to B4 Lens Adapter (K2.0001238). A mechanical and optical adapter that allows the use of B4 mount lenses on cameras with a PL mount.

### Lens Data System (LDS)

ARRI's Lens Data System (LDS) comprises a range of products generating highly accurate lens metadata for use on set and in post. When using an LDS lens on AMIRA's LDS mount, lens data about iris, focus and zoom positions is visible in the viewfinder and all lens data will be embedded in the recorded QuickTime files. The lens data can also be displayed as part of the status information.

For more information about the Lens Data System please visit our Lens Data System FAQs webpage.

### Cooke /i support

The camera supports the Cooke /i protocol for lenses running firmware versions according to the following table.

| Lens type | FW version |
|---|---|
| S4 /i Prime lens (10-bit) | 0.29 or higher |
| S4 /i Prime lens (12 bit) | 0.39 or higher |
| S4 /i Zoom lens (10 bit) | 1.29 or higher |
| S4 /i Zoom lens (12 bit) | 1.39 or higher |

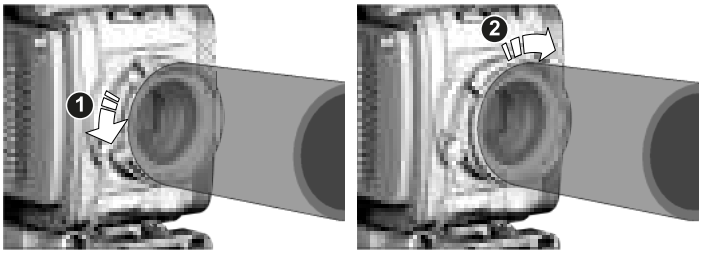
The firmware version can be retrieved from the lens with the *Cooke Viewer Lens Display* program. For detailed information, please contact Cooke Optics directly.

### Internal FSND Filters

The AMIRA has a built-in motorized and sealed filter stage for Full Spectrum Neutral Density filters (FSND) with densities of 0.6, 1.2 and 2.1 (and an optical clear filter). 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 reduction over the whole spectrum.

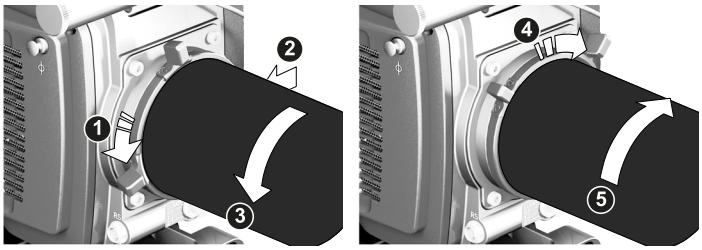
## 6.6.1 Changing a Lens

### PL Mount Lenses




1. Observe maximum lens dimensions.
2. To remove a lens (or a lens port cap), rotate the two bayonet levers of the lens mount anti-clockwise (1) as far as possible while grasping the lens firmly. Then carefully slide the lens out of the port.
3. To fit a lens, align the notch in the lens flange with the index pin on the mount, keeping the lens rotated into a position where the lens markings are visible from either side of the camera.
4. Gently press the lens flange flat onto the lens mount.
5. Rotate the two bayonet levers clockwise (2) until the lens is seated properly and locked securely. Do not use any force!

### EF Mount Lenses




1. To remove a lens (or a lens port cap), rotate the two bayonet levers of the lens mount anti-clockwise (1) as far as possible while grasping the lens firmly.
2. Press and hold the button (2) to unlock the lens.
3. Turn the lens (3) counter-clockwise, then remove it.
4. To fit a lens, align the red dots of both lens and lens mount. Then gently push the lens into the mount.
5. Turn the lens clockwise (5) until the bayonet locks.
6. Turn the two bayonett levers clockwise (4) to tighten the lens to the lens mount.

**NOTICE**

Protect the sensor: Always keep a lens or a lens cap on the empty lens mount.

Change lenses in dry, dust-free environments only.

Never exceed the maximum lens dimensions.

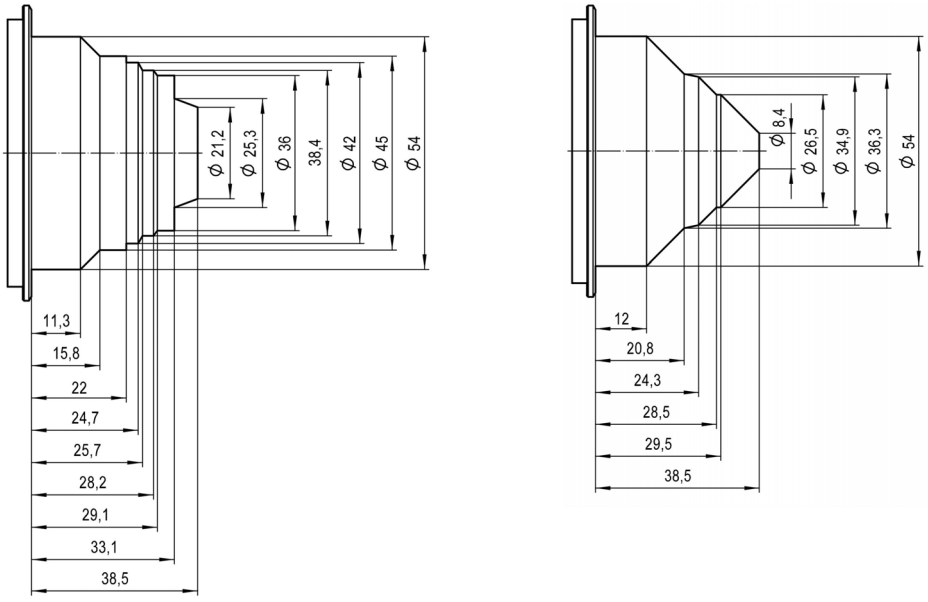
Have every lens properly shimmed as prescribed by the manufacturer.

### Lens Support

Heavy lenses (above 3kg/6.6lbs) require additional lens support. Using a lens support guarantees that the weight of the lens will not influence the flange focal depth and reduces stress on the lens mount. ARRI offers a wide range of lens supports for 15mm and 19mm studio rods.

## 6.6.2 Maximum Lens Mounting Depth

To avoid damage or injury when using PL mount lenses, use only lenses that do not exceed the following dimensions (left: 35mm PL mount lenses, right: S16mm PL mount lenses):




**NOTICE**

Risk of damage and injury from improper lenses!

To ensure maximum allowable lens mounting depth, and to avoid damage or injury, always shim your camera correctly.

PL mount lenses with more than 38.50 mm mounting depth might damage internal filters and the camera. Shards from broken filter glass might cause injury. Always check the lens mounting depth before mounting or changing a lens.

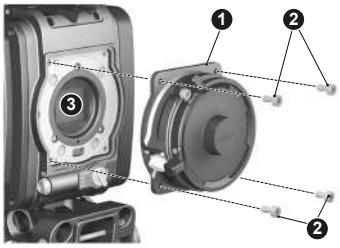
## 6.6.3 Changing the Lens Mount

The AMIRA's interchangeable PL lens mount can be easily replaced, allowing the use of B4 video and EF mount lenses.

### Required Tools and Precautions

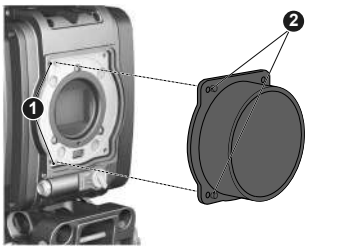
- 3.0 mm Allen key
- Camera switched off and power source disconnected
- Lens removed and properly stored
- Make sure to protect all optical surfaces when changing a lens mount

## Deinstalling a Lens Mount (here: PL Mount)

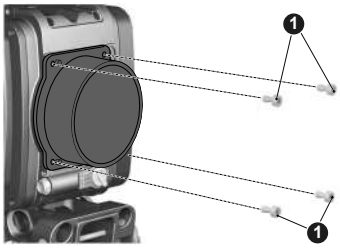



1. Crosswise, loosen all four screws (2) with an Allen key.
2. Carefully remove the mount (1).
3. Store the mount in a case for dust protection.
4. **Note:** To protect the sensor (3), immediately install another original lens mount.

## Installing a Lens Mount




1. Properly align the two guiding pins (1) for correct lens mount fit (2).




2. Crosswise, hand-tighten all four screws (1).
3. Only then, tighten all screws crosswise with the Allen key.

**Note:** Always store the camera with a lens mount properly installed and capped.

**⚠ WARNING!**

**Condensation! Risk of electric shock and damage!**

Humidity may ingress due to misinstalled lens mounts!

When installing a lens mount, always align and attach properly; never apply force.

Hand-tighten all screws crosswise before final tightening.

Always tighten crosswise with the prescribed tool.

**⚠ DANGER!**

**High voltage! Risk of electric shock and fire!**

Short circuits may entail lethal injury and damage!

Use original ALEXA-Mini or AMIRA lens mounts only.

Before each lens mount change, always switch the camera off and disconnect all power sources.

Changing the lens mount while the camera is powered may permanently damage the camera and lens mount.

Protect sensor and electrical system: Always store the camera with a lens mount properly installed and capped.

Immediately replace each lens mount after removal.

Change lens mounts in dust-free environment only.

**NOTICE**

After each lens mount change, always check the back focus of the camera.

Have the back focus always corrected by properly skilled personnel.

Back focus correction requires special tools and training that meet ARRI guidelines.

For all back focus issues, contact a qualified ARRI Service Center.

### 6.6.4 Lens Iris Control

You can control the lens iris with EF lenses and ENG-style lenses (B4 and PL). You can control the iris via the auto iris feature or manually via user buttons, the camera menu (EF lenses only) or with the ARRI Master Grips.

For more information, see

- "Adjusting the Iris (EF lenses) Manually", page 63
- "Defining the Auto Iris Calculation", page 63
- "User Buttons", page 123
- "EF Lens Support", page 44

### 6.6.5 EF Lens Support

With the EF mount the camera supports a wide range of EF lenses from Canon, Sigma, Zeiss and other manufacturers.

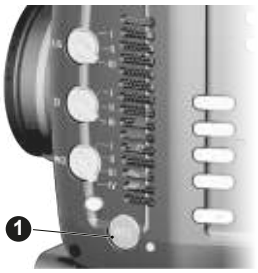
Apart from the common features for controlling lenses, the camera also supports the following features:

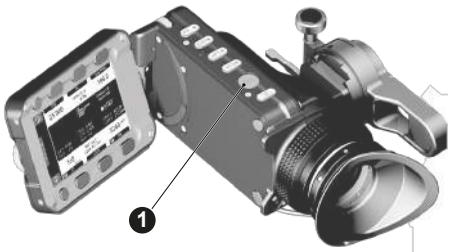
- Image stabilization
  The lens image stabilizer for EF lenses is supported.
- Iris and focus control
  If you are using the Wireless Compact Unit WCU-4 or Master Grips from the ARRI Electronic Control System (ECS) range, you can control EF lenses as follows:

| Axis | Master Grip | WCU-4 |
|---|---|---|
| **Iris** | X | X |
| **Focus** | X | |

## 6.7 Starting Recording via REC button

The REC button (1) is located on the left side of the camera, on the MVF-1 and the Camera Control Panel CCP-1. The camera status LED (2) next to the REC button reflects the camera's status. Recording can only be started with a valid CFast card inserted.



| Camera Status LED state | Camera State |
|---|---|
| Solid green | Ready for recording |
| Solid red | Recording, Pre-recording |
| Off | Idle and not ready for recording (CFast card is full, no CFast card is inserted or CFast card is not valid). |
| Flashing red/green | Camera is in an error state. |

**NOTICE**

Pressing the record button returns the MVF-1 user interface to the home screen and disables the menu access.

Recording disables the *US* switch and the home screen buttons for *FPS, TC, Shutter,* and *Look* settings.

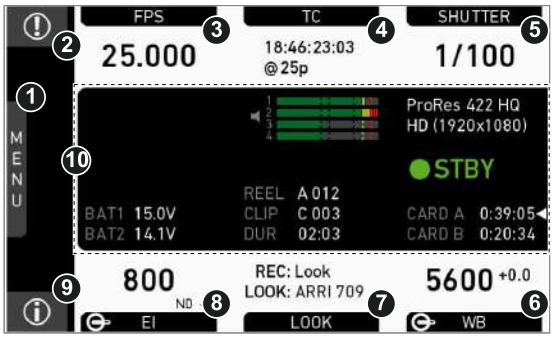
Connecting or disconnecting devices or cables while recording can disturb the audio/image signal due to static electricity.

# 7 Home Screen and Camera Menu

The AMIRA provides many parameters to customize the camera to suit your shooting needs. The most important parameters are shown and can be modified using the home screen. All other parameters can be modified using the menu.

## 7.1 Home Screen

The HOME screen is the AMIRA's default screen. It shows the most important camera parameters and gives quick access to changing them through the screen buttons:




| | |
|---|---|
| 1 | **MENU** Button/Access |
| 2 | **ALERT** Screen |
| 3 | **FPS** Frame Rate Settings |
| 4 | **TC** Timecode Settings |
| 5 | **SHUTTER** Settings |
| 6 | **WB** White Balance Settings |
| 7 | **LOOK** Settings |
| 8 | **EI** Exposure Index Settings |
| 9 | **INFO** Camera Info Screens |
| 10 | Status Section |

### MENU

While the monitor is showing the HOME screen, press the jogwheel to access the camera menu.

### ALERT Screen

The ALERT screen communicates critical system states to the user. They require immediate attention and remain active until the state returns to normal. A red exclamation mark, visible on the home screen, the monitor, EVF and SDI overlays (if active) indicates active alert messages, press the round '!' button to read them.

### FPS Sensor Frame Rate Setting

FPS shows the sensor frame rate, allowing adjustments from 0.75 to 100 fps (200 fps with valid license).

**Note:** The maximum frame rate is dependent on the recording resolution and the codec.

**Note:** The switch icon in the black label is only shown if the *US* user switch is set to *FPS*.

**Note:** If the sensor fps does not match the project rate, the FPS label turns orange and shows an exclamation mark.

### TC Timecode Settings

Shows the current timecode value and the active project rate, allows adjustment of timecode format and values.

**Note:** If timecode is forced to Rec Run, or external timecode is missing, the TC label turns orange and shows an exclamation mark. Enter the timecode screen by pressing the TC button to see more information on the warning.

### SHUTTER Settings

Sets the shutter angle of the sensor. Shutter angle and sensor FPS determine exposure time of the sensor in seconds by the following equation: angle / (360 * FPS). Shutter unit can be set to display settings either as angle (5.0° to 356.0°) or exposure time (1s to 1/8000s). The maximum shutter angle is limited by the resulting exposure time (1s max).

**Note:** The switch icon in the black label is only shown if the *US* user switch is set to *SHUTTER*.

### WB White Balance Settings

Sets the camera's white balance. This is the color temperature of the light source that the camera is currently adjusted for. In addition to the red/blue correction of the white balance, the ALEXA Mini can also compensate for a green/magenta tint. This value, called CC (color compensation), is shown as an exponent of the WB value. Positive values are marked with a "+" and negative values with a "-".

You can adjust WB from 2,000 to 11,000 Kelvin (here: 5,600) in steps of 10 K for red/blue correction. You can also color-compensate for green/magenta tints in a range from -16.0 to +16.0. Positive or negative CC color compensation values then appear in superscript (here: +0.0).

For automatic white balance: Press AW (on operator panel) twice in one second. This stores the auto-white balance result in the currently active switch position.

### LOOK Settings

Shows the REC path processing setting and the name of the active look. Opens the look screen, which provides further access to processing settings of all image paths and global look as well as in-camera look editing.

**Note:** The switch icon in the black label is only shown if the *US* user switch is set to *LOOK*.

### EI Exposure Index Settings

Shows the current EI rating and ND filter value. Base sensitivity for the AMIRA is 800 ASA. The EI rating can be adjusted from 160 to 3200 ASA.

### INFO Camera Info Screens

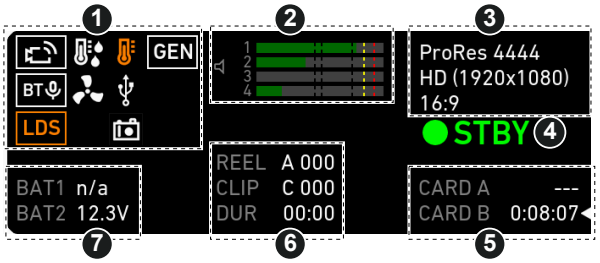
Provides access to various info screens such as camera system info, card info, network info or user button info.

### Status Section

The status section gives an overview of other important camera settings such as recording resolution, remaining recording time and battery voltage.

### 7.1.1 Status Section

The status section on the home screen shows key data about recording, power supply, remaining media capacity and more:




1 Status Icons
2 Audio Meters
3 Codec, Resolution, Aspect Ratio
4 Camera Status
5 Remaining Card Capacity
6 Clip Information
7 Battery Level

#### Status Icons

| Icon | Description |
|---|---|
| | WiFi is enabled and the WiFi mode is set to *Host*. |
| | WiFi mode *Client* is enabled and the camera is connected to a network. |
| | WiFi mode *Client* is enabled but the camera is not connected to a network. |
| | Bluetooth is active and a bluetooth device is connected.<br>If bluetooth talkback is enabled, a small microphone icons is displayed next to 'BT'. |
| | Indicates an error on the LDS interface. |
| | Shows that the high humidity mode is active. |
| | Alerts on sensor temperature issues:<br>• Black: warning<br>• Orange: error<br>• Red: system temperature error (see *INFO* > *System status*) |
| | Icon color shows the fan noise status:<br>• *Gray:* about to increase above 20 dBa.<br>• *Orange:* higher than 20 dBa. |
| | Icon color shows USB memory status:<br>• *White:* ready<br>• *Gray:* read only<br>• *Orange:* not usable |

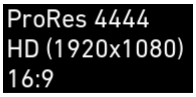
| Icon | Description |
|---|---|
| | Icon color shows frame grab status:<br>• *White:* frame grab is active.<br>• *Orange:* frame grab failed. Typically cause by missing USB. |
| | Shows that genlock is activated. |

### Audio Meters

Shows current level of camera audio channel signals. If audio is disabled, the speaker icon is crossed out.

Black markers at signal levels -20, -18, -9 dBFS for reference test tone. Yellow marker at -5 dBFS and red marker at -2 dBFS indicate a signal close to clipping. A red frame around the meter indicates a clipping at the A/D stage.

### Codec, Resolution, Aspect Ratio




Currently active codec, recording resolution, and aspect ratio.

### Camera Status

*STBY:* Ready for recording

*REC:* Recording

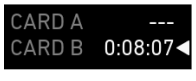
*PREREC:* Prerecording

*ERASE:* Erasing a CFast 2.0 card. Active erasing disables recording

*PLAY:* Camera is in playback

*None (IDLE):* Recording not possible (e. g. no card inserted, card is full)

### Card Capacity




Remaining capacity of CFast 2.0 cards, at current FPS and codec combination, in real time.

The currently active card is marked by a triangle on the right.

When card capacity is less than 2 minutes, capacity values start flashing.

### Clip Information

*REEL:* Current reel (camera index letter and reel number) of active recording medium.

*CLIP:* Current clip of current reel.

*DUR:* Duration of currently recorded clip (during REC) or last recorded clip (during STBY).

#### Battery Voltage

Current battery supply levels.

### 7.1.2 Info Screens

1. Choose ***HOME > i***.

   The INFO list is displayed. It offers access to detailed information in various subscreens. You have the following options:

   - *Version info*
   - *System info*
   - *Maximum FPS info*
   - *CARD info*
   - *USB info*
   - *Network info*
   - *Lens info*
   - *User button info*
   - *Export HW info file*
   - *Export logfiles*
   - *Export update logfiles*
   - *Export user manual*

#### Version Info

- *Software*
  Shows the camera software version. The first two parts identify the SUP version.
- *Revision*
  Detailed information on software version.
- *FPGA*
  Firmware version of currently active FPGA (indicated by number in brackets).
- *MVF-1 software*
  Software version of MVF-1 (only shown if connected).
- *CCP-1 software*
  Software version of CCP-1 (only shown if connected).
- *Lens mount software*
  Software version of lens mount.

#### System Info

- *Time + Date*
  Current system time and date of camera.
- *Camera serial no.*
  Serial number of camera.
- *Operating hours*
  Total operational time of camera in hours:minutes.
- *Camera license model*
  Active license model of camera, can be: *Eco*, *Advanced* or *Premium*.
- *Sensor temperature*
  Current temperature of image sensor.

- *Sensor temp. state*
  Rates the sensor temperature according to: *OK*, *Warning*, *Error*.
- *Camera temp. state*
  Rates the camera temperature according to: *OK*, *Warning*, *Error*.

### Maximum FPS Info

- *Sensor FPS*
  Maximum sensor frame rate with the current recording resolution of the camera.
- *Codec FPS*
  Maximum sensor frame rate with the camera's current codec setting.
- *Card FPS*
  Maximum sensor frame rate supported by the inserted card with the current recording codec and camera's resolution setting.

**NOTICE**

The lowest value determines the maximum selectable fps value.

### Card A/B Info

Shows information on the CFast 2.0 cards. Use the jogwheel to change between card A and card B.

- *CARD status:*
  Status of card.
- *CARD model*
  Name of card model.
- *CARD SN#*
  Serial number of card.
- *CARD FW version*
  Firmware version of card.
- *CARD size*
  Total storage size of card.
- *CARD clip count*
  Amount of clips on card.

### USB Info

- *USB Status*
  Status of USB medium.
- *Storage free/total*
  Free and total available storage on USB medium in megabyte.
- *Frame line files*
  Number of frame line files on USB medium and maximum number of files recognizable by camera.
- *License files*
  Number of license files on USB medium and maximum number of files recognizable by camera.
- *Look files*
  Number of look files on USB medium and maximum number of files recognizable by camera.
- *Setup files*
  Number of user setup files on USB medium and maximum number of files recognizable by camera.

- *SUP files*
  Number of SUP (software update package) files on USB medium and maximum number of files recognizable by camera.

### Network Info

- *WiFi network*
  Name of connected network (client mode)
- *WiFi IP*
  IP address of camera via WiFi.
- LAN IP
  IP address of camera via Ethernet.
- *Web remote*
  URL address of camera remote control website.
- *Bluetooth status*
  Status of bluetooth module.

### Lens Info

- *Lens status*
  Status of lens connected to camera.
- *Model*
  Lens model name according to manufacturer.
- *SN#*
  Serial number of lens.
- *Focal length*
  (Current) focal length of lens in mm.
- *Focus*
  Current focus distance value of lens according to user preference setting of distance unit (metric/imperial).
- *Iris*
  Current iris value of lens.
- *SETTINGS* button
  Quick link to the lens mount settings menu, see "Lens Mount Settings", page 106.

### User button Info

Shows functions assigned to user buttons of camera body and MVF-1.

For more information, see "User Buttons", page 123.

### Export HW Info File

HW info files are required to order licenses in the ARRI License Shop or may be requested by camera service to get detailed information on the camera's hardware and components.

After generating, the resulting file will be exported to the USB medium in the ARRI/AMIRA/LICENSES folder.

### Export Logfiles

Logfiles help camera service to analyze problems. In normal circumstances, logfile export is not required.

Logfiles will be exported to the USB medium in the ARRI/AMIRA/LOG folder.

### Export Update Logfiles

Similar to normal logfiles, update logfiles help camera service to analyze problems that occured during the update process. In normal circumstances, exporting update logfiles is not required.

Update logfiles will be exported to the USB medium in the ARRI/AMIRA/LOG folder.

### Export User Manual

This screen allows you to export the camera quick guide and user manual in .pdf format.

Quick guide and user manual will be exported to the USB medium into the folder ARRI/AMIRA/MANUAL.

## 7.1.3 ALERT Messages

ALERT messages communicate critical system states to the user. They require immediate attention and remain active until the state returns to normal.

A red exclamation mark, visible on the home screen, the monitor and EVF and SDI overlays indicates active alert messages.

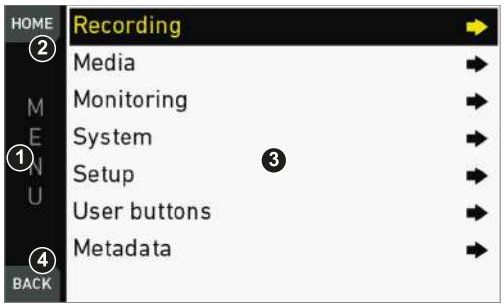
1. On the home screen, press the button showing the exclamation mark to access the alert messages.

   The icon will turn gray on the HOME screen if no alert message is active.

# 7.2 Camera Menu

The camera menu contains parameters for basic camera setup. It has a tree structure and the name of the current submenu is displayed across the top of every screen. To access the menu, press the jogwheel while the camera is showing the HOME screen.

There are seven submenus in the main menu (3) for setting up the AMIRA:




### Basic Menu Operation

1. Rotate the jogwheel (1) to scroll up or down to select the desired entry.
2. Entries with an arrow navigate to a lower menu level:
   - To navigate to the submenu: press the jogwheel (1).
   - To return to a higher menu level: press *BACK* (4).
3. Entries with a value allow direct editing:
   - To edit a value: press the jogwheel (1), then rotate the jogwheel to select the desired value.
   - To confirm and end editing: press the jogwheel.

- To cancel editing: press *BACK* (4).

4. To leave the menu: press *HOME* (2).

### 7.2.1 Working with Lists

For certain parameters, the camera operates with lists that come with default entries and can be customized to suit your needs. You can add and delete entries so that only the entries relevant for your work are listed.

Some lists contain values that can be directly edited in the camera, while other lists show files that can be imported from or exported to the USB medium. Lists showing values or files installed on the camera have a blue background, lists showing ARRI default files or files on the USB medium are shown with a gray background.

All lists have a maximum number of entries. Whenever a list is full, the *ADD* button is grayed out and a message is shown. You must delete any unnecessary entries to add new ones.

The following parameters work with lists and the values can be edited in the camera:

- ***HOME > FPS***
- ***HOME > SHUTTER***
- ***HOME > WB***

The following parameters work with file-based lists:

- ***HOME > LOOK***
- ***MENU > Monitoring > Frame lines > Frame line***
- ***MENU > Setups > User setups installed***
  Please see the next chapter for information on how to import files from a USB memory stick.

#### Maximum List Items

The following table lists the maximum number of entries for each type of list:

| List | Maximum Entries |
|---|---|
| FPS, Shutter, WB | 16 |
| Looks | 50 |
| Frame lines | 100 |
| User setups | 20 |

#### Adding Entries to a List

1. Select one of the parameters listed above.
2. Press *ADD*.
3. For lists with directly editable values:
   a) Enter the desired value.
   b) Press *ADD TO LIST*.
4. For lists with files:
   a) Press *DEFAULTS* to see the default files provided by ARRI.
   b) Select the desired file.

c) Press the jogwheel to start the import.
**Note:** If a file with the same name already exists, the camera asks whether you want to overwrite the existing file.

### Deleting Entries from a List

1. Select one of the parameters listed above.
2. Press *DELETE*.

   The list turns red.
3. Select the entry you want to delete with the jogwheel.
4. Press the jogwheel.

   The camera asks if you want to delete the selected entry.
5. Press *CONFIRM* to delete the selected entry or press any other button to cancel.

## 7.2.2 Import of User Files

To import files from a USB memory stick into the camera, the USB memory stick needs to be prepared with a certain folder structure and files need to be copied to the corresponding folder. Please see "Preparing USB Medium" for further information on the USB meomry stick folder structure.

Following files can be imported into the camera:

| File | Corresponding USB folder |
|---|---|
| Frame Lines | ARRI/AMIRA/FRAMELINES |
| Look Files | ARRI/AMIRA/LOOKFILES |
| User Pixel Mask | ARRI/AMIRA/SENSOR |
| User Setup | ARRI/AMIRA/SETUPS |

### Import of User Files

1. Insert the USB memory stick into the camera.
2. Choose
   - ***MENU > Monitoring > Frame lines > Frame line > ADD > USB***
   - ***HOME > LOOK > EDIT > ADD > USB***
   - ***MENU > System > Sensor > User pixel masking***
   - ***MENU > Setup > User setups on USB***
3. Select the desired file and start the import
   - by pressing the jogwheel (frame lines and look files)
   - by selecting *Install user pixel mask* (user pixel mask)
   - by pressing IMPORT (user setups)

For more information on frame lines please see "Frame Lines".

For more information on look files please see "Look Settings".

For more information on user pixel masks please see "Working with a User Pixel Mask".

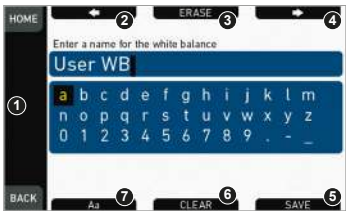
For more information on user setups please see "Setup".

**NOTICE**

The maximum file name length of user files is 32 characters including the file extension. User files with a name exceeding 32 characters can't be displayed in camera lists.

### 7.2.3 Using the On-screen Keyboard

When you are working with textual parameters on the camera, an on-screen keyboard allows you to enter text. You can use the keyboard, for example, to enter the name of a white balance preset.




- *Jogwheel* (1)
  Selects or confirms characters to form a name.
- *Left Arrow* (2)
  Moves the cursor backwards.
- *ERASE* (3)
  Deletes the character to the left of the cursor.
- *Right Arrow* (4)
  Moves the cursor forwards.
- *SAVE* (5)
  Saves the entry.
- *CLEAR* (6)
  Clears the entire text.
- *Aa* (7)
  Toggles between upper and lower case.

## 7.3 Camera's Main Settings

The following chapter lists the most important parameters of the camera. Before starting a production, you will probably have to adjust these parameters to suit your needs.

