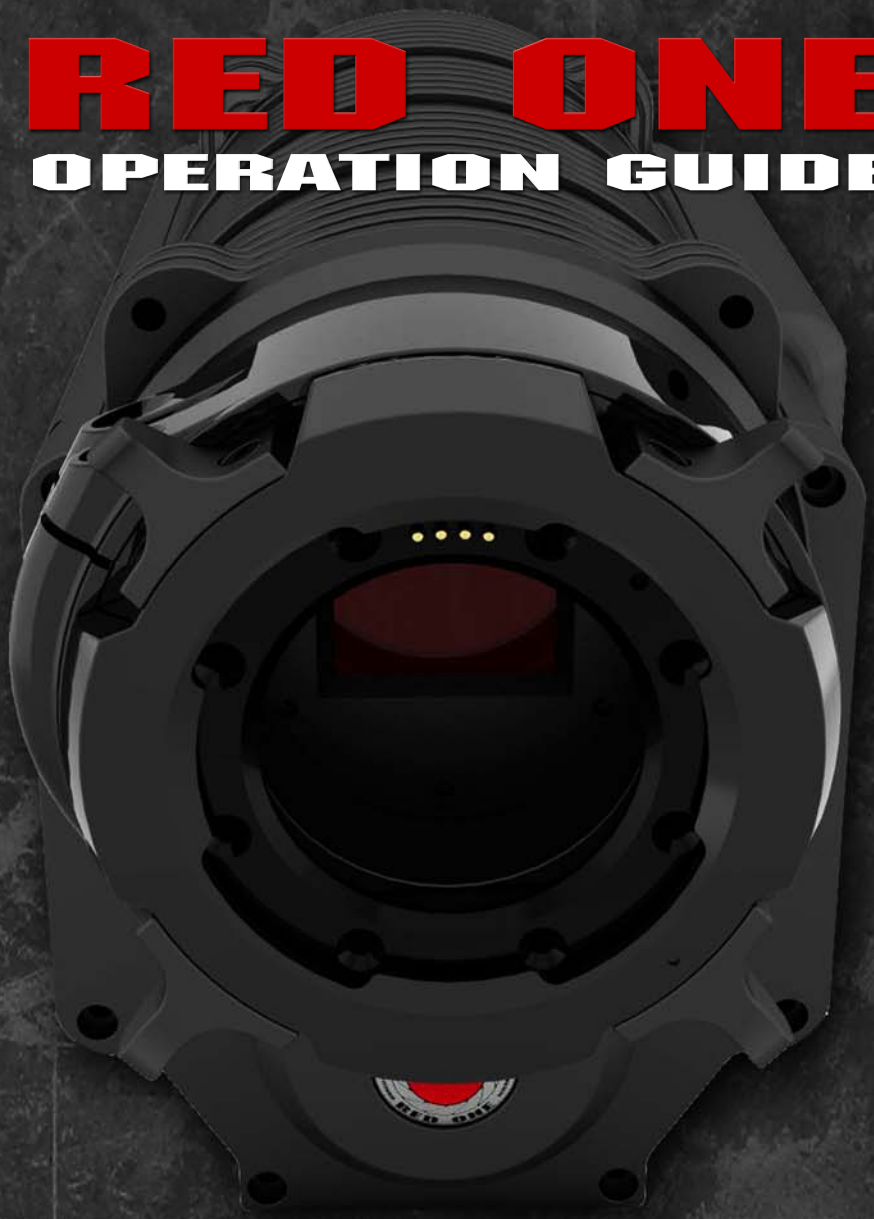
RED ONE™

OPERATION GUIDE



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RED ONE™ Operation Guide

Camera Build 21 Version 21.3.1 BETA

November 20, 2009

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OPERATION GUIDE REVISIONS

The following changes have been made since the previous revision of this Operation Guide:

- Under SYSTEM MENU CONTROL > MEDIA MENU, PRE-RECORD has been revised.
- Under SYSTEM MENU CONTROL > SETUP > MAINTENANCE, RESTORE has been revised.

DISCLAIMER

RED™ has made every effort to provide clear and accurate information in this Operation Guide, which is provided solely for the user's information. While thought to be accurate, the information in this document is provided strictly "as is" and RED™ will not be held responsible for issues arising from typographical errors or user's interpretation of the language used herein that is different from that intended by RED™. All safety and general information is subject to change as a result of changes in local, federal or other applicable laws.

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BEFORE YOU START

Congratulations on your purchase of a RED ONE™ camera. Please read the attached safety instructions, then carefully unpack the camera body any accessories. If there is any physical damage or missing components for your camera body and any accessories, please file a support ticket at **www.RED.com/support**.

RED ONE™ Camera

IMPORTANT INFORMATION
- READ BEFORE USING YOUR CAMERA -

GENERAL USE

DO NOT MODIFY OR DISMANTLE: Do not attempt to open your camera, lens or other accessory as doing so may expose you to electric shock and serious injury. There are no user-serviceable parts inside. Alteration or repairs made to the camera, lens or other accessory, except by a RED™ authorized service facility, will void the Limited Warranty. Users are not permitted to make design changes or otherwise modify the operation of the camera, lenses or other accessories, without the express written approval of RED DIGITAL CINEMA™.

STORAGE: Store in a protected, level and ventilated place. Avoid exposure to temperature extremes, damp, severe vibration, strong magnetic fields, direct sunlight or local heat sources during storage. Remove any batteries from the camera before storage.

Note that storing batteries fully charged or in high temperature conditions may permanently reduce the life of the battery. Available battery capacity may also be temporarily lessened after storage in low temperature conditions.

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The recommended storage and usage temperatures for your camera, lenses and other accessories are:

- Operating range: 0°C to +40°C (32°F to 104°F)
- Storage range: -20°C to +50°C (-4°F to 122°F)

If there are any performance issues with your camera or accessories within this operating range, please file a support ticket on **www.RED.com/support**.

MOISTURE: Avoid exposing your camera to moisture. The unit is not waterproof, so contact with water could cause permanent damage to the unit as well as electric shock and serious injury to the user. Do not use the camera in the rain or under other conditions with high moisture and immediately remove the power source if exposed to moisture.

AVOID SHOCK: Do not expose your camera to excessive vibration or impact. Be careful not to drop your camera. Internal mechanisms may be damaged by severe shock. Mechanical alignment of optical elements may be affected by excessive vibration.

CLEANING: When cleaning your camera, remember that it is not waterproof and moisture can damage electronic circuitry. Do not rinse or immerse any element of the camera, lens or other accessory, keep them dry at all times. Do not use soaps, detergents, ammonia, alkaline cleaners, and abrasive cleaning compounds or solvents. These substances may damage lens coatings and electronic circuitry.

LASER BEAMS: Avoid imaging of laser beams as they may cause damage to the sensor.

BATTERY: Lithium Ion batteries may be subject to special handling requirements pursuant to federal and local laws. Please refer to specific shipping instructions included with your battery regarding proper transport of your battery. Do not handle your battery if it is damaged or leaking. Disposal of batteries must be in accordance with local environmental regulations. For example, California law requires that all rechargeable batteries must be recycled by an authorized recycle center.

ELECTROMAGNETIC INTERFERENCE: The use of devices using radio or other communication waves may result in the malfunction or interference with the unit and/or with audio and video signals.

FCC RULES: 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 proved reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference, in which case, the user will be responsible for correcting the interference at the user's own expense.

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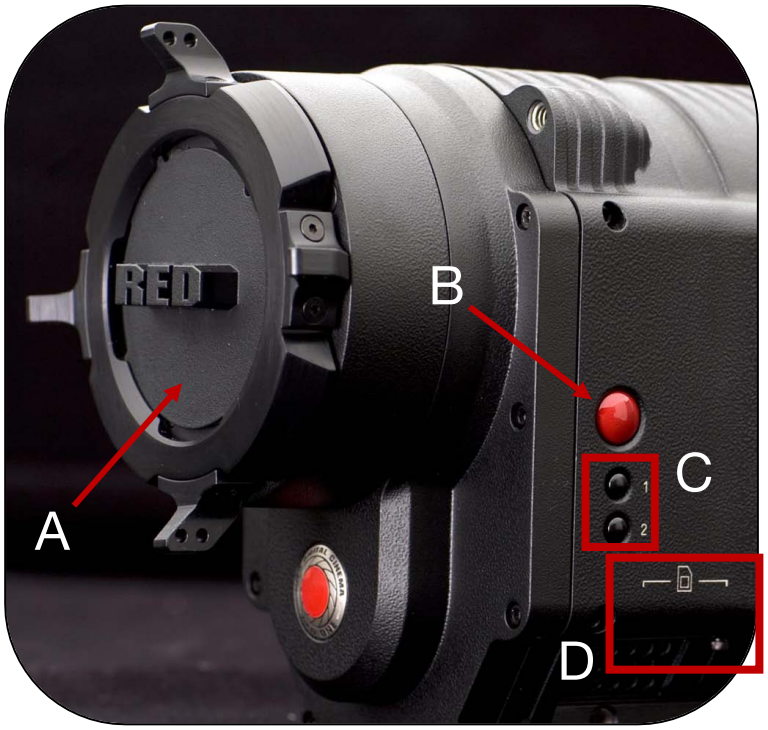
CAMERA CONTROLS, CONNECTORS AND DISPLAYS

This section describes the physical controls, connectors and displays on the RED ONE™ camera body.

CAMERA CONTROLS

LEFT FRONT OF CAMERA

This section describes the physical controls on the RED ONE™ camera body.



A	PL Lens Mount Cover	**B**	Record Button
C	User Keys 1 and 2	**D**	SD Memory Card

Figure 1 – Left Front Camera Controls

A PL Lens mount is provided as standard with the RED ONE™ camera. The mount is compatible with the majority of S35mm, 35mm and S16mm cinematography lenses. In addition, broadcast B4 mount lenses may be used if the camera is equipped with the optional B4 to PL mount optical converter.

The PL Lens mount (A) includes a 4-pin S4/i data interface. This allows the camera to gather lens metadata from lenses supplied by RED™ and Cooke Optics. Ltd, using S4/i protocol.

On the left side of the camera body is a RECORD key (B) and two User Keys (C). User Key 1 is pre-assigned to AUTO WB and User Key 2 is pre-assigned to 1:1 FOCUS CHECK. Focus check zooms in the image to allow for precise focus adjustment. These assignments can be changed in the KEYMAP preferences menu. Refer to KEY-MAP under PREFERENCES in SET UP under SYSTEM MENU CONTROLS.

NOTE: If User Key 2 assignment is changed, FOCUS CHECK is still available through the EVF buttons. Refer to RED™ EVF DISPLAY under CAMERA DISPLAYS for additional information.

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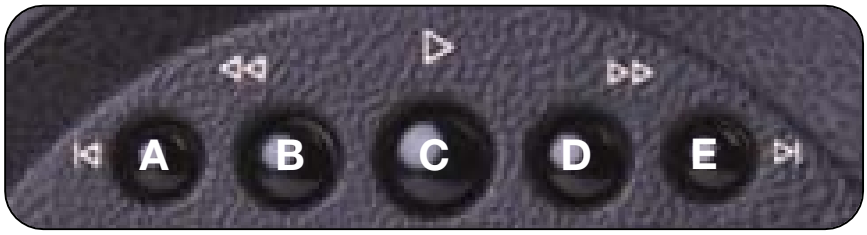
An SD Memory Card slot (D) is located below User Key 2, which supports most SD Cards of up to 1GB capacity. It is not possible to store video or audio data to the card SD card, however it may be used for camera firmware upgrades and to store USER PROFILE and LOOK files.

REAR OF CAMERA



A	Clip Start / Previous Clip	**C**	Clip Play / Pause	**E**	Clip End / Next Clip
B	Play Reverse	**D**	Fast Forward		

Figure 2 – Rear Upper Playback Camera Controls

A. Cues the Clip to its Start Frame. If already at the Start Frame, pushing this key again will cue to the Start Frame of the previous clip recorded on the digital media, if one exists.

B. FRW – Plays the clip back in reverse. Each push of this key cycles clip playback between – 1 x, - 2 x and - 8 x speed playback.

C. PLAY/PAUSE - Used to enter PLAYBACK mode and to initiate playback of the last recorded clip. Push once to enter Playback mode, a second time to start playback. Once in clip playback, this key acts as a Play/Pause toggle.

D. FFW - Plays the clip at higher speeds. Each push of this key cycles clip playback between 1 x, 2 x, 8 x and 32 x speed playback.

E. Cues the Clip to its End Frame. If already at the End Frame, pushing this key again will cue to the Start Frame of the next clip recorded on the digital media, if one exists.

NOTE: It is not necessary to exit Playback mode prior to the next recording. To exit playback mode, either push the RECORD key, or push the EXIT key to the left of the joystick.

When in playback, all cursors will be disabled, and the camera provides a clean feed of the recorded video signal at 1280 x 720 resolution on the Preview HD-SDI and HDMI outputs.

Depending on the capture frame rate, pull down will be added to create a standard 1280 x 720 progressive scan 59.94Hz or 50.00 Hz high definition video signal. SMPTE timecode is embedded on the Preview HD-SDI output, and both Preview HD-SDI and HDMI outputs provide up to 4 independent channels of 24-bit 48KHz audio.

NOTE: If PLAYBACK MODE preference is set to 1080p, HD Preview HD-SDI and HDMI outputs will switch to 1920 x 1080p progressive scan 10-bit 4:2:2 at 23.98, 24.00, 25.00 or 29.97 fps.

NOTE: If PLAYBACK LOOK preference is set to CLIP, the color adjust metadata will be read from the recorded clip. If set to CAMERA, the metadata used are the current camera settings.

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A	User Menus Select	**F**	UNDO / Alternate Action
B	Sensor Menu	**G**	System Menu
C	Audio / Video Menu	**H**	Record Start / Stop
D	EXIT Menu	**I**	Record/Ready (OK) LED
E	Joystick	**J**	LCD Display

Figure 3 – Rear Center Camera Controls

On the rear of the camera, several buttons surround a daylight readable LCD status display (J).

To the left of the status display are three User Menu buttons (A), which by default provide direct access to SENSITIVITY (A), SHUTTER (B) and COLOR TEMPERATURE (C) menus. The specific function of these keys may be re-programmed by the user, to provide quick access to other functions. Refer to KEY-MAP under PREFERENCES in SET UP under SYSTEM MENU CONTROLS.

