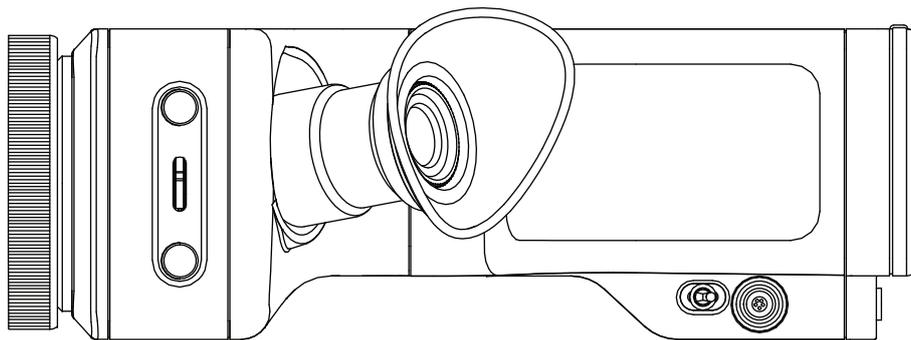


IKONOSKOP™

a-cam dIII



User Guide

Firmware version 1.28

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Welcome

Welcome to the Ikonoskop A-Cam dll User Guide for firmware version 1.28.

Firmware version 1.28 includes the following improvements:

- Corrects frame metadata for 24 and 30 fps.

Firmware version 1.27 includes the following improvements:

- False color function for adjusting the exposure.
- New gamma curve for the viewfinder and HDSDI output.
- New black level metadata in the CinemaDNG files.
- Sensor tuning function that will detect and map away defective pixels.
- New viewfinder information for shutter angle, gain, card number and take number.

How to upgrade the A-Cam dll firmware:

Install the A-Cam dll firmware version 1.28 (d2v01_28.tar) and restart the camera. For full instructions see "Operation of the camera" on page 11.

If you upgrade from A-Cam dll firmware version 1.24 or earlier, you will also need to install the new camera OS version OSv01_01 and upgrade all memory cards. For full instructions, see "The Memory card" on page 12.

The Express Card Reader driver needs to be upgraded to version 1.2.

The USB Card Reader needs to be upgraded to firmware version 1.28 (d2c01_28.tar).

Download all the files at:

www.ikonoskop.com/downloads/software

Main Controls

Power On/Off switch

Turn on the camera by pulling the switch forward. A green light behind the switch indicates when the camera is switched on. It will take about 20 seconds for the camera to boot up.

Menu button

Press menu button to access the menu mode. To exit a sub-menu or return to camera mode, press the menu button again.

Side Step/Select scroll wheel and button

In the menu mode, scroll the wheel up or down to navigate in the menu. To select a menu option, push the wheel in. In camera mode, scroll the wheel up to enable the histogram. To disable the histogram, scroll the wheel up again. To set the focus with the pixel zoom, push the wheel in to enable it, to disable it push it again. To set the exposure you can also use the new feature called false color. The false color will show overexposed areas in the picture in magenta and underexposed areas in green. To enable the false color function scroll down the wheel, to disable the false color scroll down the wheel again. The false color will also be shown in the HDSDI signal, be aware of the false color function if you record the HDSDI signal.