### 7.3.1 Selecting the Recording Codec

1. Choose ***Menu > Recording > Recording codec***.
   You have the following options:

| Recording codec | Color coding | Bit rate (VBR, 24fps, 1920x1080) |
|---|---|---|
| ProRes 422 LT | 10 bit YCbCr | 90 Mb/s |
| ProRes 422 | 10 bit YCbCr | 125 Mb/s |
| ProRes 422 HQ[1] | 10 bit YCbCr | 185 Mb/s |
| ProRes 4444[2] | 12 bit YCbCr | 280 Mb/s |
| ProRes 4444 XQ[2] | 12 bit YCbCr | 420 Mb/s |
| MPEG-2 HD 422 | 8 bit YCbCr | 50 Mb/s |

| Recording codec | Color coding | Bit rate (VBR, 24fps, 1920x1080) |
|---|---|---|
| ARRIRAW[3] | | |

[1] Requires AMIRA Advanced license key.

[2] Requires AMIRA Premium license key.

[3] Requires ARRIRAW license key.

2. Select the desired recording codec.

**Note:** When the recording codec family is changed, the camera has to perfom a partial software reload. A popup shows the settings that are affected by the reload and that may not be available in the new mode. After confirming the popup, the software is reloaded.

**Note:** MPEG-2 HD limits the camera to sync speeds. The sensor fps is automatically set to the equivalent of the project rate.

### 7.3.2 Setting the Recording Resolution

The list of available recording resolutions depends on the recording codec. For information on selecting the recording codec, see "Selecting the Recording Codec", page 56.

1. Choose ***Menu > Recording > Resolution***.

   You have the following options:

| Recording Codec | Resolution | |
|---|---|---|
| ProRes | S16 HD | Records images in 1920x1080 resolution. Uses a 1600x900 sensor center crop and scales it to 1920x1080. |
| ProRes | HD | Records images in 1920x1080 resolution. |
| ProRes | 2K[1] | Records images in 2048x1152 resolution. |
| ProRes | 3.2K[2] | Records images in 3200x1800 resolution. |
| ProRes | 4K UHD[2] | Records images in 3840x2160 resolution. |
| ARRIRAW | 2.8K[3] | Records images in 2880x1620 resolution. |
| MPEG-2 | HD | Records images in 1920x1080 resolution. |

1 Requires AMIRA Premium license key.

2 Requires 4K UHD license key.

3 Requires ARRIRAW license key.

**Note:** Changing between recording resolutions may require a software reload. Confirm the reload before it is performed.

A popup shows the settings that are affected by the reload and which may not be available in the new mode. After confirming the popup, the software is reloaded.

#### S16 HD Resolution

In ProRes codec, the camera can be changed to a recording resolution of S16 HD. This resolution records 1920x1080 image from a 1600x900 sensor pixel count, which allows for using S16 PL mount lenses on the camera such as the ARRI Ultra 16 series. The image circle of the S16 HD mode is 15.1 mm, which is slightly larger than the usual Super 16 image circle of 14.5 mm. For most lenses, this should not introduce vignetting in the recorded image area. But individual testing, covering all lens iris and focus settings is recommended. Be careful when mounting S16 lenses to the camera for the first time. Lenses that reach very deep into the mount may not work and collide with the cover glass in front of the internal ND filter system. The available depth is 39.5mm. This does cover lenses that fitted into a standard S16 Film camera. When used with lenses intended for S35 sensors, the S16 HD resolution can be used as a digital extender.

## 7.3.3 Project Settings

The project settings menu contains settings that should be configured at the beginning of each project.

► Choose ***Menu > Recording > Project settings***.

### 7.3.3.1 Setting a Project Rate

The project rate sets the timecode timebase and the playback frame rate. The timecode timebase determines how many frames the timecode counts per second. The playback frame rate determines the frame rate at which clips will be played back.

1. You have the following options:
   - Choose ***Menu > Recording > Project settings > Project rate***.
   - Choose ***HOME > TC > PROJ. RATE***.

   The following values are available:

| Project rate | Scan format | Sensor real-time recording |
|---|---|---|
| 23.976p | Progressive | 23.976 fps |
| 24p | Progressive | 24 fps |
| 25p | Progressive | 25 fps |
| 29.97p | Progressive | 29.97 fps |
| 30p | Progressive | 30 fps |
| 48p | Progressive | 48 fps |
| 50p | Progressive | 50 fps |
| 59.94p | Progressive | 59.94 fps |
| 60p | Progressive | 60 fps |
| 50i | Interlaced | 50 fps |
| 59.94i | Interlaced | 59.94 fps |
| 60i | Interlaced | 60 fps |

2. Select the desired project rate.

**NOTICE**

- Changing the project rate will match the sensor fps setting to the project rate, unless the user switch is set to *FPS*. A popup will inform you about this. SDI fps should also be checked when changing the project rate.
- Setting the camera to an interlaced project rate requires the sensor to run at an equal frequency to capture real-time images. Therefore, as an example, project rate 50i requires the sensor to be set to 50 fps.
- With MPEG-2 HD, the camera is limited to sync speeds. The sensor fps is automatically set to the equivalent of the project rate.
- MPEG-2 HD only supports project rates 23.976p, 25p, 29.97p, 50i and 59.94i.
- Interlaced project rates are only available in recording resolutions HD, S16 HD and MPEG-2 HD.

#### 7.3.3.2 Setting the Next Reel Count

Sets the reel number assigned to the next new medium used for internal recording. A new medium is either a blank card or a card with reels of other AMIRA cameras. The camera automatically advances the reel number every time new media is formatted on the camera. The reel number is reflected in clip names and is displayed on the home screen.

► Choose ***MENU > Recording > Project settings > Next reel count***.

#### 7.3.3.3 Setting the Camera Index

Give each camera a unique camera index so that you can identify the individual camera unit (A, B, C etc.) in clip and reel names.

You can also activate the camera index in the SDI status overlays to easily identify the camera. For more information, see "Setting EVF/SDI Status Info Components", page 88.

► Choose ***MENU > Recording > Project settings > Camera index*** to select the camera index in the range from A to Z.

#### 7.3.3.4 Defining the Camera ID Prefix

You can define the first character of the Camera ID. The Camera ID is a Base36 representation of the camera serial number and part of each clip's name. It allows you to match each clip to a specific camera. You set the camera ID prefix individually on each camera.

► Choose ***MENU > Recording > Project settings > Camera ID prefix*** to select the ID prefix in the range from A to Z.

#### 7.3.3.5 Lens Squeeze Factor

► Choose ***MENU > Recording > Project settings > Lens squeeze factor***.

For more information please see "Anamorphic Desqueeze".

### 7.3.4 Sensor Frame Rate

**NOTICE**

Maximum frame rate is 100 fps without an advanced or premium license. Advanced and premium licenses enable a maximum of 200 fps.

Always use CFast 2.0 cards with maximum write rates. For example, 60 GB cards are slower than 120 GB cards and may limit the fps (depending on the currently set codec).

The maximum possible frame rate may be limited by the set recording codec, recording resolution and CFast 2.0 card model. See user manual appendix for a detailed list of fps limits.

#### Setting the Sensor Frame Rate

1. Choose ***HOME > FPS***.
   - The user switch **is not** configured to FPS: The FPS list opens (skip forward to FPS list).
   - The user switch **is** configured to FPS: The FPS switch screen opens.
2. (If FPS switch screen is shown): Press the jogwheel to open the *FPS* list.

   **Note:** You can only change the frame rate for the current switch position.

   The FPS list is displayed.
3. Via jogwheel, scroll to the desired value.
4. Press the jogwheel to activate the value.

**NOTICE**

MPEG-2 HD limits the camera is to sync speeds. The sensor fps is automatically set to the equivalent of the project rate, and the user switch is disabled, if set to FPS.

### 7.3.5 Shutter Settings

You can select your preferred shutter unit:

*Shutter angle* converts exposure time into the angle of a virtual rotating mirror shutter as in film cameras.

A fixed angle creates varying exposure times with varying frame rates. You can set angles from 5.0 to 356.0 degrees.

*Exposure time* shows the effective sensor exposure time. With varying frame rates, it remains identical and can be set from 1/1 to 1/8000 seconds.

**Note:** Maximum exposure time with a given frame rate is 1/fps, with a limit of 1/1 seconds. When the selected exposure time is no longer possible because you changed the frame rate, the camera uses the longest exposure time possible. For example, if you configured 1/25s at 25 fps and you change the sensor fps to 50, the camera will use 1/50s.

**Note:** The camera sensor is optimized for exposure times shorter than 1/24s and image artifacts like individual overexposed pixels can appear when using longer exposure times.

For a constant exposure time over a range of used frame rates, set it to 1/(highest used frame rate).

#### 7.3.5.1 Setting a Shutter Value

1. Choose ***HOME > SHUTTER***.
   - The user switch **is not** configured to shutter: The shutter list opens.
   - The user switch **is** configured to shutter: The shutter switch screen opens.
2. (If shutter switch screen is shown): Press the jogwheel to open the shutter list.

   **Note:** You can only change the shutter for the current switch position.

   The shutter list is displayed.
3. Via jogwheel, scroll to the desired value.
4. Press the jogwheel to activate the value.

**Adjusting the shutter for filming a monitor**

1. Set unit to angle.
2. Go to *SHUTTER* > *SELECT* > *ADD*.
3. Select the third digit (single degrees).
4. Adjust the shutter value until the monitor image flickers the least.
5. Select the fourth digit (sub-degrees).
6. Fine-adjust the shutter value until there is no more flicker visible.
7. Press ADD TO LIST to add the shutter value to the list.

#### 7.3.5.2 Setting the Shutter Unit

1. Choose ***HOME > SHUTTER***.
2. Press *SWITCH UNIT*.

   A confirmation screen is displayed.
3. Confirm with *OK* or cancel with any other button.

   The camera returns to the home screen. The shutter unit has changed (from time to angle or vice-versa).

### 7.3.6 Exposure Index

The Exposure Index (EI) is the applied sensitivity of the camera. The AMIRA has a base sensitivity of 800 ASA. This means that the dynamic range is almost evenly distributed above and below neutral gray with low noise in the shadows and clean, smooth clipping behavior in the highlights. Due to its high dynamic range, the AMIRA's sensitivity can be set from 160 to 3200 ASA in steps of 1/3 stops while maintaining high image quality:

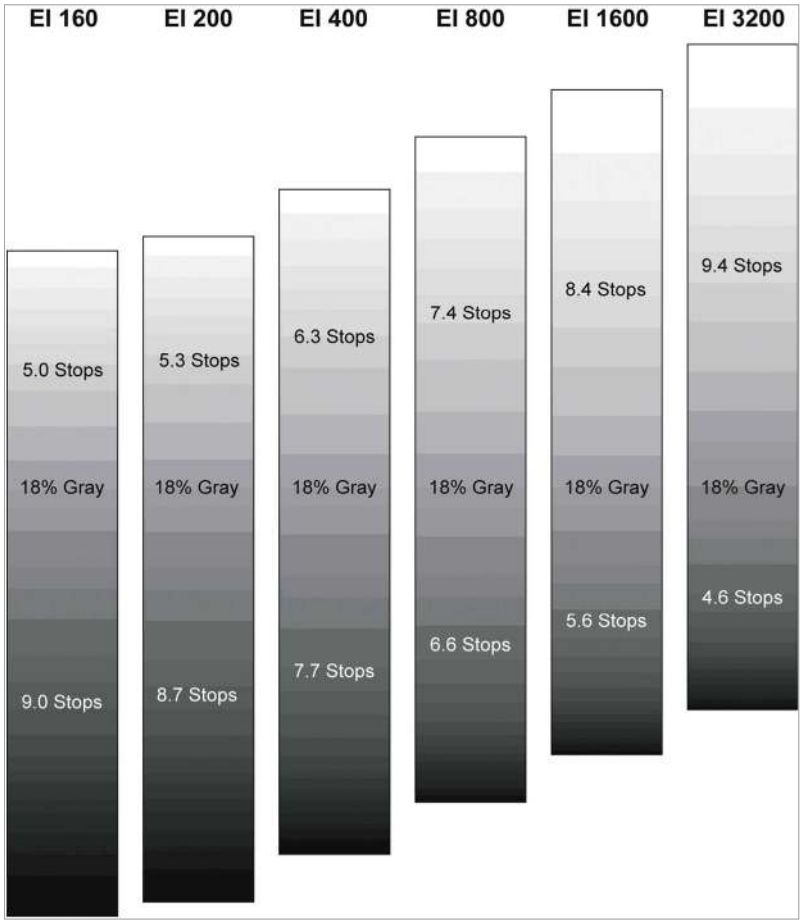
$$\text{EI } 160^{+5.0}_{-9.0} \quad \text{EI } 200^{+5.3}_{-8.7} \quad \text{EI } 400^{+6.3}_{-7.7} \quad \text{EI } 800^{+7.4}_{-6.6} \quad \text{EI } 1600^{+8.4}_{-5.6} \quad \text{EI } 3200^{+9.4}_{-4.6}$$

Applying the exposure indexes at the extremes of the range will nonetheless have an influence on the images.

At low exposure indexes, such as 160 ASA, the dynamic range below neutral gray increases, reduces noise even further. At the same time, the dynamic range above neutral gray is slightly reduced.

Highlight clipping itself is not influenced by this, but the shoulder of the processing curve will be slightly steeper, reducing the smoothness of the change from almost overexposed to overexposed.

At high exposure indexes, such as 1600 ASA, the images behave in the opposite way. Noise is increased, which makes it important to judge shadow detail, while there will be even more headroom in the highlights:




### 7.3.6.1 Setting the Exposure Index

1. Choose ***HOME > EI***.

   A switch screen shows the preset exposure indexes. You can only change the value for the current switch position.

2. Press the jogwheel.
3. Scroll up or down with the jogwheel to increase or to decrease the EI.
4. Press the jogwheel to confirm or press *BACK* to cancel editing.

### 7.3.6.2 Selecting the ND Filter

**NOTICE**

AMIRA uses FSND (Full Spectrum Neutral Density) filters, which are linear across the full spectrum of the camera sensor. This prevents artifacts from infrared wavelengths and the need for additional IR filters.

The camera contains an internal ND filter module, consisting of ND 0 (Clear), 0.6, 1.2 and 2.1 filters. The filters can be operated via user buttons, MVF-1, web remote or WCU-4.

The ND filter switch controls the internal ND filter module. Filter densities of 0.6, 1.2 and 2.1 allow quick exposure changes and compensation over a range of seven stops.

1. To activate a filter: Switch to the desired filter position.

#### Other Ways to Control the ND Filter

The ND filter can also be controlled with user buttons, the web remote or the overlay menu, accessible via HOME > EI > ND. Any of these may result in the active ND filter not matching the ND switch position.

A difference between current switch position and active ND filter is indicated by an orange ND value on the homescreen and in the status overlays of monitor, EVF and SDI images (if overlays are active). The currently selected ND filter is also stored and recalled from user setup files.

To give precedence to the ND filter switch, change the switch position once.

### 7.3.6.3 Adjusting the Iris (EF lenses) Manually

1. Choose ***HOME > EI > IRIS***.

   A screen showing the current iris value is displayed.

2. Turn the jogwheel up or down to open or close the iris. Press the jogwheel to toggle between full stops and substops.

   **Note:** Sub-stop precision depends on the lens type and is automatically set by the camera.

#### Activating Iris Adjustment on the Live Screen

► On the live screen, you can activate and deactivate iris adjustment by short-pressing the lower round button. Keeping the button pressed activates iris adjustment until it is released.

**Note:** Depending on the orientation of the monitor, the round button may be located on the right.

### 7.3.6.4 Defining the Auto Iris Calculation

The camera can perform an auto iris calculation and adjust the lens iris automatically, if supported by the mounted lens. The auto iris function can be triggered via a user button. For more information on user buttons, see "User Buttons", page 123. The auto iris calculation can be configured with the following settings.

1. Choose ***HOME > EI > IRIS > OPTIONS***.

   You have the following options:

   - *Auto iris mode*
     Defines the iris calculation.
     - *Integral*
       Iris is calculated based on full image content.
     - *Center*
       Iris is calculated with higher priority on image center.
   - *Auto iris offset*
     Offsets the auto iris calculation result by up to +/- 3 stops in 1/3 stops.

## 7.3.7 White Balance

White Balance (WB) is the color balance of the camera that should be matched to the color temperature of the light in use. There are three methods for setting the white balance:

• white balance presets

• user-defined white balance

• automatic white balance

White balance is a red-blue adjustment of the image. To adjust the green-magenta balance, use the color compensation (CC) adjustment. For example, a fluorescent source will have peaks in its spectrum that cannot be corrected with red-blue white balance alone. The CC shift can correct these peaks up to a full green or full magenta gel. One step of CC shift is equal to 035 Kodak CC values or 1/8 Rosco values.

### 7.3.7.1 Setting the White Balance

1. Choose ***HOME > WB***.

   The WB switch screen opens.

2. Press the jogwheel to open the WB list.

   **Note:** You can only change the WB for the current switch position.

   The WB list is displayed.

3. Via jogwheel, scroll to the desired value.
4. Press the jogwheel to activate the value.

For information on how to add entries to a list please see "Working with Lists".

### 7.3.7.2 Automatic White Balance

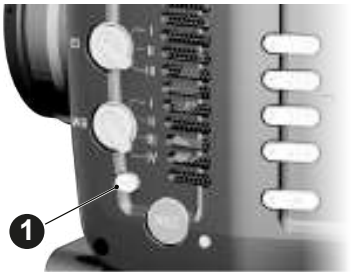
The user can execute an automatic white balance by pressing the AUTO WB button in the WB screen

**NOTICE**

Under- or overexposed images may cause the automatic white balance to fail. Always trigger automatic white balance with properly exposed images.

**Using the AW Button**

► Press the *AW* button (1) twice within a second to trigger automatic white balance.




**Using a User Button**

1. Assign a user button with *Auto WB*.
2. Press the user button twice within a second.

For information on how to assign functions to user buttons please see "User Buttons".

### Auto WB Mode

► Two modes are available for automatic white balance calculation, *Matrix* and *Center*: choose ***HOME > WB > Options > Auto WB mode.***

- *Matrix*: Full-image-based, the algorithm determines the image content best suited to white balance calculation.
  Use for regular image content.
- *Center*: Calculates the white balance based on the center area of the image. The camera displays an image overlay showing the center area used for calculation.
  Use with a gray card placed in the image center. For accurate results: fill the entire area with the gray card.

#### 7.3.7.3 White Balance Options

1. Choose ***HOME > WB > OPTIONS***.

   You have the following options:

   - *Auto WB mode*
     Sets the calculation method of auto white balance. Matrix analyzes the full image and uses the image part best suited for WB calculation, while Center uses the image center area only.
   - *WB tracking on position IV*
     If activated, moving the WB switch to position IV activates automatic white balance tracking, where the white balance value is continuously updated based on the image scene.

**Note:** WB tracking always uses matrix mode for WB calculation.

## 7.3.8 Timecode

Timecode ensures that every image of recorded media can be identified with a unique value and synced with corresponding media, such as sound or the second camera in a 3D application. When used with other metadata, such as reel names, all recorded media retains its unique identity.

The following are two ways of using timecode on a production:

### Free run timecode, time of day

- *Use*: This format is often used on multi-camera productions with sync-sound, i. e. the sensor frame rate matches the project rate, sound and image timecode match and allow for easy syncing in post.
- *Setup*: The sound department acts as the timecode master, and generates timecode which uses the time of day as a value, and a time base matching the project frame rate. Twenty-four hours of time will translate into twenty-four hours of time code. Timecode is fed to the camera via the TC connector. The project fps setting must match both the sensor frame rate and the time base of the external timecode signal.
- The camera can be set to timecode mode jam sync, in which it samples the timecode value once from the timecode connector and then continues counting based on its own high-precision crystal clock. The timecode source can be disconnected from the camera after jamming in jam sync mode. This mode ensures stable timecode with an offset of less than one frame for each eight hours, after which the camera has to be re-jammed.
  Alternatively, the camera can be set to timecode mode regenerate (regen). In regen mode, the camera uses the timecode value of the external timecode source. This ensures correct timecode for an infinite duration, but the timecode source must remain connected to the camera. Please note that while recording the camera ignores external timecode and is using its internal clock to avoid potential

timecode jumps, which can occur due to connection problems such as a faulty timecode cable for example.

- *Variations*: If shooting starts close to midnight, the timecode may be started with an offset time of day to prevent a rollover at midnight.
- *Restrictions*: Free run timecode is only possible, if the camera is running at sync-sound speed. If the camera is over- or undercranking, the timecode frame rate will no longer match the sensor framerate, and timecode values would either be duplicated or dropped. To prevent this, the camera will automatically switch to run mode rec run when the sensor frame rate is changed.

#### Rec run timecode

- *Use*: Rec run timecode is often used on single camera productions that are either MOS or use a dumb slate to sync picture and sound. Record run timecode guarantees continuous timecode on all recorded data. Record runtime code also works with over- and undercranking.
- *Setup*: The timecode run mode must be set to rec run, the mode to regenerate. Timecode counts up only during recording, by one frame for each image generated by the sensor. The timecode counts at the project frame rate set on the camera. Normally, the timecode hour value advances by one hour for each new reel, using only hours 01-20 for reel 1-20, and then restarting at hour 01 for reel 21.
- *Variations*: Rec run timecode might be used for off-speed work on productions that use external timecode sources for all sync sound.
- *Restrictions*: None.

**NOTICE**

The camera's internal battery will keep the timecode and timecode tuning values for about 10 minutes after the power source was disconnected.

### 7.3.8.1 Setting the Timecode Manually

**Note:** *EDIT* is available only when timecode is in preset mode. For information on the mode, see "Setting the Timecode Mode", page 67.

1. Choose ***HOME > TC > EDIT***.
2. You have the following options:
   - For TC = 00:00:00:00: Press *RESET*.
   - For TC = current system time: Press *SET TO TIME*.

   Via jogwheel, you can change each value. Scroll up or down to increase or decrease the value. Press the jogwheel to select the next digit pair.
3. Press *DONE* to save the changes. Cancel with *BACK*.

### 7.3.8.2 Changing the Project Rate

You can change the project rate. You have the following options:

- Choose ***HOME > TC > PROJ. RATE***.
- Choose ***MENU > Recording > Project settings > Project rate***.

For information on changing the project rate, see "Setting a Project Rate", page 58.

### 7.3.8.3 Timecode Options

The following sections show the available timecode options.

### Setting the Timecode Run Mode

1. Choose ***HOME SCREEN > TC > Options > Run mode***.

   You have the following options:

   - *Rec run*
     Timecode increases during recording only. The timecode value increases with every frame generated by the sensor while recording.
   - *Free run*
     Timecode increases with every new frame generated by the sensor, independently from recording.

**Note:** Free run is only possible if the sensor fps equals the project fps (i.e. shooting sync speed). Otherwise, the camera temporarily switches to rec run. The free run timecode continues to count in the background.

When you set the sensor frame rate back to equal the project frame rate, the timecode will synchronize itself to the free run timecode again.

If you synchronized your camera to an external signal while it was in free run, you can shoot offspeed shots in rec run timecode and return to sync speed afterwards. The camera will return to free run timecode and seamlessly reconnect to the previously synchronized timecode.

### Setting the Timecode Mode

► Choose ***HOME > TC > Options > Mode***.

You have the following options:

- *Regen*
  Depending on the timecode run mode, regen behaves differently:
  Run mode rec run: The camera determines the timecode of the last frame of the last recorded clip and increments it by one for the next clip. This ensures consecutive timecodes for a sequence of clips.
  Run mode free run: The timecode source should be connected to the camera permanently. The camera continuously reads the timecode signal at the timecode connector as long as it is present. Upon disconnection or loss of signal, the camera continues counting on its own, but will indicate the missing signal through an orange exclamation mark on the TC button on the home screen. When the external signal is reconnected, the camera uses the value of the external signal again. Regen mode will disable manual editing of the timecode.
- *Preset*
  The camera uses its internal counter.
- *Jam sync*
  The camera samples the timecode value and simultaneously tunes its internal timecode clock to match the clock of the timecode source. During this procedure, the timecode display on the home screen, on the timecode menu screen as well as on the status overlays is flashing. Jamming has finished when the timecode display stops flashing, then the timecode source can be disconnected. The camera continues counting based on its own high-precision crystal clock now. This mode ensures stable timecode with a drift of less than one frame over eight hours, after which the camera has to be re-jammed.
  **Note:** Due to the tuning mechanism, jamming the camera might take up to 30 seconds and a timeout is issued if tuning could not be completed after 60 seconds.

**Note:** You can edit timecode in preset mode only.

### Timecode Regen Source

Based on the timecode run mode, the camera determines the timecode regen (regenerate) source automatically.

If the run mode is set to *Free run*, it regenerates timecode from the timecode input connector. If set to *Rec run*, it regenerates timecode from the last clip of the active recording card by continuing seamlessly from the last active value.

► Choose ***HOME > TC > Options > Regen source***.

The regen source is displayed. The following settings are possible:

- *LTC in*
- *Media*

### Setting the Timecode Count Mode

Sets the preference for how timecode is counted with non-integer project rates 29.97p, 59.94p, 59.94i.

► Choose ***HOME > TC > Options > Count mode***.

You have the following options:

- *Non-Dropframe*
  Timecode increases with every frame without compensation, resulting in a 1,001 count for 1,000 frames.
- *Dropframe*
  Timecode values are dropped with a defined pattern (frame counts 00 and 01 of every minute, except every 10th minute) to re-adjust for the drift.
  A semicolon between timecode seconds and frames indicates an active dropframe timecode.

### Setting a Timecode Offset

You can apply an offset to LTC input signals to compensate for timecode offsets in external devices.

1. Choose ***HOME > TC > Options > TC offset***
2. Adjust the timecode offset in the range of *-20* to *+20* frames.

### Setting TC BNC Mode

You can set the mode of the TC I/O connector.

► Choose ***HOME > TC > Options > TC BNC mode***. You have the following options:

- *OFF*
  The connector is not in use.
- *TC in*
  The camera samples the timecode signal from the connector.
- *TC out*
  The camera outputs the internal timecode signal via the connector.

## 7.3.9 Look Settings

Looks alter the image color in a creative way. Due to a high-quality rendering core, AMIRA is capable of applying looks in production quality, fully in-camera.

The following looks come pre-installed with the camera:

*ARRI 709:* Renders the video image according to the ITU.R-BT709 standard, for most accurate color reproduction on standard broadcast monitors.

*ALEXA Classic 709 (requires premium license):* Matches the color reproduction of AMIRA to the ARRI ALEXA.

*ARRI 2100 HLG 1K 200:* HDR look file. Renders an image for a HLG (Hybrid Log Gamma, ITU-R BT.2100) monitor. It is assumed that the monitor has maximum luminance of 1000 cd/m². In this case, the image will look the same as when the PQ look is used with a PQ monitor.

*ARRI 2100 PQ 1K 200:* HDR look file. Renders an image for a PQ (SMPTE 2084, ITU-R BT.2100) monitor. The maximum luminance is 1000 cd/m², which is a PQ level of 75%. The diffuse scene white (2.5 stops above the gray card) will appear with a luminance of 200 cd/m².

*ARRI 709 Multicam:* Editable version of ARRI 709 for use with the multicam feature. For more information, see "Multicam", page 108.

*Commercial:* Renders the image brighter for smoother skin tones.

*Landscape:* Applies a steeper contrast curve to the image.

*LCC 709:* Low Contrast Curve look that keeps more details in highlights for color correction purposes.

*TV-neutral:* An ARRI 709 like look, which is more saturated in colors with slightly lower blacks.

*TV-warm:* Same as TV neutral, just with a little bit warmer look overall.

*Vibrant:* Boosts color saturation except for red and yellow (skintone protection).

For information on the ARRI Look Library, see "Use of the ARRI Look Library", page 76.

To create look files for the camera, download the free Mac OS utility ARRI Color Tool from the ARRI website:
https://www.arri.com/camera/amira/tools/arri_color_tool/

**NOTICE**

When using HDR look files, we recommend to record in Log C and not to burn in the HDR look into the recorded footage, in order to maintain all technical and artistic options for post production.

### 7.3.9.1 Selecting a Look File

1. Choose ***HOME > LOOK***.
   - The user switch **is not** configured to Look: The Look list opens.
   - The user switch **is** configured to Look: The Look switch screen opens.
2. (If Look switch screen is shown): Press the jogwheel to open the Look list.

   **Note:** You can only change the Look for the current switch position.

   The Look list is displayed.
3. Via jogwheel, scroll to the desired value.
4. Press the jogwheel to activate the value.

### 7.3.9.2 Configuring Processing and Color Spaces

**NOTICE**

Changing the processing setting to Log C requires an advanced or premium license.

1. Choose ***HOME > LOOK > CONFIG***.

   The processing settings and color spaces for the different image paths are

displayed.

2. Select and confirm the required processing or color space for each image path. You have the following options:
   - *Recording processing*
     - *Log C*
     - *Look*

       **Note:** When recording ARRIRAW, the recording processing cannot be changed.
   - *EVF/Mon proc.*
     - *Log C*
     - *Look*
     - *ALEXA Classic 709*
   - *SDI 1 processing*
     - *Log C*
     - *Look*
     - *ALEXA Classic 709*
   - *SDI 2 processing*
     - *Log C*
     - *Look*
     - *ALEXA Classic 709*
   - *SDI 1 color space*
     - *REC 709*
     - *REC 2020*
   - *SDI 2 color space*
     - *REC 709*
     - *REC 2020*

### *Log C*

Based on the Cineon format for output to film print or digital intermediate, this logarithmic processing requires color-grading in postproduction.

On standard broadcast monitors, Log C images appear flat and desaturated. Proper display, dailies and editing proxies require a conversion look-up table (LUT).

Create preview LUTs with the ARRI LUT Generator at www.arridigital.com.