NOTE: For quick programming of the keys, navigate to the desired menu you wish to program the A, B or C key to, then push and hold the desired key until external monitors display "User button A/B/C has been assigned to this menu. The selected key will now be programmed to the new menu destination. To reset keys to default settings, go to RESTORE. A reboot of the camera may be necessary to restore defaults.

Below the LCD status display are the Joystick (E), Exit (D), Undo / Alternate Action (F) and RECORD (H) buttons, plus the SENSOR (B), AUDIO / VIDEO (C) and SYSTEM (G) menu buttons. The camera control menus are logically grouped under these last three buttons to provide streamlined camera operations.

The status display reports key camera status values, and is complimented by two LED's (I): the REC LED provides record status (illuminates Red when recording), while the OK LED indicates the camera is ready for operation (illuminates Green when ready).

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UNDO/EXIT BUTTONS

- **EXIT** will exit the menus.
- Press and hold **UNDO** and **SYSTEM** menu buttons at the same time to navigate to the last displayed menu before exiting.
- Press and hold **UNDO** and **EXIT** buttons at the same time to unmount media from the camera. Refer to REMOVE MEDIA FROM CAMERA (UNMOUNT) under APPENDIX B: MANAGING DIGITAL MEDIA.

JOYSTICK OPERATION

- **Left/Right** to navigate menu selections.
- **Up** to go previous screen (will exit menu when at top level).
- **Down** to go to next menu (similar to Push to select a menu item).

- **Rotate** (turn/twist like a knob) changes value in highlighted box.
- **Push** (like a button) to enter a selection.

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POWER ON/OFF SWITCH

Power on/off switch (A) is located on the lower rear of the camera. Press once to power up/power down the camera.

A	Power ON / Off Switch

Figure 4 – Rear Lower Camera Controls

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CAMERA CONNECTORS

RIGHT SIDE OF CAMERA

This section describes the physical connectors on the RED ONE™ camera body. For detailed description and operation refer to APPENDIX D: INPUT/OUTPUT CONNECTORS.

A	Headphone	**H**	USB Slave
B	Program HD-SDI (A)	**I**	Audio Out
C	Program HD-SDI (B)	**J**	Timecode
D	Preview HD-SDI	**K**	Audio In Ch 1 – 4 (1-2 Upper Left - Right, 3-4 Lower Left - Right)
E	Video Genlock	**L**	Viewfinder for RED™ EVF
F	HDMI Out	**M**	Monitor for RED™ LCD
G	USB Master	**N**	Aux / RS232

Figure 5 – Right Side Camera Connections

The right side of the camera contains all the video, audio and time code inputs and outputs.

From top left to bottom right, these comprise a 3.5mm stereo headphone jack (A), and four DIN 1.0/2.3 video connectors that support Program HD-SDI (B, C), Preview HD-SDI (D) and Video Genlock (E).

Next is an HDMI output (F), a USB-2 "master" port (G) to connect the camera to another camera or to connect a USB memory device to update camera firmware, a USB-2 "slave" port (H) to connect the camera to another camera or computer based controller, a 5-pin mini-XLR audio output (I), a 5-pin timecode input/output (J) and four (4) 3-pin mini-XLR audio inputs (K). Finally there are two 16-pin push lock LEMO connectors (L, M) that provide video, communications and power for a RED™ EVF (L) and RED™ LCD (M), and a 10-pin push lock LEMO connector (N) supporting the Aux/RS232 port that can interface to a variety of B4 lenses and lens motor control devices.

One 6-inch length DIN 1.0 / 2.3 to BNC video adaptor cable and one 9-inch length 3-pin mini-XLR to mini-XLR cable plus a mini-XLR to full size XLR adaptor are provided with the camera.

Additional video and audio adaptor cables may be ordered online at **www.RED.com/store**.

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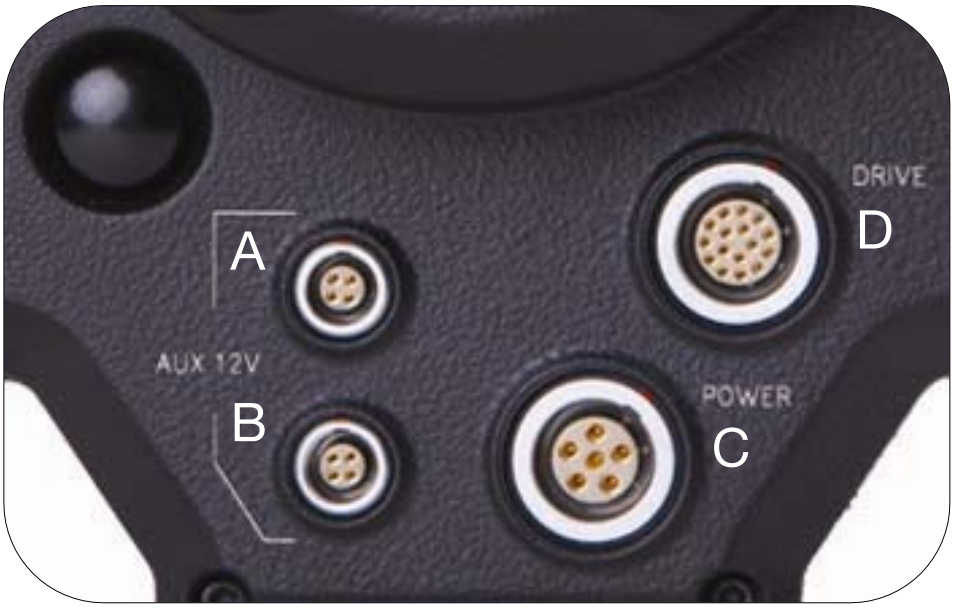
NOTE: Cameras shipped prior to Sept 15th 2008, may have an earlier revision of the audio board and no S4/i pins installed in the P/L mount. Contact RED™ customer service about appropriate audio cables to use with these systems, and hardware upgrade options.

REAR OF CAMERA



A	Aux Power / GPIO A	**C**	Camera Power 11.5 – 17V DC Input
B	Aux Power / GPIO B	**D**	e-SATA Interface (to RED-DRIVE or RED-RAM digital magazine)

Figure 6 – Lower Rear Camera Connectors

On the rear of the camera are the two 4-pin Auxiliary Power / GPIO outputs (A, B), 6-pin camera system POWER input (C) and a 16-pin DRIVE interface (E).

Each Auxiliary Power / GPIO connector can supply 1.75 amps of unregulated 11.5 – 17V DC to accessories such as range finders or low power lens motors. The upper connector provides a GPI trigger (user programmable but defaulted to Record Start / Stop) and a Record Tally output. The lower connector provides a GPI trigger (user programmable but defaulted to Record Start / Stop – for Time-lapse set to TIMLAPSE in GPIO preferences) and a Frame Recorded Tally output.

The DRIVE interface supplies power and data over e-SATA protocols to record REDCODE™ (TM) RAW compressed video data, metadata and audio to RED-DRIVE® or RED-RAM® digital media.

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CAMERA DISPLAYS

The LCD status display mounted at the rear of the RED ONE™ camera provides a snapshot of the camera setup.

RED™ LCD and RED™ EVF monitors are factory preset digital displays. There are no saturation, peaking or contrast adjustments as found on analog monitors to correct color reproduction.

Monitor outputs on the RED ONE™ camera are set up for REC 709 gamma and color space.

Image intensity can be adjusted to compensate for ambient lighting conditions. For the RED™ LCD, use the Up / Down keys on top of the display. For the RED™ EVF use the rotary encoder.

To assist with exposure, all monitor outputs can display a dual Zebra pattern and a False Color exposure meter overlaid on the video. In addition the RED™ EVF and RED™ LCD outputs can display a RGB histogram, exposure "stop lights" and RAW sensor data exposure meter.

CAMERA LCD STATUS DISPLAY

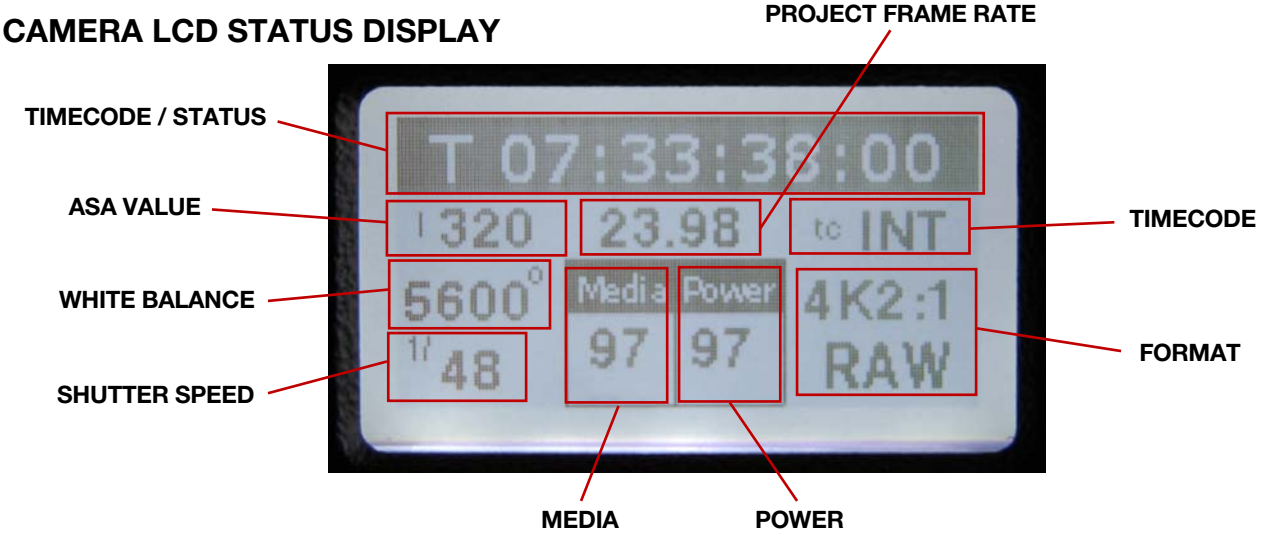

Figure 7 – Camera LCD Display

The LCD status display elements include:

- **Timecode / Status:** Displays current timecode value, clip name or system messages
- **ASA Value:** Displays current exposure index
- **Project Frame Rate:** Displays the project frame rate, 23.98 fps in this example
- **Timecode:** Displays timecode lock status
- **White Balance:** Displays current color temp
- **Media:** Displays remaining media capacity in %
- **Power:** Displays remaining battery capacity in % (as shown) or connection to DC power
- **Shutter Speed:** Displays current exposure time
- **Format:** Displays video recording format, 4K RAW in this example

NOTE: The timecode value reported is Edge Code or Time Code, as selected by the user in the TIMECODE menu. During recording, the Clip Name is reported in this display field.

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RED LCD DISPLAY

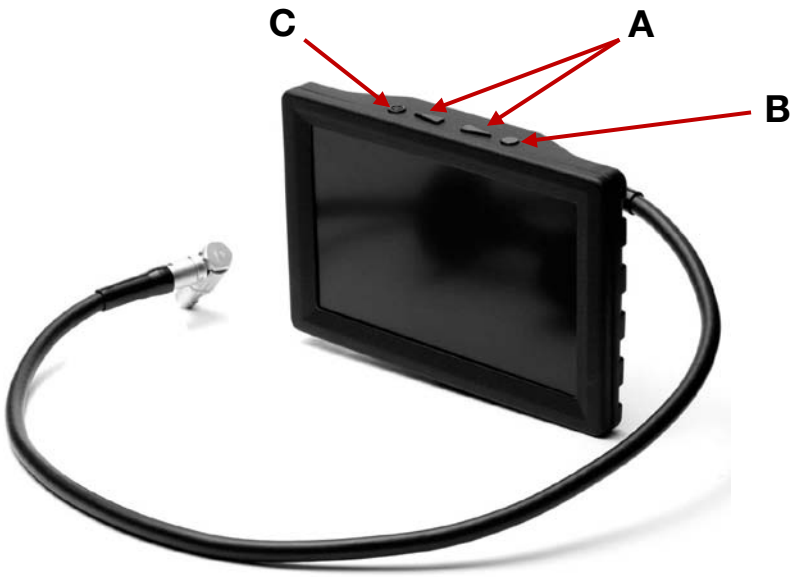

Figure 8 –RED™ LCD

Two (2) round and two (2) triangular buttons are located on top of the RED™ LCD.

- The two triangular buttons (A) in the center are used to increase or decrease backlight intensity.
- Right button (B) switches display between Video plus Frame Guides and Menus, to Video plus Frame Guides only.
- Left button (C) is User Key 5 and can be programmed. Refer to KEY-MAP under PREFERENCES in SET UP under SYSTEM MENU CONTROLS.

RED EVF DISPLAY

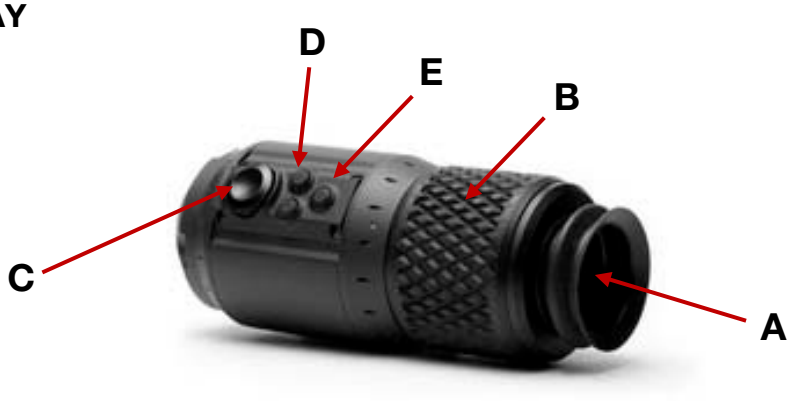

Figure 9 – RED™ EVF

The RED™ EVF comprises the following components:

A. High-resolution color display: Provides a 1280 pixel x 848-pixel resolution progressive scan color image equivalent to viewing a 17” reference color monitor from a distance of approximately 4 ft.