Gain/Fps button

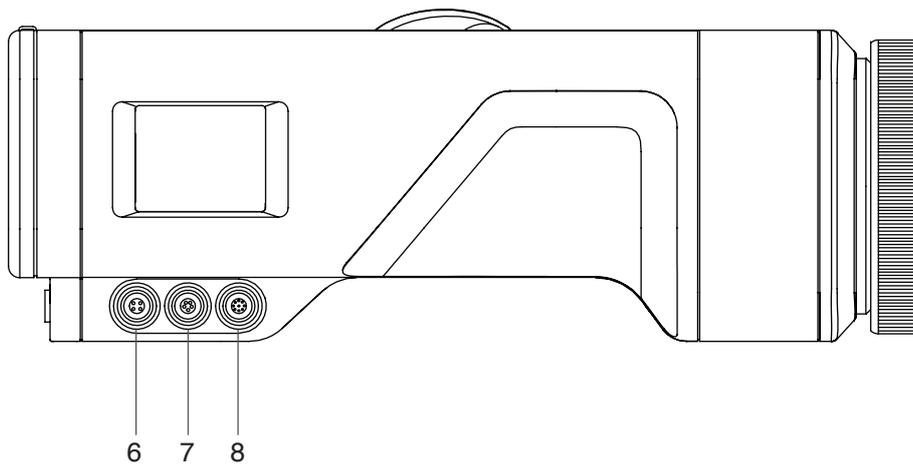
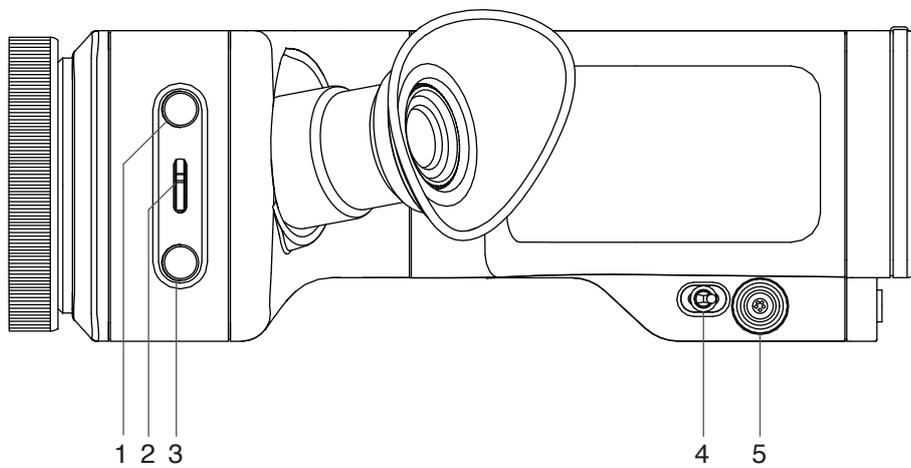
To set gain, press the Gain/Fps button and use Step/Select scroll wheel to select desired gain level 0, 3, 6 or 12 db. The gain setting will be displayed in the top of the viewfinder. To set fps, press Gain/Fps button and Menu button simultaneously. Use Step/Select scroll wheel to set the fps to 1, 2, 3, 4, 6, 9, 12, 15, 18, 23.98, 24, 25, 29.97 or 30 fps. The fps setting can also be accessed through the SET UP menu.

Pixel zoom/Histogram scroll wheel

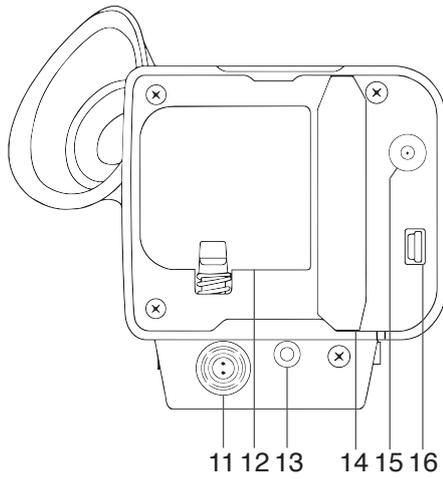
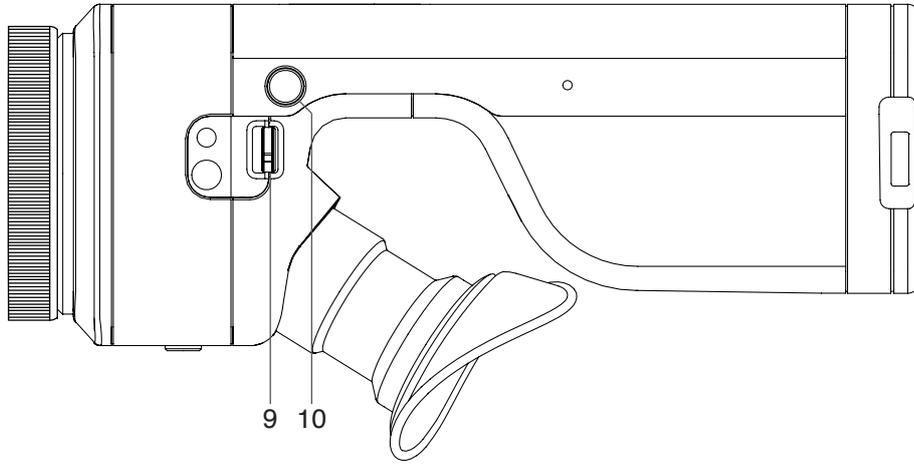
To set the focus with the pixel zoom, push the wheel to the left and hold to enable it, to disable it release it. To check exposure with histogram, push wheel to the right and release. To disable the histogram mode, push wheel to the right again.