**Note:** Log C is not supported with MPEG-2-HD.

### *LOOK*

Applies a video display processing to camera images. The default *ARRI 709* look complies with the ITU.R-BT709 standard for display on standard broadcast monitors.

### *ALEXA Classic 709*

Creates a Rec 709 equivalent image in the same way that it is processed in the ALEXA Classic product line. This setting may be used when the selected Look file alters the image too drastically, but a Log C image would be too flat for monitoring.

***REC 709***

Material recorded in Rec 709 (short for ITU-Recommendation BT.709) has a display specific encoding. The purpose of a display specific encoding is to immediately provide a visually correct representation of the camera material, when it is screened on a certain display device. This is achieved by mapping the actual contrast range of the scene into the contrast range that a display device can reproduce. Examples of display specific encodings are Rec 709 for HDTV screens or DCI P3 for Digital Cinema Projectors. On the downside, a display specific encoding puts some limits on the options for a colorist.

***REC 2020***

Rec 2020 is a wider color space than Rec 709, which is the current industry standard for HD. Rec 2020 promises more brilliant images, though only new display technology is able to show these. Traditional Rec 709 displays (like TVs or ordinary computer displays) can not display Rec 2020.

While Rec 709 is the encoding color space for HDTV, Rec 2020 is the encoding color space for UHD. The primary colors lie on the spectral locus and it is thus possible to have more saturated colors in images. It does not mean, however, that all colors look more saturated. When properly converted, a Rec 709 image will look exactly the same when displayed on a Rec 2020 display. Rec 2020 is an encoding standard. A TV or display may not support the full gamut. Nevertheless, it will correctly display the colors within its physical gamut. To get the “Premium” logo of the UHD Alliance, for example, a TV needs to support a minimum of 90% of the P3 gamut.

### 7.3.9.3 Duplicating a Look File

By duplicating a Look file, you can create a new Look file based on an existing one.To create a new Look file within the camera, duplicate Rec 709 and edit its parameters. Except for Rec 709, you can rename all look files.

1. Choose ***HOME > LOOK > EDIT***.

   The list of installed looks is displayed.

2. Via jogwheel, scroll to the desired file.
3. Press *DUPLICATE*.

   A file name editor opens. For information on using the on-screen keyboard, see "Using the On-screen Keyboard", page 56.

4. Enter the name of the new Look file.
5. Press *SAVE* .

   **Note:** You cannot save a file with an existing name.

   You have now created a copy of the original Look file.

### 7.3.9.4 Look Parameters

A Look file contains different parameters for altering the image. The Look parameters screen shows the values of the different parameters and allows you to edit them directly in the camera, if the Look file is modifiable.

**NOTICE**

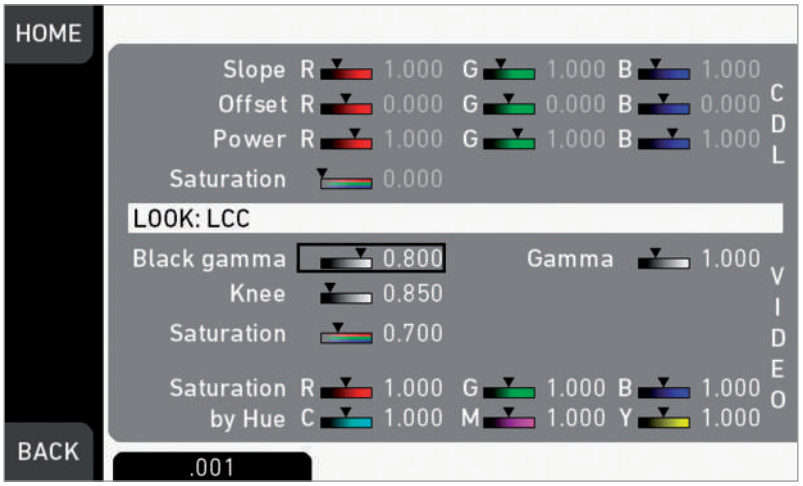
User-defined looks may contain a non-editable 3D LUT instead of video parameters.

Editing Log C parameters requires the Advanced license.

Import of looks with 3D LUTs requires the Premium license.

► Choose ***HOME > LOOK > LOOK PARAM.***

The Look parameters screen is displayed.




- *Slope, Offset, Power, Saturation*
  Affect ASC CDL images under Log C.
- *Black Gamma, Gamma, Knee, Saturation, Saturation by Hue*
  Affect *VIDEO* images.
- ASC CDL parameters
  Are applied to the image before *VIDEO* parameters. Please refer to the ARRI white paper on color parameters (for download at www.arri.com).

**Note:** All look transforms, including ASC CDL, are applied in the conversion from Log C to Video color space. When you choose Log C as gamma for an image path, the clean Log C image is routed to this path.

## ASC CDL Transforms

The American Society of Cinematographers has specified a set of transforms that have become standard in postproduction. They are determined by slope, offset, power and saturation (applied in that order).

All these parameters are based on simple color manipulations (multiplying with a factor, adding an offset, raising to an exponent). Noted as "Color Decision List" (ASC CDL), they offer an exchange format for basic look transformations between color correction systems and editing tools by different manufacturers.

The AMIRA image processing applies ASC CDL transforms to the Log C encoded image. This allows manipulations such as exposure correction or bringing down highlights, before the picture is converted to the display color space with its steeper contrast curve.

ASC CDL adjustments are available in all AMIRA license bundles.

## Slope

The linear section of the Log C curve is equivalent to the processing of a negative film stock. The Log C curve has a default processing of approximately 0.51 (adjustable via slope parameter).

A slope value of 1.2 will have a similar effect as using negative stock with a processing of 0.6 (= 1.2 * 0.5). A value below 1.0 will lower the processing accordingly.

### Offset

This most intuitive CDL parameter has a similar effect as increasing the exposure index on the camera. If you are familiar with the motion picture print film process, it's the same as printer lights.

### Power

Via power you can adjust the mid tones, similar to the processing parameter in video color grading. A power value below 1.0 will increase, a value above 1.0 willl decrease the mid tone brightness.

### (Log) Saturation

This parameter affects the saturation of all color components in the Log domain. A value of 1.0 represents the default saturation.

## 3D LUT and Video Look Parameters

Via a 3D LUT (lookup table), the camera generates a Rec 709 video image from Log C data. Next to the ASC CDL parameters, which apply to the Log C image, the camera also offers a set of video look parameters (VLP) for tone mapping and color transformation of the rendering 3D LUT.

VLPs determine knee, black processing and the processing of the tone map curve, which qualify the contrast of the output image. They also include values for saturation and the saturation by hue for six color vectors (green, yellow, red, magenta, blue, cyan).

Video look parameters are available in all AMIRA license bundles.

### Knee

The knee parameter controls the transition of mid-tones into highlights. Values below 0.5 (default) produce harder highlights, higher values soften them. Knee is applied to all channels equally (master control). It has no effect on the mid gray level.

### Black gamma

The black gamma controls the shadow detail in the image. Values below 0.5 (default) bring down, higher values brighten the blacks. Black gamma is applied as master control. It only affects the mid gray level for very high values.

### Gamma

This setting can be used to brighten or darken the mid tones, while leaving the black and white level unchanged. Values below 1.0 (default) will darken; higher values will brighten the image.

### (Video) Saturation

The VLP set also includes a saturation control, with a similar effect as the ASC saturation control. A value of 1.0 represents the default saturation.

### Saturation by Hue

This parameter set allows you to control the saturation for six color vectors (red, yellow, green, cyan, blue, magenta) independently.

### Custom 3D LUT

For AMIRA look files, you can create and export custom 3D LUTs from a color grading tool. You must store them in the AMIRA look file format:

- With the free AMIRA Color Tool from www.arri.com
- Or directly in the color correction tool (if it supports the export of AMIRA Look Files).

Using a custom 3D LUT disables the video look parameter controls. The resulting look, however, can still be tuned via ASC CDL parameters.

A grading system usually allows better and finer color adjustments for all these parameters. It also offers additional manipulations not available with the set of CDL and VLP values, such as:

- Ability to pick any key color (not just one color vector)
- Change of chromaticity (not just saturation)

### Generating a 3D LUT

1. Load Log C footage into a color grading tool supporting the AMIRA Look File Format.
2. Apply creative color grading.
3. Apply Log C to Rec 709 video rendering (or any other output color space).
4. Show the resulting look on a reference monitor.
5. Export the look as a concatenated 3D LUT (use the transforms from step 2 and 3).

**Note:** For more details, please read the white paper *AMIRA Color by Numbers* for download on www.arri.com.

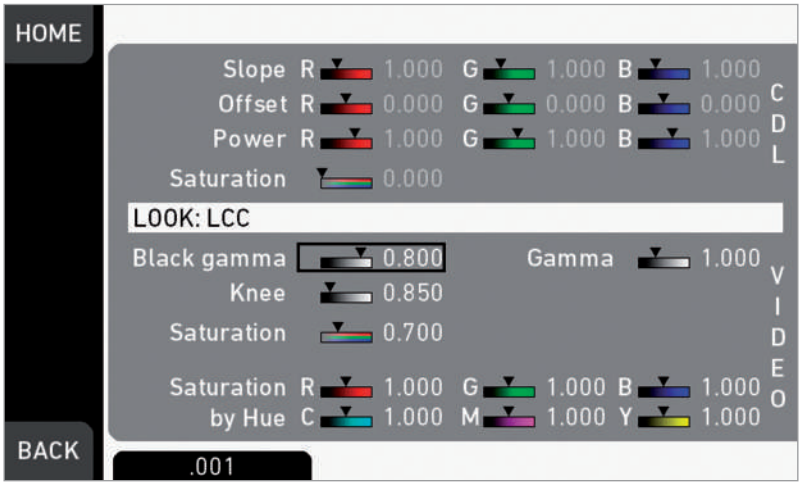
## 7.3.9.5 Editing Looks

**NOTICE**

Editing will overwrite an existing look file and it's values. To prevent this, duplicate the look first, and then edit the duplicate. Some looks like ARRI 709 as well as all ARRI Look Library looks are read-only and cannot be edited directly, please create a duplicate and edit the duplicate if you want to edit read-only looks.

1. Via the home screen, open either the active *LOOK* or the current *LOOK SWITCH* position.
2. Press *LOOK PARAM.*

   The Look parameters screen is displayed.



3. All look parameters appear. Non-licensed ones (here: *CDL*) are grayed out.

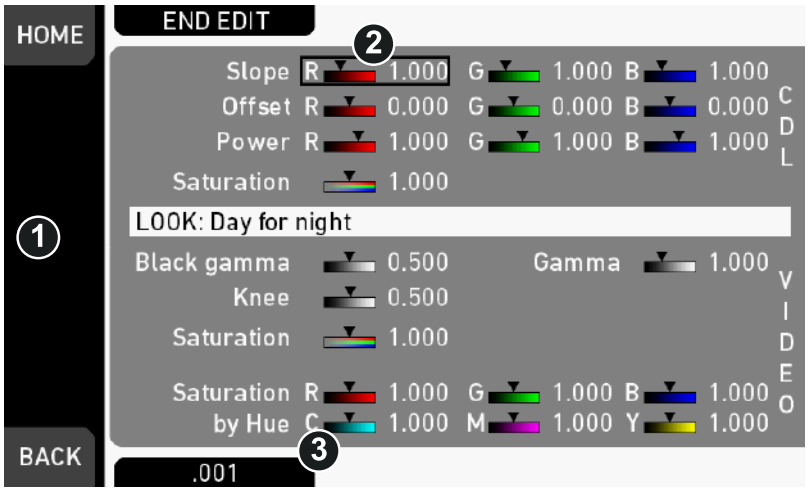
   **NOTE:** Look files with a 3D-LUT offer no VIDEO parameters.

4. Press *EDIT*.

   A warning on file overwriting is displayed.

5. Press *OK* to confirm the warning.

   The Look editor becomes active.

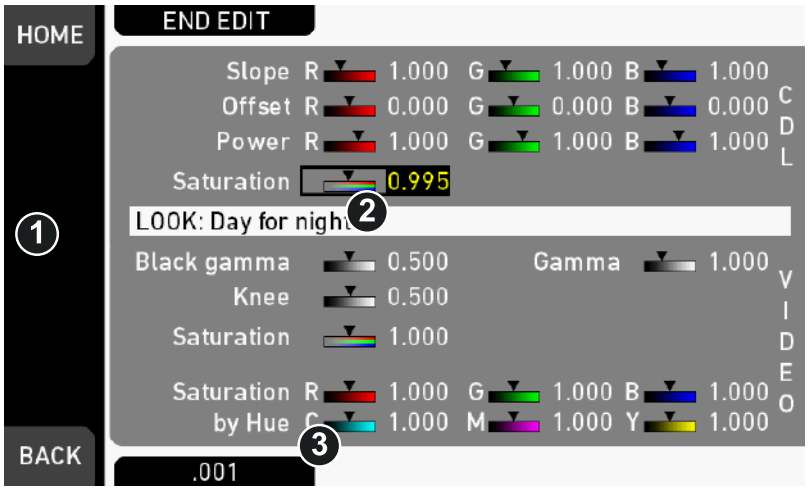



6. Via jogwheel (1), scroll to the desired parameter.

   A black frame (2) marks your selection.

7. Press the lower right screen button (3) to toggle the edit step size between 0.001, 0.01, and 0.1.

8. Press the jogwheel (1) to start editing the selected value.




   A yellow-on-black font (3) marks the edit mode.

9. Confirm the new value by pressing the jogwheel (1).

10. Edit more parameters if required.

11. After editing: Press *SAVE* .

12. To revert all changes: Press *UNDO CHANGES*.

    **Note:** When you start a recording while the Look editor is active, the camera will save all changes automatically.

#### 7.3.9.6 Use of the ARRI Look Library

The ARRI Look Library is a comprehensive set of predefined looks with an advanced look management. It provides a set of high quality looks and offers a basic repertoire of color responses like film stocks and filters did for film cameras.

It offers 87 looks in 3 different intensities for Rec 709 color spaces (standard dynamic range). It uses a numbering scheme, for example 3110 film 01 or 5110 dayfornight 01. The numbering scheme is used to indentify looks and covers common themes, for example film emulations, beauty or tinted looks.

For further information about the ARRI Look Library, please visit

http://www.arri.com/camera/amira/tools/arri_look_library/

http://www.arri.com/camera/amira/learn/arri_look_library_faq/

The ARRI Look Library is installed on the camera and can be unlocked by installing the ARRI Look Library license, which can be purchased online at the ARRI License Shop.

**Note:** The ARRI Look Library license is included in AMIRA Premium cameras shipped from May 2017 onwards.

##### Adding a Look File from the Look Library

1. Choose ***HOME > LOOK > EDIT > ADD > LOOK LIB***.

   The ARRI Look Library is displayed. The target color space of the currently selected look file is also displayed, e.g. Rec 709.

2. Select the desired look file and press *SELECT*.

   You are prompted to select the strength. You have the following options:

   - *Low (1)*
   - *Medium (2)*
   - *High (3)*

3. Select the strength and press *SELECT*.

   When the look file is imported successfully, a message is displayed.

4. Press *BACK*.

   The imported look file is highlighted in the SET LOOK list and can be activated. For more information, see "Selecting a Look File", page 69.

##### Modifying an ARRI Look Library Look

Look files from the ARRI Look Library cannot be edited directly. You can, however, duplicate the Look file and change the CDL paramaters of the duplicated file instead. This prevents the original ARRI Look Library files from being changed accidentally.

For information on how to duplicate a Look file, see "Duplicating a Look File", page 71.

**Note**: If you duplicate or rename a Look file based on the ARRI Look Library, the ARRI Look Library identifier is set as prefix of the new file name and cannot be deleted.

**Note:** Look files from the ARRI Look Library or derivates thereof cannot be exported to USB. Look files starting with the same name prefix as files from the ARRI Look Library (XXXX-X…) cannot be imported from USB.

## 7.4 Recording

AMIRA supports a wide range of recording codecs, resolutions and project settings to fit your needs.

Available menu items like codecs, resolution/frame rates etc. depend on the installed camera license.

## 7.4.1 ARRIRAW

ARRIRAW data delivers unencrypted, uncompressed and uncompromised image quality. It offers the highest achievable resolution, the camera's natural color response and great exposure latitude as uncompressed and unprocessed sensor data. ARRIRAW images have only one channel. A color reconstruction algorithm calculates the missing components of each pixel based on the type and position of the array of colored filters (Bayer pattern) on the camera sensor.

ARRIRAW de-bayering is available through the ARRIRAW SDK or custom processing, which is implemented in most of the major post production tools for dailies processing and mastering.

ARRIRAW is used for cinema production, visual effects and high quality TV. It is the best format for creative color correction and visual effects work.

The frames 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. The internal stucture of MXF files is defined by the Operational Patterns (OP).

- The OP1a MXF format packages picture, sound and metadata in a single file.
- The OP1a is a streaming format, which means that even incomplete files can be played.
- The OP-Atom MXF format places picture and sound into individual MXF files. Audio is written after video.
- The OP1a MXF files are the primary acquisition and archiving format for many broadcasters.

## 7.4.2 Record Mode

The record mode determines the way in which the camera records images.

► Choose ***Menu > Recording > Record mode >*** **Record mode**.

You have the following options:

- Normal
  For more information, see "Normal Mode", page 77.
- Interval recording
  For more information, see "Interval Recording", page 77.
- Stop motion
  For more information, see "Stop Motion", page 78.

### 7.4.2.1 Normal Mode

The camera records all consecutive images with the configured sensor frame rate for the duration of the recording.

### 7.4.2.2 Interval Recording

The camera captures only short bursts of images after waiting a defined duration (i.e. the interval length) during recording. This mode is used to create a time lapse effect.

#### Setting the Interval Length

► Choose ***Menu > Recording > Record mode > Interval length*** and set the length in *hours:minutes:seconds*. Maximum interval length is 2:00:00 h.

This setting configures the duration the camera waits between every burst of images that it captures.

#### Setting the Burst Length

► Choose ***Menu > Recording > Record mode > Burst length*** and set the number of frames. The maximum number of frames is 2000.

This setting configures the number of frames that are captured by the camera for each burst.

#### Setting the Duration Mode

1. Choose ***Menu > Recording > Record mode > Duration mode***.

   You have the following options:

   - *Manual*
     The recording is started and stopped with the *REC* button.
   - *Preset*
     The recording is started with the *REC* button and runs for the duration of the set recording. Additionally, it can be stopped with the *REC* button before the set duration of the recording has ended.

2. If you have set the duration mode to *Preset*, set the recording duration and resulting clip length. For more information, see "Setting the Recording Duration", page 78 and "Setting the Resulting Clip Length", page 78.

#### Setting the Recording Duration

**NOTE:** Only available in duration mode *Preset.* For more information, see "Setting the Duration Mode", page 78.

**NOTE:** When changing the recording duration, the camera automatically updates the resulting clip length.

► Choose ***Menu > Recording > Record mode > Recording duration*** and set the time in *hours:minutes:seconds*. The maximum recording duration is 99:59:59 h.

This setting configures the duration of the interval recording in real-time after start.

#### Setting the Resulting Clip Length

**NOTE:** Only available in duration mode *Preset.* For more information, see "Setting the Duration Mode", page 78.

**NOTE:** When changing the resulting clip length, the camera automatically updates the recording duration.

► Choose ***MENU > Recording > Record mode > Resulting clip length*** and set the time in *hours:minutes:seconds*.

This setting configures the duration of the resulting clip.

### 7.4.2.3 Stop Motion

The camera captures only single images after receiving a trigger from a user button during the recording. This mode is often used with motion control systems.

To initialize the stop motion mode, press the *REC* button. To record frames, press the user button *Stop motion trigger*.

For information on how to assign user buttons, see "User Buttons", page 123.

#### Activating the Stop Motion Beeper

**NOTE:** Only available in record mode *Stop motion*.

► Choose ***MENU > Recording > Record mode > Stop motion beeper*** .

## 7.4.3 Prerecording

**NOTICE**

Prerecording requires an AMIRA Advanced or AMIRA Premium license and the assignation of a user button to activate.

Prerecording internally buffers images for up to 20 seconds of real-time instead of recording them directly to the CFast 2.0 cards.

When prerecording is activated, pressing REC writes the buffered images to the CFast 2.0 card. This ensures the capture of unpredictable events without wasting media capacity.

Maximum prerecording duration is determined by the set combination of sensor fps and recording codec, and can also be limited by the user.

Pressing REC during prerecording stores all buffered images to the CFast 2.0 card at maximum write rate. After that, regular recording continues.

Sensor FPS can be changed during prerecording, either via ***Home > FPS*** or with the user switch set to FPS. This will clear the image buffer at the time of switching, causing the previously buffered images to be lost irreversibly.

### 7.4.3.1 Activating Prerecording

1. To activate prerecording, you have the following options:
   - Choose ***MENU > User buttons > Button VF1 / VF2 > Prerecording***
   - Choose ***MENU > User buttons > Camera user buttons > Button X > Prerecording***
2. Assign the prerecording functionality to a user button. For more information, see "User Buttons", page 123.
3. To activate buffering: Press the assigned user button.

   **Note:** While prerecording is active, *TC, Shutter, Look* and *MENU* settings cannot be accessed. Playback is also not possible. FPS can be changed during prerecording, but this will clear the image buffer.
4. Start/stop recording by pressing the *REC* button.
5. To end buffering: Press the assigned user button again.

   **Note:** When ending prerecording, the image buffer is cleared and all remaining images in the buffer are discarded.

### 7.4.3.2 Setting the Prerecording Duration

Requires an advanced license.

Technical limitations may reduce the actual buffer duration below the set value.

To activate and de-activate prerecording, assign prerecording to a user button. For more information, see "Activating Prerecording", page 79.

► Choose ***MENU > Recording > Prerecording max. duration***. Set the maximum duration of buffering used for pre-recording in a range from *1* to *20* seconds. The actual buffer duration is shown below the menu entry.

| | HD | 4K UHD |
|---|---|---|
| **25 fps** | 20 s | 5 / 7.6 / 11 s |
| **29.97 fps** | 16 s | 4.1 / 6.3 / 9.1 s |

**ProRes 422 LT/422/422 HQ buffer durations**

| | HD | 4K UHD |
|---|---|---|
| **100 fps** | 5.0 s | 2.0 / 3.1 / 4.5 s (at maximum frame rate of 60 fps) |
| **200 fps** | 2.4 s | - |

**ProRes 422 LT/422/422 HQ buffer durations**

| | HD | 4K UHD |
|---|---|---|
| **25 fps** | 13 s | 3.2 s |
| **29.97 fps** | 11 s | 2.7 s |
| **100 fps** | 3.3 s | 1.5 s (at maximum frame rate of 60 fps) |
| **200 fps** | 1.6 s | - |

**ProRes 4444 buffer durations**

| | HD | 4K UHD |
|---|---|---|
| **25 fps** | 9.0 s | 2.1 s |
| **29.97 fps** | 7.5 s | 1.7 s |
| **100 fps** | 2.1 s | 0.8 s (at maximum frame rate of 60 fps) |
| **200 fps** | 1.8 s (at maximum frame rate of 120 fps) | - |

**ProRes 4444 XQ buffer durations**

### 7.4.4 Activating Rec Beeper and Tally

1. Choose ***MENU > Recording > Rec beeper/tally***.

   You have the following options:

   - *Rec start beeper*
     Acoustic indication for start of recording.
   - *Rec stop beeper*
     Acoustic indication for stop of recording.
   - *Card full beeper*
     Acoustic indication for stopping recording due to full card. Has a different sound pattern than start/stop beeper for better distinction.
   - *Tally front*
     Sets the tally light on the viewfinder front end.
   - *Tally rear*
     Sets the tally light on the upper end of the IO panel.

**Note:** If Multicam mode is on, only an external trigger can activate camera tallies. If Multicam mode is off, only the internal recording can activate camera tallies.

**Note:** On recording, the tally light turns red.

## 7.5 Media

In the media menu, you can erase the CFast 2.0 card, delete footage and prepare the required folder structure on USB memory sticks.

**Note:** A triangle marks the active card.

**NOTICE**

A maximum of 400 clips can be recorded on a CFast 2.0 card. When the maximum of 400 clips is reached, the card will be declared as full and further recording onto the card is not possible.

**NOTICE**

A CFast 2.0 card may need to be reformatted in the event of a sudden power loss while the camera is writing to the card. The camera will indicate the error with an alert message. Please follow the alert instructions to avoid damage to the card or further recordings. No action is required if no alert is displayed.

### 7.5.1 Erasing Card A and B

**NOTICE**

Irreversibly erases all data from CFast 2.0 cards in slot A or B. Requires prior confirmation.

Card ejection during erasure, or interrupting the camera power supply, may render the card unusable.

1. You have the following options:
   - Choose ***MENU > Media > Erase CARD A***.
   - Choose ***MENU > Media > Erase CARD B***.

   A confirmation screen is displayed.
2. Press *ERASE*.

   A screen is displayed. If the card is erased successfully, a green message is displayed.

### 7.5.2 Deleting Last Clip of CARD A and B

You can delete the last **recorded** (not always the last listed) clip on the CFast 2.0 card in slot A or B. The deletion requires prior confirmation.

**Note:** On a card recorded with two different cameras, the last recorded clip might be listed in the middle of the clip table.

1. You have the following options:
   - Choose ***MENU > Media > Delete last clip CARD A***.
   - Choose ***MENU > Media > Delete last clip CARD B***.

   A list with clips to be deleted is displayed. The last clip is highlighted.
2. Confirm by pressing the jogwheel.

   A message asks for your confirmation.
3. Press *CONFIRM*.

   You have deleted the last clip. If required, you can delete the next clip in the list.

### 7.5.3 Preparing USB Medium

**NOTICE**

You can add files only from a correctly prepared USB memory stick with the required folder structure. Preparing the folder structure on the USB medium within the camera will not alter existing folders and files on the USB medium.

Prepare all USB media as described in this document before using them with the camera.

For information on connecting the USB medium, see "Inserting and Removing USB Medium", page 38.

1. Choose ***Menu > Media > Prepare USB medium***.

   **Note:** To avoid file corruption, never remove the USB medium during writing access.

2. Press *CONFIRM* to prepare the folder structure.

   The USB memory stick is now ready for use with the camera. You can remove the USB medium from the camera without unmounting.

The required folder structure for use in the camera is listed below:

| | |
|---|---|
| ARRI / AMIRA / | FRAMELINES: for frame line imports to camera |
| | GRABS: for grabbed still frames |
| | LICENSES: for license file installation |
| | LOG: for exported camera and update logfiles |
| | LOOKFILES: for look file imports/exports |
| | MANUAL: for user manual exports from camera |
| | SENSOR: for import/export of User Pixel Mask files and export of framegrabs for UPM creation |
| | SETUPS: for imports/exports of user camera setup files |
| | SUP: for update file installation |

## 7.6 Monitoring

The monitoring menu covers all settings related to EVF, Monitor and SDI as well as frame lines and other overlays on these outputs.

► Choose ***MENU > Monitoring*** and select the settings you want to change.

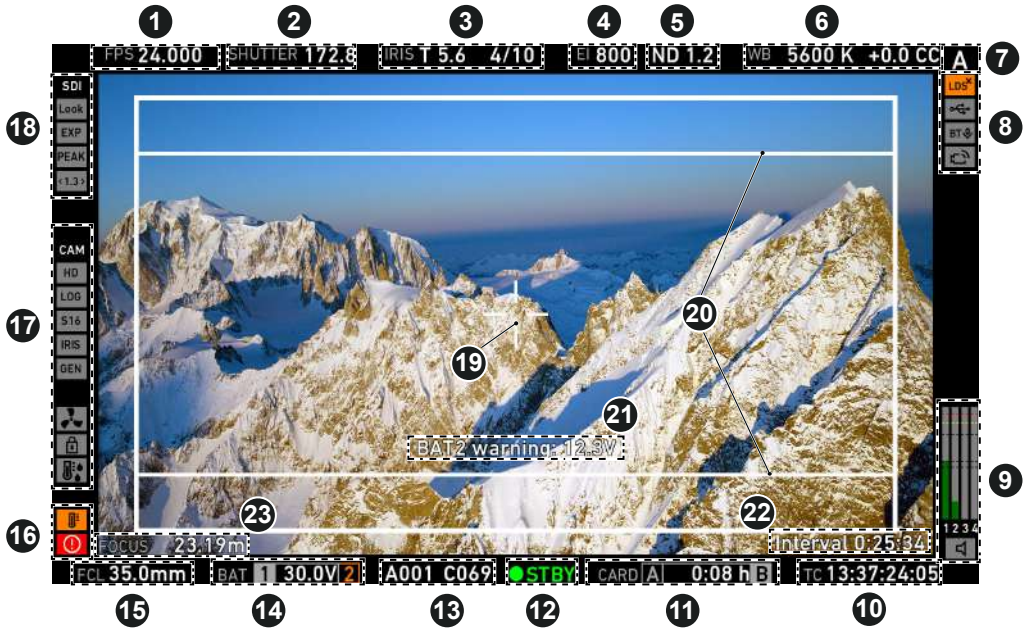
### 7.6.1 Status Info and Overlays

#### EVF and SDI Status Info

The camera can display camera status information on MVF-1 and the SDI outs. At the top and bottom of the screen, the camera displays textual status information. The top status bar consists of sensor FPS, shutter angle, exposure index, ND filter and white balance. In the MVF-1, the status bar also works as an overlay menu, allowing the user to change the values quickly. Please see "Overlay Menu" for further information. The bottom status bar displays information about the battery level, reel and clip, camera status, remaining recording time and timecode.

On the left and right of the screen, icons provide information about the current status of the camera. The icons are organized into groups. The left icon groups display the EVF/SDI configuration as well as the camera configuration. Additionally various other icons are displayed below to indicate certain active parameters. The right side shows the audio meters as well as other icons (described below).