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B. Focus ring: May be adjusted for optimal subject focus for your eye. Available diopter range is +1.5 to -2.0.

C. Rotary encoder/switch: Used to adjust a variety of parameters. These include the EVF Intensity, but also camera parameters such as Ch1 Audio Level or Ch 2 Audio Level, and Shutter speed, Varispeed frame rate and ISO setting. **For detailed information on enabling and using this feature, go to EVF MENU under DISPLAY in PREFERENCES under SETUP in SYSTEM MENU CONTROLS.**

D. Two (2) programmable USER KEY 3 and 4 buttons.

- Default setting of USER KEY 3 turns COLOR TOOLS (monochrome or false color) On/Off.
- Default setting of USER KEY 4 turns the METER (e.g. WAVEFORM or FOCUS ASSIST) On/Off.
- USER KEY 3 and 4 can be programmed. Refer to KEY-MAP under PREFERENCES in SET UP under SYSTEM MENU CONTROLS.

E. One (1) fixed function button.

- The fixed function button (located closest to the focus ring) selects 1:1 FOCUS CHECK mode. When selected this shows the central region of the MYSTERIUM® sensor in native 4K resolution.

  NOTE: This function is not available during RECORD.

EXTERNAL HD-SDI OR HDMI MONITORS

External monitors can be connected to the camera through the HDMI and HD-SDI (2) ports located on the side of the camera. Refer to CAMERA CONNECTORS.

To aid external monitor alignment, the RED ONE™ camera provides a range of test signals including SMPTE Bars, Back and White Fields, Luma and Chroma Ramps, and a Chip Chart. Refer to TEST SIGNAL under MONITOR in SYSTEM MENU CONTROLS.

NOTE: The internal test signals cannot be recorded; they are provided to align external video recorders or monitors connected to the camera via the HD-SDI or HDMI ports.

TROUBLESHOOTING EXTERNAL MONITORS

If after connecting the camera to an external monitor and the camera display is not shown completely on the monitor display, press SYSTEM menu button, select MONITOR and try the following:

- Select PREVIEW and change setting between MENUS [DVI] or VIDEO [720p].
- Select HD-SDI and change setting between 50.00 HZ or 59.94 HZ.

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THEORY OF OPERATION

The RED ONE™ Digital Cinema camera provides high performance digital imaging over a wide range of frame rates and optical formats including Super 35mm, 35mm and Super16mm. The camera is supplied as standard with a PL mount, and may be configured with 19 mm rods to accommodate most cinematography lenses, matte boxes and follow focus systems. Adaptors for 15mm offset studio and 15mm lightweight rods are also available.

In addition to compatibility with existing PL mount cinematography lenses; a select range of S35/35mm format PL mount prime and zoom lenses are available from RED DIGITAL CINEMA™.

Other lens mounts, including Canon FD, and Nikon F are available from RED™ and 3rd parties, permitting the use of Nikkor and Canon photographic lenses. To use these mounts the PL mount must be removed. It is recommended that this should be done only in a dust-free environment, as the sensor and optical path will be exposed to the elements during this process.

A B4 mount to PL mount adaptor is also available to permit use of 2/3" HD lenses on the RED ONE™ camera. The optical coverage it provides is equivalent to S16 mm. Hence, the maximum recording resolution with these lenses will be 2K RAW. (2048 x 1152 pixel progressive scan)

MYSTERIUM® SENSOR

The MYSTERIUM® sensor has been specifically designed for use with the RED ONE™ camera, and provides variable frame rate imaging over 1- 30fps in 4K, 1-60fps in 3K resolution, and 1-120fps in 2K resolution record modes.

Native color balance for the MYSTERIUM® sensor is 5,000 degrees Kelvin, but may be electronically compensated for any color temperature in the range 1,700 to 10,000 Kelvin. White Balance presets are available for Tungsten (3200K) and Daylight (5600K) lighting; the camera may also calculate a color neutralizing White Balance value using a standard white card technique.

MYSTERIUM® includes integrated 12-bit resolution analog to digital conversion, capable of delivering up to 11 stops of dynamic range when operating in daylight at a sensitivity of 320 ISO.

IMAGE PROCESSING

Images received from the MYSTERIUM® sensor are formatted as pixel defect corrected (but not color processed) 12-bit RAW data - similar in image quality to a high end digital stills camera.

The sequence of 12-bit RAW images received from the sensor is compressed using proprietary wavelet based REDCODE™ RAW compression. The RAW data recorded is independent of the RGB signal monitored from the monitoring path. ISO, white balance or other RGB color space adjustments made to the monitoring path are not burned into the recorded 12-bit RAW data.

Images can be stored on a high-speed Compact Flash, RED-DRIVE® or RED-RAM® media.

The camera's monitoring path converts 12-bit RAW sensor data white balanced 10-bit 1280 x 720 pixels RGB 4:4:4 video. This signal may be modified using ISO, white balance or other RGB color space adjustments and provides monitor feeds for the RED™ EVF, RED™ LCD, Preview HD-SDI and HDMI outputs.

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AUDIO RECORDING

The RED ONE™ includes four channels of analog audio input processing, Peak Level meter, headphone monitor and 2-channel balanced analog audio output. Audio is digitized at 24-bit depth and 48 KHz and recorded in synchronization with video and timecode to the attached media. Digital audio is also embedded in the HDMI, Preview and Program HD-SDI outputs.

Line Level and Microphone Level analog audio input signals are routed via a high quality A/D and pre-amplifier, whose gain stage may be controlled using the Input Level control to achieve the desired audio reference / recording level.

To assist with audio operating reference level setup, the camera provides a color-coded 3dB per division Peak Level meter with 0dBu (-2odBFS) Witness Mark in the Graphical User Interface.

Peak Level meter range is –34dBu to +20dBu (-54dBFS to 0dBFS) and provides clip indication.

LINE LEVEL INPUTS

Line level audio inputs are designed to operate at unity gain (0dB **Input Level**); therefore an appropriate line output level should be established by your field production mixer or other external signal source.

Reference signal level for Line inputs is 0dBu / 0.775 volts RMS / -20dBFS when operating at 0dB **Input Level**. The maximum input signal that can be applied before the onset of input signal clipping is +18dBu / 6.5 volts RMS / - 2dBFS. I.e. this setting supports a guaranteed minimum of 18dB of input signal headroom above reference, plus the maximum available Signal to Noise Ratio for the resulting 24-bit digital recording.

MICROPHONE LEVEL INPUTS

The recorded signal levels of Microphone inputs are affected by the sensitivity of the microphone and the **Input Level** setting. Range is +36dB to +54dB, with a default value of +36dB. The camera operator should choose an **Input Level** that aligns the input signal to the reference line drawn vertically through the camera's PPM, indicating 0dBu.

This setting supports a guaranteed minimum of 18dB of input signal headroom above reference, plus the maximum available Signal to Noise Ratio for the resulting 24-bit digital recording.

VIDEO MONITORING OUTPUTS

In its default configuration, the RED ONE™ camera can simultaneously support a RED™ EVF, RED™ LCD, 3 HD-SDI outputs and one HDMI output, with two of these outputs supporting full GUI overlay graphics.

Default setting for GUI support is RED™ EVF and RED™ LCD. However, if either one of these is not present, full GUI overlay support is automatically enabled on HD-SDI and HDMI outputs.

RED™ EVF: 1280 x 848 resolution RGB 4:4:4 progressive video display with Surround View, frame guides and safe action / title overlays, zebra and false color exposure overlays, waveforms, camera status and operation menus.

RED™ LCD: 1024 x 600 resolution RGB 4:4:4 progressive video display with Surround View, frame guides and safe action / title overlays, zebra and false color exposure overlays, waveforms, camera status and operation menus.

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PROGRAM HD-SDI: When in record mode, these connectors provide two extra copies of the HD-SDI PREVIEW signal. When in playback mode, these connectors provide a dual-link 10-bit RGB 4:4:4 video signals.

PREVIEW HD-SDI: 1280 x 720 resolution 10-bit 4:2:2 video output (720p 50.00 /59.94 Hz).

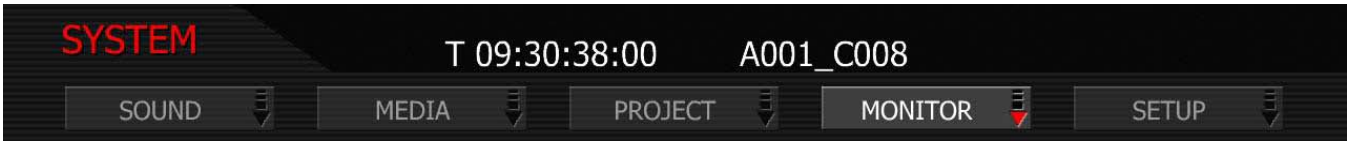
PREVIEW HDMI: 1280 x 720 resolution 10-bit 4:2:2 video output (720p 50.00 /59.94 Hz).

NOTE: If a RED™ EVF or RED™ LCD is connected, the PREVIEW HD-SDI and HDMI outputs will provide Surround View, frame guides, safe action / title, and timecode / clip name. If both RED™ EVF and RED™ LCD are connected, these outputs only support Surround View.

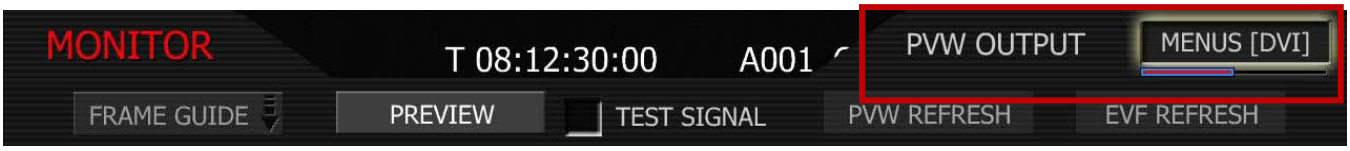
NOTE: Only if a RED™ EVF or RED™ LCD is connected, the HDMI output can also support a 1280 x 848 resolution video output with Surround View, frame guides, safe action / title, timecode / clip name, waveform, and camera status and operation menu overlays. This signal should be compatible with the majority of DVI based SXGA+ computer monitors.

To select between these modes perform the following:

1. Push the SYSTEM menu button.
2. Using joystick, select MONITOR. Push the joystick in or down to select.



3. Using the joystick, select PREVIEW.
4. Twist joystick to select MENUS (DVI) or VIDEO (720p) in the PVW OUTPUT box above the EVF REFRESH box - default is VIDEO (720p).



5. To set selection and exit the menu, push the EXIT button or move the joystick up two times (x2).

The Preview Output setting will be held in camera memory. Once it is set it will not need to be re-set when power cycling the camera.

RED LCD AND RED EVF

The optional RED™ LCD and RED™ EVF are specialized video monitors, that may be attached to the camera body, and provide a variety of user tools to assist framing, focus and exposure.

Surround View, which is an additional visible area outside the actual recorded image.

Frame guidelines show common film presentation and television formats such as 2.40:1 and 1.85:1, picture center, and/or television aspect ratios such as 16:9, 14:9 and 4:3.

Focus is aided by the high resolution of the displays, 1:1 Focus Check function, and two user selectable waveform based focus assist meters.

Exposure is aided by dual zebras a false color meter and Luma and RGB histograms.

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System information including instantaneous frame rate, sensitivity, shutter speed, color temperature, recording format, clip name, timecode, battery and media remaining is provided in the RED™ LCD or RED™ EVF monitor outputs, and the rear status display on the camera back.

For applications where a RED™ LCD or RED™ EVF are not desired – for example working on a crane – the Surround View video, frame guides, and exposure overlays are also available on the Preview HD-SDI output, providing remote camera monitoring up to 200 ft away.

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RECORD INDICATOR

When recording, the RED ONE™ camera provides a variety of record indications (tallies):

- Timecode, normally displayed in white colored text, will turn red
- A small red dot will appear in the top left corner of any video monitoring outputs (RED™ LCD, etc…)
- The REC LED on the rear of the camera will turn red
- If using an EVF, the LED on the front will turn red

RECORDING ERRORS

RECORD ERROR: NO_DIGIMAG: is displayed if media is not present for recording**.** Connect media to camera. Refer to APPENDIX B: MANAGING DIGITAL MEDIA for detailed information.

RECORD ERROR: INCOMPATIBLE_DIGIMAG: is displayed if media is not set up properly**.** Reformat media as necessary. Refer to FORMATTING MEDIA under APPENDIX B: MANAGING DIGITAL MEDIA for detailed information and instructions.

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DIGITAL MAGAZINES

REDCODE™ RAW compressed video, time code, audio and metadata may be recorded to on-board or attached digital media devices including:

REDFLASH ™: RED™ speed verified Compact Flash cards of 8 or 16GB capacity.

RED-DRIVE®: A hard disk media based Digital Magazine of 320 or 640GB capacity.

RED-RAM®: A solid-state flash media based Digital Magazine of 64 or 128GB capacity.

Each clip is recorded with a unique clip name and with all the appropriate elements of the clip – RED-CODE™ RAW files and QuickTime Reference files placed in a clip folder (.RDC)

A011_05013M.RDM	May 1, 2008, 12:18 AM	--	Folder
A011_C001_05015C.RDC	May 1, 2008, 12:18 AM	--	Folder
A011_C002_050167.RDC	May 1, 2008, 12:18 AM	--	Folder
A011_C002_050167_001.R3D	May 1, 2008, 12:20 AM	2 GB	RED RAW R3D
A011_C002_050167_002.R3D	May 1, 2008, 12:21 AM	549.4 MB	RED RAW R3D
A011_C002_050167_F.mov	May 1, 2008, 12:21 AM	64 KB	Quick... Movie
A011_C002_050167_H.mov	May 1, 2008, 12:21 AM	64 KB	Quick... Movie
A011_C002_050167_M.mov	May 1, 2008, 12:21 AM	64 KB	Quick... Movie
A011_C002_050167_P.mov	May 1, 2008, 12:21 AM	64 KB	Quick... Movie
A011_C003_05016A.RDC	May 1, 2008, 12:21 AM	--	Folder

All clips are in turn placed in a root directory (.RDM) The root directory (folder) contains all the clips recorded on that specific piece of digital media, so copying of clips from the digital magazine to backup media may be performed by a single drag and drop operation.