Record button

Press and release the button to start recording. A red tally light in the button will indicate recording. Press and release again to stop the recording.



- 1 Gain/Fps button
- 2 Step/Select scroll wheel and button for menu navigation
- 3 Menu button
- 4 Power on/off switch
- 5 External SMPTE timecode input
- 6 USB monitor or 3D remote (slave)
- 7 Audio line input
- 8 Remote start/stop or 3D sync



- 9 Pixel Zoom/Histogram
- 10 Record button
- 11 External power input
- 12 Battery compartment
- 13 Headphones
- 14 Memory card slot
- 15 HD-SDI output (SMB connector)
- 16 USB

Menu Controls

VIEW

To view recorded takes on a memory card directly in the camera viewfinder or on an external monitor connected to the HD-SDI output, press Menu and select VIEW. Step/Select to the take you wish to view. Select PLAY. To view the same take from the beginning again, press Step/Select. To cancel viewing, press Menu. To exit view mode, select EXIT or press Menu again. You can erase the last take recorded on a memory card. To delete the last take, press Menu and select VIEW. Select the last take and select DELETE. To confirm delete, select YES. To erase all takes on a memory card, use the ERASE CARD option in the MAINTENANCE menu.

FRAME RATE

Set up frames per second, shutter angle, interval recording (time-laps) or still frames.

FRAMES PER SECOND (FPS)

Press Menu and select FRAME RATE/FPS. Use Step/Select wheel to set the desired frame rate from the available presets 1, 2, 3, 4, 6, 9, 12, 15, 18, 23.98, 24, 25, 29.97 and 30 fps. The fps set will be displayed all the time in the bottom left of the viewfinder.

SHUTTER

Press Menu and select FRAME RATE/SHUTTER. Use Step/Select wheel to set shutter from available presets 11.25°, 22.5°, 45°, 90°, 172.8°, 180°, 270° and 360°, or select the 005- 360° option to set the shutter in steps of 1° between 5-360°. To set the variable value, use Step/Select wheel to set the three XXX digits. The shutter angle selected will be displayed in the bottom of the viewfinder next to the frame rate.

INTERVAL

For time-laps recording, press Menu and select FRAME RATE/INTERVAL. Use the Step/Select wheel to set the desired exposure interval time. The exposure time will be displayed in the top left of the viewfinder after the interval is set. To change the exposure time you can set the base FPS before setting the exposure interval. When recording, REC will be displayed in top right of the viewfinder. After recording an interval take the camera will automatically return to regular filming mode.

STILL IMAGE

To record still images, press Menu and select FRAME RATE/STILL IMAGE. STILL will appear in top right of the viewfinder. Use record button to trigger. All recorded still frames from a still sequence will be stored in the same CinemaDNG folder on the memory card. To exit the still mode, press Menu.

SET UP

Set up of camera functions.

CARD NUMBER (CARD NO)

The A-Cam dll memory cards can be programmed with an individual card number spanning from 000 to 999. The card number will be shown as part of the filename on the recorded CinemaDNG files. To avoid identical filenames to appear within a project, set new card numbers for each card being recorded within a project. To set the card number, select SET UP/CARD NO. Use Step/Select wheel to set all three XXX digits. To exit without changing the card number, press Menu three times. Note: The card number is not attached to the filename until the files are transferred from the memory card. This allows for the card number to be set even after material has been recorded on to the memory card.

TIMECODE

The A-Cam dll has an internal clock for REC RUN timecode recording. It is also possible to input external timecode (SMPTE) to the camera for use in FREE RUN mode. This allows for synchronization with other devices like sound recorders and external recorders.

TIMECODE BASE: To set the timecode base, select BASE and use Step/Select wheel to set the base according to your projects timecode base.

INITIAL VALUE: To set the initial value of the internal REC RUN timecode, select INIT. VALUE and use Step/Select wheel to set hour (HH), minute (MM), second (SS) and frame (FF).