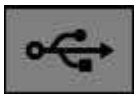
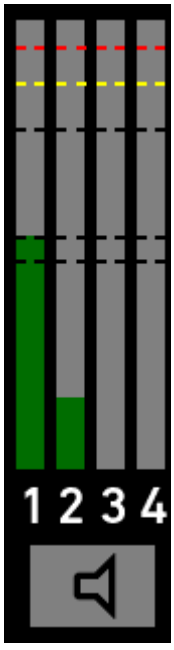
Furthermore the user can activate the display of additional camera information such as lens data and electronic horizon.



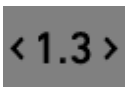

| | | | |
|---|---|---|---|
| **1** | Sensor *FPS* | **13** | Reel and clip info |
| **2** | *SHUTTER* value | **14** | *BAT 1/2* level/status |
| **3** | *IRIS* value | **15** | Focal length |
| **4** | *EI* Exposure index | **16** | Alert and temperature status |
| **5** | Internal *ND* filter | **17** | Camera settings |
| **6** | *WB* White balance | **18** | *EVF/SDI* status |
| **7** | Camera index letter | **19** | Center mark (here: cross) |
| **8** | Status icons | **20** | Frame Line |
| **9** | Audio status | **21** | Important camera warnings |
| **10** | Timecode | **22** | Record Mode |
| **11** | *CARD A/B* capacity/status | **23** | Focus value |
| **12** | Camera status | | |

The following table explains the status info displayed for EVF and SDI:

| Status info | Description |
|---|---|
| (1) Sensor FPS<br>FPS 24.000 | Shows the current sensor frame rate. The FPS label turns orange if the sensor frame rate does not match the project rate. |
| (2) SHUTTER<br>SHUTTER 172.8 | Shows the current shutter value (here: shutter angle). |
| (3) IRIS<br>IRIS T 5.6 4/10 | Shows the current value for the IRIS including sub stops.<br>The IRIS label is highlighted white when an ARRI Master Grip has control over the IRIS axis. |

| Status info | Description |
|---|---|
| (4) EI Exposure index<br> | Shows the current value for the exposure index. |
| (5) Internal ND filter<br> | Shows the current setting for the ND filter. |
| (6) WB White balance<br> | Shows the current value for the white balance. |
| (7) Camera index letter | Shows the camera index letter. |
| (8) LDS status<br> | Shows that the LDS interface has been disabled manually. |
| (8) USB status<br>  | Shows a connected USB medium.<br>If orange: The camera has detected a problem with the USB medium. You can find more information on the USB info screen. |
| (8) WiFi<br> | If WiFi mode is Host, depicts a small camera.<br>If WiFi mode is Client, shows the signal strength of the WiFi connection. |
| (9) Audio status<br>  | Shows the current level of camera audio channel signals. If audio recording is currently not possible, an orange speaker icon with a small x is shown.<br>Black markers at signal levels -20, -18, -9 dBFS for reference test tone. Yellow marker at -5 dBFS and red marker at -2 dBFS indicate a signal close to clipping. A red frame around the meter indicates a clipping at the A/D stage. |

| Status info | Description |
|---|---|
| (10) Timecode<br> | Shows the current timecode. |
| (11) CARD<br> | Shows the remaining capacity of CFast 2.0 card at current FPS and codec combination in real time. When card capacity is less than two minutes, capacity values starts flashing orange. |
| (12) Camera status<br> | Shows the camera status:<br>• STBY: Ready for recording<br>• REC: Recording<br>• PRE: PreRecording<br>• ERASE: Erasing a CFast 2.0 card. Active erasure disables recording.<br>• FULL: Card full<br>• ERROR: Card error<br>• None: Recording not possible (no card inserted) |
| (13) Reel and clip info<br> | Shows the reel (A001) and clip (C069) info. |
| (14) BAT level status<br> | Shows the current battery supply level. If the level is below the configured warning level, the value is flashing orange. |
| (15) Focal length info<br> | Shows the focal length of the connected lens.<br>The FCL label is highlighted white when an ARRI Master Grip has control over the zoom axis. |
| (16) Alert status<br> | Indicates an active alert state. |
| (16) Temperature warning<br> | Indicates that the camera temperature is outside of its optimal range. |
| (17) Recording resolution<br> | Shows the current recording resolution. |
| (17) Processing<br> | Shows the processing of the respective output. |

| Status info | Description |
|---|---|
| (17) S16 mode | Shows that Super 16 mode is active. |
| (17) Iris | Shows that auto iris is active. |
| (17) GEN | Indicates that Genlock is activated.<br>If orange: Genlock signal is missing or not usable. |
| (17) Fan icon | Shows that the camera needs to increase the fan speed to cool the camera properly. |
| (17) Lock | Indicates that the camera controls are locked (only shown in EVF-1). |
| (17) High humidity | Indicates that high humidity mode is active. |
| (18) EVF/SDI processing | Indicates the processing of the respective output, in this case ARRI Look 2 file. |
| (18) Exposure tool | Shows that the exposure tool is active.<br>If dark gray: Shows that the selected exposure tool cannot be used currently. |
| (18) Peaking | Indicates that peaking is active on the respective output. |
| (18) Anamorphic desqueeze   | Shows that anamorphic desqueeze is active and which lens squeeze factor is selected. |
| (19) Center cross | Marks the center of the image. |

| Status info | Description |
|---|---|
| (20) Frame line | Help to choose the right framing for different aspect ratios. |
| (21) Important camera warnings | Warnings that may interfere with camera operation are shown in the middle of the screen, e.g. low power supply, remaining card capacity less than 15 seconds. |
| (22) Record mode | Shows the record mode if set to Interval or Stop motion recording. |
| (23) Focus distance<br>FOCUS 10.80m | Shows the focus.<br>The FOCUS label is highlighted white when an ARRI Master Grip has control over the FOCUS axis. |

### 7.6.1.1 Live Monitor Status Bar

The fold-out monitor of the MVF-1 shows slightly different overlays than the EVF and the SDI output. Below the camera live image, the live screen shows image and camera status. You can toggle the status bar's content with the screen buttons below. The center screen button returns you to the main camera parameters.

The monitor status bar offers the display of five parameter groups:

- Main camera parameters: FPS, shutter, exposure index, ND filter and white balance (as shown below)
- Audio meters and timecode
- Status Icons
- Lens data: Focus, iris and zoom
- Recording: Remaining card capacity, clip duration, codec and battery level

1 Camera Status
2 Sensor Frame Rate
3 Shutter
4 Exposure Index
5 ND Filter
6 White Balance

### 7.6.1.2 Setting EVF/Monitor/SDI Status Overlays

► You have the following options:

- Choose ***MENU > Monitoring > EVF/Monitor > EVF overlays***.
- Choose ***MENU > Monitoring > EVF/Monitor > Monitor overlays***.

- Choose ***MENU > Monitoring > SDI > SDI processing > SDI overlays***.

You have the following options:

- *Frame lines*
  Sets frame lines on or off. Used as a framing reference tool with typically an image frame, a center mark and aspect ratio. For information on setting frame lines, see "Setting Frame Lines", page 90.
- *Center mark*
  Sets the center mark for use with frame lines between *Off*, *Dot*, *Small Dot*, *Cross* or *Small Cross*.
- *Surround mask*
  Sets the type of overlay to mark the surround view area of the active image. Either as black line, colored line, or semi transparent with 25, 50 or 75 percent opacity (opacity selection not available for monitor). The surround view area helps with framing and is not recorded.
- *Status info*
  Only for EVF and SDI. Sets camera status overlays between *Off*, *Overlay* (status on the active image), or *Safe* (status outside the active image).
  **Note:** In Overlay mode, frame lines up to an aspect ratio of 1.94:1 are not displayed because they are covered by the status info.
- *Status components*
  Only for EVF and SDI. Configures the status info overlay components. For more information, see "Setting EVF/SDI Status Info Components", page 88.

#### 7.6.1.3 Setting EVF/SDI Status Info Components

You can configure which parts of the status information should be displayed.

1. You have the following options:
   - Choose ***MENU > Monitoring > EVF/Monitor > EVF overlays > Status components***.
   - Choose ***MENU > Monitoring > SDI > SDI processing > Overlays > Status components***.
2. You have the following options:
   - *Info 1*
     Enables/disables the status areas above and below the image.
   - *Info 2*
     Enables/disables the status icons on the left and right side of the image.
   - *Timecode*
     Enables/disables display of the timecode on the bottom right of the image.
   - *Audio*
     Enables/disables display of the audio levels located on the lower right side of the image.
   - *Lens data*
     Enables/disables iris and focal length readings. Also available for monitor (in Monitor overlays menu screen).
   - *Lens focus distance*
     Sub-option of lens data setting. Enables/disables display of focus distance readings, located on the lower left corner of the image.
   - *Camera index letter*
     Displays the camera index letter in the top right corner of the image. Helps to identify camera image output when shooting with multiple cameras.
     **Note:** Only available for SDI.

## 7.6.2 Overlay Menu

The overlay menu offers a set of camera parameters for adjustment. When activated, it is visible in the top section of the image on the MVF-1 monitor and EVF and on any SDI output which has SDI processing activated. The overlay menu is a quick way to change the following camera settings:

- Sensor FPS
- Shutter (Shutter Angle / Exposure Time)
- Exposure Index
- ND filter
- White Balance

Sensor FPS, Shutter and White Balance cannot be changed manually, but in the range of their user predefined lists. ND filter is changed instantly and requires no additional confirmation step.

A white frame marks the selected parameter. A yellow font indicates active edit mode.

For detailed instructions on how to activate and operate the overlay menu, see the following sections.

### Activation and control using a user button

1. Assign a user button to "Overlay menu".
2. Activate the overlay menu by pressing the user button.
3. Select a parameter with the jogwheel of the MVF-1.
4. Start editing the parameter by pressing the jogwheel.
5. Change the value of the parameter with the jogwheel.
6. Confirm the new value by pressing the jogwheel.
7. If required, repeat steps 3-6 for other parameters.
8. Exit the overlay menu by pressing the user button.

## 7.6.3 Setting EVF/Monitor/SDI Surround View

With Surround View set to On, 10% additional pixels outside the recorded image area on the camera's ALEV III sensor are displayed, allowing the operator to see outside the recorded image and keep unwanted objects, such as microphone booms or dolly tracks, out of the shot. To view only the recorded image, set Surround View to off.

1. You have the following options:
   - Choose ***MENU > Monitoring > EVF/Monitor > Surround view***.
   - Choose ***MENU > Monitoring > SDI > SDI processing > Surround view***.
2. Set the surround view on or off. Per default the surround view is enabled.

## 7.6.4 Frame Lines

To aid in framing, both the MVF-1 and the SDI outs can display frame lines overlaid on the image. Frame lines can be considered electronic versions of ground glass markings in film cameras.

You can configure which frame line the camera should show and how it should be displayed (color and transparency). You can also configure up to two user rectangles which allow you to mark a rectangular area on the image, e.g. for marking an area that you need to keep clear during shooting for later VFX insertion.

A standard set of frame lines for different aspect ratios is provided in the camera, the availabilty depends on the selected recording mode:

- 1.33:1 (ARRI 1.33)
- 1.78:1 (ARRI 1.78)
- 1.78:1 1.3x anamorphic (ARRI 1.78 Ana. 1.3x)
- 1.85:1 (ARRI 1.85)
- 1.85:1 1.3x anamorphic (ARRI 1.85 Ana. 1.3x)
- 2.39:1 (ARRI 2.39)
- 2.39:1 1.3x anamorphic (ARRI 2.39 Ana. 1.3x)

To create custom frame lines, please use the ARRI Frameline Composer.

For information on how to import custom frame lines into the camera, please see "Import of User Files".

**NOTICE**

Frame lines created for a sensor mode other than the currently active are not selectable.

### 7.6.4.1 Setting Frame Lines

1. Choose ***MENU > Monitoring > Frame lines > Frame line***.

   A list of installed frame lines is displayed.

2. Select the desired frame line and confirm by pressing the jogwheel.

### 7.6.4.2 Setting Frame Line Color

You choose the color in which the following elements are displayed:

- frame line
- center mark
- user rectangle
- surround mask (if mask is set to Colored line)

► Choose ***MENU > Monitoring > Frame lines > Frame line color*** .

You have the following options:

- *Red*
- *Green*
- *Blue*
- *Cyan*
- *Magenta*
- *Yellow*
- *Black*
- *White*

### 7.6.4.3 Setting Frame Line Intensity

You can set the brightness of the frame line, center cross and user rectangles.

► Choose ***MENU > Monitoring > Frame lines > Frame line intensity*** and set the intensity. The value range is from *1* to *4*.

#### 7.6.4.4 User Rectangles

##### User Rectangles Setup

You can configure *width, height* and *offset* (i.e. position from left and top screen edge) in per mill. You can also reset all settings.

1. Choose ***MENU > Monitoring > Frame lines > User rectangle 1*** or ***MENU > Monitoring > Frame lines > User rectangle 2***.

   You have the following options:

   - *Width*
   - *Height*
   - *Offset left*
   - *Offset top*
   - *Reset all*

2. Configure the rectangle according to your needs.
3. To reset the configuration, press *Reset all*.

##### Activation of User Rectangles

You can activate up to two user rectangles.

► Choose ***MENU > Monitoring > Frame lines > User rectangles***. You have the following options:

- *Off*
- *Rect 1*
- *Rect 2*
- *Rect 1 + 2*

### 7.6.5 Anamorphic Desqueeze

##### Setting the Lens Squeeze Factor

The lens squeeze factor determines the factor that is used for anamorphic desqueeze on EVF/Monitor and SDI. This value is also written into the metadata of the clip and allows video players and editing software to automatically desqueeze clips that have been shot with anamorphic lenses.

Supported lens squeeze factors are 1.0x and 1.3x.

1.3x anamorphic desqueeze is supported in recording resolutions

- 3.2K
- UHD
- ARRIRAW 2.8K

► Choose ***MENU > Recording > Project settings > Lens squeeze factor*** and select the appropriate factor.

##### Activation of Anamorphic Desqueeze for EVF/Monitor and SDI

With the desqueeze factor defined in the project settings, anamorphic desqueeze can be then enabled and disabled for EVF/Monitor and SDI so that the image is displayed with the correct aspect ratio.

1. You have the following options:

   - Choose ***MENU > Monitoring > EVF/Monitor > Anamorphic desqueeze***.

- Choose ***MENU > Monitoring > SDI > Anamorphic desqueeze***.

2. Enable or disable anamorphic desqueeze for the EVF/Monitor and/or SDI outputs.
3. Additionally you can assign "EVF/Mon. Desqueeze" and "SDI Desqueeze" to user buttons to quickly enable and disable anamorphic desqueeze for the corresponding path. For further information on how to assign functions to user buttons please see "User Buttons".

## 7.6.6 Peaking

### 7.6.6.1 Defining Peaking for EVF/Monitor/SDI

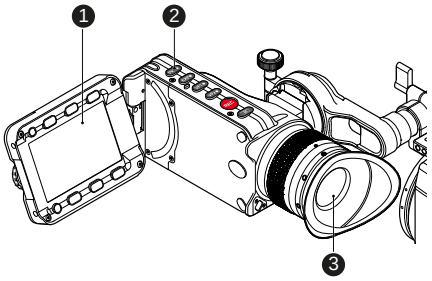
Peaking highlights in-focus image sectors for better focus judgement. You can activate peaking via the menu, via user button or by pressing *PK* on the viewfinder (only for EVF/Monitor).

1. You have the following options:
   - Choose ***MENU > Monitoring > EVF/Monitor > EVF/Monitor Processing > Peaking***.
   - Choose ***MENU > Monitoring > SDI > SDI Processing > Peaking***.
2. You have the following options:
   - *Peaking*
     Activates Peaking.
   - *Peaking mode*
     Toggles between *Color* and *Aperture*. Select color peaking to overlay in-focus areas with a color, and select aperture peaking to enhance object edges only.
   - *Peaking level*
     Sets a peaking strength in range from 1 (minimum) to 20 (maximum).
   - *Peaking offset shift*
     Adjusts the threshold for color peaking to become active, relative to the peaking level. **Note:** A negative offset shift, in particular with high ASA ratings, can increase the peaking results.
   - *Color*
     You have the following options: *Red*, *Green*, *Blue*, *Cyan*, *Magenta*, *Yellow*, *White*.

### 7.6.6.2 Activating Peaking

#### Activating Peaking on EVF and Monitor

Peaking highlights the image parts that are in focus for better focus judgement.




1. Press the *PK* (2) button.
   You have activated peaking for both Monitor (1) and EVF (3).

#### Activating Peaking on SDI

Peaking on SDI needs to be activated by a user button. For information on assigning user buttons, see "User Buttons".

Activation of peaking using a user button:

1. Assign "SDI Peaking" to a user button.
2. Press the user button.

   You have activated peaking on SDI.

Activation of peaking in the camera menu:

1. Choose ***MENU > Monitoring > SDI > SDI processing > Peaking > Peaking.***

## 7.6.7 Exposure Tools

### 7.6.7.1 Exposure Tool Setup

You can select which exposure tool you want to use to evaluate the image exposure. You can activate it with a user button or by pressing *EXP* on the viewfinder.

**Note:** *Zebra* is not available on image paths with processing set to Log C. Please use *False Color* or the waveform display to check the image exposure on image paths with processing set to Log C.

► Choose ***MENU > Monitoring > Exposure tools***.

You have the following options:

- *Select EVF/Mon. exp. tool*
  *False Color* marks predefined luminance ranges of the viewfinder image, as described below, and turns the remaining image parts black and white.
  In *Zebra* mode, the camera overlays up to two luminance ranges with diagonal stripes. *High zebra* ranges above, *Mid zebra* around the user-defined luminance value.
- *Select SDI exp. tool*
  *False Color* and Zebra, as described above.

- *False color mode*
  The result of activating false color can be varied to either *Monitoring-based* or *Log C-based*. This choice is global and will be valid for all viewing outputs.

  *Monitoring-based*
  When choosing *Monitoring-based* false color and false color is activated (with the EXP button on the viewfinder, for example), false color is calculated based on the video signal of the respective monitoring output. In other words, whatever is seen on the image path is the basis for calculating false color. This is the same behavior as in SUPs up to version 4.1.
  If you have a monitor output or the viewfinder configured to show Log C, false color levels will be calculated based on the Log C signal.
  If you have a monitor output or the viewfinder configured to LOOK or ALEXA Classic 709, false color levels will be calculated based on the image with the look applied or the ALEXA Classic 709 image respectively.
  *Monitoring-based* false color makes most sense when baking a look file into the recorded image. It allows you to monitor the exposure levels of the signal you are recording. Looking at *Log C-based* false color makes no sense in this case, as you are not recording the Log C signal and will therefore not have the Log C image available in post.

  *Log C-based*
  When choosing *Log C-based* false color, false color is always calculated based on the Log C image. When false color is activated (with the EXP button on the viewfinder, for example), the respective monitoring output is switched to Log C processing, false color levels are calculated based on the Log C signal and false color is activated. When de-activating false color, the image path is switched back to it's previous processing and false color is switched off. This setting makes most sense for projects that record Log C images. While your monitoring image paths can be set to show Rec 709 or a look to provide a preview for all, you will want to know the exposure levels of the signal you are actually recording (Log C) when checking false color. *Log C-based* false color mode is mandatory when using HDR ALF-2 files.

  **NOTICE**

  When a HDR ALF-2 look file is loaded and activated in the camera, false color mode automatically switches to 'Log C-based'. This is because HDR look files do not generate video signals over 75%, which means that overexposure might not be indicated correctly in ‘Monitoring-based false color’ mode.

  When you are using a Look file that does not utilize the full signal level range and you activate false color on a monitoring path where Look processing is active, false color will not indicate over- or underexposure. This specifically applies to Rec 2100 PQ Look files, as they level out at a maximum signal level of 75%.

  When using look files with extreme color grading, it is possible for 'Monitoring-based' false color to show an inaccurate result.

  For more information on monitoring processing, see "Configuring Processing and Color Spaces", page 69.

- *Zebra setup*
  For more information, see "Zebra Setup", page 95.
- *EVF waveform*
  Sets waveform overlay on EVF on or off.
- *EVF waveform size*
  Sets size of EVF waveform overlay to small or large.

- *Monitor waveform*
  Sets waveform overlay on monitor on or off.
- *Monitor waveform size*
  Sets size of monitor waveform overlay to small or large. **Note:** Waveform is a luminance waveform from a 0-100% signal level, calculated from the EVF and monitor image signals for each path.

### False Color

The false color display is a tool to check correct exposure. It can be activated on EVF / Monitor and SDI, and takes the respective gamma setting as a basis for calculation. When active, the image is turned into a greyscale image with important luminance ranges shown in signal colors. Note that the false color tool is only suitable for checking exposure and is not an appropriate tool for checking other image parameters or sensor quality.

Activating false color replaces luminances with the following colors:

| 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 | |

### Zebra Setup

► Choose ***MENU > Monitoring > Exposure tools > Zebra setup***.

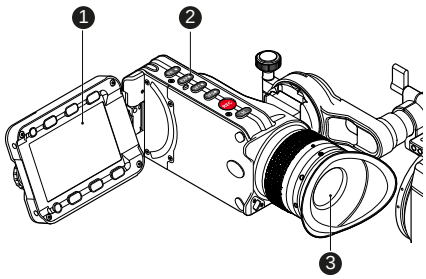
You have the following options:

- *Zebra mode*
  Sets the zebra mode to High, Mid, or both.
- *High zebra level*
  Sets the exposure level (in %) above which high zebra is active.
- *High zebra color*
  Sets the pattern color.
- *Mid zebra range*
  Sets the active range (in %) around a mid zebra level.
- *Mid zebra color*
  Sets the pattern color.

## 7.6.7.2 Activating the Exposure Tool

Use the exposure tool for evaluation of the image exposure levels.

### Activating the Exposure Tool on EVF and Monitor




1. Press the EXP (2) button.
   You have activated the exposure tool for both Monitor (1) and EVF (3).

### Activating the Exposure Tool on SDI

Exposure tool on SDI can be activated by a user button. For information on assigning user buttons, see "User Buttons".

Activation of the exposure tool using a user button:

1. Assign "SDI Exp. tool" to a user button.
2. Press the user button.

   You have activated the exposure tool on SDI.

Activation of the exposure tool in the camera menu:

1. Choose ***MENU > Monitoring > SDI > SDI processing > Exposure tool***.

## 7.6.8 Return In Path Configuration

Selects the paths for return in signal routing. Return In is activated with a user button.

Available paths are EVF/Monitor, SDI 1 and SDI 2.

Return In requires a 422 1.5G HD-SDI signal in 1920x1080 resolution on the RET/ SYNC IN BNC connector.

**Note:** Return In is not available when in MPEG-2 HD 422.

## 7.6.9 EVF Zoom

### Setting the EVF Zoom Position

You can zoom into the image e.g. to better judge focus. The camera offers 3x3 patches that can be selected as zoom positions, and an additional position called eye level, which are between top center and mid center.

While EVF Zoom is activated, the zoom can be changed by using the jogwheel or the soft buttons on the MVF-1, if it is set to display the live image.

Active EVF Zoom magnification is indicated by an orange frame around the image. Frame lines are deactivated while EVF Zoom is active.

**Note:** Zoom needs to be activated by a user button. For information on assigning user buttons, see "User Buttons", page 123.

1. Choose ***MENU > Monitoring > EVF/Monitor > Zoom position***.
2. Select the default zoom position for EVF Zoom.

### Activating EVF Zoom

EVF Zoom needs to be activated by a user button. For information on assigning user buttons, see "User Buttons", page 123.

1. Assign "EVF+Mon. Zoom" to a user button.
2. Press the user button.

   You have activated the EVF Zoom for EVF and Monitor

### Change EVF Zoom Position

1. Activate EVF Zoom
2. Press the soft buttons on the MVF-1 monitor or use the jogwheel to change the EVF Zoom position.

## 7.6.10 SDI Configuration

You can configure the *SDI* outputs. The following combinations of formats, frame rates and scan formats are available:

| Format | Reso-lution | Samp-ling | Frame rates |
|---|---|---|---|
| ***422 1.5G HD*** | 1920x1080 | 4:2:2 YCbCr | 23.976p, 24p, 25p, 29.97p, 30p, 50i, 59.94i, 60i, 23.976psf, 24psf, 25psf, 29.97psf, 30psf |
| ***422 3G HD*** | 1920x1080 | 4:2:2 YCbCr | 48p**, 50p, 59.94p, 60p |
| ***444 3G HD*** | 1920x1080 | 4:4:4 RGB | 23.976p, 24p, 25p, 29.97p, 30p |
| ***DL 422 3G UHD**** | 3840x2160 | 4:2:2 YCbCr | 23.976p, 24p, 25p, 29.97p, 30p |
| ***422 6G UHD**** | 3840x2160 | 4:2:2 YCbCr | 23.976p, 24p, 25p, 29.97p, 30p |
| ***DL 422 6G UHD**** | 3840x2160 | 4:2:2 YCbCr | 48p**, 50p, 59.94p, 60p |

* only available in 3.2K/4K UHD recording resolution.

**48p may not be supported by some SDI devices, as this is not a defined frame rate according to the SMPTE standard.

**Note:** Status overlays are not available when using UHD (3840x2160) resolution.

### 7.6.10.1 Configuring SDI Processing

You can configure the SDI processing elements.

► Choose ***MENU > Monitoring > SDI > SDI processing***. You have the following options:

- *Surround view*
  Activates or deactivates surround view.
- *Exposure tool*
  Activates or deactivates the exposure tool. For more information, see "Exposure Tool Setup", page 93.
- *Peaking*
  Configures peaking for SDI. For more information, see "Defining Peaking for EVF/Monitor/SDI", page 92.
- *Overlay*s
  Configures the SDI overlays. For more information, see "Setting EVF/Monitor/SDI Status Overlays", page 87.

### 7.6.10.2 Setting SDI 1/2 Format

You can toggle the SDI signal between different formats:

- *422 1.5G HD*
- *422 3G HD*
- *444 3G HD*
- *422 6G UHD***
- *DL 422 3G UHD***

- *DL 422 6G UHD***

** only in 3.2K and 4K UHD. Requires installed 4K UHD license.

For information on the combination of formats, frame rates and scan formats, see "SDI Configuration", page 96.

► Choose ***MENU > Monitoring > SDI > SDI 1 format*** or ***MENU > Monitoring > SDI > SDI 2 format*** and select the desired format.

**Note:** When you select a dual link (DL) format, the settings for SDI 2 become unavailable.

### 7.6.10.3 Setting SDI 1/2 Frame Rate

You can set the frame rate together with the scan format on the SDI output. If the frame rate is lower than the sensor fps, frame drops will occur. If it is higher, duplicate frames will be output.

► Choose ***MENU > Monitoring > SDI > SDI 1 frame rate*** or ***MENU > Monitoring > SDI > SDI 2 frame rate*** and select the desired frame rate.

Possible scan formats

- *Progressive (p)*: Transmits images line by line starting at the top-left pixel.
- *Progessive segmented frame (psf)*: Splits progressive images into fields (odd lines and even lines). Transmits these (all odd before all even) line by line.
- *Interlaced (i)*: Creates two fields from two adjacent progressive frames (odd lines from the first; even lines from the second frame)

For information on combinations of formats, frame rates and scan formats, see "SDI Configuration", page 96.

### 7.6.10.4 Setting SDI 1/2 3G Level

For the single link 3G SDI formats, you can choose whether to use 3G level A or B. Refer to the manual of your connected devices to decide which 3G level to choose.

► Choose ***MENU > Monitoring > SDI > SDI 1 3G level*** or ***MENU > Monitoring > SDI > SDI 2 3G level*** and select the desired 3G level.

### 7.6.10.5 Setting SDI 1/2 Image

The SDI image setting determines how images are output over SDI:

*Clean* images are identical to the images that the camera records internally. They do not contain any overlays and do not show any surround view.

*Processed* images may contain overlays and show surround view.

SDI 1 and 2 cannot be configured completely independently from each other in reference to the image setting. The SDI 1 setting determines the available options for SDI 2.

The following combinations are possible:

| SDI 1 | SDI 2 |
|---|---|
| clean | clean |
| clean | processed |
| processed | clean |

If both SDI 1 and 2 are supposed to show processed images, SDI 2 needs to be configured as SDI 1 clone. See "Cloning SDI 1 Settings to SDI 2", page 99 for more information.

► Choose ***MENU > Monitoring > SDI > SDI 1 image*** or ***MENU > Monitoring > SDI > SDI 2 image***.

### 7.6.10.6 Cloning SDI 1 Settings to SDI 2

You can set SDI 2 as a clone of SDI 1. SDI 2 will inherit all settings from SDI 1. The configuration options for SDI 2 are grayed out while it is configured as a clone of SDI 1. If you change a value for SDI 1, the same value becomes active for SDI 2 as well.

► Choose ***MENU > Monitoring > SDI > SDI 2: clone SDI 1***.

## 7.6.11 EVF/Monitor Settings

► Choose ***MENU > Monitoring > EVF/Monitor > Settings***.