For additional information, refer to APPENDIX B: MANAGING DIGITAL MEDIA.

METADATA

RED ONE™ cameras record Metadata, which is data that describes the precise characteristics of the picture and sound data, in each frame of footage. This may include camera specific setup information, project and clip management information, Edge code, Time code, date and GMT, lens parameters, audio settings and any video image processing information.

CLIP NAMING CONVENTIONS

When you push record, the camera names the clip being recorded on the digital media. The format of the clip name is Camera Letter + Reel Number + Month + Day + ** where ** is a two digit alphanumeric random number generated by the camera for each file

E.g. A001_C002_0502A6.RDC

Where: A = camera A, 001 = reel 001, C002 = clip 002, and 0502 = May 02

And A6 is a two digit alphanumeric random number generated by the camera. This number helps avoid duplicate file names if two cameras are inadvertently named A on the same set.

Three cameras identified as A, B and C can therefore have individually recognizable clips:

A001_C001_0502**.RDC B001_C001_0502**.RDC C001_C001_0502**.RDC

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A single camera identified as A can have individually recognizable reel numbers, such as:

A001_C001_0502**.RDC A002_C001_0502**.RDC A003_C001_0502**.RDC

A single camera identified as A can have individually recognizable clip numbers, such as:

A001_C001_0502**.RDC A002_C002_0502**.RDC A003_C003_0502**.RDC

NOTE: Even if the same Reel number and / or camera name are reused, the use of the two random characters generates non-duplicate file names, such as:

A001_C001_0502A6.RDC A001_C001_050267.RDC A001_C001_0502F8.RDC

Under normal operation, the reel number increments each time the camera formats a new piece of digital media, up to a maximum value of 999. However the reel number may be manually reset at any time to 001or other desired value.

SMPTE TIMECODE

As each recording is made, the RED ONE™ camera records two independent timecode tracks.

Edge Code is a SMPTE timecode track that always starts at 1.00.00.00 on the first frame of each piece of digital media. It is a sequential code that is continuous from frame to frame and also between clips. Edge Code is equivalent to RUN RECORD as used on broadcast cameras.

Time Code is a SMPTE timecode track that syncs to the camera's clock, or if operated in Jam Sync mode, syncs to an externally supplied SMPTE master timecode signal. It is therefore a sequential code that is continuous from frame to frame, but discontinuous between clips.

NOTE: Time Code and Edge Code are only output from the 5-pin timecode connector if OUTPUT is enabled in the TIMECODE setup menu, but are always embedded in HD-SDI.

When in Varispeed or Time-lapse recording modes, the timecode counters are updated at the same frame rate as the recording. This means valid SMPTE timecode is created without count jumps that would affect clip playback or editing. If using an external timecode source with Jam Sync enabled, the clip's master time reference point is the first frame of the recorded clip.

When in Loop Record mode, the Edge Code will become discontinuous between clips, because frames copied into the cache memory are discarded. This may lead to problems with applications that assume a continuous timecode sequence. It is therefore recommended that Time Code be selected when operating in this recording mode.

POWER CONSUMPTION

The camera draws approximately 75 watts in a typical configuration. A RED-BRICK® 140Wh battery will run the camera and typical accessories for about 90 minutes. The camera is normally cooled by passive convection from the camera body, assisted as required by a fan.

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BASIC OPERATION

This section describes powering up/down and basic controls of the RED ONE™ camera and how to initiate a project.

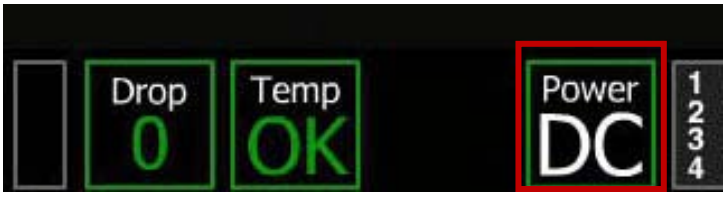
POWER UP / DOWN

Power is supplied to the camera via a RED-BRICK® battery (connected through a RED™ BATTERY PLATE, RED™ QUICKPLATE or RED™ CRADLE) or RED™ CHARGER connected to the POWER connector located at the rear of the camera.

- To power the camera up (turn on); push the power on/off switch once.
- To power the camera down (turn off); push the power on/off switch once.

During power up, PIN, Build and Version will display on the camera LCD display and all external monitors.

When powering the camera through direct DC power such as RED™ CHARGER, status is displayed on the camera's LCD Display and any external monitoring outputs as "Power DC".



When powering camera through RED-BRICK® batteries, battery status is displayed on the camera's LCD Display as well as any external monitoring outputs as "Battery (with battery power percent remaining)".

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OPERATING CAMERA USING RED CHARGER

1. Plug the RED™ CHARGER into an AC power source between (120 – 240V).
2. Plug one end of the supplied 6-pin power cable into the AUX power output connector of the charger.
3. Plug the other end of the power cable into the POWER connector on the rear of the camera.
4. Turn on the charger.
5. When the LED above the RED™ CHARGER AUX power output connector turns green, you can turn on the camera.

NOTE: The maximum sustainable power load of the RED™ CHARGER is 100W @13.8V. The output of the charger is over current protected, and will shut down if an excess load condition occurs. If the output trips for any reason, remove any external loads from the camera, such as lights, motors etc, turn off the RED™ CHARGER and repeat the above procedure.

RECHARGING BATTERIES USING RED CHARGER

When using the RED™ CHARGER, recharge time for a single RED-BRICK® battery is 200 minutes. The battery can also be partially charged, to approximately 80% capacity, in 120 minutes. This RED™ CHARGER can sequentially charge two batteries with charging currents of up to 4A.

NOTE: When a cable is plugged into the 6-Pin LEMO auxiliary output connector of the charger, the battery charging process will suspend (pause). The AUX LED will illuminate and the LEDs on the charger will blink Green. Once the cable is unplugged, the charger will continue the previous charging sequence from the point of interruption.

1. Plug AC power cord into charger AC input and power source.
2. Turn the charger power switch ON.
3. Insert a battery into one of the two V-plate adapters. Insert second battery if desired.
4. Observe the charger LED. In addition, the charge status will read in 20% steps through the RED-BRICK® battery LED array.

RED-BRICK® battery LED array

5. Leave the battery to charge for the appropriate time as shown in the table (assuming battery is completely discharged).

Charging RED-BRICK® 140Wh using RED™ CHARGER

Charge Amount% (Minutes)
80 (120)
100 (210)

6. Unplug the battery when the LED becomes steady Green and/or all the LEDs illuminate on the battery LED array.

FIRST TIME USE - SETTING UP YOUR RED ONE™

Before recording, the camera must be set up properly.

1. Physically set-up camera as desired.
2. Download the latest camera firmware from **www.RED.com/support** and upgrade camera. Refer to APPENDIX A: UPGRADING CAMERA FIRMWARE.
3. Perform a Black Shading Calibration. Refer to BLACK SHADING under MAINTENANCE in SETUP under SYSTEM MENU CONTROLS.
4. Verify Back-Focus and adjust if necessary. Refer to BACK FOCUS ADJUSTMENT.
5. Connect digital media to camera. Refer to CONNECTING MEDIA.
6. Set up your project (Resolution, Time Base, Quality, etc.) Refer to PROJECT SETUP.
7. Format media. Refer to APPENDIX B: MANAGING DIGITAL MEDIA.
8. Develop an exposure methodology using the camera tools (False Color, Histogram, etc.) and testing to find the "fat RAW negative" for various light conditions. For detailed information refer to this link: **http://reduser.net/forum/showthread.php?t=30055**
9. Frame, focus and record.

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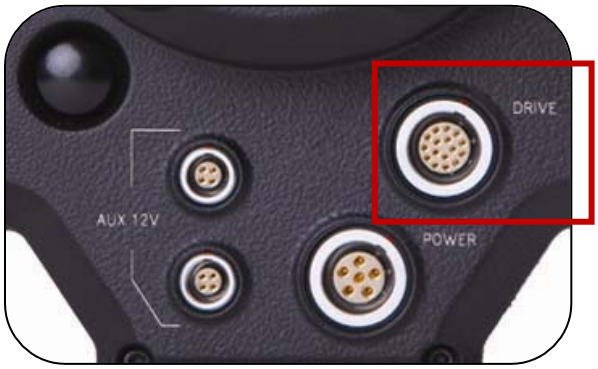
CONNECTING MEDIA

Insert the CF card with the manufacturer's label facing outward (away from camera body). Push the CF firmly into the CF slot, but without using excessive force to prevent damage.

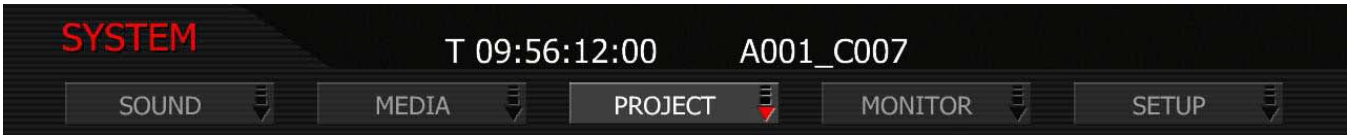
Or attach a RED-DRIVE® or RED-RAM® magazine to the DRIVE connector (e-SATA port) located on the rear of the camera using the 16-pin e-SATA cable provided.



For additional information formatting media, refer to APPENDIX B: MANAGING DIGITAL MEDIA.

PROJECT SETUP

1. Push the SYSTEM menu button.
2. Using the joystick, highlight PROJECT. Push joystick in or down to select PROJECT.



3. Using the joystick, highlight CONFIGURE. Push joystick in or down to select.

4. CONFIGURE menu will be displayed.

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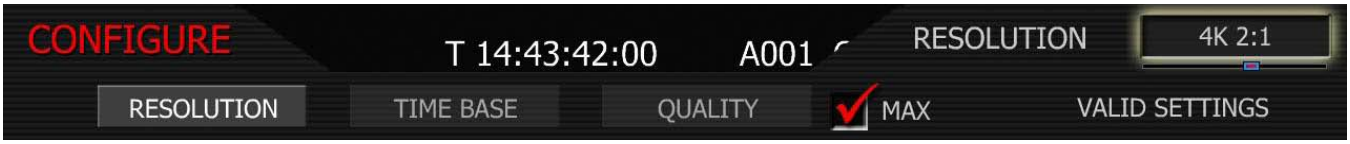


5. Select each item to set up your project using the joystick. Push joystick in or down to enter.

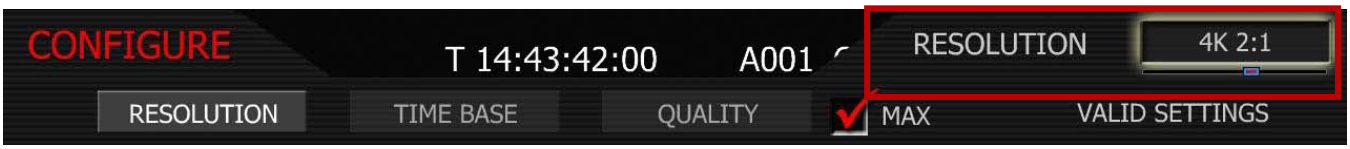
NOTE: Leave MAX box checked, unless recording 4K HD and needing real time software decode.

RESOLUTION

Selecting RESOLUTION will highlight the upper right hand menu item and give you the following options:

- 2K 2:1
- 2K ANA
- 3K 16:9
- 4K 2:1
- 4K 16:9
- 4.5K
- 2K 16:9
- 3K 2:1
- 3K ANA
- 4K HD
- 4K ANA

1. To view options, twist joystick.



2. Choose 4.5K, 4K, 3K or 2K, or 2:1 variants. Use 2K or 2K 2:1 for S16mm/B4 lenses.
3. Push joystick in or down to set the selected resolution.

NOTE: A project can only support one project Time Base as this defines the frame rate to be used for timecode and for clip playback. It is also the primary frame rate for acquisition, but variable speed (over-crank and under-crank) recordings can be made above and below this base frame rate. On playback these recordings will be displayed at the Project Frame Rate

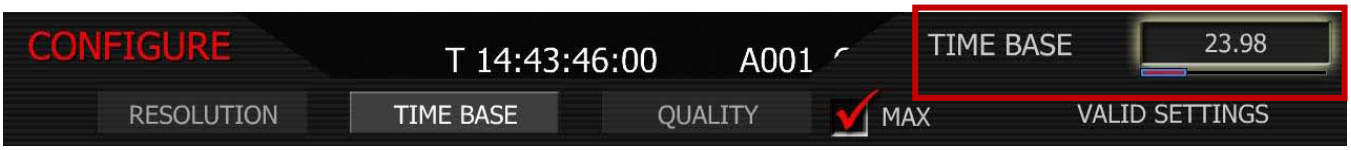
NOTE: If operating on a multi-camera production, enter a different Camera I.D for each camera using the SLATE menu; otherwise skip this step; the camera is ready to shoot.

TIME BASE

Selecting TIME BASE will highlight the upper right hand menu item and give you the following fps options:

- 23.98
- 24.00
- 25.00
- 29.97

1. To view options, twist joystick.



2. Choose 23.98, 24.00, 25.00 or 29.97fps.
3. Push joystick in or down to set the selected time base.

NOTE: The time base establishes the base frame rate for a project, and so should not be adjusted. Use Varispeed if shooting above or below this base frame rate for slow motion effects.

NOTE: 2K and 3K record resolutions also support 50.00 and 59.94 fps Project Time Bases.

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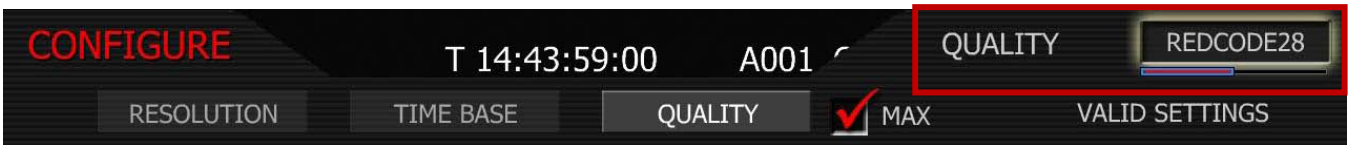
QUALITY

Selecting QUALITY will highlight the upper right hand menu item and give you the following options:

- REDCODE™ 28
- REDCODE™ 36
- REDCODE™ 42

1. To view options, twist joystick.



2. Choose between REDCODE™ 28, REDCODE™ 36 (Default) and REDCODE™ 42.
3. Push joystick in or down to set the selected quality.