READ EXTERNAL TC: To read an external SMPTE timecode, connect the external timecode source to the 5pin Lemo TC input on the camera. Select READ EX. TC. "EXT TC OK" will appear in top left corner of the viewfinder/display if the timecode is read correctly. If the external timecode is not read correctly, "NO EXT TC" will be displayed. Make sure the source is outputting SMPTE timecode and try again. If read error persists, contact Ikonoskop service and support.

MODE: To select REC RUN mode (internal timecode) or FREE RUN mode (external timecode), select MODE and use Step/Select wheel to select desired mode. If FREE RUN mode is selected and no external timecode is present, the camera will record the time set in DATE & TIME as free run timecode. If the DATE & TIME is set after the camera has been synchronized, the external timecode will be reset to the new setting of the time. **OFFSET:** Use the offset to adjust the external FREE RUN timecode if necessary. Select OFFSET and use Step/Select wheel to set the desired offset between -30 to +30 frames.

COLOR TEMPERATURE (COL. TEMP)

To set the color temperature, select COL. TEMP. and Step/Select DAYLIGHT or TUNGSTEN. "DL" or "TS" will be displayed in the bottom of the viewfinder at all time. The setting affects the meta data in the file as well as the color matrix of the viewfinder and the HD-SDI output.

DATE & TIME

To set date and time, press Menu and select SET UP/DATE & TIME. Use Step/Select to set YEAR/ MONTH/ DAY/ HOUR (HH)/ MINUTE (MM). To exit without changing the date or time, press Menu for each setting. Since the date and time and the free run timecode use the same clock, it is recommended to set the date and time before synchronizing with an external timecode in order to avoid resetting of the external timecode.

VIDEO OUT

To set the video output frame rate, select VIDEO OUT and use Step/Select to set the output frame rate to 24, 25 or 30 fps. When the video output is not in use, it is recommended that it be turned off to save power. To turn the video output off, select VIDEO OUT and select OFF.

CAMERA MODE (CAM. MODE)

Use to set the camera sync mode. For normal use, camera should be set to the single camera mode. To set, press Menu and select SET UP/CAM. MODE/SINGLE. To setup cameras for synchronized recording, press Menu and select CAM. MODE. Set designated cameras to MASTER and SLAVE. (Note: For synchronized recording, you will need the 3D sync cable kit to connect the cameras!) To synchronize basic settings FPS, SHUTTER, GAIN, COLOR TEMPERATURE and TIMECODE BASE from the master to the slave camera, press Menu and select SET UP/CAM. MODE/SYNC DB. The settings will automatically be transferred to the slave camera. Note: We recommend that you always check settings of both cameras before recording.

AUDIO

The camera can record 2-channel of analog line level audio via the audio input. To record audio you will also need the A-Cam dll Audio Cable. The sound is embedded in the CinemaDNG files and needs to be extracted to WAV or AIFF files with the A-Cam dll Audio Tool application available for download at: www.ikonoskop.com/downloads/software/

To set the LEVEL OUT for monitoring, press menu and select SET UP/AUDIO/LEVEL OUT. Step/Select to a level between 0-11. The current level will be displayed in top left of the viewfinder.

For level monitoring purpose there is a built in VU meter on the side O-LED display. This can be turned on or off to your preference. To set the VU METER preference, press menu and select SET UP/AUDIO/VU METER. Select ON/OFF. The ON/OFF status will be displayed in top left of the viewfinder.

SLEEP MODE

In order to save power, the camera will enter SLEEP MODE after a designated time 1, 5, 10 minute or DISABLED when left inactive. To exit sleep mode, press any button on the camera. To set the idle time of the camera to enter sleep mode, press Menu and select SET UP/SLEEP MODE and Step/Select your preference. If the camera is left inactive in sleep mode for longer time then 10 minutes, not when DISABLED, it will enter power save mode and will shut down all functions. To awake the camera it will need to be restarted with the power switch.

DISPLAY

The side OLED display on the camera can be turned OFF to save power when not in use. To turn display on or off, select SET UP/DISPLAY and Step/Select ON/OFF.

VIEWFINDER MASK (VF MASK)

VF MASK is used to set a format mask and/or cross in the viewfinder. ASPECT – To set aspect rate of the format mask, select SET UP/VF MASK/ASPECT. Step/Select the preferred aspect ratio 1:1.85 or 1:2.35. CROSS – To turn on or off the cross in the viewfinder, select SET UP/VF MASK/CROSS and Step/Select ON/OFF. COLOR – To set color of format mask and cross, select SET UP/VF MASK/COLOR and Step/Select to your preference (BLACK/RED/WHITE).