You have the following options:

- ***EVF brightness***
  For AMIRA MVF-1 up to serial number 4000:
  Brightness of the EVF is adjustable from 1 (minimum) to 10 (maximum). The default value is 06.
  For AMIRA MVF-1 starting with serial number 4000:
  These MVF-1 have a new OLED viewfinder panel built in, using new calibration and brightness settings. Brightness of the EVF is adjustable with values 120, 200 and 300 (Nits). The default value is 120.
- ***EVF gamma***
  *Standard:*
  Equals the EVF gamma of up to SUP 4.1.
  *Lifted:*
  Uses an 1.3x increased gamma as introduced with SUP 5.0 to e.g. better control lighting in dark areas. *Lifted* is the default setting.
  **Note**: EVF gamma setting is not available for AMIRA MVF-1 with serial no. 4000 and higher. These MVF-1 have a new OLED viewfinder panel built in, using new calibration and brightness settings, with EVF gamma fixed and equivalent to the *Lifted* setting of the preceding viewfinder panel.
- ***EVF power***
  *Auto:*
  EVF OLED display is activated and deactivated automatically, depending on the proximity sensor state. This is the default setting.
  *Off:*
  Deactivates the EVF OLED display permanently so that it remains switched off even when the proximity sensor is covered e.g. by a rain cover.
  *On:*
  Use this setting to override the MVF-1 proximity sensor and to constantly enable the viewfinder display. This setting should be regarded as an emergency setting to be used, for example, when the proximity sensor is faulty and no longer activates the viewfinder display anymore.

**NOTICE**

Please be aware that when enabled, and used for prolonged periods, this configuration may cause irreversible burn-ins on the viewfinder display.

When it is enabled, the camera will issue a corresponding warning after each boot-up and sensor mode switch.

- ***Monitor brightness***
  Brightness of the monitor from 1 (minimum) to 10 (maximum). The default value is 06.
- ***Monitor flip mode***
  *Auto:*
  Flips the monitor image automatically depending on it's orientation. This is the default setting.
  *Normal:*
  Ignores the monitor's orientation sensor and displays the monitor image in normal orientation.
  *Flipped:*
  Ignores the monitor's orientation sensor and displays the monitor image in flipped orientation (upside down).

### 7.6.12 Activating Color Bars

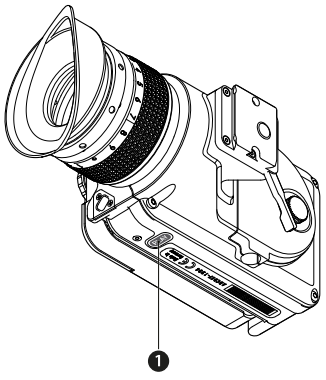
You can activate a SMPTE color bar on the SDI outputs.

**Note:** Recording deactivates the color bar.

► Choose ***MENU > Monitoring > Color bars*** and set the bars on or off.

## 7.7 Playback

### 7.7.1 Starting Playback via the PLAY Button




1. Press *PLAY* (1) for one second to see the last recorded clip on the active CFast 2.0 card.

   The camera enters playback on Monitor, EVF and on SDI.
2. You may toggle between play and pause by briefly pressing *PLAY* (1) again.
3. To exit playback: Press *PLAY* (1) for one second.
4. For more information on playback control, see the next chapter.

## 7.7.2 Playback Controls

- When starting playback, the camera loads the last recorded clip (paused on the first frame).
- ***PLAY/PAUSE* (6)** button:
  Toggles between play and pause.
  Play/pause can also be toggled by pressing the play button at the bottom of the viewfinder or by pressing on the jogwheel. The jogwheel can also be used to shuttle through a clip:
  - While in pause:
    Use the jogwheel to shuttle through the clip frame by frame
  - While playing:
    Use the jogwheel to increase or decrease the playback speed up to 512x forwards or backwards.
- ***SKIP FWD* (4)** button:
  Loads the next clip in the cliplist.
- ***SKIP REV* (2)** button:
  Loads the previous clip in the cliplist.
- ***CLIPLIST* (7)** button:
  Select another clip for playback from a list of all clips on the inserted card.
- ***WAVEFORM* (3)** button:
  Enable/disable the waveform overlay on the user monitor.
- ***OPTIONS* (5)** button:
  Allow to set the clip end action.
- ***ARROW* (8)** button:
  Hides/shows button labels.
- ***EXIT* (1)** button:
  Ends playback and returns to HOME screeen.

**Note:** When playing back clips with project rates of 48 fps or greater that were recorded in ARRIRAW or with ProRes resolutions of 3.2K or 4K UHD, the camera only plays back every second frame to ensure smooth playback. When stepping through single frames, however, every frame is shown.

***CLIPLIST***

1. On the playback screen, press *CLIPLIST* to open the cliplist of the active recording card. The list shows the clip names and their resolution.
   **Note:** Clips may be grayed out, if they cannot be played back because their recording resolution is not compatible with the currently set recording resolution.
2. You may toggle between cards by pressing the card-related screen button.
3. **Note:** Label turns gray and displays n/a if card slot is empty.
4. Via jogwheel, scroll to the desired clip.
5. For the selected clip, clip properties are displayed below the cliplist:
   - *Codec:* Recording codec of clip.
   - *Resolution:* Recording resolution of clip.
   - *Duration:* Clip duration at playback speed.
   - *Rec FPS:* Sensor frame rate the clip was recorded with.
   - *Project rate:* Playback frame rate of clip.
   - *TC:* Start timecode of the clip.
6. To load the selected clip: Press the jogwheel.
7. To return to the play screen without loading a new clip: Press *BACK*.
8. To end playback: Press *EXIT*.

***OPTIONS***

► Press the *OPTIONS* button to open the playback options screen.

You have the following options:

- *Play end mode*
  Define the playback behavior at the end of a clip.
  - *Pause on end*
    Playback pauses at the end of the clip.
  - *Pause on start*
    Playback pauses at the beginning of the clip.
  - *Loop*
    Playback continues from the beginning of the same clip again.
  - *Play next clip*
    Playback continues with the next clip in the cliplist.
  - *Exit playback*
    Camera exits playback.
- Monitor waveform
  Sets the waveform overlay on monitor to *On* or *Off*.

## 7.8 System

The system menu organizes the general camera setup.

► Choose ***MENU > System***.

## 7.8.1 Sensor

*Sensor temperature:* Toggles the sensor temperature between normal and high humidity.

- Setting to *High humidity* increases the sensor temperature to reduce the risk of condensation on the sensor cover glass.
- **Note:** Recommended only in environments > 40 °C (104 °F) and 80 % r.H. Entry is grayed out, if camera is not calibrated for high humidity.
- **Note:** Cameras with newer calibration are optimized for all environmental conditions, so that no more manual adjustment is required. The menu entry is not shown on these cameras,.

► Choose ***MENU > System > Sensor > Sensor temperature***.

### 7.8.1.1 Adjusting the Image Sharpness

You can adjust the image sharpness ranging from -5 to +5 (default = 0). The image sharpness influences the image detail. For more information, see "Adjusting the Image Detail", page 103

► Choose ***MENU > System > Sensor > Image sharpness set/active***.

### 7.8.1.2 Adjusting the Image Detail

You can adjust the maximum detail frequency influenced by the sharpness setting ranging from *-5* to *+5* (default = *0*).

► Choose ***MENU > System > Sensor > Image detail set/active***.

### 7.8.1.3 Setting Noise Reduction

Noise reduction reduces the amount of noise in dark image areas. It reduces the noise in a very organic way and preserves the character and texture of the image. **Note:** *Strong* may result in image artifacts with fast moving objects.

There is no impact on image sharpness. You can set the noise reduction in S16, 3.2K and 4K UHD mode only.

► Choose ***Menu > System > Sensor > Noise reduction*** and select your setting. You have the following options:

- *Off*
- *Normal*
- *Strong*

For more detailed information about noise reduction, image sharpness and image detail settings please refer to the "Sharpness, Detail and Noise Reduction" white paper on the ARRI website.

### 7.8.1.4 Setting Genlock Sync

You can synchronize the camera sensor to external sync sources.

**NOTICE**

When daisy-chaining several AMIRAs via HD-SDI, set the first camera to Genlock: *Off* and all others to the desired input signal.

1. Choose ***MENU > System > Sensor > Genlock sync*** and select a setting. You have the following options:
   - *Off*

- *RET/SYNC IN*
  The camera requires a black burst, tri-level or a 422 1.5G HD-SDI signal running at sensor fps for the RET/SYNC IN BNC connector.
- *TC IN*
  The camera requires a timecode signal running at sensor fps for the TC connector.

2. The camera will display a genlock icon on the HOME screen as well as in status info.

**NOTICE**

Syncing to HD-SDI signals is only possible using 422 1.5G signals.

3G, 6G or 12G HD-SDI signals are not supported to be used as sync source.

### 7.8.1.5 Setting the Sync Shift

Sync shift (+ 0.000 µs): Offset applied to the genlock signal at the input. Minimum stepsize is 52 ns, maximum possible correction is up to +/- 20 ms (= 384000 steps), depending on the sensor frame rate.

► Choose ***MENU > System > Sensor > Sync shift***.

### 7.8.1.6 Mirroring the Sensor Image

You can mirror the sensor image in horizontal and vertical directions.

**Note:** Mirroring information is stored as metadata in Quicktime files. MPEG-2 HD MXF files do not support mirroring via metadata, so the clips appear as recorded when played back externally.

► Choose ***MENU > System > Sensor > Mirror image***.

You have the following options:

- *Off*
  Mirroring is inactive.
- *V*
  Vertically mirrored.
- *H*
  Horizontally mirrored.
- *V+H*
  Vertically and horizontally mirrored (i.e. rotated by 180°).

### 7.8.1.7 Working with a User Pixel Mask

All sensors exhibit a certain number of defect pixels, and ARRI cameras have two mechanisms to catch and correct them: one is a static pixel correction based on a pixel mask created during manufacturing, and the other is a dynamic pixel correction that continuously evaluates each frame and masks defect pixels that are not caught by the static pixel mask. In very few cases, we have observed some pixels that are not corrected by either method; for those cases we have User Pixel Masking. User Pixel Masking works in combination with the ARRIRAW Converter (ARC) from ARC version 3.0 onwards.

NOTE: When shooting ARRIRAW, it is not necessary to load the User Pixel Mask into the camera. Instead, it can be applied to the ARRIRAW files in post using the ARRIRAW converter software or any third party software that has implemented the User Pixel Mask feature through our ARRIRAW SDK.

NOTE: The User Pixel Mask will remain intact during a factory reset and during a software update. It can be manually removed or overwritten with a new one at any time.

**NOTICE**

User pixel masks can be created with the ARRIRAW Converter for Mac and Windows, available for download from the ARRI website. Please refer to the ARRI website and the ARRIRAW Converter documentation for additional information.

Choose ***MENU > System > Sensor > User pixel masking***.

You have the following options:

- *User pixel mask active:*
  Shows whether a User Pixel Mask is currently active in the camera.
- *Install user pixel mask*:
  Select to install a User Pixel Mask from USB memory stick.
- *Export user pixel mask*:
  Select to backup the currently installed User Pixel Mask onto USB memory stick.
- *Delete user pixel mask*:
  Select to uninstall a User Pixel Mask.
- *Grab raw image*:
  Stores an ARRIRAW frame grab on the USB memory stick.

### To use User Pixel Masking for all Output and Recording Formats

1. Insert an USB memory stick into camera.
2. Use ***MENU > System > Sensor > User pixel masking > Grab raw frame*** to grab an ARRIRAW frame. The ARRIRAW frame grab is stored on the USB memory stick in folder ARRI/AMIRA/SENSOR.
3. Import the ARRIRAW frame grab into the ARRIRAW Converter.
4. Use the ARC software to mark defect pixels. The marked pixel coordinates are stored in an XML file called the User Pixel Mask. Please note that it is advisable to mark the least number of pixels necessary, as too many marked pixels can be counter productive.
5. Save the User Pixel Mask to the USB memory stick in folder ARRI/AMIRA/SENSOR and load it into the camera with ***MENU > System > Sensor > User pixel masking > Install user pixel mask***
6. After a restart of the camera, the marked pixels will be masked using information from surrounding pixels. This masking is applied to the images delivered from the sensor, before any other processing takes place, and thus becomes active on all outputs.
7. Carefully check the end result by visually inspecting the areas where you have marked pixels; if too many pixels are marked too close to each other, or if pixels are marked close to other pixels that are already marked in the static pixel mask, the result could be uncorrectable clusters, which are more visible than the original defect pixels.

As an added service, it is possible to send the User Pixel Mask to ARRI Service at service@arri.de for verification. We strongly recommend that you take advantage of this free service, as sometimes, clusters are difficult to spot depending on the background. Please note, however, that in the end, it is the responsibility of the person creating the User Pixel Mask to verify that no clusters are formed.

## 7.8.2 Setting the Fan Mode

You can set the camera cooling for different shooting situations.

► Choose ***MENU > System > Fan mode***.

You have the following options:

- *Regular*
  Holds a balance between fan noise and camera temperature.
- *Rec low*
  Increases fan speed during standby to pre-cool the camera. Minimizes fan speed/noise during recording.
  **Note:** Ideal in an environment warmer than 25 °C (77 °F).
- *Low Noise*
  Minimizes fan noise during standby and recording.
  **Note:** With data rates above 100 MB/s (due to fps/codec setting), the fan speed automatically increases to prevent CFast 2.0 cards from overheating.

## 7.8.3 Power Warnings for Batteries

You can configure low battery warning.

► Choose ***MENU > System > Power*** and change the configuration.

### 7.8.3.1 Setting Bat Onboard (BAT1) Warning

You can sets the voltage or percentage level that triggers a power warning for onboard batteries.

**Note:** Percentage setting is only used if Bat unit preference is set to Percent and battery transmits capacity in percent.

► Choose ***MENU > System > Power > Bat onboard (BAT1) warning*** and set the voltage or percentage level.

### 7.8.3.2 Setting the BAT In (BAT2) Warning

You can set the voltage level that triggers a power warning for external batteries on the BAT connector.

► Choose ***MENU > System > Power > Bat in (BAT2) warning*** and set the voltage level.

### 7.8.3.3 Setting the BAT Unit Preference

You can set the preferred unit for **onboard** batteries.

**Note:** If the battery does not transmit the capacity in percent, voltage levels are used.

1. Choose ***MENU > System > Power > BAT unit preference*** and set the unit.

## 7.8.4 Lens Mount Settings

You can enable/disable the LDS contacts of the lens mount and set your preferred focus unit.

► You have the following options:

- Choose ***MENU > SYSTEM > Lens mount settings***.

- Choose ***HOME > i > Lens info > Settings***.

The lens mount settings screen is displayed.

You have the following options:

- *Focus unit*
  Select the unit for display of the lens focus distance. You have the following options:
  *Lens default*
  *Imperial*
  *Metric*
- *Enable lens mount*
  Allows you to deactivate the LDS contacts of a PL lens mount.
  Allows you to deactivate the electronic contacts of an EF mount.

**NOTICE**

Please note that as soon as an LDA table is activated, the LDS contacts of the lens mount are switched off. There is no need to switch the mount off manually when using LDA.

## 7.8.5 Adjusting System Time and Date

You can adjust system time and date.

► Choose ***MENU > System > System time + date*** to set the system time and date.

**Note:** *Timezone* and *Daylight savings time* do not change time and date settings. They are stored as metadata in the recorded clips.

## 7.8.6 Buttons and Display

You can configure the display style and the brightness and locking of the camera buttons.

► Choose ***MENU > System > Buttons + display*** and select the configuration you want to change.

### 7.8.6.1 Setting the Display Style

► Choose ***MENU > System > Buttons + display > Display style*** and select your setting. You have the following options:

- Day mode
- Night mode

The brightness of display and buttons changes according to the selected mode.

### 7.8.6.2 Setting the Button Brightness

► Choose ***MENU > System > Buttons + display > Button brightness*** and set the brightness in a range from 0 to 3.

The button illumination changes according to the selected value.

### 7.8.6.3 Lock Configuration

Sets which switches and buttons are affected by the camera lock. The configuration cannot be changed while lock is active. The default lock configuration locks all buttons except REC and [M] buttons as well as lens buttons. The audio module buttons and

switches, camera LOCK button, and power button cannot be locked. Lens buttons are only available on certain types of lenses. For information on operation of camera lock, see "Locking the Camera", page 128.

1. Choose ***MENU > System > Buttons + display > Lock config.***

   You can configure the lock of the following buttons by navigating to the according entry and setting them on or off:

   - *Camera buttons and switches*
     ND filter switch
     US switch
     EI switch
     WB switch
     AW switch
     Rec button
   - *EVF buttons*
     REC button
     PLAY button
     EXP button
     PEAK button
     VF1 button
     VF2 button
   - *Lens buttons*
     RET button
     VTR button

For information on user buttons, see "User Buttons", page 123

## 7.8.7 Multicam

The Multicam feature allows you to use the camera in a multi-camera production environment. When activated, the camera can be controlled with a range of Sony RCPs using the Sony Simple Camera Protocol (SSCP), communicating via the camera's Ethernet port.

Additional information on the Multicam feature can be found in the Multicam white paper available on the ARRI website.

### 7.8.7.1 Required Hardware

In addition to the camera, the following hardware is required to allow remote controlling the camera by a RCP:

- Sony RCP (models supported by SSCP devices)
- SSCP device: Sony CNA-1 or DTS1840 ethernet remote interface or equivalent
- Ethernet connection cables

For a serial connection between RCP and SSCP device:

- Serial cable for connecting RCP and SSCP device

For an ethernet connection between RCP and SSCP device:

- Ethernet switch supporting PoE (or PoE injector for powering SSCP device and RCP)

Optional components:

- If you are using SUP 5.0 (or higher) with the single or dual 6G output for UHD up to 60p, please make sure to update your camera at an ARRI service station with the latest SDI output board (IAOX Rev. H) to ensure best 6G or dual 6G performance.
- A modified AMIRA media door is available as spare part, allowing to close the door with the ethernet cable connected. Alternatively a flat ethernet cable and connector may be used when using the standard media door.
- Camera on-board monitor with optional yoke for camera top back mounting position (the on-board monitor is not an essential requirement, but typically used for a studio-like setup, where the operator is located behind the camera and controls zoom and focus with rear camera controls).
- AMIRA Multicam Monitor mount for Sony 740/741 monitors (K2.0010247).
- Lens controls for zoom and focus, depending on the used lens type, or ARRI Master Grips.

### 7.8.7.2 Supported RCP Parameters

The following list contains the RCP parameters supported by the camera:

- Iris control:
  ENG style PL lenses and ENG style B4 lenses via the Hirose 12/20 pin connection
  EF lenses via the lens contact on the mount
  Cinestyle lenses using the CMotion Broadcast camin as interface between the Hirose connector and the lens motor
- Auto Iris
- Black R/G/B
- Master Black
- White R/G/B
- 5600K Override
- Auto White Balance
- ND filter selection
- Detail
- Master Gain
- Gamma R/G/B
- Master Gamma
- Master Black Gamma
- Master Knee
- Saturation
- Scene Files (up to 5)
- Call
- Color Bars
- Shutter
- ECS Shutter
- White Balance

Specific behavior for Auto White Balance:

In the color processing signal flow, the „Auto White Balance“ function is processed before the RGB white or black processing. This is different to typical 2/3’ cameras, and needs to be considered when using „Auto White Balance“ for „neutralizing“ the image. With AMIRA, after performing „Auto White Balance“, the RGB setting still is maintained.

Look Support:

With AMIRA in multicam mode, the look functions are part of the image parameter remote control of the RCP. Starting with SUP 5.0, other looks than the default Rec 709 can be used.

### 7.8.7.3 Multicam Setup and Configuration

#### General Settings

Genlock

To synchronize the HD-SDI outputs to the studio clock, choose *MENU* > *System* > *Sensor* > *Genlock sync* and set the genlock source. Use *Genlock Shift* to compensate for a phase shift between the studio clock and the HD-SDI outputs. Please also see "Setting Genlock Sync".

SDI Configuration

Go to *MENU* > *Monitoring* > *SDI* and ensure the HD-SDI outputs to be configured according to your setup. Please also see "SDI Configuration".

Image processing

Choose *HOME* > *LOOK* > *Config* to configure image processing for each image path. Set SDI processing to *LOOK* for the color adjustments by the RCP to be baked in into the HD-SDI output signals. Set REC processing to *LOOK* if you want the color adjustments by the RCP to be baked in into the internal recordings on the CFast card. Set *REC processing* to Log C for recordings without the Looks being baked into the signal, but look parameter adjustments are carried in the metadata. For more information see "Configuring Processing and Color Spaces".

Look settings

In multicam mode, the look functions are part of the image parameter remote control of the RCP. Starting with SUP 5.0, other looks than the default Rec 709 can be used, typically *ARRI 709 Multicam*. Please also see "Look Settings".

**NOTE**: Please make sure you have a look loaded which is editable (e.g. ARRI 709 Multicam), some default looks included in the camera are write protected, these looks cannot be edited. Duplicate a look (in the LOOK screen of the camera menu) or use an individual look, and set this as active look. Otherwise the RCP controls affecting the look (all color or gamma related) will not change the parameters.

Frame rate and shutter

Select *HOME* > *FPS* to set the desired sensor frame rate, and *HOME* > *SHUTTER* to set the desired shutter angle or exposure time. Make sure the SDI frame rates are set accordingly.

#### Activating Multicam Mode

1. Connect the camera to the SSCP device via ethernet.
2. Choose ***MENU > System > Multicam***.
3. Set the IP address of the SSCP device.

4. Set the port of the SSCP device.
5. Activate *Multicam* by checking the box.

**NOTICE**

With Multicam enabled, access to the camera user interface screens FPS, SHUTTER, EI and WB is disabled.

### Camera IP Configuration

To establish communication between camera and SSCP device the camera's LAN needs to be configured to use a static IP address within the same range as the SSCP device.

1. Choose ***MENU > System > Network/WiFi > LAN IP mode.***
2. Set LAN IP mode to *Static*.
3. Choose ***MENU > System > Network/WiFi > LAN static IP***.
4. Enter IP address and confirm.
5. Choose ***MENU > System > Network/WiFi > LAN static subnet***.
6. Enter subnet and confirm.

MENU > SYSTEM > NETWORK / WIFI > LAN static IP

### Web Remote

It may be useful to have a computer connected to the ethernet network. This allows using the web remote interface (with a web browser) of each camera to check and modify camera parameters, and to e.g. trigger internal recording on cameras. The web remote can be accessed with a web browser by entering the IP address of the camera.

### Camera Remote Control via CAP

The camera can be remote controlled with the Camera Access Protocol (CAP) interface communicating through ethernet or WiFI connection. Amongst other functions, CAP supports the tally command and the return switch trigger. Please contact ARRI service or an ARRI sales representative for further information.

## 7.8.7.4 Tally Control

In addition to controlling image parameters via a Sony RCP, the camera can also receive tally information e.g. from an image switcher. The AMIRA displays an active tally by lighting up the integrated tally lights on the EVF and on the camera back, and by showing an overlay in the EVF and on the SDI outputs (SDI processed).

To control tally the camera provides a telnet interface on port 40000 that can be accessed via ethernet or WiFi. The command *tallyengage <parameter>* controls the tally output on the camera, where *<parameter>* may be ***1*** to activate red tally, ***2*** to activate green tally and ***0*** to deactivate tally.

As an example, the communication with an AMIRA with IP address 192.168.0.104 is given below. The bold texts are entered by the commanding system, the regular texts show the responses sent by the camera. In the example green tally is switched on, followed by red tally and the switched off.

```
$ telnet 192.168.0.104 40000
Trying 192.168.0.104...
Connected to 192.168.0.104.
tallyengage 2
Response: TallyEngage
Result: 0 "Done."
tallyengage 1
```

```
Response: TallyEngage
Result: 0 "Done."
tallyengage 0
Response: TallyEngage
Result: 0 "Done."
```

A tally injector can be easily made: just connect the inputs of an Arduino or Rasberry Pie with the outputs of the mixer, program some lines of code for the telnet command triggering the camera tally (see details above, please contact ARRI if you need more information), and use the ethernet network to send the command to the camera.

**NOTICE**

The Tally command is also included in the Camera Access Protocol (CAP) protocol, starting with SUP 5.2. CAP is a protocol interface for remote access to the camera, and it is available through the ARRI Partner Program.

## 7.8.8 Camera Access Protocol (CAP)

The camera access protocol is an IP based API that allows for control of look file parameters as well as operational parameters:

- CAP can be used to send and receive color grading information to and from ARRI cameras via network connection and modify the CDL parameters of the currently active Look file. Modifications to the Look file become immediately effective on all image paths with the processing configured to Look.
- Control of basic camera parameters

For more information, contact the ARRI Partner program:

ARRI Partner Program

► Choose ***MENU > System > Camera access protocol*** .

### 7.8.8.1 Activating CAP Server

► Choose ***MENU > System > Camera access protocol (CAP)*** and set the CAP server on.

Third party software can access the camera to remotely modify the currently active ARRI Look File 2 file.

### 7.8.8.2 Setting CAP Server Password

1. Choose ***MENU > System > Camera access protocol (CAP) > Cap server password***.
2. Enter a password and press *DONE*.

### 7.8.8.3 Displaying CAP Client List

► Choose ***MENU > System > Camera access protocol (CAP) > CAP client list***.

The CAP client list is displayed.

## 7.8.9 Network / WiFi

► Choose ***MENU > System > Network / WiFi***.

### 7.8.9.1 Activating Camera WiFi Power

► Choose ***MENU > System > Network / WiFi > WiFi power*** and set WiFi power on or off.

### 7.8.9.2 Setting WiFi Mode

► Choose ***MENU > System > Network / WiFi > WiFi mode*** and set the mode. You have the following options:

- *Client*
  The camera can connect to a WiFi network.
- *Host*
  The camera acts as an access-point.

### 7.8.9.3 Setting the WiFi Host Password

You can only set the WiFi host password if the WiFi mode is set to *Host*. For more information, see "Setting WiFi Mode", page 113.

1. Choose ***MENU > System > Network / WiFi > WiFi host password***.

   A screen is displayed to set your password.

2. Enter a password. The WiFi password must be between 8 and 32 characters long.

   For information on using the on-screen keyboard, see "Using the On-screen Keyboard", page 56.

**Note:** The default password is: *arriarri*

### 7.8.9.4 Selecting the WiFi Network

You can select a WiFi network, if you have activated the WiFi power and when the WiFi mode is set to *Client*. The camera allows you to join networks with WPA2 encryption or without encryption.

1. Choose ***MENU > System > Network/WiFi > WiFi network***.

   The list of available WiFi networks is displayed.

2. With the jogwheel, select the desired WiFi network.

   If the selected WiFi network uses encryption, you are prompted to enter the password.

3. Enter the password and press *CONNECT*.

   For information on using the on-screen keyboard, see "Using the On-screen Keyboard", page 56.

#### Connecting to a WiFi Network by QR Code

You can use a QR code to connect to a WiFi network. The WiFi credentials need to be provided in the following format:

WIFI:S:*my-ssid*;T:*[WEP|WPA|WPA2]*;P:*my-password*;;

where the italic parts need to be replaced with your network credentials.

1. Choose ***MENU > System > Network/WiFi > WiFi network > SCAN QR***.
2. Hold the QR-Code in front of the lens so that it fills the frame and is in focus.

   A popup with QR-Code data is displayed.

3. Press *CONNECT*.

   The camera connects with the network. The name of the network is displayed in the *WiFi NETWORKS AVAILABLE* list.

#### Connecting to a WiFi Network Manually

If the desired network is not displayed in the *WiFi NETWORKS AVAILABLE* list, you can enter the name of the network you want to join manually. The network is displayed as long as you are connected.

1. Choose ***MENU > System > Network/WiFi > WiFi network > OTHER***.

   A screen for entering the network name is displayed.

2. Enter the name of the network and press *NEXT*.

   You are prompted to enter your password.

3. Type your password and press *CONNECT*.

For information on using the on-screen keyboard, see "Using the On-screen Keyboard", page 56.

#### Disconnecting from a WiFi Network

1. Choose ***MENU > System > Network/WiFi > WiFi network***.
2. Press *DISCONNECT*.

   If the network you were connected to is hidden, it will disappear from the network list shortly after.

### 7.8.9.5 Setting the Region of the WiFi Interface

**NOTICE**

Wireless region settings specify where the wireless function can be used in compliance with local regulations. It may be illegal to use the wireless function in a region other than specified in the setting. Please ensure that the region is configured correctly, e. g., when traveling.

**Note:** WiFi requires an advanced license.

► Choose ***MENU > System > Network / WiFi > Wireless region setting*** and select the region. You have the following options:

- *Europe*
- *USA*
- *Japan*
- *South Korea*
- *World*

### 7.8.9.6 Setting LAN IP Mode

► Choose ***MENU > System > Network / WiFi > LAN IP mode*** and set the mode. You have the following options:

- *Static*
  Select for manually entering an IP address and subnet mask.
- *DHCP*
  Select to let the camera accept a dynamically assigned IP address from an DHCP server.

### 7.8.9.7 Setting LAN Static IP and Subnet

#### Setting the static IP

1. Choose ***MENU > System > Network / WiFi > Lan static IP***.
2. With the jogwheel, change the static IP.

#### Setting the LAN static subnet

1. Choose ***MENU > System > Network / WiFi > Lan static subnet***.
2. With the jogwheel, change the static subnet.

## 7.8.10 Licensing

You can further enhance the camera's capabilities through licensed features available from the ARRI license shop at http://alshop.arri.de.

Following license keys are available for the AMIRA:

- AMIRA Advanced License Key
- AMIRA Premium License Key
- AMIRA 4K UHD License key
- ARRI Look Library License Key
- AMIRA ARRIRAW License Key

License keys are linked to the camera's serial number and cannot be transferred from one camera to another. The active camera license model (incl. contained features) is available under: *Menu* > *System* > *Licensed features*

The ARRI license webshop requires a hardware info file to identify the individual camera.

Before ordering a license key, you must export the *HW INFO* file from the camera to a USB memory stick for upload during purchase.

**NOTICE**

Licenses are also available as timed temporary licenses. After installation, the license is valid for a defined period past the installation time. After this period, the license becomes invalid.

A temporary license shows Valid until: YY-MM-DD HH:MM:SS in the licensed features screen.

### 7.8.10.1 License Bundles

Licensed features require the installation of a license to enable their use. Licenses are installed and removed as bundles. Two bundles are available.