NOTE: Choosing REDCODE™ 36 limits available frame rates and resolutions to CF cards.

RECORDING

Ensure a RED-DRIVE® is connected or a REDFLASH™ Compact Flash card is inserted in the camera. To record, use either of the RECORD buttons located on the rear and left side of the camera. Push once to begin recording, push again to stop recording. The camera will automatically create a file name for every clip recorded on the digital magazine or media.

REDCODE™ RAW data recordings store the Color Temperature and Exposure (ISO) and any RGB color processing values you use in the monitor path as metadata. This metadata is used in RED Alert! ® or other post production software as initial white balance, exposure and color correction points i.e. you can change these if you wish when you process the RAW footage.

Time Code and Edge Code values used by the camera are Non Drop Frame (NDF); Drop Frame (DF) is not supported. Audio is captured at 48KHz 24-bit resolution per channel, uncompressed.

Digital media should be treated with equal care as exposed film or a videotape master. We recommend storing digital media that contains your footage in a secure location and backing up the data on another digital media, such as data tape or a hard disk drive.

Each clip is recorded to the digital media in a separate folder and with a unique clip name. To copy the clip from the digital media to a Macintosh or Windows computer, just drag and drop its folder to the computer's storage device. If you open the Clip folder, it will look like this:

A011_05013M.RDM	May 1, 2008, 12:18 AM	--	Folder
A011_C001_05015C.RDC	May 1, 2008, 12:18 AM	--	Folder
A011_C002_050167.RDC	May 1, 2008, 12:18 AM	--	Folder
A011_C002_050167_001.R3D	May 1, 2008, 12:20 AM	2 GB	RED RAW R3D
A011_C002_050167_002.R3D	May 1, 2008, 12:21 AM	549.4 MB	RED RAW R3D
A011_C002_050167_F.mov	May 1, 2008, 12:21 AM	64 KB	Quick... Movie
A011_C002_050167_H.mov	May 1, 2008, 12:21 AM	64 KB	Quick... Movie
A011_C002_050167_M.mov	May 1, 2008, 12:21 AM	64 KB	Quick... Movie
A011_C002_050167_P.mov	May 1, 2008, 12:21 AM	64 KB	Quick... Movie
A011_C003_05016A.RDC	May 1, 2008, 12:21 AM	--	Folder

The Clip folders (.RDC) are held in a root directory (.RDM) on the digital magazine. In each folder there will be one or more REDCODE™ RAW data files (.R3D) containing RAW sensor data, plus audio and metada-

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ta, and four QuickTime reference movies, which allows a QuickTime Player to display the RAW data at _F full, _H high, _M medium or _P proxy resolutions.

Double click on one of the QuickTime reference movies to see a preview of the .R3D file. Playback frame rate will depend on the processor speed of your computer. If the frame rate is too low, select a smaller QuickTime movie.

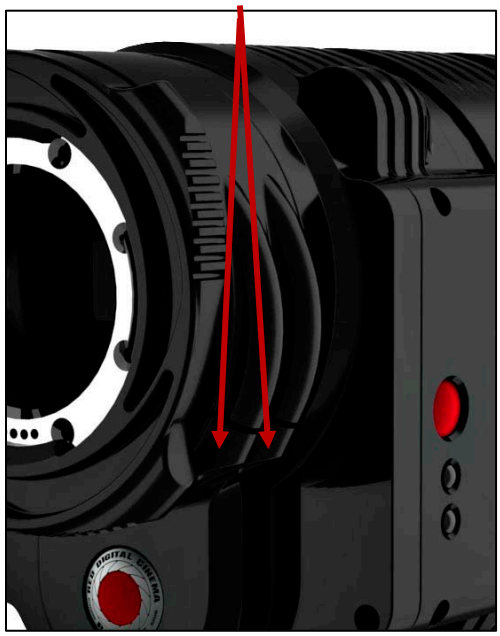
NOTE: To operate with QuickTime under Macintosh OSX, install the supplied REDCODE™ RAW plug-in available at www.RED.com/support. Windows is not currently supported.

PLAYBACK

Playback of recorded clips is available on-camera using the buttons located above the LCD display. Refer to CAMERA CONTROLS under CAMERA CONTROLS, CONNECTORS AND DISPLAY for complete information.

BACK FOCUS ADJUSTMENT

1. Level the camera on a stable surface or tripod.
2. Set a focus chart at a medium distance from the camera. (5 to 10 feet)
3. Attach a medium length prime lens to the camera, (50 to 75mm) and set the lens focus to match the appropriate distance the camera is away from the chart.
4. Using a 5/32” Allen wrench, loosen the two (2) screws on the focus ring near the front of the camera.



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5. Adjust the camera focus ring until the focus chart is in focus.

NOTE: The digital zoom function of the camera can aid with visibility, and may help achieve more accurate results.

6. Allow for an even amount of play on both sides of the lens focus marker. There should be a depth of field range of several inches, so it is best to allow for good focus on either side of the exact distance marker.
7. Tighten the camera focus ring screws, and retest focus. Screws should be tightened to approx. 22.22 In-Lb of Torque. Some shifting may occur while tightening the focus ring.
8. The “Edge Highlight” option in the viewfinder menu is a handy tool (if viewfinder is installed), and can serve as a good double-check for proper focus.

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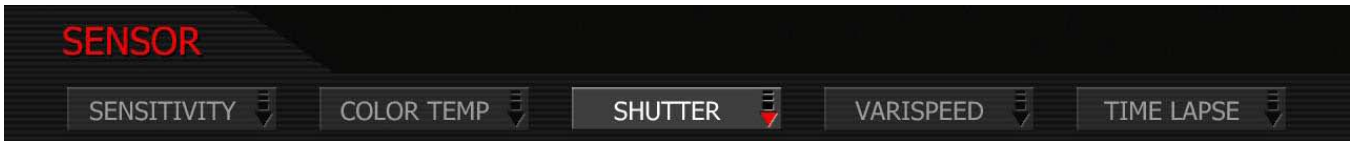
SENSOR MENU CONTROLS

This section describes how to set sensor specific menu parameters including Sensitivity, Shutter Speed, Color Temperature, Varispeed and Time-lapse.

To access the Sensor main menu push the SENSOR menu button on the rear of the camera. To enter the available sub-menus, use the joystick to highlight the desired selection and push joystick in or down.



NOTE: Sensitivity and Color Temperature metadata values are stored as metadata and are also used to modify the RED™ LCD, RED™ EVF, Preview HD-SDI and HDMI monitor outputs. They do not affect 12-bit REDCODE™ RAW data recording; the stored metadata values may be used by REDCODE™ RAW compatible NLE and image processing applications if desired.

SENSITIVITY

The sensitivity sub-menu allows you to adjust the camera's operating sensitivity. The default sensitivity value is ISO 320; adjustable in 1/3rd stop increments from ISO 100 to ISO 2000. When sensitivity is adjusted, the camera metadata logs the change and the monitor path reacts accordingly.

1. To adjust, twist joystick to change the highlighted SENSITIVITY box to the desired setting (default is ISO 320).
2. Push up on the joystick to set and return to the previous menu (SENSOR main menu) or push the EXIT button to exit the menu completely.

COLOR TEMP

The Color Temperature sub-menu adjusts the purity of white reproduction of the RGB monitoring paths at different Color Temperatures of ambient light. Factory default is 5,600 degrees Kelvin.

AUTO WB: The Automatic White Balance (AUTO WB) function allows the camera to calculate a Color Temperature that will render a white object as white. AWB mode analyzes the central 25% of the image visible in the monitor.

To use AUTO WB, place a white or gray object under the ambient light, select the AUTO WB parameter and then push in on the joystick once. AUTO WB may also be assigned to a User Key.

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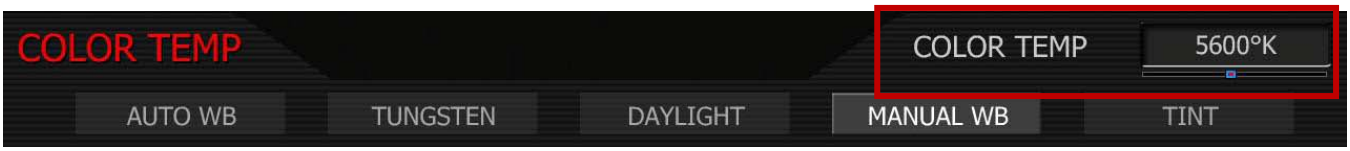
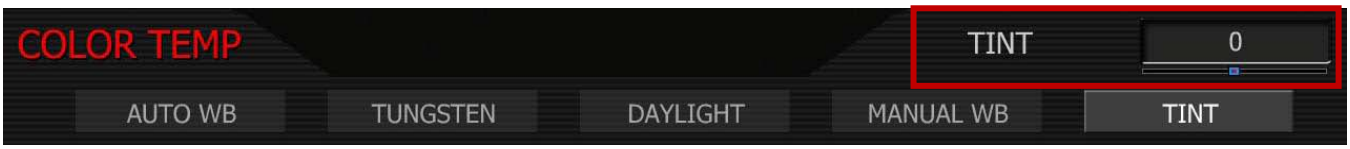
TUNGSTEN: Preset to 3,200K.

DAYLIGHT: Preset to 5,600K.

MANUAL WB: Allows you to manually set Color Temperature in the range from 1,700 to 10,000 degrees Kelvin. **To adjust:** Select MANUAL WB and twist joystick to change the highlighted COLOR TEMP box to the desired setting (default is 5,600K).



TINT: Color Temperature calculations assume a pure light source that may not be true in the specific scene the camera is imaging. To compensate for any residual colorcast, the TINT parameter can adjust the RGB color balance with a compensating Magenta - Green color component. **To adjust:** Select TINT and twist joystick to change the highlighted TINT box to the desired setting.



NOTE: Pushing AUTO WB calculates a new Tint value. This is maintained if the Color Temp is adjusted via the Manual WB parameter. If you select the Tungsten or Daylight presets, Tint will be reset to zero, which is the default value.

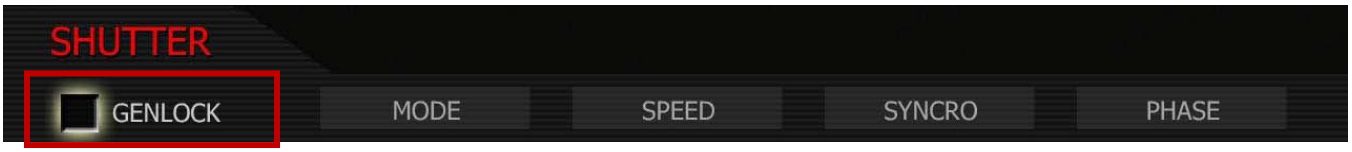
SHUTTER MENU

Adjusts exposure time of each frame captured by the MYSTERIUM® sensor. Shutter speed presets are available for all common speeds (and corresponding angles) at 24 / 25 fps and 50 / 60 fps.

Preset shutter speeds may be adjusted using the RELATIVE and SYNCRO shutter parameters.

GENLOCK

References Shutter scan start time (phase) to an external Tri-Level Sync genlock signal. For 3D and multi-camera, permits scan time and scan phase of all cameras to be matched. **To select:** Use joystick to highlight GENLOCK checkbox. Push in or down on joystick to place checkmark in GENLOCK checkbox.



GENLOCK ICON

When GENLOCK is checked, a PADLOCK icon will be displayed at the top of the EVF, LCD and all external monitors. An external GENLOCK signal generator will need to be connected to the GENLOCK connector to allow full use of this feature (refer to GENLOCK INPUT under APPENDIX D: INPUT/OUTPUT CONNECTORS).

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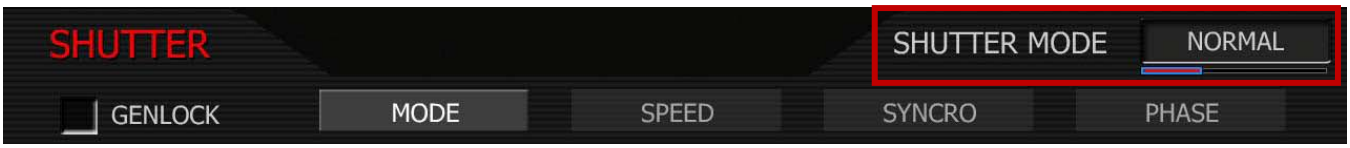
- If the PADLOCK appears on its own as shown above, the camera is Genlocked. This means the shutter start time is referenced to the external Genlock signal, so multiple cameras recording the same scene will be capturing their individual images at the same moment in time if they are all Genlocked to a common reference signal.
- If the PADLOCK has a red circle and diagonal bar through it as shown below, this indicates the sensor is not Genlocked. Check that the Genlock signal generator frame rate is equal to the project TIME BASE and / or the cabling and connections are correct.

MODE

Enables one of three following shutter modes: (Default selection is Normal) For additional information, see SPEED section.



- **Normal:** Shutter Speed is defined exclusively by the Shutter Speed setting.
- **Syncro:** Shutter Speed is defined by Shutter Speed, but modified by Syncro setting.
- **Relative:** Shutter Speed is defined by Shutter Speed, but modified by the capture fps.

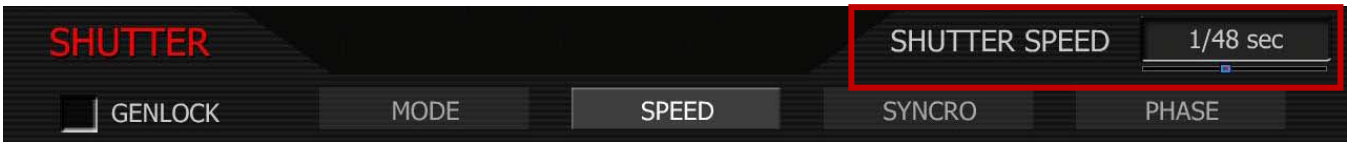
To adjust: Select MODE and twist joystick to change the highlighted SHUTTER MODE box to the desired setting.