RESET CONFIGURATION (RST CONF.)

RST CONF. resets all configurations to factory default. To reset, select RST CONF. To confirm reset, select YES. RESTART CAMERA will be prompted in the viewfinder. After restart, the all settings are reset to factory default.

MAINTENANCE (MAINT.)

Camera and memory card maintenance functions.

ERASE CARD

Before you erase a memory card, make sure all the files are downloaded and write protection is disabled. To erase the memory card, press Menu and select MAINT./ERASE CARD. To confirm erase, select YES. To dismiss, select NO. Always remember to set new card number to avoid multiple files with the same number to appear within a project.

VERSION

VERSION identifies the installed firmware version. To view the current version, press Menu and select SET UP/VERSION. Press Menu to exit.

CALIBRATE

CALIBRATE will calibrate the sensor quadrants. To select the default calibration, press Menu and Step/Select CALIBRATE. Select DEFAULT. To select the custom calibration, press Menu and Step/Select CALIBRATE. Select CUSTOM. To make a new custom calibration, Step/Select CALIBRATE/RECALIBRATE. Confirm calibration by selecting YES. To save a custom calibration as new default calibration, Step/Select CALIBRATION/SAVE AS DEF. To confirm saving the calibration, select YES. The new calibration will only be effective on the gain level created on. To calibrate all gain levels, repeat process on remaining gain levels. The original default calibration will be overwritten and not possible to recall after this. Selecting LOG will output a log file used for service purposes. See more detailed instructions under "Operation of the Camera/Calibrating the sensor quadrants".

SENSOR TUNING (SENS. TUNE)

Sensor tuning will detect and map away defect pixel on the sensor. Before you start the sensor tuning you will need to set up an even lit white or gray surface, make sure that the surface is covering the full image area. After that put the lens cap on the camera lens. The camera should be warm before the sensor tuning is started, leave the camera on for about 20-30 minutes to warm it up. To start sensor tuning press the menu button and select MAINT./ SENS. TUNE/ SENS. TUNE and confirm by selecting YES. Make sure that the lenscover is on and then press any key. After the first pass is done take off the lens cap and adjust the aperture as close to the value 2000 prompted in the viewfinder and press any key. After the second pass is done, defect pixels will be mapped away. Cameras that is shipped with version 1.27 will have a factory default sensor tuning. If your camera was shipped with an earlier firmware version you can save your custom sensor tuning as default.

UPGRADE

UPGRADE is used to upgrade the camera firmware. To upgrade camera firmware, press Menu and Step/Select MAINT./UPGRADE. Follow the prompted instructions. See more detailed instructions under "Operation of the Camera/Upgrading camera firmware".

UPGRADE CARD (UPGR CARD)

To manually upgrade the memory card firmware, press Menu and Step/Select MAINT./UPGR CARD. Select YES to confirm upgrade. The UPGRADE CARD function will not erase any data on the memory card. See more detailed instructions under "The Memory Card/Upgrading the memory card".

REBUILD CARD (REBLD CARD)

REBUILD CARD rebuilds the bad block table on the memory card. To rebuild a memory card, press Menu and Step/Select MAINTAINACE (MAINT.). Step/Select REBUILD CARD (REBLD CARD). Confirm rebuild by selecting YES. The REBUILD CARD function will erase all data on the memory card. See more detailed instructions under "The Memory Card/Rebuilding the memory card". If you are uncertain how to use this option, consult with Ikonoskop.

RECOVER

If metadata on a memory card becomes corrupted, the camera will prompt you to enter RECOVER mode when the card is inserted to the camera. To recover the metadata, follow the instructions prompted. The recover function will temporarily recreate the metadata in the camera memory so that the files can be downloaded from the camera USB port. The memory card needs to be in the camera with the power on during the whole process and until the files have been completely downloaded from the camera. After downloading the files, erase card and test if s function by recording at least two 30 sec takes and removing and re-inserting the card to ensure that the camera does not prompt you to enter recover mode again. Also view takes in the camera to make sure they are played back properly. If the problem still persists, consult with Ikonoskop.