#### Advanced License Bundle

- Frame rates 100-200 fps
- ProRes 422 HQ recording format
- Pre-record function
- Dynamic Auto-Tracking white balance
- WiFi Remote Control
- Bluetooth Audio Monitoring

#### Premium License Bundle

- All advanced license features
- ProRes 4444 and ProRes 4444 XQ recording format
- 2K (2048 x 1152) recording

#### Viewing Licensed Features

► Choose ***MENU > System > Licensed features > FEATURES***.

The features contained in the active license bundle are displayed.

### Temporary Licenses

Licenses are also available as temporary real-time licenses. After installation, the license is valid for a defined period past the installation time. After this period, the license becomes invalid.

A temporary license shows *Valid until: YY-MM-DD HH:MM:SS* (1) in the licensed features screen and in the *FEATURES* subscreen.

## 7.8.10.2 Exporting *HW INFO* from the Camera

1. Prepare a USB memory stick. For more information, see "Preparing USB Medium", page 82.
2. Open the media lid and connect the USB memory stick to the camera.
3. Choose ***Menu > System > Licensed features***.
4. Press ***HW INFO***.
5. A screen is displayed. Press ***CONFIRM***.
6. The file is saved in the USB folder *ARRI/AMIRA/LICENSES*.

   File name is *AMIRA-HW-#####-YYMMDD-HHMM.json**
7. Copy the file from the USB memory stick to a computer, easily accessible when ordering licenses.

* ##### = camera serial number. *YYMMDD-HHMM* = date/time stamp.

## 7.8.10.3 Installing a License File

**NOTICE**

Keep backup copies of all license files in case a license deleted from the camera must be re-installed.

Installed licenses remain on the camera, independent of USB memory stick, and across the installation of SUP software update packages.

All installed licenses are displayed at *MENU >System > Licensed features > FEATURES*.

1. Copy the license file into the *ARRI/AMIRA/LICENSES* folder on a correctly prepared USB memory stick. For more information, see "Preparing USB Medium", page 82.
2. Open the media lid and connect the USB memory stick to the camera.
3. Choose ***Menu > System > Licensed features > ADD***.

   A list is displayed.
4. Use the jogwheel to scroll to the required file.
5. Confirm by pressing the jogwheel (1).
6. Wait for the file to install.
7. Reboot the camera afterwards.
8. If required: Repeat for other license files.

## 7.8.10.4 Displaying Licensed Features

► Choose ***MENU > System > Licensed features > FEATURES***.

### 7.8.10.5 Deleting a License

Installed licenses can be deleted in the license menu. This will remove the corresponding functions from the camera. To re-install a license, the appropriate license key for this individual camera needs to be reloaded. If a camera set was purchased including a preinstalled license, the license key can be found on the USB memory stick delivered with the camera. If a license was purchased from the ARRI license web shop, please use the license provided there.

1. Choose ***MENU > Systems > Licensed features > DELETE***.

   A list with licenses is displayed.

2. Select the license you want to delete.

   A confirmation screen is displayed.

3. Press *CONFIRM*.

   If the licence was successfully deleted, a green message is displayed.

### 7.8.10.6 Downgrading to Another License Model or Deleting UHD License

**NOTICE**

After a downgrade, you must reboot the camera for the new license model to become active.

1. Choose ***Menu > System > Licensed features > DELETE***.

   A screen is displayed.

2. Select either the downgrade- or the delete-option.

   A confirmation screen is displayed.

3. Press *CONFIRM*. **CANCEL** with *BACK*.

4. After completion, reboot the camera for the downgrade to take effect.

## 7.8.11 Updating the Camera

You can update the camera and camera components.

► Choose ***MENU > System > Update***.

For more information on updating the camera, see "Updating the Camera via USB Memory Stick", page 117.

### 7.8.11.1 Updating the Camera via USB Memory Stick

Before update, create the folder structure on a FAT 32 USB memory stick. For more information, see "Preparing USB Medium", page 82.

**NOTICE**

Power the camera with a fully charged battery or a power supply to avoid power loss during the update. The update procedure takes about ten minutes.

After each update, the camera reboots. Never shut down or unpower the camera during reboot. Check the audio screen for update status. A popup message is displayed after the update finished successfully.

#### Preconditions

- AMIRA with connected MVF-1
- Fully charged camera battery or power supply

- Computer with internet access and USB interface
- USB memory stick (FAT 32 file format), prepared with the folder structure for the use with your camera

#### Downloading the Software to the USB Memory Stick

The camera supports the installation of SUP software update packages. Check www.arri.com for the latest available SUP version.

1. Via computer, download the software update package (SUP) from www.arri.com.
2. Double-click on the downloaded file (*.zip) to unpack it:
   - Update file (*.SUP)
   - Update key (*.lic)
   - Release notes
3. Read the release notes carefully.
4. Copy the update file (*.SUP) to the ARRI/AMIRA/SUP folder on the USB stick.
5. Copy the update key (*.lic) to ARRI/AMIRA/LICENSES on the USB stick.
6. Safely remove the USB memory stick from the computer.

#### Connecting the USB Memory Stick to the Camera

7. Open the media lid and connect the USB memory stick to the camera.
8. Remove all CFast 2.0 cards from the camera.
9. Switch on the camera with a full battery or use a mains power supply.

#### Updating the Software on the Camera

**Note:** An update is only possible with all CFast 2.0 cards removed from the camera.

1. Choose ***MENU > System > Update***.
2. Scroll to the required update file and press the jogwheel.
3. Press *CONFIRM* to start the update. **Cancel** with *BACK.*

   **Note:** Never shut down the camera or unplug power during the update.
4. Check the audio screen for the update progress.
5. Wait for the update process to finish and the camera to reboot.

   After a successful update and reboot, the camera monitor displays a success message.
6. Press *CLOSE* to start using your updated camera.
7. **Note:** After an update, the timezone and daylight saving time settings of the camera are reset. Please set them accordingly. Choose ***MENU > System > System time + date***.

   For more information, see "Adjusting System Time and Date", page 107.

**NOTE:** A failed update produces a red warning message. However, previous camera software remains intact. Press CLOSE, restart the camera and start the update again.

### 7.8.11.2 Updating Camera Components

You can update camera components (MVF-1, CCP-1 or lens mount) via the camera.

The camera will issue a message if the software version of a camera component is outdated.

1. Choose ***MENU > System > Update > Components.***

   A screen is displayed. You have the following options:

   - *Update MVF-1*
   - *Update lens mount*
   - *Update CCP-1*

2. Select the component you want to update, and press the jogwheel.

   A confirmation screen is displayed.

3. Press *CONFIRM*.

### 7.8.12 Setting the System Language

1. Choose ***MENU > System > Language***. You have the following options:

   - *English*
   - *Chinese* (simplified)

   You can toggle between the languages.

2. Select the language.

   The system language on the user interface changes immediately.

## 7.9 Setup

You can save and load full camera configurations as well as parts of it on the camera.

You can also import user setups into the camera from a USB medium and export user setups to a USB medium. For more information, see "Loading Setups", page 120.

► Choose ***MENU > Setup***.

### 7.9.1 Saving User Setup

You can save the current setup configuration in the camera or on the USB medium.

1. You have the following options:

   - Choose ***MENU > Setup > User setups installed > SAVE***.
   - Choose ***MENU > Setup > User setups on USB > SAVE***.

   A screen for entering the file name is displayed.

2. Type in a name for the user setup and press *SAVE*.

   For information on using the on-screen keyboard, see "Using the On-screen Keyboard", page 56.

   A screen is displayed to select parameter blocks. You have the following options:

   - *General*
   - *Format*
   - *Scene*
   - *Lens*
   - *User*

     For information on the parameter blocks, see "User Setup Parameter Blocks", page 120.

3. Select one or more options and press *CONFIRM*.

   The camera stores the user setup.

4. Press *BACK*.

## 7.9.2 Loading Setups

You can load user setups stored on the camera or on a USB medium.

In case you are using the ARRI WCU-4 unit, you can trigger the loading of internally stored setups from there.

1. You have the following options:

   - Choose ***MENU > Setup > User setups installed***
   - Choose ***MENU > Setup > User setups on USB***

   A list of user setups is displayed.

2. Select a user setup, and with the jogwheel, press *LOAD*.

   A popup with the parameter blocks of this user setup is displayed.

3. Press *CONFIRM*.

   The camera loads the selected user setup and shows a result popup. The popup highlights the parameters that you should check in case certain parameters could not be loaded.

## 7.9.3 User Setup Parameter Blocks

The camera allows you to store a full camera configuration by selecting all parameter blocks, or only parts of the configuration by de-/selecting the desired blocks. The parameter blocks have been chosen to allow for maximum flexibility while keeping coherent sets of parameters and minimizing the amount of potential conflicts by loading partial setups.

**GENERAL**

Groups the general camera configuration and basic project settings.

| | |
|---|---|
| MENU > RECORDING > PROJECT SETTINGS > | Project Rate |
| HOME > TC > OPTIONS > | Timecode Options (All Settings) |
| MENU > RECORDING > AUDIO RECORDING > | Audio (All Settings) |
| HOME > LOOK > CONFIG > | Recording Processing |
| HOME > LOOK > EDIT > | Installed Look Files |
| HOME > LOOK > CONFIG > | SDI 1&2 color space |
| MENU > MONITORING > FRAME LINES > FRAME LINE > | Installed Frame Line Files |
| HOME > FPS > | Sensor FPS table |
| HOME > SHUTTER > | Shutter table |
| HOME > EI > | Exposure Index switch values |
| HOME > WB > | WB table |
| HOME > WB > | WB switch values |
| HOME > FPS/SHUTTER/LOOK > | User switch values |

| | |
|---|---|
| MENU > METADATA > | Metadata (All Settings) |
| MENU > MONITORING > SDI > | SDI 1&2 Format |
| MENU > MONITORING > SDI > | SDI 1&2 Frame Rate |
| MENU > MONITORING > SDI > | SDI 1&2 Image |
| MENU > MONITORING > SDI > | SDI 1&2 3G Level |
| MENU > MONITORING > SDI > | SDI2: Clone SDI1 |
| MENU > MONITORING > SDI > | Anamorphic Desqueeze |
| MENU > SYSTEM > SENSOR > | Image sharpness/detail |
| MENU > SYSTEM > SENSOR > | Noise reduction |
| MENU > SYSTEM > SENSOR > | Mirror Image |
| MENU > SYSTEM > SENSOR > | Genlock Sync |
| MENU > SYSTEM > SENSOR > | Sync Shift |
| MENU > SYSTEM > SENSOR > | Mirror Image |
| MENU > SYSTEM > SENSOR > | Sensor Temperature |
| MENU > SYSTEM > | Fan Mode |
| MENU > SYSTEM > | Multicam Settings |
| MENU > SYSTEM > | CAP Settings |
| MENU > SYSTEM > | Network Settings |
| MENU > USER BUTTONS > USER SWITCH > | User switch Assignment |
| MENU > RECORDING > | Prerecording max. duration |

**FORMAT**

Allows for easy switching between recording formats.

| | |
|---|---|
| MENU > RECORDING > | Recording Codec |
| MENU > RECORDING > | Resolution |
| MENU > RECORDING > | Record Mode (All Settings) |
| MENU > MONITORING > FRAME LINES > | Active frame line*<br>*if not found in list, load NONE |

**SCENE**

Allows you to change quickly between different shooting situations.

| | |
|---|---|
| HOME > FPS | Sensor FPS |
| HOME > SHUTTER | Shutter |
| HOME > EI | Exposure Index |

| | |
|---|---|
| HOME > WB | White Balance |
| HOME > EI > ND (MINI) | ND Filter |
| HOME > LOOK | Active Look*<br>*if not found in list,<br>then load ARRI709 |
| HOME > EI > IRIS | EF Iris Value |

**LENS**

Allows you to change quickly between different lens setups.

| | |
|---|---|
| MENU > RECORDING > PROJECT SETTINGS > | Lens squeeze factor |
| MENU > SYSTEM > LENS MOUNT SETTINGS > | Focus unit |

**USER**

Stores all parameters for camera personalization.

| | |
|---|---|
| HOME > LOOK > CONFIG > | EVF/Mon. Processing |
| HOME > LOOK > CONFIG > | SDI processing |
| MENU > MONITORING > EVF / Monitor > | Surround View |
| MENU > MONITORING > EVF / Monitor > | Zoom Position |
| MENU > MONITORING > EVF / Monitor > | Peaking Settings |
| MENU > MONITORING > EVF / Monitor > | Settings (all, except EVF power) |
| MENU > MONITORING > EVF / Monitor > | EVF Overlays (all settings) |
| MENU > MONITORING > EVF / Monitor > | Monitor Overlays (all settings) |
| MENU > MONITORING > SDI > SDI PROCESSING > | Surround View |
| MENU > MONITORING > SDI > SDI PROCESSING > | Exposure Tool |
| MENU > MONITORING > SDI > SDI PROCESSING > | Peaking (all settings) |
| MENU > MONITORING > SDI > SDI PROCESSING > | Overlays (all settings) |
| MENU > MONITORING > | Exposure Tools (all settings) |
| MENU > USER BUTTONS > | User Buttons (all settings)<br>Except User Switch (see General) |
| MENU > SYSTEM > POWER > | Power (all settings) |
| MENU > SYSTEM > BUTTONS + DISPLAY > | Buttons, Display Style<br>Lock Config |
| PLAY > OPTIONS > | Play End mode |
| HOME > WB > | WB options |
| HOME > EI > IRIS > | Iris options |

| | |
|---|---|
| MENU > RECORDING > RECORD MODE > | Stop Motion Beeper |
| MENU > RECORDING > REC BEEPER / TALLY > | Rec Beeper + Tally |

### 7.9.4 Resetting to Factory Defaults

You can reset the camera to the ARRI factory default values.

1. Choose ***MENU > Setup > Factory reset.***

   You are asked to confirm the reset.

2. Press ***RESET***.

**NOTICE**

A factory reset does not delete user setups stored/installed on camera.

## 7.10 User Buttons

You can customize the user buttons. Some user button functions support smart behavior. For these, a short press (i.e. less than half a second) toggles the function, while a long press (i.e. longer than half a second) activates the function only temporarily.

**User button smart behavior**

Assume a user button is configured with EVF zoom:

Long press EVF zoom: EVF zoom function is activated while you are pressing the button, release of the button deactivates zoom.

Short press EVF zoom: EVF zoom is activated and stays activated. Press again to deactivate.

To customize the user buttons, you have the following options:

► Choose ***MENU > User buttons*** and select the buttons you want to customize.

| User button functions | |
|---|---|
| *Off* | Disables the user buttons. |
| *EVF Status Info* | Switches status info on or off. |
| *EVF Waveform* | Switches EVF waveform overlay on or off. Supports smart behavior. |
| *EVF+Mon. Check Log C* | Temporarily set EVF/Monitor processing to Log C. |
| *EVF+Mon. Desqueeze* | * Toggles anamorphic desqueeze on EVF and Monitor. |
| *EVF+Mon. Exp. Tool* | * Switches the exposure tool on or off. Supports smart behavior. |
| *EVF+Mon. Frame Lines* | * Switches frame lines on or off. Supports smart behavior. |
| *EVF+Mon. Peaking* | * Switches peaking on or off. Supports smart behavior. |
| *EVF+Mon. Surround* | * Switches surround view on or off. Supports smart behavior. |
| *EVF+Mon. Zebra/FC* | * Toggles the exposure tool between Zebra and False Color. |

| User button functions | |
|---|---|
| *EVF+Mon. Zoom* | * Switches the viewfinder zoom function on or off. Supports smart behavior. **Note:** Zoom image is monochrome. |
| *Monitor Waveform* | Switches Monitor waveform overlay on or off. Supports smart behavior. |
| *Flip Monitor* | Toggles the Monitor between normal and flipped mode. **Note:** To return to automatic operation, press and hold the user button for two seconds. |
| *SDI Check Log C* | Temporarily set SDI processing to Log C. |
| *SDI Exp. Tool* | Switches the exposure tool on or off. Supports smart behavior. |
| *SDI Frame Lines* | Switches frame lines on or off. Supports smart behavior. |
| *SDI Peaking* | Switches peaking on or off. Supports smart behavior. |
| *SDI Status info* | Switches status info on or off. |
| *SDI Desqueeze* | Toggles anamorphic desqueeze on SDI (not active in 16:9 modes). |
| *SDI Surround* | Switches surround view on or off. Supports smart behavior. |
| *SDI Zebra/FC* | Toggles the exposure tool between Zebra and False Color. |
| *EI Increase* | Selects the next value from the EI list. |
| *EI Decrease* | Selects the previous value from the EI list. |
| *FPS Increase* | Selects the next value from the FPS list. |
| *FPS Decrease* | Selects the previous value from the FPS list. |
| *ND Increase* | Selects the next value from the ND list. |
| *ND Decrease* | Selects the previous value from the ND list. |
| *Shutter Increase* | Selects the next value from the Shutter list. |
| *Shutter Decrease* | Selects the previous value from the Shutter list. |
| *WB Increase* | Selects the next value from the WB list.<br>**Note:** User button skips the Auto WB entry of the WB list. |
| *WB Decrease* | Selects the previous value from the WB list.<br>**Note:** User button skips the Auto WB entry of the WB list. |
| *Audio Ch1 Increase* | Increases gain of audio channel 1 in 1dB steps.<br>**Note:** User button is only functional with channel 1 control set either to *Manual* or *Manual (+L)*. |
| *Audio Ch1 Decrease* | Decreases gain of audio channel 1 in 1dB steps.<br>**Note:** User button is only functional with channel 1 control set either to *Manual* or *Manual (+L)*. |

| User button functions | |
|---|---|
| *Audio Ch1+2 Increase* | Increases gain of audio channels 1+2 simultaneously in 1dB steps.<br>**Note:** User button is only functional with channel 1 and channel 2 control set either to *Manual* or *Manual (+L)*. |
| *Audio Ch1+2 Decrease* | Decreases gain of audio channels 1+2 simultaneously in 1dB steps.<br>**Note:** User button is only functional with channel 1 and channel 2 control set either to *Manual* or *Manual (+L)*. |
| *Audio solo* | Mutes all audio recording channels except one. Toggles through Off, Ch1, Ch2, Ch3, Ch4, selecting the next channel with every button press. Channels that are not assigned to an audio input are skipped. Does not work when audio is disabled or switched off. Works in playback for all channels and on all clips, as information on clip audio is not available. This may result in a selection of an unassigned channel when playback is exited. In this case, press button once to select the next assigned channel. When solo is active, the selected channel is marked as SOLO in the audio bars of EVF, monitor and SDI, on the homescreen and the audio display. AUDIO SOLO is only affecting the headphones output (not the embedded audio in the SDI stream). |
| *Auto WB* | First press arms auto white balance for one second, second press triggers AWB. |
| *Check Last Clip* | Plays the last five seconds of the last recorded clip. |
| *Color Bars* | Turns color bar on or off. Activation works only during Stby. |
| *Frame Grab* | Grabs a still frame in .JPG and .DPX format and saves it to the USB stick in the GRABS directory. Frame grabs can be stored when the camera is in STBY, REC, or PLAY.<br>**Note:** Framegrabs are taken from the clean SDI image path (including SDI settings such as processing, active look and anamorphic desqueeze) and cropped to the active image area (without black borders). |
| *Frame Line Color* | Changes the frame line color. |
| Iris Auto | ** Triggers automatic iris compensation. |
| Iris Close | ** Closes the iris of a lens. Short press closes by 1/x stop (step size depending on lens), long press closes by 1 stop per 0.5 seconds. |
| Iris Open | ** Opens the iris of a lens. Short press opens by 1/x stop (step size depending on lens), long press opens by 1 stop per 0.5 seconds. |
| *BT Talkback* | *** Switches the talk-back channel via Bluetooth to Open (signal is recorded) or Muted (signal is not recorded). |
| *Overlay Menu* | Activates or deactivates the overlay menu on MVF-1 EVF, monitor and SDI (when SDI processing is activated). |
| *Playback* | Behaves identically to the PLAY button on MVF-1. |
| *Prerecording* | *** Switches prerecording on or off. |
| *Record Start/Stop* | Behaves identically to the record button. |

| User button functions | |
|---|---|
| *Return In* | Activates return signal connected to RET/SYNC IN BNC connector on SDI and/or EVF/Monitor image paths, depending on preconfiguration via ***MENU > Monitoring > Return in path config.***<br>Outputs a metadata flag via SDI that can be used by external equipment, e. g. to switch inputs for monitoring.<br>Supports smart behavior.<br>While multicam is enabled, only toggles temporarily. |
| *Select Card* | Changes between card slots A and B for recording. |
| *Stop Motion Trigger* | Triggers the capture of a single frame during recording in recording mode Stop Motion. |
| *WiFi Power* | *** Toggles WiFi power On and Off. |

* Affects both viewfinder and monitor settings.

** Requires EF lens mount and a suitable EF lens.

*** Requires advanced license or higher.

For information on locking buttons, see "Lock Configuration", page 107.

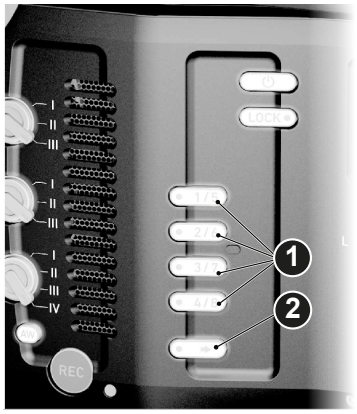
## 7.10.1 Camera User Buttons

The camera menu allows you to assign individual functions to each user button.

### Assigning a Function to a Camera User Button

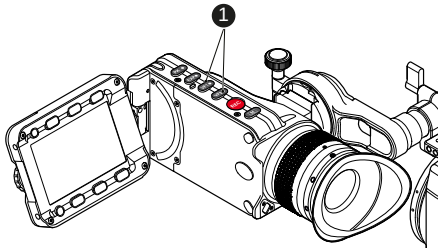
1. Choose ***MENU > User buttons > Camera user buttons***.
2. Button 1 to 8: Set the functions of user buttons 1 to 8 on the left camera side.

### Activation of the Assigned Function




1. Press a user button (1) to trigger its function.
2. For buttons five to eight: Press and hold the *SHIFT* button (2), then press a user button (1).
3. An LED on each user button reflects the functional status.
4. To check the functional status of user buttons five to eight (1): Press the *SHIFT* button (2).

## 7.10.2 MVF-1 User Buttons *VF1 & VF2*




The MVF-1 has two user buttons, VF1 and VF2 (1). You can assign frequently-needed functions to each button.

► Choose ***MENU > User buttons > Button VF1*** or ***MENU > User buttons > Button VF2*** and assign the desired function.

## 7.10.3 Setting the User Switch Function

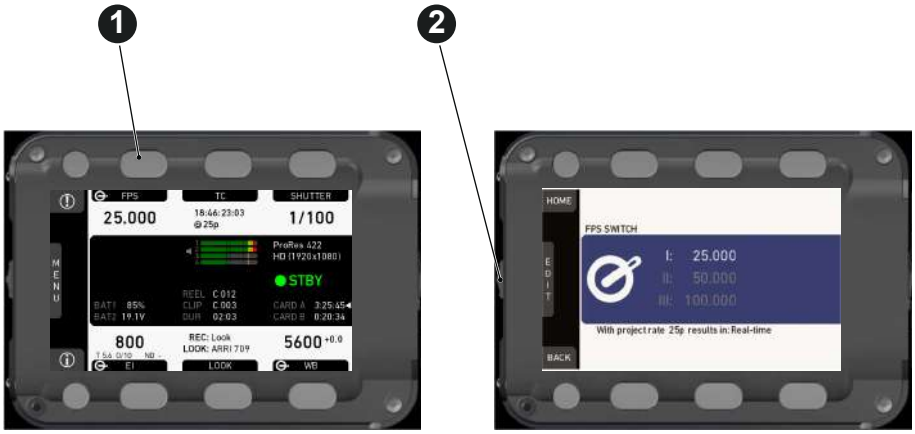
You can set the function of the user switch (US).

1. Choose ***MENU > User buttons > User switch***.
2. Select one of the following options:
   - ***None***
   - ***Fps***
   - ***Shutter/Exp Time***
   - ***Look***

A switch symbol appears on the home screen next to the soft button of the assigned function.

The *EI* and *WB* switches are assigned to exposure index and white balance respectively. Permanent switch icons on the *EI* and *WB* soft buttons on the home screen indicate this permanent assignment.

## 7.10.4 Presetting the *US / EI / WB* Switches




1. On the home screen, select a switch function (here: *FPS*) by pressing the button (1).
   **Note:** Active functions show a switch icon in the button label.
2. Change the switch to the desired position.
   **Note:** You can only change the preset of the active switch position.
3. Press the jogwheel (2).
4. Via jogwheel (2), select the desired preset.

5. Confirm by pressing the jogwheel (2).
6. Repeat for other switch positions if desired.
7. For *FPS, SHUTTER, LOOK*, and *WB*, you can configure preset lists for each switch position.

### 7.10.5 WCU User Buttons

You can assign functions to the WCU-4 user buttons.

**Note:** Configuration is valid for WCU-4 connected to the camera via UMC-4. WCU-4 requires software version 2.1 or later to support smart behavior of buttons.

► Choose ***MENU > User buttons > WCU user buttons*** and assign the desired function to each button.

### 7.10.6 LBUS Device User Buttons

You can assign functions to the user buttons of LBUS devices such as the ARRI Master Grips. 12 user buttons are available.

► Choose ***MENU > User buttons > LBUS device user buttons*** and assign the desired function to each button.

### 7.10.7 GPIO User Buttons

The ARRI GPIO box (GPB-1, K.2.0007642) can be used as an interface to the camera for external user buttons. It connects to the camera via the EXT connector and has a 37-pin D-Sub connector carrying 14 GPI (General purpose input) connections plus 2 outputs (camera power status and camera recording status). For additional information, please refer to the user manual of the GPB-1.

You can assign functions to GPIO user buttons. The buttons are connected via a GPIO box.

► Choose ***MENU > User buttons > GPIO user buttons*** and assign the desired function for each button.

### 7.10.8 Lens RET User Button

You can assign a camera function to the RET button of a ENG lens. If the lens does not support this, a disconnected plug is shown behind the menu entry.

► Choose ***MENU > User buttons > Lens RET*** and assign the desired function.

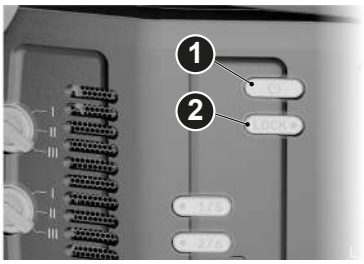
### 7.10.9 Locking the Camera

**NOTICE**

Locking the camera disables, unlocking re-enables all camera controls configured for locking except audio controls.

Changing the position of the *US, EI, WB*, or *ND* switch on a locked camera will result in parameter changes when unlocking.

For details on lock configuration, see "Lock Configuration", page 107.




1. Press and hold the *LOCK* button (2).
2. A countdown appears in both the monitor and the viewfinder. The camera locks as soon as the countdown reaches zero.
3. **To unlock:** Press and hold the *LOCK* button (2) again.

## 7.11 Entering Metadata

You can enter production metadata to the recorded Quicktime files.

1. Choose ***MENU > Metadata***.
2. Select the metadata field you want to edit. You have the following options:
   - *Production*
   - *Prod. Company*
   - *Director*
   - *Cinematographer*
   - *Camera operator*
   - *Location*
   - *Scene*
   - *Take*
   - *User info 1 & 2*

## 7.12 Audio Menu

On the audio control panel, you can fully control, change, and edit the audio setup without the risk of accidentally changing camera parameter.

The audio function switch (1) toggles between *INFO* screen, channel *1/2* and *3/4* configurations, and audio *SETUP* on the display (2).

The *L* and *R* jogwheels (3) control left and right channel gain.

With the *SET* jogwheel (4), you navigate through the audio setup menu.

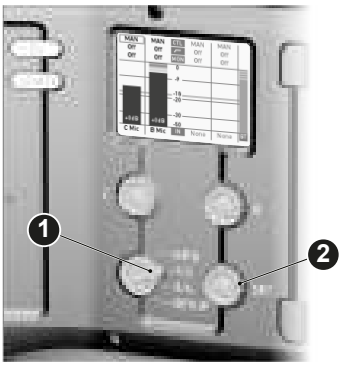
**Note:** For line level input, the camera supports a maximum analog input level of +8 dBu by default. Higher levels will result in clipping. Cameras with the new audio board (IOAU2) have the option to select between +8 and +24 dBu as maximum input level. Set the *SET* switch to *SYSTEM* and choose *Maximum line levels* from the menu.

**Note:** Additional audio meters are available on the camera monitor (fixed) and on the EVF display (configurable via *MENU* > *Monitoring* > *EVF/Monitor* > *EVF overlays* > *Status elements* > *Audio*).

## 7.12.1 Adjusting the Headphone Volume

The headphone volume can be adjusted using the headphone volume wheel or via the audio *INFO* screen:

► Use the headphone volume wheel on the camera right side.



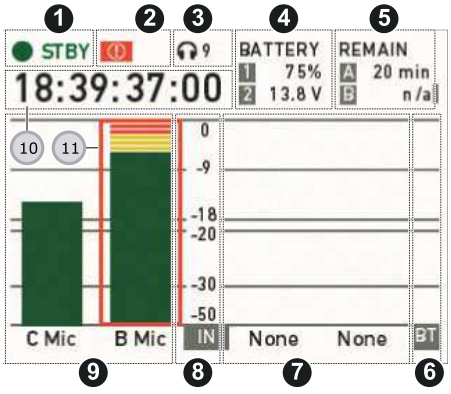

1. Switch to *INFO* (1).

   The headphone volume level is displayed at the top center of the display.
2. Press and turn the *SET* jogwheel (2) to adjust the headphone volume.