NOTE: If operating in Relative or Syncro modes, the shutter speed is reported in yellow text.

NOTE: If the operator requests a shutter speed (angle) that is outside the capability of the camera in that mode, the actual shutter speed (angle) used will be reported in red text.

SPEED

When operating in **Normal** mode, the **Shutter Speed** value used by the camera is fixed, i.e. it is independent of the image capture rate. This is opposite from a mechanically shutter camera.



Decreasing Shutter Speed will allow more light to fall on the sensor, increasing exposure and motion blur on any objects moving within the frame. As Shutter Speed increases less light falls on the sensor, decreasing exposure and motion blur on objects moving within the frame.

Exposure times presets include: 1/24, 1/25, 1/30, 1/32, 1/33, 1/40, 1/48, 1/50, 1/60, 1/96, 1/100, 1/120, 1/125, 1/192, 1/200, 1/250, 1/384, 1/400, 1/500, 1/696, 1/800, 1/1,000, 1/1,200, 1/2,000th sec.

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To adjust: Select SPEED and twist joystick to change the highlighted SHUTTER SPEED box to the desired setting.

When operating at 23.98 or 24.00fps, these equal common shutter angles of:

Shutter	Degrees	Shutter	Degrees
1/32	270	1/96	90
1/48	180	1/192	45
1/60	144	1/384	22.5

When operating in **Relative** mode, the **Shutter Speed** values are proportionately reduced or extended to correspond to changes in the instantaneous capture frame rate.

This mode is analogous to use of a fixed shutter angle on a mechanically shuttered camera.

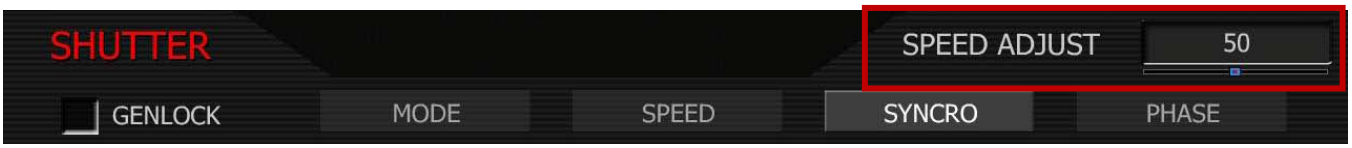
E.g. Enabling Relative mode with 1/48th sec shutter at 24fps will mean 1/96th sec for 48fps, and 1/16th sec for 8fps. This achieves the same visual result as setting a180 degree shutter.

SYNCRO

When operating in this mode, the Shutter Speed values may be proportionately reduced or extended to tune exposure time to a precise value. Range 10–90. Default is 50.

To adjust: Select SYNCRO and twist joystick to change the highlighted SPEED ADJUST box to the desired setting.

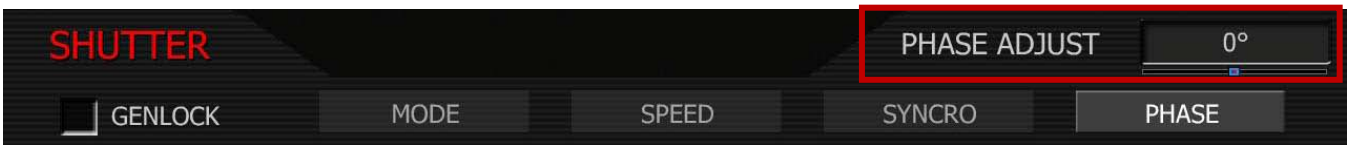
E.g. Setting Syncro to 53 with a 1/60th sec shutter is equal to 1/56.6 sec exposure time.



PHASE

Provides a delay relative to the start of the frame for the exposure time. Phase may be adjusted over the range - 45 to + 45 degrees. Default value is 0.

To adjust: Select PHASE and twist joystick to change the highlighted PHASE ADJUST box to the desired setting.



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To Convert Shutter Speed to Angle Equivalent:

Equivalent Degrees = (Shutter Speed x Frame Rate x 360)

E.g. = (1/48 x 24 x 360) = (8640/48) = 180

Shutter	Degrees	Shutter	Degrees
1/32	270	1/120	72
1/48	180	1/192	45
1/50	172.8	1/348	22.5
1/60	144	1/696	11
1/96	90	1/1000	8.6

To Convert an Angle to an Equivalent Shutter Speed:

Equivalent Shutter = 1 / (Frame Rate x 360 / Angle)

E.g. = 1/(24 x 360/180) = 1/(8640/180) = 1/48

Degrees	Shutter	Degrees	Shutter
270	1/32	72	1/120
180	1/48	45	1/192
172.8	1/50	22.5	1/348
144	1/60	11	1/696
90	1/96	8.6	1/1000

VARISPEED

The Varispeed menu supports Variable Frame Rate recording at speeds faster or slower than the Project Frame Rate and Frame Rate Ramping. Varispeed recordings can be initiated by pushing the Record key, or by GPI trigger.

NOTE: In all Varispeed modes, audio recording is disabled.

NOTE: In Varispeed modes timecode is written to digital media at a rate equal to the instantaneous capture rate. This ensures that the recorded REDCODE™ RAW data has valid and sequentially incrementing timecode for use by non-linear editing devices.

NOTE: In Varispeed, the frame rate display turns yellow, the audio panel reports VARISPEED.

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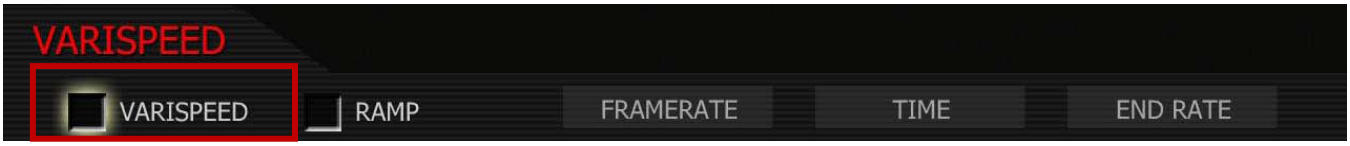
VARISPEED

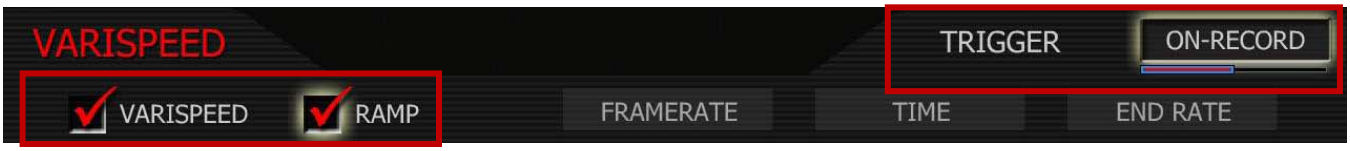
Before recording, enable this function by placing a checkmark in the **Varispeed** checkbox. **To select:** Use joystick to highlight VARISPEED checkbox. Push in or down on joystick to place checkmark in VARISPEED checkbox.



RAMP

Enables a speed ramp; a transition over **Time** from the **Frame Rate** to an **End Rate.**

1. To select and adjust, use joystick to highlight RAMP checkbox.
2. Push joystick in or down to place checkmark in RAMP checkbox (VARASPEED checkbox will automatically be checked).
3. TRIGGER box will highlight to allow you to choose between ON-RECORD and ON-EVENT.
4. Twist joystick to change the highlighted TRIGGER box to the desired setting.
5. Move joystick left or right to exit.



On-Record: On recording start, the capture frame rate will immediately start transitioning from the Frame Rate to the End Rate.

On-Event: On recording start, the capture frame rate starts out at the Frame Rate, the start of the transition to the End Rate occurs only when an external GPI trigger has been received.

FRAME RATE

Enables the user to choose any single frame rate. **To adjust:** Select FRAMERATE and twist joystick to change the highlighted FRAMERATE box to the desired setting.

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Minimum frame rate is 1 fps; maximum frame rate is a function of REDCODE™ setting (REDCODE™ 28, REDCODE™ 36 or REDCODE™ 42), record resolution and media type:

REDCODE™ 28	REDFLASH ™ 8GB	REDFLASH™ 16GB	RED-DRIVE®	RED-RAM®
2K 2:1	100 fps	120 fps	120 fps	120 fps
2K ANA	120 fps	120 fps	120 fps	120 fps
2K 16:9	100 fps	100 fps	100 fps	100 fps
3K 2:1	50 fps	60 fps	60 fps	60 fps
3K ANA	60 fps	60 fps	60 fps	60 fps
3K 16:9	30 fps	50 fps	50 fps	50 fps
4K 2:1	25 fps	30 fps	30 fps	30 fps
4K ANA	30 fps	30 fps	30 fps	30 fps
4K HD	25 fps	30 fps	30 fps	30 fps
4K 16:9	25 fps	30 fps	30 fps	30 fps
4.5K WS	25 fps	30 fps	30 fps	30 fps

REDCODE™ 36	REDFLASH ™ 8GB	REDFLASH™ 16GB	RED-DRIVE®	RED-RAM®
2K 2:1	75 fps	100 fps	120 fps	120 fps
2K ANA	100 fps	120 fps	120 fps	120 fps
2K 16:9	75 fps	90 fps	100 fps	100 fps
3K 2:1	30 fps	48 fps	60 fps	60 fps
3K ANA	50 fps	60 fps	60 fps	60 fps
3K 16:9	30 fps	40 fps	50 fps	50 fps
4K 2:1	25 fps	30 fps	30 fps	30 fps
4K ANA	25 fps	30 fps	30 fps	30 fps
4K HD	----	25 fps	30 fps	30 fps
4K 16:9	----	25 fps	25 fps	25 fps
4.5K WS	----	25 fps	30 fps	30 fps

REDCODE™ 42	REDFLASH™ 8GB	REDFLASH™ 16GB	RED-DRIVE®	RED-RAM®
4K 2:1	----	25 fps	25 fps	25 fps
4K ANA	----	25 fps	25 fps	25 fps
4K HD	----	25 fps	25 fps	25 fps
4.5K WS	----	25 fps	25 fps	25 fps

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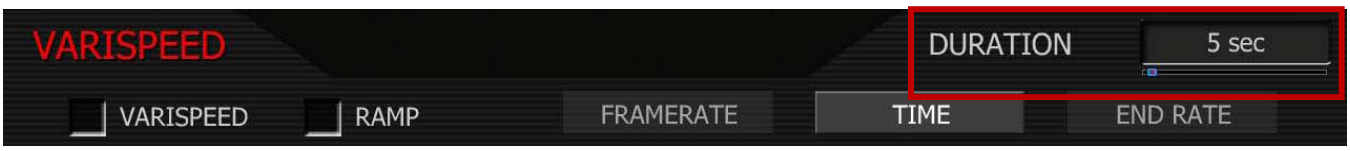
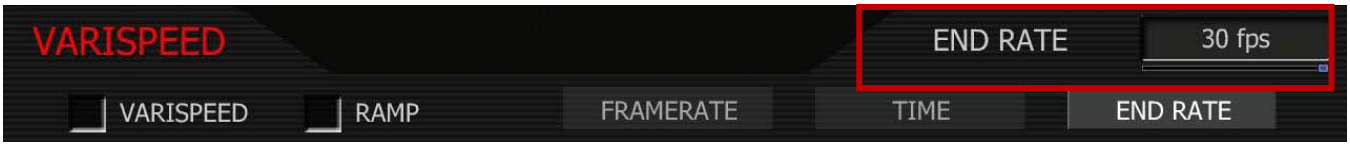
TIME

When Ramp is enabled, this value specifies the transition time to be used by the camera between the (start) Frame Rate and the End (frame) Rate. **To adjust:** Select TIME and twist joystick to change the highlighted DURATION box to the desired setting (default value is 5 seconds.)



END RATE

When Ramp is enabled, this value specifies the final (ending) speed of the ramp in frames per second. When a ramp transition has been completed, the camera will continue to record at the End Rate until the end of the Recording.



NOTE: When in Varispeed modes the camera maintains the last exposure time selected (unless the requested frame rate requires a shorter exposure time) to provide a constant exposure. If a variable exposure is required set the Shutter Mode to Relative - this is a fixed angle setting.

TIME-LAPSE

The Time-lapse menu supports single frame image capture and step frame recording under the control of an internal Intervalometer, side RECORD key or an external (GPI) trigger.

ENABLE

After making any adjustments in the Time-lapse menu, check the Enable box to enter these values and enable the Time-lapse record mode. The UI indicates by changing the top left frame rate display from **fps** to **TL**, and the lower right audio level display to **TIMELAPSE**.

1. To select and adjust, use joystick to highlight ENABLE checkbox.
2. Push in or down on joystick to place checkmark in ENABLE checkbox.
3. TRIGGER MODE box will highlight to allow you to choose between INTERVAL and ONE SHOT (default is INTERVAL).
4. Twist joystick to change the highlighted TRIGGER MODE box to the desired setting.
5. Move joystick right to exit.

TRIGGER MODE: Specifies if the camera is to use a fixed Interval of time or wait for a side record command or external GPI contact closure to initiate the next frame capture.

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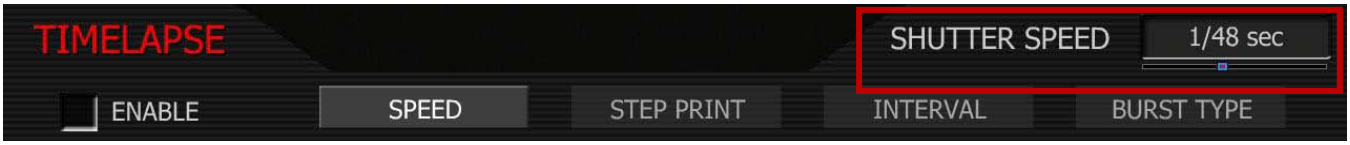
INTERVAL: The camera waits for the period of time defined by the **Interval** parameter. See INTERVAL.

ONE-SHOT: The camera waits for a side record command or external GPI contact closure.