Operation of the Camera

Powering the camera

The A-Cam dll is powered with exchangeable 7,2 volt SONY NP-F770 type batteries. A fully charged battery in good condition gives a standby/recording time of about 1 hour. When a battery is running low, the camera will indicate "WARNING LOW BAT". The warning is calculated so you are able to continue recording for 15-25 min after it first appears before the battery runs out. Running a recording until a battery runs out of power does not cause corruption to the card. If a battery has too little power when booting the camera, it will fail to do so, leaving the camera at the start up screen or shutting it down. The camera can also be powered from an external power source (7,2-15 v). To connect an external power source, use the EXT. POWER input. It is possible to plug and unplug an external power source to a camera running on a battery without causing any interruption in the power feed. When both battery and external power is present, the camera will primarily run on the external source. Consequently it is also possible to change batteries when an external power source is present without needing to turn the camera off. Using an external power source is recommended when using the camera for downloading files from the camera USB port.

Calibrating the sensor quadrants

The CCD sensor of the A-Cam dll is divided in four quadrants for taping the analogue sensor data. In order for the image to be shown correctly without any difference in exposure of the four quadrants, the camera needs to be calibrated. In the MAINTENANCE (MAINT.) menu you can choose between "DEFAULT" or "CUSTOM" calibration mode. Cameras shipped with firmware version 1.22 or higher the default calibration is a factory calibration. For shooting in extreme heat/cold or in special light situations where one color is very dominant, you might need to use a custom calibration. Best result of the calibration is achieved when the sensor has reached a normal working temperature. Turn on the camera and wait until the camera is warm. Set up an even lit white or gray surface and make sure that the surface is covering the full image area. Press Menu and Step/Select MAINT./CALIBRATE/CUSTOM. Select MAINT./CALIBRATE/RECALIBRATE. You will then be prompted to adjust the light value to a number between 1800 and 2200. The light value is displayed in the top left of the viewfinder/display and will turn white when in the correct span. Then press any button to start the calibration. After finishing the first part of the calibration you will be prompted to correct the light value to a number between 400 and 500. Again press any button to start the second part of the calibration. After the calibration process is done, check the result by making sure there is no difference in the exposure of the four quadrants turning the aperture all the way from wide open to fully closed. Repeat the process for all gain levels. If you are updating an older camera without a factory default calibration the latest calibration before the upgrade will be saved as the default calibration. Since v.1.22 contains new code for the timing of the sensor, it is possible that the old calibration will not be accurate enough. You then have to perform a custom calibration and save this as the default. Follow the steps above. When done, save the calibrations by selecting MAINT./CALIBRATE/SAVE AS DEF. Repeat this at all gain levels.

Upgrading the camera firmware

When new camera firmware is released the camera needs to be upgraded. To do so, press Menu and Step/Select MAINT./UPGRADE. When prompted, connect the camera to a computer with a USB cable. Drag the upgrade d2v1.27.tar file to the DCAM icon appearing on the computer desktop. Press any key on the camera to start the transfer. Wait until the upgrade is complete and when prompted, disconnect the camera from the computer and restart the camera. Make sure to have sufficient power for the camera during the upgrade process.

The Memory Card

Using the memory card

The Ikonoskop A-Cam dll memory cards are developed and designed by Ikonoskop for maximum performance and durability. To record on a memory card, remove the rear cover and insert the card to the memory card slot. The card will mount automatically. The card is equipped with two indication lights, red and green, and a write protection switch. (Note: This feature is not available on some older cards.) The indication lights indicate the status of the memory card. Green light indicates that the memory card is ready to use for recording. Green light in combination with red light indicates that the memory card is either full, locked with write protection or hasn't been mounted correctly by the camera. A red light indicates that the memory card is not functioning properly. To trouble shoot, first try to upgrade the card (see below) manually. If still persistent, try rebuilding the card (see below). If card is still not functioning properly, consult with Ikonoskop. If a memory card with corrupted metadata is inserted to the camera, you will be prompted to enter RECOVERY mode. The recovery mode will temporarily recreate the metadata of the card in the camera memory so that the takes can be downloaded thru the camera USB port. The camera needs to be powered during the whole operation, or the camera will lose the temporarily stored meta data of the card.

Erasing the memory card

To erase a memory card, follow the instructions under Menu Controls/MAINTENANCE/ERASE CARD on page 9. Note: Erasing a memory card can only be done in the camera or in the MK-2 USB Card Reader, not by emptying folders on the card when mounted to a computer with the Express Card Reader.