## 7.12.2 Audio INFO Screen

► Turn the audio function switch to *INFO* (1).

**Note:** The *INFO* position locks the left and right gain controls. The audio *INFO* screen opens:



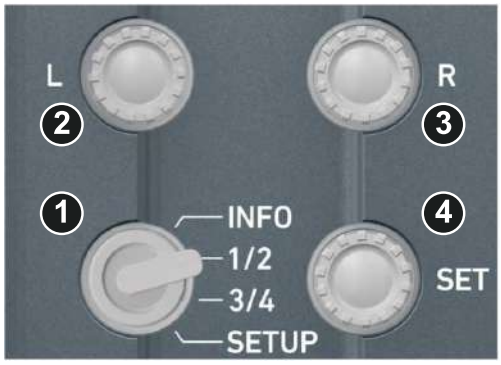

| | |
|---|---|
| **1** | Camera Status |
| **2** | Alert Status |
| **3** | Headphone Volume Level |
| **4** | Battery Status |
| **5** | Remaining Card Capacity |
| **6** | Bluetooth Level |
| **7** | CH 3&4 Mapping and Levels |
| **8** | Level Scale (dBFS) |
| **9** | CH 1&2 Mapping and Levels |
| **10** | Timecode Display |
| **11** | Clipping Indicator |

*INFO* shows the audio levels, the input channel mapping, and the most important camera parameters:

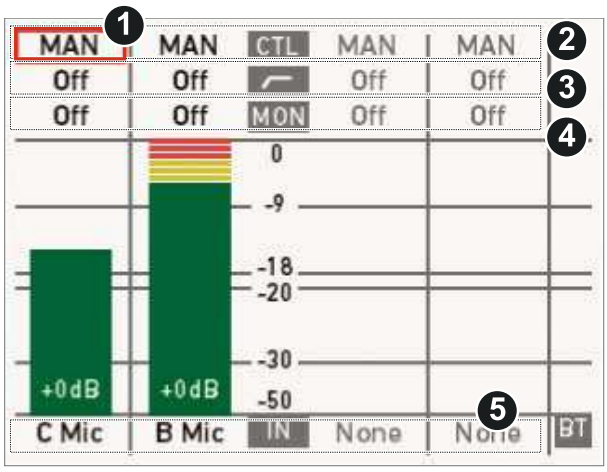
- Camera status (1): *STBY* (ready for recording). *REC* (recording). *PLAY* (playback). None (card missing, full or not yet formatted).
- The alert *(!)* icon appears (2) whenever alert messages are available. See "ALERT Messages", page 53.
- Headphone volume (3) from level *1* (= off) to *64* (= maximum).
- Battery status (4): *BAT 1* (onboard). *BAT 2* (BAT IN). Can be set to percent or volt, depending on battery.

- Remaining card capacities (5), in minutes.
- Audio levels (7 and 9) for all four channels and BT (6), in dBFS.
- Reference scale (8) for audio levels in dBFS.
- Current timecode (10). *TC* settings are accessible via user monitor. For more information, see "Timecode Options", page 66.
- Clipping indicator (11): If the channel shows a red frame, the audio signal is clipping. If the audio meter is not at its peak, the input signal itself is clipping.

## 7.12.3 Configuring Recording Channels 1/2 and 3/4




1. Turn the audio switch to *1/2* or *3/4* (1).
2. The left gain control (2) now addresses recording channel one or three. For channel two or four, use the right gain control (3).
3. Select and change parameters with the *SET* jogwheel (4).
4. The audio *1/2* and *3/4* screens allow you to configure gain control mode, filtering, headphone monitoring, and input selection:




| | |
|---|---|
| **1** | Cursor (here: on channel one) |
| **2** | *CTL*: Gain control mode per channel |
| **3** | Highpass filter per channel |
| **4** | *MON*: Headphone monitoring per channel |
| **5** | *IN*: Input selection |

- Cursor (1): Can be moved by turning the *SET* jogwheel.
- Gain control mode (2):
  - *MAN* (manual via *L/R* wheels, in 1 dB steps)
  - *MAN + L* (manual plus limiter, in 1 dB steps)
    A limiter prevents the signal from clipping if the input signal level combined with the set gain results in signal levels exceeding -6 dB FS.
  - *AUTO* (automatic gain control)

  For technical information on limiter and auto gain modes, see "Technical Data", page 142.

- Highpass filter (3): Frequencies below the set value are filtered from the signal.
  - *Off* (no filtering)
  - *80 Hz*
  - *160 Hz*
- *MON* (4): routing of audio channel to headphones:
  - *L* (to left headphone channel only)
  - *R* (to right headphone channel only)
  - *L+R* (mono mix on both)
  - *Off* (no routing)
- *IN (5):* Input source mapping to the respective recording channel. Available channels depend on the XLR input configuration. Setting e.g. *IN B* to *LINE* enables *B Line.* As *IN A* is a stereo input, *A1* and *A2* are also available. Setting *IN B* or *IN C* to *AES* provides *AES1* and *AES2.*

## 7.12.4 Adjusting Audio Settings

1. Turn the audio function switch to *SETUP* (1).
2. By turning and pressing the *SET* jogwheel (2), you can now adjust basic settings on the *SETUP* screen:
   - *Audio recording*
     Switches audio recording on or off. *Off* deactivates audio inputs and all outputs; no audio channels are recorded.
   - *Test tone*
     Activates a 1 kHz test tone on all recording channels.
   - *Maximum line levels*
     Switches the maximum line level for input A, B and C.
   - *Mic. attenuation*
     Apply an attenuation of 26dB to the microphone input A, B and C (MIC or +48V). Can be used to avoid signal clipping when recording audio in loud environments. When set to 0dB, no attenuation is applied.
   - *Display brightness*
     Sets the audio display backlight from level 1 (= minimum) to 10 (= maximum).
   - *Display style*
     Sets both audio display and camera monitor to day or night style.
   - *Bluetooth*
     Allows you to monitor audio recording or to record talk-back tracks via Bluetooth headphones or headsets.

### 7.12.4.1 Switching the Maximum Line Levels

You can switch the maximum line level for input A, B and C.

**Note:** Requires a camera hardware modification (new audio board IOAU2). After changing maximum line levels, please check input gain settings.

1. Choose ***Audio > Setup > Maximum line levels***.
2. Select the input. For each of the inputs, you have the following options:
   - +8 dBu
   - +24 dBu

Please also see "AMIRA Audio Block Diagram".

#### 7.12.4.2 Setting Microphone Attenuation

You can apply an attenuation of 26dB to the microphone inputs A, B and C (MIC or +48V).

The attenuation can be used to e.g. avoid microphone signal clipping when recording audio in loud environments. When set to 0dB, no attenuation is applied.

**Note:** Requires a camera hardware modification (new audio board IOAU2).

1. Choose ***Audio > Setup > Mic. attenuation***.
2. Select the input. For each of the inputs, you have the following options:
   - 0 dB
   - 26 dB

Please also see "AMIRA Audio Block Diagram".

### 7.12.5 Bluetooth

#### Setting Up Bluetooth

You can monitor audio recording with a Bluetooth headset. Monitors the same channel configuration as the headphone out. Also allows you to record a talk-back track (e.g., for work instructions, comments etc.).

1. Choose ***Audio > Setup > Bluetooth***.
2. You have the following options:
   - *Power*
     Switches Bluetooth on or off.
   - *Device list*
     Shows the available Bluetooth devices.
   - *Profile*
     Sets the Bluetooth connection profile.
     - *HFP*
       Is required for talk-back function.
     - *A2DP*
       **Note:** The selected profile must be supported by the Bluetooth headset. A2DP mode may, depending on the device, cause a delay of up to 5 frames. With HFP, audio is only available on the right channel (R).
       Has a higher audio signal quality.
   - *Talk back channel*
     Sets the talk-back channel to *Open* (signal is recorded) or *Muted* (signal is not recorded). Can also be assigned to a user button.

- *Talk-back monitoring*
  Configures the monitoring of the recorded talk-back channel to the headphones out. Configuration is also valid during playback. Can be set to *Off, L* (left out), *R* (right out), *L+R* (left and right out).

#### 7.12.5.1 Connecting to and Disconnecting from a Bluetooth Device

**Connecting to a Bluetooth Device**

1. Open the *Blootooth* menu and set *Power* to *On*.
2. Set the desired profile.
3. Via *SET* jogwheel, navigate to the device list.
4. Choose ***Audio > Setup > Bluetooth > Device list.***

   **Note:** Ensure the Bluetooth device is active and in pairing mode.
5. Select the desired Bluetooth device from the list.
6. Press the *SET* jogwheel for connection.

**Disconnecting from a Bluetooth Device**

► Select *Disconnect <device name>* and press the *SET* jogwheel.

### 7.12.6 Configuration of Channels 1 and 2 via the Camera Menu

In addition to the camera's audio screen, basic settings for audio channels 1 and 2 can be configured via the camera menu as well as the webremote.

1. Choose ***MENU > Recording > Audio recording***. You have the following options:
   - *Audio recording*
     Sets audio recording on or off.
   - *Channel 1/2 control*
     Sets control mode of channel to *Manual*, *Manual+Limiter* or *Auto*. For technical information on limiter and auto gain functionality see "Technical Data".
   - *Channel 1/2 gain*
     Sets gain of channel in *Manual* and *Manual+Limiter* control mode between *0* and *+30* dB.
   - *Channel 1/2 level*
     Shows current level of channel signal in dBFS.
   - *Test tone*
     Sets 1kHz sine test tone on all channels and outputs to off, -9 dBFS, -18 dBFS or -20 dBFS.

# 8 Web Remote

AMIRA has a web remote function for full remote control of the camera with a browser. It requires a connection to the camera via WiFi or with a RJ-45 LAN cable.

**Note:** Web remote requires an advanced or premium license.

The web remote has been tested with the following platforms and browsers:

| | |
|---|---|
| Desktop browsers | Google Chrome 45<br>Mozilla Firefox 44 |
| iOS | Safari 9.2.1 |
| Android | Google Chrome Mobile 45 |

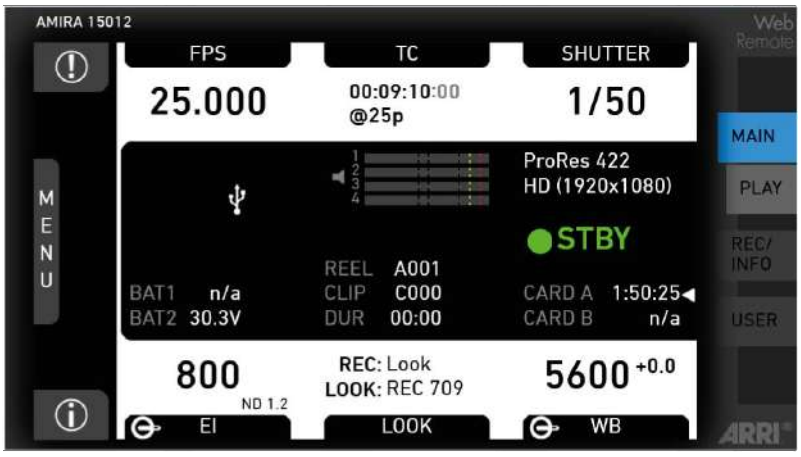
Open a web browser and enter the URL: http://amira-xxxxx.local (replace xxxxx with your camera's 5-digit serial number).

**NOTICE**

To use the web remote function via this URL, the device must support zero-configuration networking (zeroconf), e.g. through Apple Bonjour. Without zeroconf, the webremote can be reached via the network's IP adress (WiFi or LAN IP). The WiFi IP is fixed to 192.168.153.1. The LAN IP can be either assigned from a DHCP server or configured manually, and can be checked with an MVF-1 via the INFO > Network info screen.

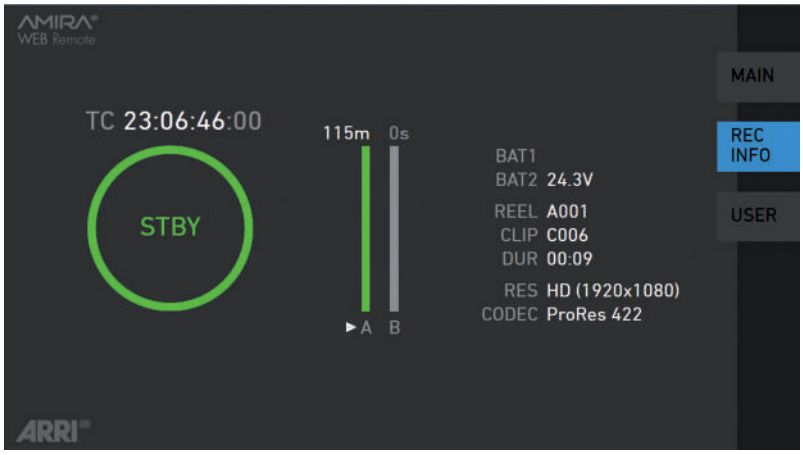
### *MAIN*, *PLAY*, *REC INFO* and *USER*

The web remote is divided into the following four sections:



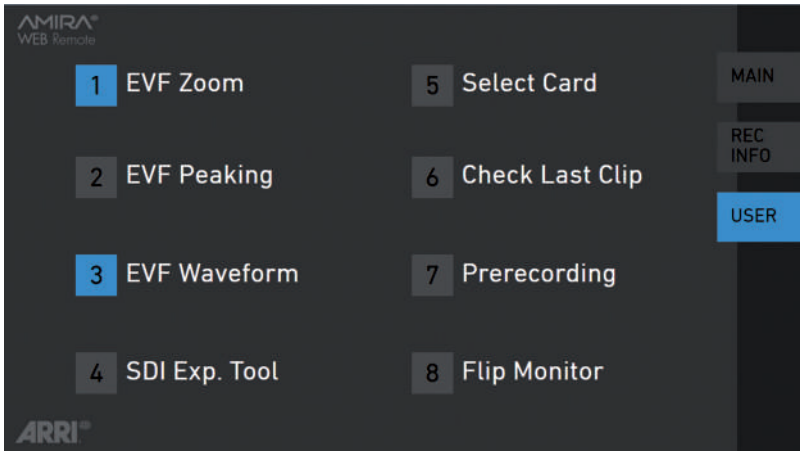

*MAIN:* Contains the same UI as the camera monitor, except the live screen. Click/tap the screen button tabs to enter a screen/trigger a function. Menu items can be clicked/tapped directly.

*PLAY:* Starts playback on the camera. Provides the same controls as the MVF-1, but does not show a video signal.




*REC INFO*: Contains info on the main recording relevant parameters, plus a *REC* button. Click the big circle icon to start/stop recording.

**Note:** Rec status and timecode may respond slightly delayed depending on the network's speed.




*USER*: Shows configuration of user buttons and allows you to trigger them. Press the number icons to trigger the user buttons.

**NOTICE**

Frequent reloading of the web remote camera interface connected with WiFi indicates a limited WiFi range. Please place the device closer to the camera or connect via ethernet. You may also consider to use the WiFi client mode which allows to connect the camera to a WiFi network.

# 9 Transvideo Starlite HD5-ARRI Monitor

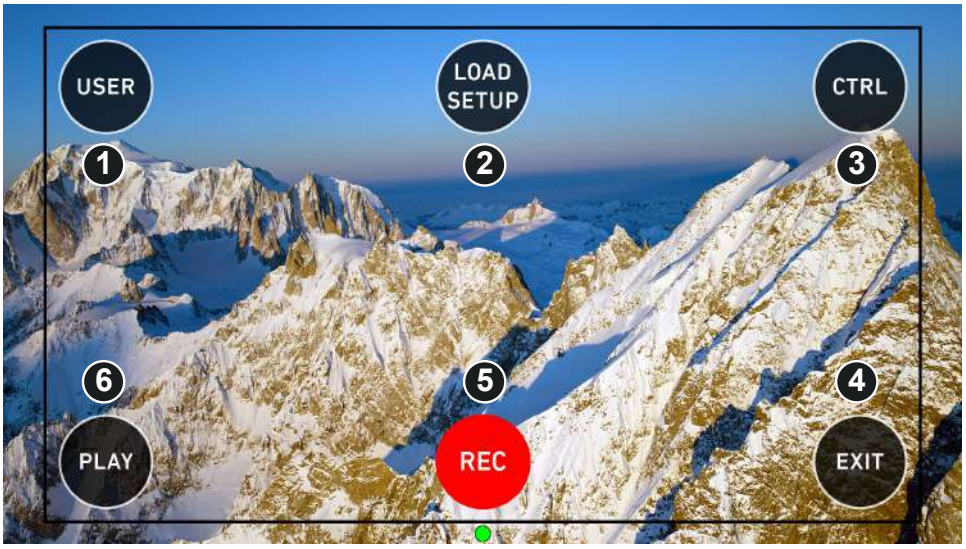
The Transvideo Starlite HD5-ARRI monitor (K2.0006960) is a 5" 3G-SDI Oled monitor with an integrated H.264 recorder, a touchscreen and a special ARRI bus interface to communicate with the camera. It allows basic operation of the camera.

All overlays required for touch operation are generated by the camera and transferred to the Starlite monitor via HD-SDI. For this reason, monitors daisy-chained to the Starlite will show the overlays as well.

The standard functionality of the Starlite monitor is not available when the ARRI menu is active.

1. Connect the monitor to an SDI output of the camera. Make sure the SDI image of the output is configured to "Processed", not "Clean". For more information, see "Setting SDI 1/2 Image", page 98.
2. Connect the bus interface cable to the EXT port of the camera.
3. Activate the ARRI menu by pressing the blue "A" touch icon on the monitor.

### Main Menu




The main screen opens up.

► Press "USER" (1) to access the user button menu.

► Press "LOAD SETUP" (2) to load a user setup from the list of installed user setups on the camera.

► Press "CTRL" (3) to activate the overlay menu.

► Press "PLAY" (6) to start playback.

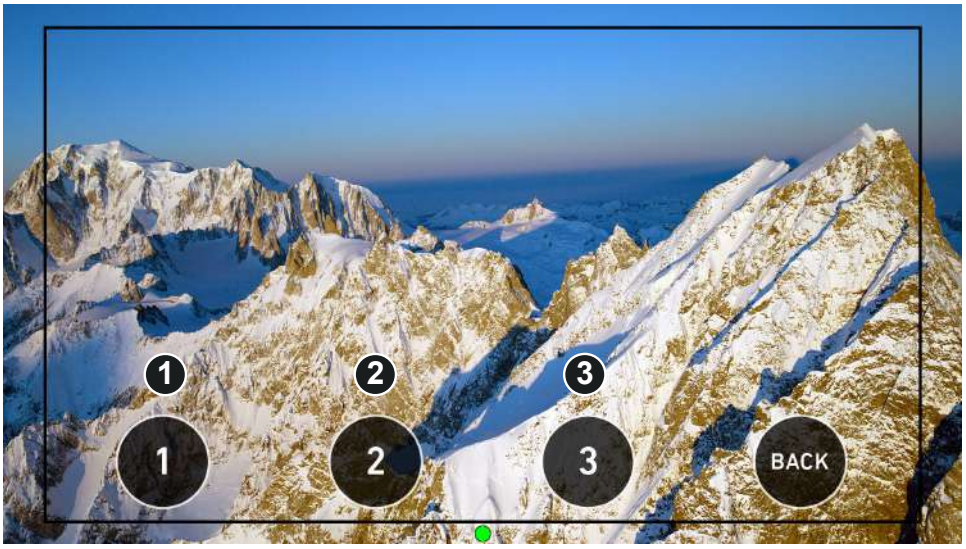
► Press "REC" (5) to start or stop recording.

► Press "EXIT" (4) to exit the ARRI menu and to return to the standard Starlite mode.

All overlays disappear after a few seconds of inactivity.

### User Button Menu

In the user button menu, the same functions are available as with the camera user buttons (1) to (3).

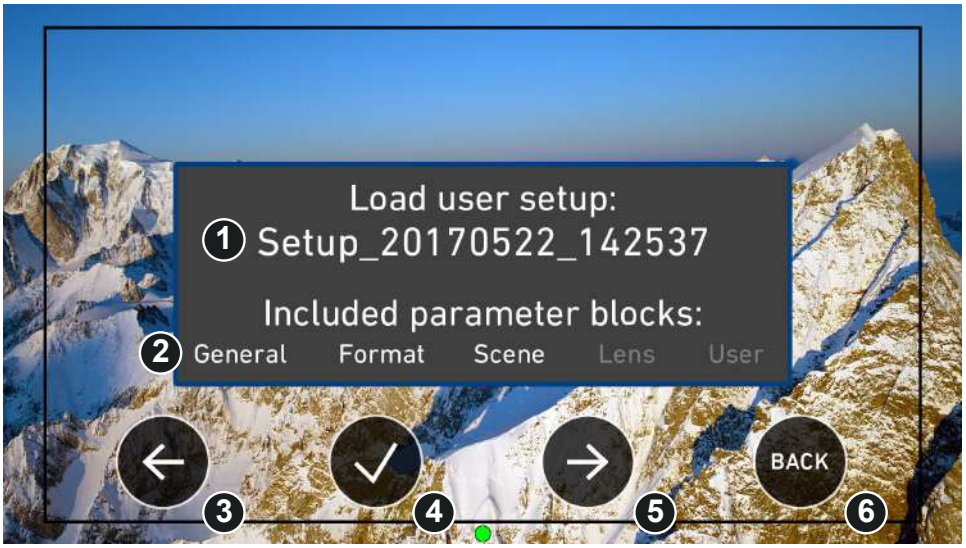



► A gray button indicates an active user function.

► Return to the main menu by pressing the "BACK" touch icon on the monitor.

### User Setup Menu

In the load user setup menu, you can load user setup files that have been stored on the camera.




► Select the user setup file to be loaded (1) with the left (3) and right (5) arrow buttons.

The camera shows the included parameter blocks in the lower part of the dialog (2). For more information on user setup parameter blocks, see "User Setup Parameter Blocks", page 120.

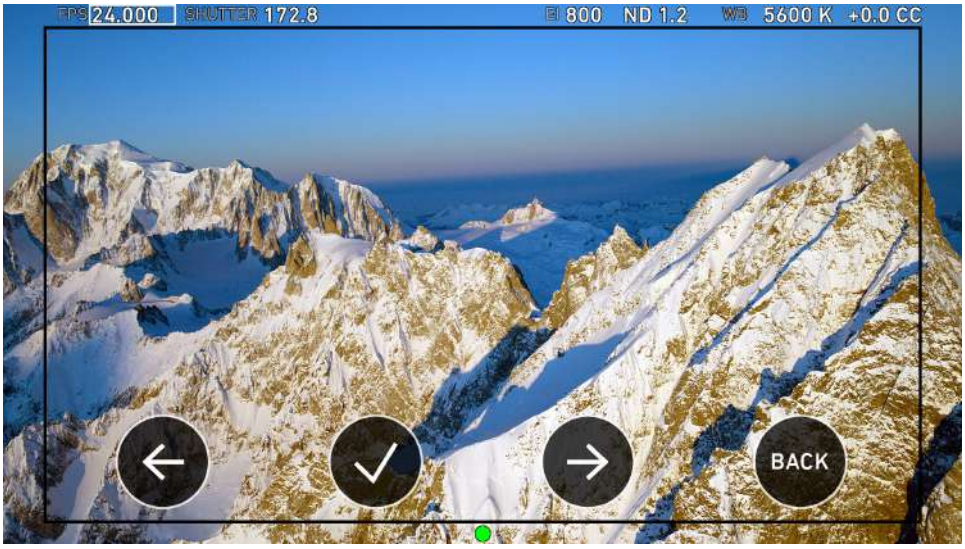
► Confirm the selection of the user setup file by pressing the checkmark (4).

► Cancel user setup loading and return to the main menu by pressing "BACK" (6).

**Note:** The user setup menu is not available during recording.

### Control Menu

In the control menu, camera parameters can be edited similar to the overlay menu. For more information, see "Overlay Menu", page 89.




► Choose a parameter by pressing the touch icon (1) or (3) on the monitor to move the selection rectangle left or right.

► Select the parameter by pressing the touch icon (2) on the monitor.

The parameter can be edited.

► Edit the parameter by pressing the touch icon (1) or (3).

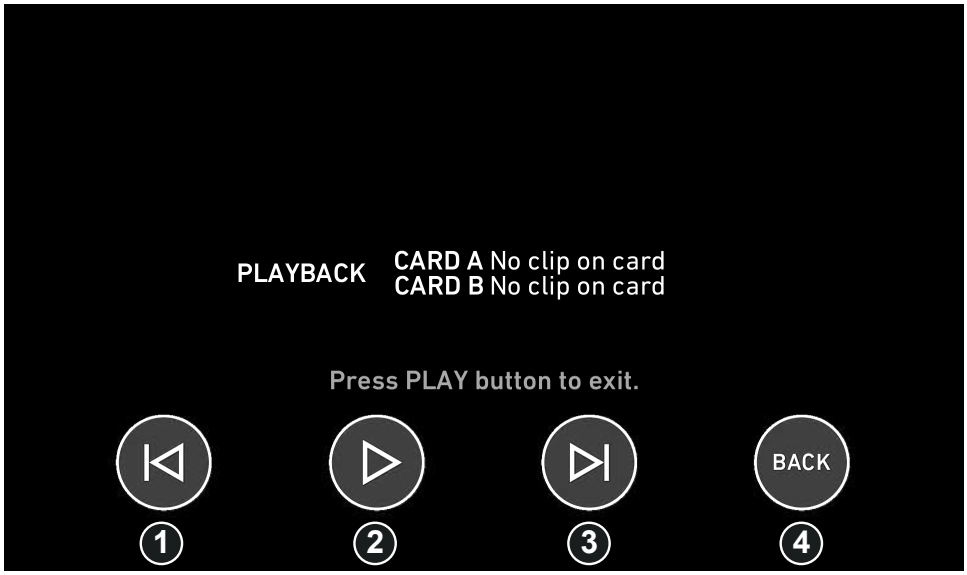
► End editing by pressing the touch icon (2) on the monitor.

► Exit the control menu by pressing the "BACK" (4) touch icon on the monitor.

**Note:** The control menu is not available during playback.

### Playback Menu

In the playback menu, recorded clips can be played or paused (2) and skipped to previous (1) or next (3) clip. You can also change the playback speed.




► Play or pause a clip by pressing the "Play" (2) touch icon on the monitor.

► Skip to previous or to next clip by pressing the "Skip previous" (1) or "Skip next" (3) touch icon on the monitor.

► While playback is running, press "Fast backward" (1) or "Fast forward" (3) to decrease or increase playback speed.

► Exit playback and return to the main menu by pressing the "BACK" (3) touch icon on the monitor.

**Note:** The playback menu is not available during recording.

# 10 Appendix

## 10.1 Supported CFast 2.0 Cards

**List of supported CFast 2.0 cards**

| Card Type | Useable Capacity* | Firmware |
|---|---|---|
| SanDisk Extreme Pro CFast 2.0 60GB (SDCFSP-060G) | 57 GB | HDX 8.03 |
| SanDisk Extreme Pro CFast 2.0 120GB (SDCFSP-120G) | 114 GB | HDX 8.03 |
| SanDisk Extreme Pro CFast 2.0 128GB (SDCFSP-128G-xxxA/B) | 121 GB | HDX 14.14 |
| SanDisk Extreme Pro CFast 2.0 128GB (SDCFSP-128G-xxxD) | 115 GB | HDX 15.01 |
| SanDisk Extreme Pro CFast 2.0 256GB (SDCFSP-256G-xxxD) | 243 GB | HDX 15.01<br>HDX 15.02 |
| SanDisk Extreme Pro CFast 2.0 512GB ARRI Edition (K2.0016648) | 512 GB | CF1502AR<br>CF1504AR |
| Lexar Professional 3600x CFast 2.0 128GB (LC128Cxxxx3600) | 128 GB | 20150507 |
| Lexar Professional 3600x CFast 2.0 256GB (LC256Cxxxx3600) | 256 GB | 20150507 |
| Lexar Professional 3600x CFast 2.0 256GB (LC256Cxxxx3600G2) | 256 GB | 20150507<br>20160507 |

* 1 GB = $10^9$ Byte

**NOTICE**

Due to the lower write speed on the SanDisk Extreme Pro 60GB cards, the max. frame rates are limited at the highest data rates:

ProRes 4444 recording in 2K: 120 fps

ProRes 4444 recording in HD: 137 fps

ProRes 422HQ recording in 2K: 181 fps.