SPEED

Specifies the shutter speed to be used during Time-lapse. This control is the same as is available in the **Shutter** menu, but it provides access to additional shutter speeds that may be used in Time-lapse recording. **To adjust:** Select SPEED and twist joystick to change the highlighted SHUTTER SPEED box to the desired setting.

The additional exposure time presets are 1/2, 1/3 1/4, 1/6, 1/8, 1/12, 1/16 second.



STEP PRINT

Specifies the number of times each single frame captured in Time-lapse mode is to be recorded to the digital media. Range is 1 to 10 frames. **To adjust:** Select STEP PRINT and twist joystick to change the highlighted NUM FRAMES box to the desired setting (default is 1 frame.)

INTERVAL

Specifies the number of seconds the camera will wait before the next image is captured. Range is 1 to 1024 seconds. **To adjust:** Select INTERVAL and twist joystick to change the highlighted PERIOD box to the desired setting (default is 5 seconds.)

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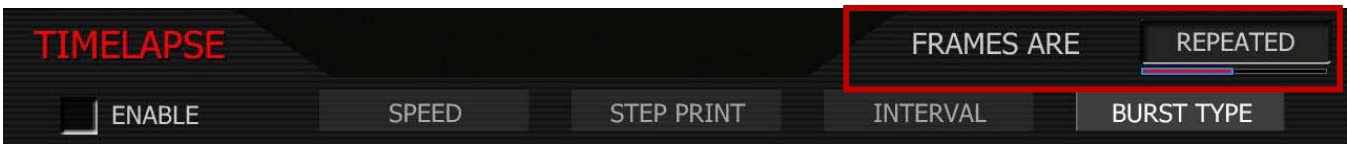
BURST TYPE

Burst type specifies the type of burst recording. **To adjust:** Select BURST TYPE and twist joystick to change the highlighted FRAMES ARE box to REPEATED or UNIQUE (default is UNIQUE.)



REPEATED: Specifies that each frame captured during the burst record be repeated. That is for each Time-lapse event, a single frame is repeated N times, where N is the Step print value.

UNIQUE: Specifies that each frame captured during the burst record is unique. That is for each Time-lapse event, N frames are captured and recorded, where N is the Step print value.

NOTE: When recording in Time-lapse mode, the RECORD tally lamp will remain illuminated.

Each successive event uses the next available Edge Code and Time Code value and uses the existing clip name. This results in a complete Time-lapse sequence with a single clip name and correct timecode sequence. To exit Time-lapse mode, push the RECORD button.

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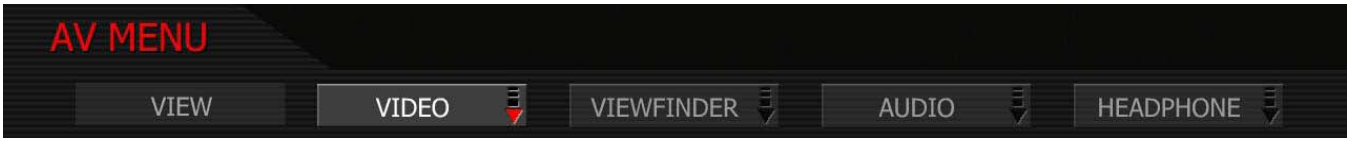
AUDIO / VIDEO MENU CONTROLS

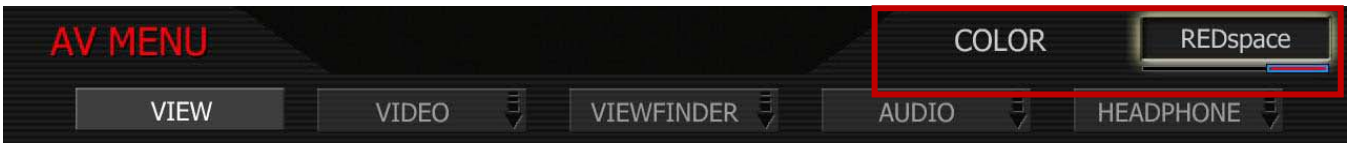
This section describes monitor path parameters such as viewfinder, and RGB color and gains. These parameters are accessed from the VIDEO menu access key.



Available sub menus include VIEW, VIDEO, VIEWFINDER, AUDIO and HEADPHONE. To access the AV MENU push the VIDEO menu button on the rear of the camera. To enter the available sub-menus, use the joystick to highlight the desired selection and push joystick in or down.

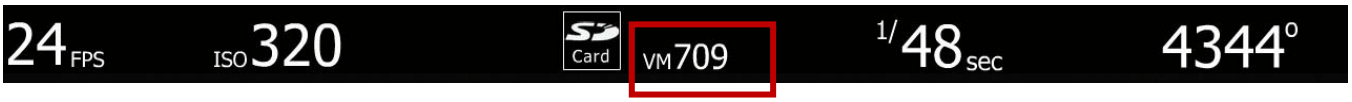
VIEW

The VIEW sub menu allows the user to choose the mode of monitor path image processing. Choices are REDspace, REC 709 and RAW. **To adjust:** Select VIEW and twist joystick to change the highlighted COLOC box to the desired setting (default is **REDspace**.) The corresponding view will be displayed at the top of the screen.



REDspace: Monitor path image processing uses custom REDspace tonal response curve (default).

REC709: Monitor path image processing uses SMPTE REC 709 tonal response curve.



RAW: Monitor path image represents the RAW sensor data, bypassing the color matrix.

VIDEO

The four available submenus are LOOK, COLOR, GAIN and TONE.

NOTE: Color and Gain and Tone values used by the monitor path are stored as metadata for use in REDCODE™ RAW compatible image processing applications. They can be used to visualize a specific color "look" but do not affect the REDCODE™ RAW recorded data.

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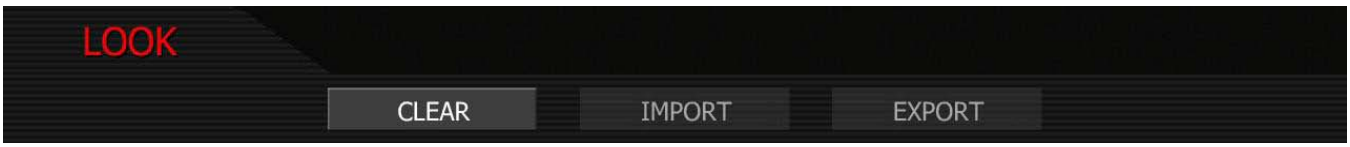
LOOK

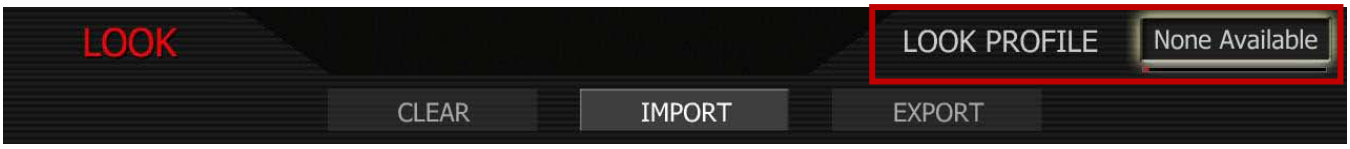
The LOOK menu permits Video, Gain and Tone values to be exported or imported from an SD Card. Look files may be read by another camera, but not RED Alert! ® or REDCINE®. Push joystick down or in to select desired change.

CLEAR: Resets the settings for Color, Gain and Tone menu parameters to their default values. When selected, camera will display "SUCCESSFULLY RESTORED SETTINGS 'look' settings restored to Factory Default Values. Select OK.



IMPORT: The current settings for Color and Gain parameters will be overwritten by the values stored on the SD Card. The available LOOK files will be listed in alphabetical order, e.g.

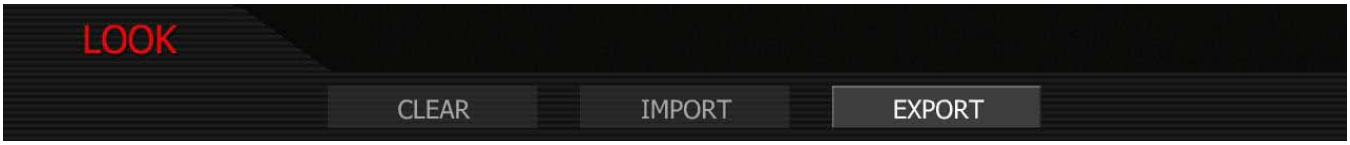
- PROFILE_1
- PROFILE_2
- MAGENTA_TINT



To adjust: When IMPORT is selected, the LOOK PROFILE box will be highlighted. Twist joystick like a knob to select, push joystick down or in to set.

NOTE: If no profiles are available, NONE AVAILABLE will be displayed in the LOOK PROFILE box.

EXPORT: The current settings for Color and Gain parameters are stored to the SD Card. The camera generates a file name of the format PROFILE_**.RLK. For detailed information on exporting LOOK files, go to APPENDIX C: SAVING LOOK/USER PROFILE.



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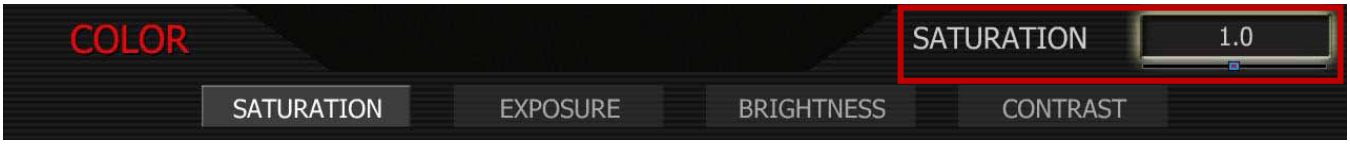
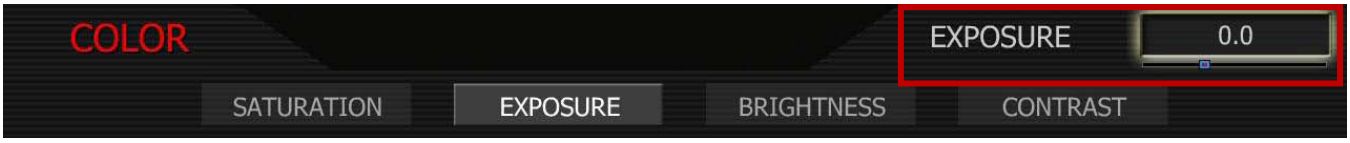
COLOR

The Color sub-menu selects various image processing parameters that may be applied to the monitor path (SATURATION, EXPOSURE, BRIGHTNESS and CONTRAST). They do not affect the actual RED-CODE™ RAW data being recorded. **To adjust:** Select the desired setting and twist joystick to change the highlighted box to the desired setting.

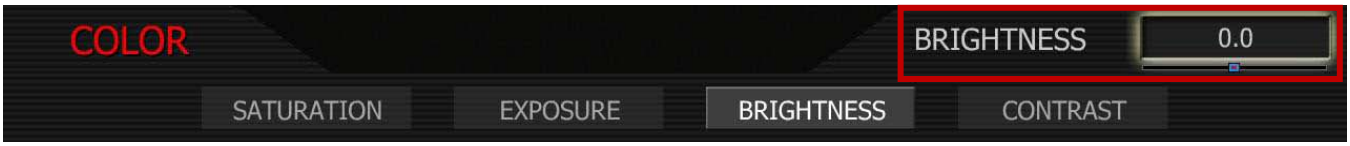
SATURATION: Adjusts color saturation. Range is 0.0 (monochrome) to + 2.0 (super color).



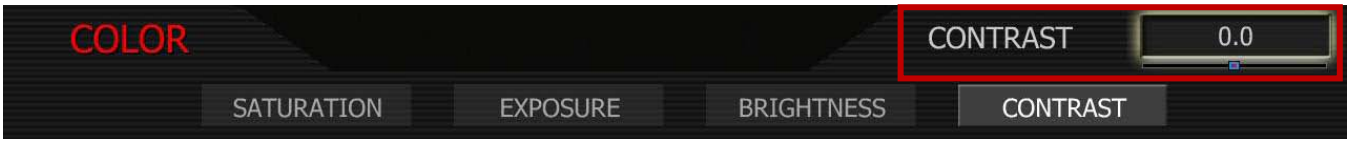
EXPOSURE: Adjusts exposure compensation. Available exposure range is – 2.0 to +4.0.



BRIGHTNESS: Adjusts brightness without crushing highlights. Available range is – 10 to + 10.



CONTRAST: Adjusts the overall contrast of the image. Range is -1.0 (flat) to +1.0 (max contrast)



GAIN

The Gain sub-menu selects various image processing parameters that may be applied to the monitor path (MASTER, RED GAIN, BLUE GAIN and GREEN GAIN). They do not affect the actual REDCODE™ RAW data being recorded. **To adjust:** Select the desired setting and twist joystick to change the highlighted box to the desired setting.

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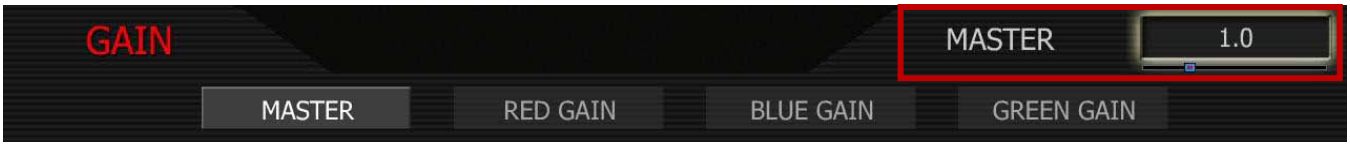
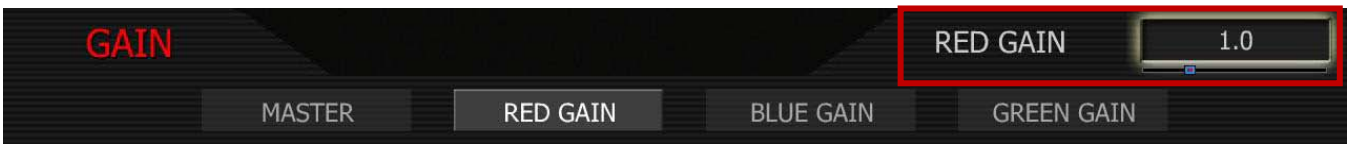
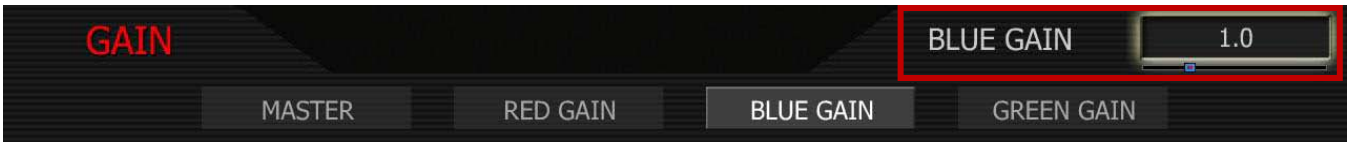
MASTER: Adjusts the gain of RED, BLUE and GREEN equally. Range is 0.0 to +4.0.