Upgrading the memory card

The Ikonoskop A-Cam dll memory cards have an internal processor for handling the writing and reading of the data. The processor is controlled by special firmware. For stability and performance of the memory cards, it is crucial that the camera and card firmware be on corresponding versions. After performing an upgrade of the camera firmware the memory cards may need to be upgraded depending on the content of the camera firmware. The card upgrade process is initiated automatically when a memory card with old firmware is present when booting a camera with a new firmware version that requires the upgrade of the memory card processor. Wait until the process is finished and re-boot the camera when prompted. It is also possible to manually upgrade the memory card firmware if a memory card with the older version is inserted to a camera already booted or if for some reason the upgrade would fail. To manually upgrade the memory card firmware, press Menu and Step/Select MAINT./UPGR CARD. Select YES to confirm upgrade.

Rebuilding the memory card

In case of corruption caused by a damaged bad block table on the memory card, this needs to be rebuilt in order for the memory card to perform correctly. The REBUILD function will erase all data on the card and create a new bad block table. After a rebuilt has been done, test the card by recording at least two 30 sec takes and viewing them. If you are uncertain how to use this option, consult with Ikonoskop first.

Alerts and Error codes

During operation camera may show alerts or error codes in the viewfinder.

CALIBRATION FAILED

Sensor calibration failed. Re-try. If persistent, consult with Ikonoskop.

CARD CORRUPTED See note*

Memory card metadata corrupt. Use RECOVER to recreate memory card metadata in camera.

CARD ERROR

Memory card error. Re-mount memory card. If persistent, consult with Ikonoskop.

CARD FULL

Erase memory card. Make sure all files have been downloaded prior to erase.

CARD PROTECTED

Memory card write protection enabled. Disable memory card write protection for recording.

CARD REMOVED

Memory card removed during recording. Check latest take for corruption.

FC ERROR

Corrupt flash bad block table. REBUILD memory card. If persistent, consult with Ikonoskop.

INT. ERROR 1-7 See note*

Camera de-bug codes.

MOUNT ERROR

Memory card failed to mount correctly. Re-mount memory card. If persistent, consult with Ikonoskop.

NO CARD

Memory card not present or camera fails to recognize memory card. Insert memory card or re-mount memory card. If persistent, consult with Ikonoskop.

NO EXT TC

Failed external timecode read. Check connection. Re-try. If persistent, consult with Ikonoskop.

REBUILD FAILED

Rebuild of memory card bad block table failed. Re-try. If persistent, consult with Ikonoskop.

RTC SYNC FAILED

Real Time Clock synchronization failed. If persistent, consult with Ikonoskop.

UPGRADE FAILED

Camera firmware upgrade failed. Re-try upgrade. If persistent, consult with Ikonoskop.

WARNING BATTERY LOW

Battery level is running low. Remaining recording time from first appear calculated to 15-20 min.

* If getting "CARD CORRUPTED" or "INT.ERROR 2-7", do not record on memory card. Check possible card content in VIEW mode. If ok, download files and check the downloaded material. If not ok, use RECOVER (see page 8). If successful, erase memory card and test by recording two 30 sec takes. View takes in camera and if ok, reboot the camera to see that card mounts properly.

Specifications

Image size:	1920x1080 (1966x1092) pixels
File Format:	CinemaDNG
Color depth:	12 bit
File size:	3,4 MB per frame
Sensor:	CCD 10,6 x 6 mm
Shutter:	Global shutter, 5-360° shutter angle
ISO:	200 ASA at 0db gain
Gain:	0, 3, 6 and 12db
Dynamic range:	11 stops
Frame rate:	1-30 fps, time lapse and still image
Sound:	Line level input, 2 channel 16 bit 48 kHz
Timecode:	SMPTE Int. and ext. 5 pin Lemo
Viewfinder:	Color LCOS, 640x480 pixels
Focus assist:	1:1 viewfinder pixel zoom
Exposure tools:	Viewfinder, histogram and false colors
Video output:	HD-SDI 1080p 4:2:2 in10 bit
Internal Power:	Sony NP-F770 type battery
External Power:	7,2-15 volt via a 2 pin Lemo connector
Computer interface:	USB 2.0
Lens mount:	IMS mount
Body:	Milled aluminum
Measures:	222 mm x 91,5 mm x 83 mm
Threads:	3/8" and 1/4" UNC (bottom and top)
Weight:	1 650 gram incl. memory card and battery.