## 10.2 Technical Data

| | | |
|---|---|---|
| **Camera Type** | 35 mm format film-style digital camera with integrated shoulder arch and receptacles for 15 mm lightweight rods, switchable active sensor area, support for ARRI MVF-1 viewfinder, built-in remote control capabilities via Wi-Fi, built-in motorized ND filters, interchangeable lens mounts and ARRI Lens Data System. | |
| **Dimensions** | Length: 309 mm<br>Height: 149 mm<br>Width: 139 mm | |
| **Weight** | 4.1 kg / 9 lbs (camera body with PL mount) | |
| **Sensor** | 35 mm format ARRI ALEV III CMOS with Bayer pattern color filter array | |
| **Active Photo Sites** (with surround view) | ProRes S16 HD | 1760x980 |
| | ProRes HD | 2880x1620 |
| | ProRes 2K | 2867x1613 |
| | ProRes 3.2K | 3200x1800 |
| | ProRes 4K UHD | 3200x1800 |
| | ARRIRAW 2.8K | 2880x1620 |
| **Shutter** | Electronic shutter, 5.0°-356.0°, 1s - 1/8000s | |
| **Exposure Latitude** | 14+ stops over the entire sensitivity range from EI 160 to EI 3200 as measured with the ARRI Dynamic Range Test Chart (DRTC-1) | |
| **Exposure Index** | adjustable from EI 160-3200 in 1/3 stops<br>EI 800 base sensitivity | |
| **Filters** | Built-in motorized FSND filters 0.6, 1.2, 2.1 | |
| **Lens Mounts** | PL mount with Hirose connector and LDS<br>Titanium PL mount with L-Bus connector and LDS (**Note:** LBUS motors are not supported by AMIRA)<br>EF mount<br>B4 mount with Hirose connector | |
| **Recording Media** | CFast 2.0 memory cards | |
| **Recording Modes** | Standard, Pre-recording, Intervalometer, Stop Motion | |
| **Recording Formats** | ProRes S16 HD | 1920 x 1080 |
| | ProRes HD | 1920 x 1080 |
| | ProRes 2K | 2048 x 1152 |
| | ProRes 3.2K [1] | 3200 x 1800 |
| | ProRes 4K UHD [1] | 3840 x 2160 |
| | ARRIRAW 2.8K[2] | 2880 x 1620 |
| | [1] requires 4K UHD License Key<br>[2] requires ARRIRAW license key | |

| | |
|---|---|
| **Recording Codecs** | ProRes 4444 XQ[1], 4444[1], 422 HQ[2], 422, 422 LT<br>MPEG-2 HD 422P@HL, 50 Mbps GOP structure: 12 (23,976, 25 and 50i FPS) or 15 (29,97, 59,94i FPS) frames/GOP, M = 3, closed GOP<br>ARRIRAW[3]<br>[1] requires AMIRA Premium license key<br>[2] requires AMIRA Advanced license key<br>[3] requires ARRIRAW license key |
| **Color Output** | REC 709, custom look or Log C |
| **Look Control** | Import of custom 3D LUT, ASC CDL parameters (slope, offset, power, saturation) |
| **Adjustable Image Parameters** | Knee, gamma, saturation, black gamma, saturation by hue |
| **Focus and Exposure Control** | Peaking, Zebra, False color, Waveform |
| **White Balance** | Manual and auto white balance, adjustable from 2000K to 11000K in 10K steps. Color correction adjustable range from -16 to +16 CC. 1 CC corresponds to 035 Kodak CC values or 1/8 Rosco values. |
| **Sound Level** | < 20 dB(A) at standard frame rates |
| **Environmental** | -20° C to +50° C (-4° F to +113° F) @ 95% humidity max, non-condensing splash and dust-proof through sealed electronics |
| **Viewfinder** | Multi Viewfinder MVF-1 (OLED and LCD) with flip-out LCD screen and military-grade connector to camera<br>Camera Control Panel (CCP-1) LCD control panel with option to daisy-chain MVF-1 |
| **Wireless Interfaces** | Built-in WiFi and bluetooth modules |
| **WiFi Remote Control** | Built-in Wi-Fi interface and web-based remote control from phones, tablets and laptops |
| **Custom Control** | Optional GPIO interface for integration with custom control interfaces |
| **Power Input** | Lemo 8-pin, 10.5-34 V DC<br>Socket for battery adapter plate |
| **Power Output** | 10.5 to 12 V (RS: 24 V) / 2.0 A |
| **Video Outputs** | 2x HD-SDI out 1.5G and 3G: uncompressed HD video with embedded audio and metadata, 6G SDI in UHD and 3.2K recording modes. |
| **Inputs** | Genlock, Return In, Timecode (in and output) |
| **Other Interfaces** | USB 2.0 (for user setups, look files etc.)<br>Ethernet for service and web remote control<br>EXT accessory interface w. RS pin and unregulated power output (outputs battery voltage) |

## Maximum Recording Frame Rates

| Resolution | Codec | CFAST 60 GB | CFAST 120+ GB |
|---|---|---|---|

| | | | |
|---|---|---|---|
| S16 HD | ProRes 422 LT | 200 | 200 |
| | ProRes 422 | 200 | 200 |
| | ProRes 422 HQ | 200 | 200 |
| | ProRes 4444 | 137 | 200 |
| | ProRes 4444 XQ | 91 | 120 |
| HD | ProRes 422 LT | 200 | 200 |
| | ProRes 422 | 200 | 200 |
| | ProRes 422 HQ | 200 | 200 |
| | ProRes 4444 | 137 | 200 |
| | ProRes 4444 XQ | 91 | 120 |
| | MPEG-2 HD | 59.940 | 59.940 |
| 2K | ProRes 422 LT | 200 | 200 |
| | ProRes 422 | 200 | 200 |
| | ProRes 422 HQ | 181 | 200 |
| | ProRes 4444 | 120 | 200 |
| | ProRes 4444 XQ | 80 | 120 |
| 2.8K | ARRIRAW | 27 | 48 |
| 3.2K | ProRes 422 LT | 60 | 60 |
| | ProRes 422 | 60 | 60 |
| | ProRes 422 HQ | 60 | 60 |
| | ProRes 4444 | 49 | 60 |
| | ProRes 4444 XQ | 30 | 30 |
| 4K UHD | ProRes 422 LT | 60 | 60 |
| | ProRes 422 | 60 | 60 |
| | ProRes 422 HQ | 51 | 60 |
| | ProRes 4444 | 34 | 60 |
| | ProRes 4444 XQ | 22 | 30 |

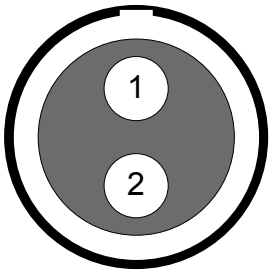
## Audio Data

| | |
|---|---|
| **External Interfaces** | 2x 3-pin XLR in (In B, C), 1x 5-pin XLR in (In A), 1x 3.5mm TRS out |
| **Input Formats** | Mic level (optional phantom power)<br>Line level<br>AES3 EBU (32, 44.1, 48, 96 kHz) *Note: In B, C only* |
| **Recording Format (embedded in video file)** | Linear PCM, 24 bit 48 kHz |
| **Number of Recording Channels** | 4+1 |
| **Gain Adjustment** | 0 - +30 dB, independently per input |
| **Line Input max. Level** | +8 / +24* dBu, correlating to 0 dBFS<br>*requires IOAU2 audio board |
| **Limiter/Auto Level Features** | 18 dB fixed gain (for AUTO level)<br>-6 dBFS threshold<br>3ms attack time for 63% effect<br>360ms release time for 63% effect<br>∞:1 ratio |

| | |
|---|---|
| **Metering** | From -50 to 0 dBFS<br>Markers at -20, -18 and -9 dBFS<br>Warnings from -5 dBFS (yellow) and -2 dBFS (red) to 0 dBFS<br>Input clipping indication through red frame around audio meter |
| **Internal Test Tone Generator** | 1 kHz sine @ -9 dBFS / -18 dBFS / -20 dBFS |

## 10.3 Pin-outs

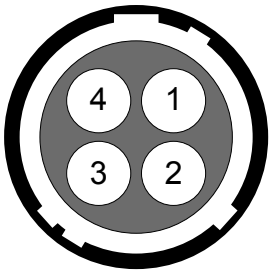
**Note:** All pin-outs for camera interfaces appear as seen by the user.




### 12 V

Connector ID: LEMO EEG.0B.302.CLN.A365

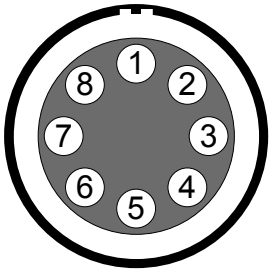
**1** Gnd
**2** 12 V Aux




### 12 V Hirose

Connector ID: Hirose HR10-7R-4S

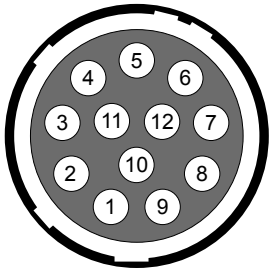
**1** Gnd
**2** GP Out
**3** GP In
**4** 12 V Aux




### BAT

Connector ID: LEMO EEJ.2B.308

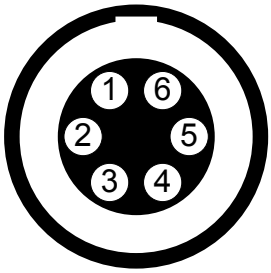
**1** Batcom
**2** Powergnd
**3** Powergnd
**4** Powergnd
**5** Batcom Gnd
**6** Batplus
**7** Batplus
**8** Batplus




### ENG (on PL lens mount steel)

Connector ID: Hirose HR10-10R-12S(73)

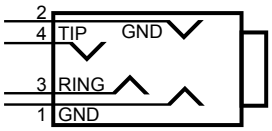
**1** -/-
**2** -/-
**3** Gnd
**4** -/-
**5** -/-
**6** 12 V
**7** -/-
**8** -/-
**9** -/-
**10** -/-
**11** RXD (Mount to Lens)
**12** TXD (Lens to Mount)




### EXT

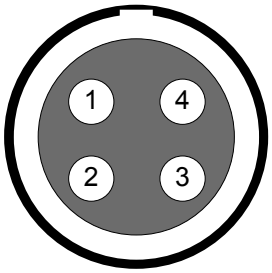
Connector ID: LEMO EEG.1B.306.CLN

**1** Can1 H
**2** Can1 L
**3** Can2 H
**4** Can2 L
**5** 24 V Aux
**6** Gnd
**7**




### Headphones

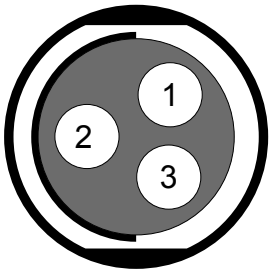
**1** Gnd
**2** Gnd
**3** R Out
**4** L Out




### LBUS (on PL lens mount titanium)

Connector ID: LEMO EEG.0B.304

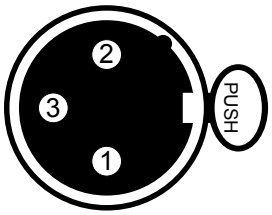
**1** Gnd
**2** Can L
**3** VBat
**4** Can H




### R/S

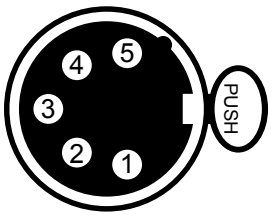
Connector ID: Fischer DPB102A052-130

**1** Gnd
**2** 24 V Aux
**3** R/S




### XLR 3-pin

**1** Gnd
**2** In (+)
**3** In (-)




### XLR 5-pin

**1** Gnd
**2** L In (+)
**3** L In (-)
**4** R In (+)
**5** R In (-)

## 10.4 MPEG-2 Notice

This product contains MPEG-2 functionality.

ANY USE OF THIS PRODUCT IN ANY MANNER OTHER THAN PERSONAL USE THAT COMPLIES WITH THE MPEG-2 STANDARD FOR ENCODING VIDEO INFORMATION FOR PACKAGED MEDIA IS EXPRESSLY PROHIBITED WITHOUT A LICENSE UNDER APPLICABLE PATENTS IN THE MPEG-2 PATENT PORTFOLIO, WHICH LICENSE IS AVAILABLE FROM MPEG LA; LLC; 4600S. ULSTER ST., SUITE 400, DENVER, CO 80237.

## 10.5 Declarations of Conformity

### EU Declaration of Conformity

Brand Name: ARRI

Product Description: Digital Camera System

- **ARRI AMIRA + Viewfinder MVF1 + Camera Control Panel CCP-1**
- + Europe Setting for Software 5.4 or later, Primes following Appendix I and Antenna following Appendix II

The designated products conform to the specifications of the following European directives:

*For cameras delivered before 13 June 2016:*

1 DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity

2 DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (recast)

*For cameras delivered from 13 June 2016:*

1 DIRECTIVE 2014/53/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment - OJ L 153, 22 May 2014, p. 62–106

2 DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment - OJ L 174, 1 July 2011, p. 88–110

The compliance with the requirements of the European Directives was proved by the application of the following standards:

Essential Requirements regarding No 1:

| | |
|---|---|
| Following 2014/35/EU | EN 62368-1:2014<br>AC:2015-05<br>AC:2015-11 |
| Following 2014/30/EU | EN 301 489-1 V1.9.2<br>EN 301 489-17 V2.2.1<br>EN 55032:2015<br>EN 55103-2:2009<br><br>EN 300 328 V2.1.1 |

Essential Requirements regarding No 2:
EN 50581:2012

To evaluate the respective information, we used: http://ec.europa.eu/growth/single-market/european-standards/harmonised-standards/index_en.htm
Year of affixed CE-marking: 2015

APPENDIX I - List of Primes

| Item | Model Name |
|---|---|
| 1 | PL-LDS Mount + ARRI Lenses with Lens Data System 1 |
| 2 | ARRI LPL Mount ALEXA Mini/AMIRA + ARRI - Signatures Primes with Lens Data System 2 with focal lenght 18-125mm |

APPENDIX II - List of Antennas

| Item | Manufacturer | Model Name | Gain (dBi) | Radation Pattern | Type | Connector |
|---|---|---|---|---|---|---|
| 1 | Proant | 333 (Ex-it 2400 Fold-able) | 2.0 | Omni-direc-tional | Dipole | Reverse SMA |

## FCC Compliance Statement

**Class A Statement:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

**Note:** This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

- **WIFI:** FCC ID: PD962205ANH or PPD-AR5B22
- **Bluetooth:** FCC ID: QOQWT32AE

## Industry Canada Compliance Statement

Complies with the Canadian ICES-003 Class A specifications.

*Cet appareil numérique de la Classe A est conforme à la norme NMB-003 du Canada.*

This device complies with RSS-210 of Industry Canada.

*Cet appareil est conforme à CNR-210 d' Industrie Canada.*

This Class A device meets all the requirements of the Canadian interference-causing equipment regulations

*Cet appareil numérique de la Classe A respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.*

- **WIFI:** IC ID: 1000M-62205ANH or 4104A-AR5B22
- **Bluetooth:** IC ID: 5123A-BGTWT32AE

## China

- **WiFi Module**:

本设备包含型号核准代码（分别）为：

CMIIT ID: 2012AJ0219 (M)

... 的无线电发射模块。

- **AMIRA**:

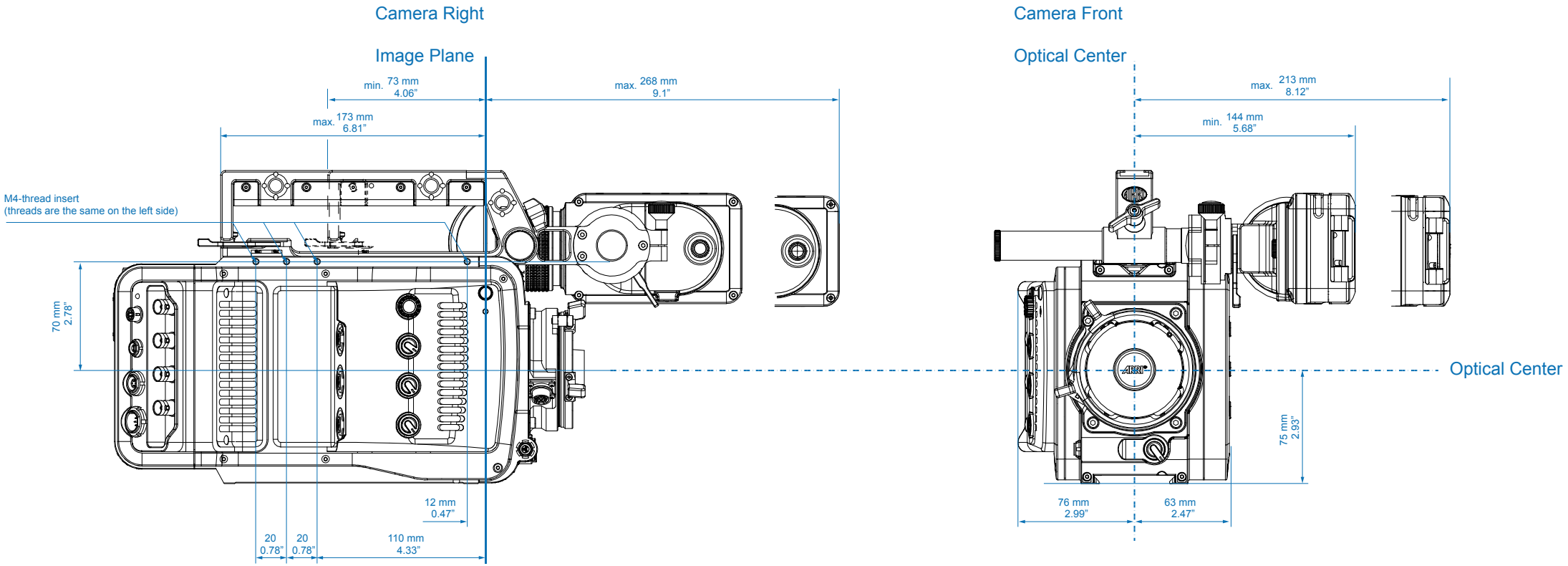
### South Korea

| | |
|---|---|
| Statement for 2.4 GHz Devices: | "해당무선설비는 운용 중 전파혼신 가능성이 있음"<br>Translation for reference only: This radio device has the possibility of radio interference. |

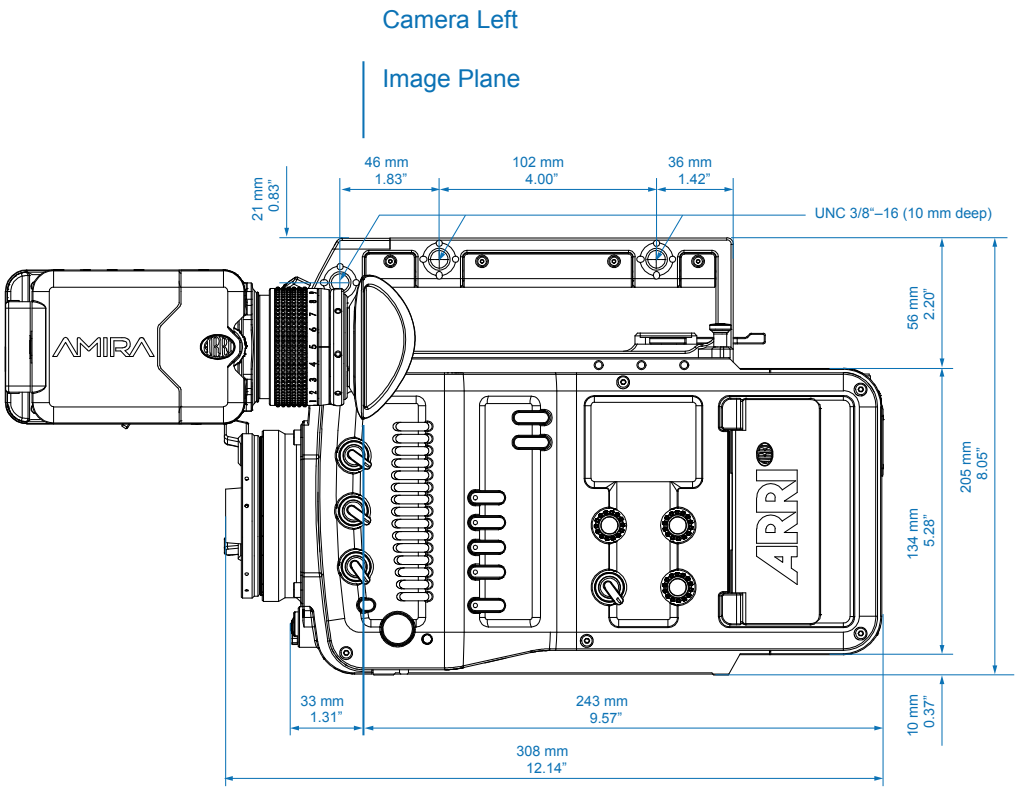
- **AMIRA**: Certification No: MSIP-REM-AXP-K1717000
- **WiFi Module**: Certification No: KCC-CRM-ATH-AR5B22

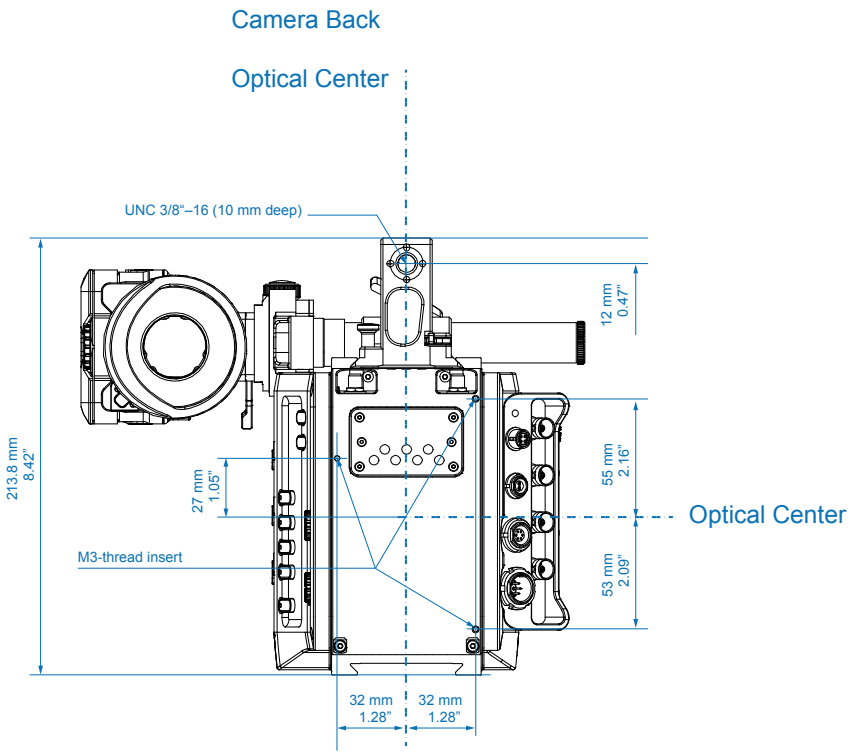
## 10.6 Dimensional Drawings

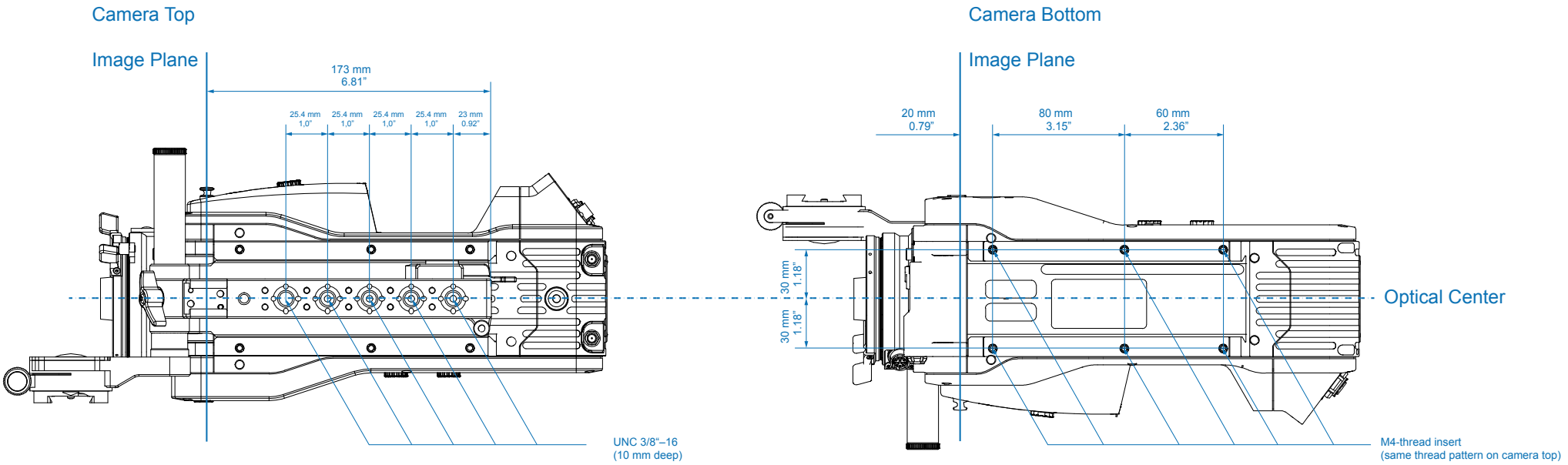
Dimensional drawings of the camera are attached to the end of this document. They can also be downloaded from the ARRI website:
https://www.arri.com/camera/amira/downloads/



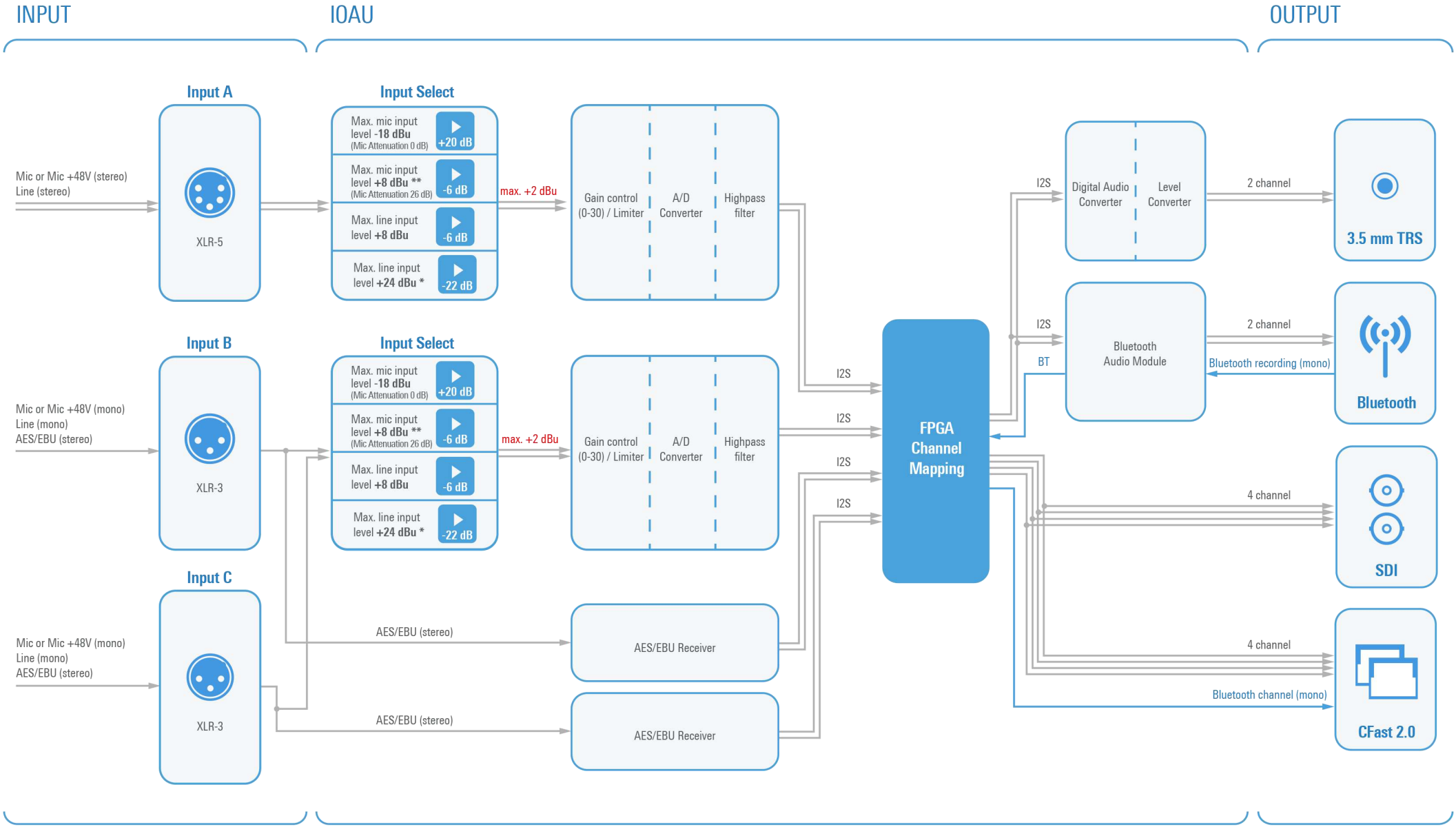

| AMIRA | | Length | Width | Height | Weight |
|---|---|---|---|---|---|
| | Body (with LDS PL-Mount) | 309 mm - 12.1" | 139 mm - 5.4" | 149 mm - 5.8" | ~ 4.1 kg - 9.2 lb |


Camera Left
Image Plane
46 mm
1.83"
102 mm
4.00"
36 mm
1.42"
21 mm
0.83"
UNC 3/8"–16 (10 mm deep)
56 mm
2.20"
205 mm
8.05"
134 mm
5.28"
10 mm
0.37"
33 mm
1.31"
243 mm
9.57"
308 mm
12.14"


Camera Back
Optical Center
UNC 3/8"–16 (10 mm deep)
12 mm
0.47"
213.8 mm
8.42"
55 mm
2.16"
27 mm
1.05"
Optical Center
M3-thread insert
53 mm
2.09"
32 mm
1.28"
32 mm
1.28"


Camera Top
Image Plane
173 mm
6.81"
25.4 mm
1,0"
25.4 mm
1,0"
25.4 mm
1,0"
25.4 mm
1,0"
23 mm
0.92"
UNC 3/8"–16
(10 mm deep)
Camera Bottom
Image Plane
20 mm
0.79"
80 mm
3.15"
60 mm
2.36"
30 mm
1.18"
30 mm
1.18"
Optical Center
M4-thread insert
(same thread pattern on camera top)

# AMIRA Audio Block Diagram




* 24 dBu max. line input level only available with the IOAU-2 audio board. The IOAU-1 audio board is limited to 8 dBu max. line input level.
** 8 dBu max. mic input level only available with the IOAU-2 audio board. The IOAU-1 audio board is limited to -18 dBu max. mic input level.