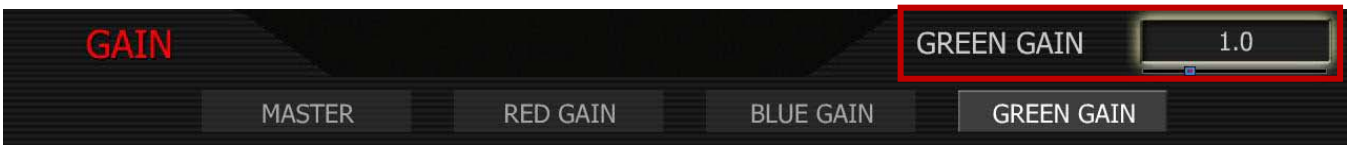
RED GAIN: Adjusts the gain of the RED channel only. Range is 0.0 (no Red) to +4.0.



BLUE GAIN: Adjusts the gain of the BLUE channel only. Range is 0.0 (no Blue) to +4.0.



GREEN GAIN: Adjusts the gain of the GREEN channel only. Range is 0.0 (no Green) to +4.0.



TONE

The TONE sub-menu allows a Tonal Response Curve to be overlaid on the video monitor path. The curves parameter values are stored in metadata, and may be visualized in RED Alert! ® Post-production software as Curve data.

CURVE: This checkbox enables the Tonal Response Curve. Default setting is enabled. **To select:** use joystick to highlight ENABLE checkbox and push in or down on joystick to place checkmark in CURVE checkbox.

DEFINE: Selects the curve control point to be adjusted - Black, Toe, Center, Knee or White. Each control point comprises two independent values, one each for X and Y-axis locations.

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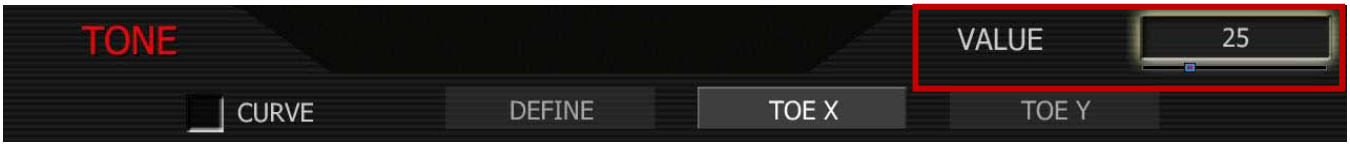
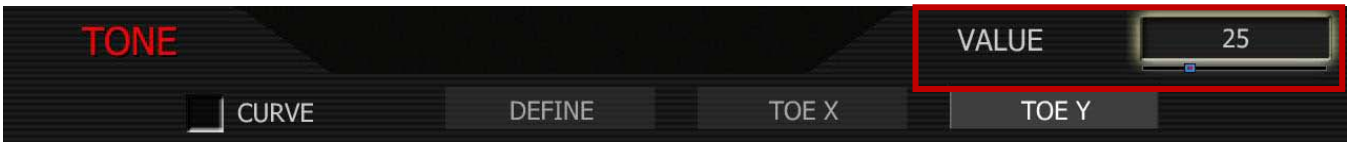
TOE X: Adjusts the location of a control point along the X-axis on the tonal response curve.

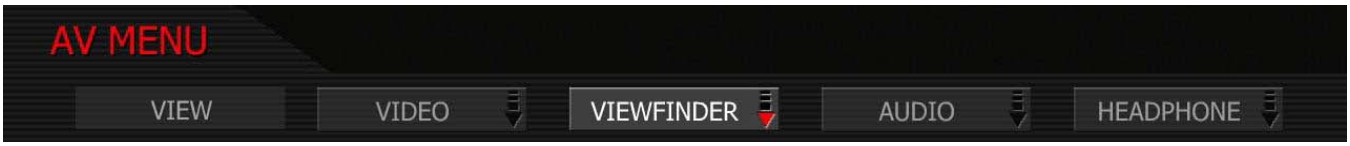


TOE Y: Adjust the location of a control point along the Y-axis on the tonal response curve.



VIEWFINDER MENU

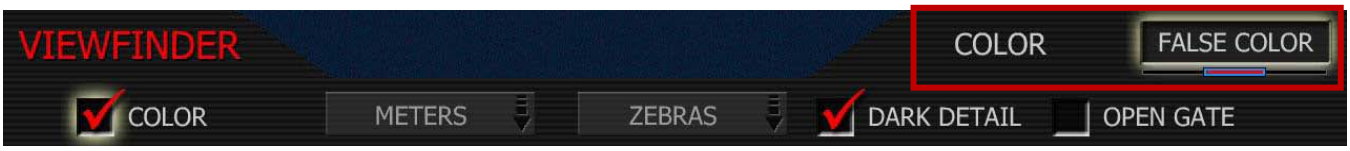
This menu permits the operator to adjust operation of the viewfinder.



COLOR

When checked, forces the RED™ EVF and RED™ LCD outputs to monochrome or a false color exposure assist or Edge Highlight.

1. To select and adjust, use joystick to highlight COLOR checkbox.
2. Push in or down on joystick to place checkmark in COLOR checkbox.
3. COLOR box will highlight to allow you to choose between MONOCHROME, FALSE COLOR or EDGE HIGHLIGHT.
4. Twist joystick to change the highlighted COLOR box to the desired setting.
5. Move joystick right to select and exit.



MONOCHROME: The color component of the image is removed.

FALSE COLOR: When False Color is selected, the color component of the image is replaced by an overlay of colored bands representing the exposure levels with the image. Bluer colors represent underexposed areas, green represents 18% ND, yellows and reds represent more exposed areas.

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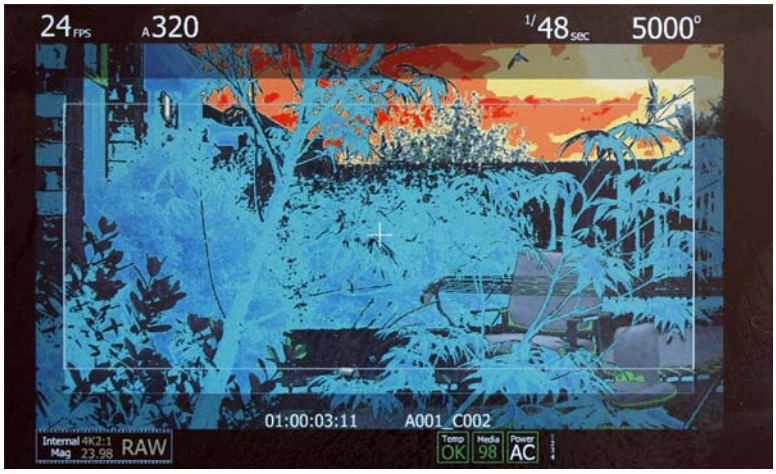
NOTE: False Color is affected by White Balance, ISO, VIEW and LOOK settings, however if VIEW is set to RAW, the False Color bands represent the exposure levels at the sensor i.e. prior to any White Balance, ISO, VIEW and LOOK settings.

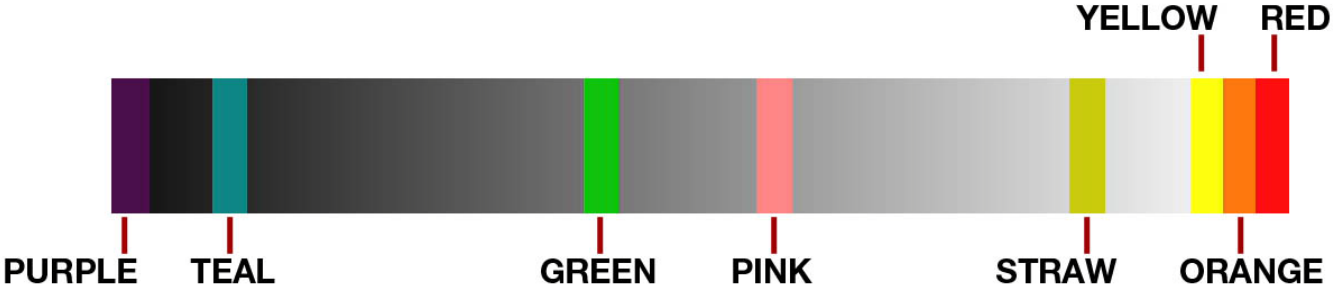


The above image is an example of false color mapping indicating the stops of exposure.

The False Colors bands provide the following information:

PURPLE	Minimum Exposure
TEAL	3 stops under reference
GREEN	Reference Exposure level with 18% Grey Card
PINK	Typical Exposure level for Caucasian Skin
STRAW	2 stops over reference
YELLOW	2/3 stop under maximum exposure
ORANGE	1/3 stop under maximum exposure
RED	Maximum Exposure

At all other values, the image displayed is the luminance value of the original scene. For example, imaging a 5-stop Chip Chart, the Black chip will show Teal, the 18" Grey chip will show Green, the White chip will show Straw and the Skin Tone chip will show a Pink false color band.



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With camera sensitivity set to ISO 320, and viewing REDSPACE™ or REC 709, the equivalent IRE values for green and pink are:

Color	IRE Values REC 709	IRE Values REDSPACE™
Green	45 - 47	56 - 59
Pink	60 - 63	67 - 70

- To adjust Sensitivity to ISO 320, go to SENSITIVITY under SENSOR MENU CONTROLS.
- To set view as REC 709 or REDSPACE™, refer to VIEW under AUDIO/VIDEO MENU CONTROLS.

EDGE HIGHLIGHT: Items that are in focus are outlined in red over monochrome.

METER

Meters allow the operator to verify camera exposure independently of False Color overlays. Selections include SPOT METER and five types of histogram: LUMA (luminance), RGB (a composite of Red Green and Blue), MONO (equal to the RGB area but without color) and RAW (a composite of colorless RGB overlaid by true sensor exposure)

To adjust: Select METER and twist joystick to change the ANALYSIS METER to the desired setting.

LUMA HIST/RGB HIST/MONO HIST/RAW HIST: Select a histogram that best illustrates the exposure distribution of your scene.

NOTE: Histograms are affected by White Balance, ISO, VIEW and LOOK settings, however if VIEW is set to RAW, histograms will represent the exposure levels at the sensor i.e. prior to White Balance, ISO, VIEW and LOOK settings. The RAW histogram is the exception to this rule, in this case the sensor exposure graph always represents true sensor exposure even though the underlying colorless RGB graph will still be affected by White Balance, ISO, VIEW and LOOK settings.

LUMA HISTOGRAM: Displays the luminance values of the RGB monitor path (or sensor exposure when VIEW is set to RAW).

RGB HISTOGRAM: Displays the RGB values of the RGB monitor path (or sensor exposure when VIEW is set to RAW).

MONO HISTOGRAM: Displays the area of the RGB values of the RGB monitor path (or sensor exposure when VIEW is set to RAW).

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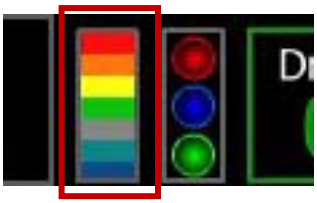
RAW HISTOGRAM: Displays the sensor exposure values (blue) over a colorless histogram of the RGB monitor path (White).

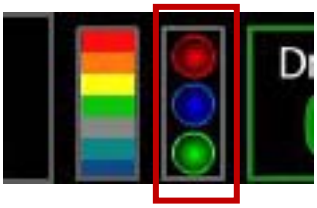
NOTE: Histogram information is complemented by two additional meters, the Sensor Raw meter and RGB Clip Meter.

SENSOR RAW METER



The Sensor Raw meter is a vertical color bar graph that indicates the true exposure at the sensor. This meter is unaffected by White Balance, ISO, VIEW or LOOK settings, and therefore represents a true exposure of the sensor at all times. The meter is color coded identically to the False Color overlay, so if False Color is enabled and VIEW is set to RAW, False Color and Sensor RAW exposure indications will be identical.

RGB CLIP METER



The RGB Clip meter looks like a traffic light and indicates if Red, Blue or Green channels of the RGB monitor path are clipping. The RGB Clip meter is affected by White Balance, ISO, VIEW and LOOK settings, and normally monitors RGB monitor path levels. Therefore it can also be used to check the HD-SDI outputs are not clipping. However if VIEW is set to RAW, the RGB Clip meter monitors sensor exposure and may be used to verify the sensor is not clipping in Red, Blue or Green channels.

UNDER AND OVER EXPOSURE EXAMPLE

Any desired combination of False Color, Zebras, Histogram, Sensor RAW and RGB Clip information may be used to judge ideal exposure. As a general rule the ideal histogram to aim for is both "fat" and "right justified", with the sensor RAW meter indicating Green, Yellow or Orange.

In this example the camera is ideally exposed. The histogram is justified to the right, the Sensor RAW meter indicates the sensor is not clipped, and the RGB Clip meter indicates the RGB monitor path is not clipped. When the recorded clip is color corrected in post production, sufficient headroom exists such that any highlight information should be displayable without clipping, and shadow information should be displayable without significant noise.

In this example the camera is significantly over exposed. The histogram is piled up to the right, the Sensor RAW meter indicates the sensor is clipped, and the RGB Clip meter indicates the red and green channels in the RGB monitor path are clipped. When the recorded clip is color corrected in post production, highlight information will probably be clipped, although shadow information will probably be displayed without any significant noise.

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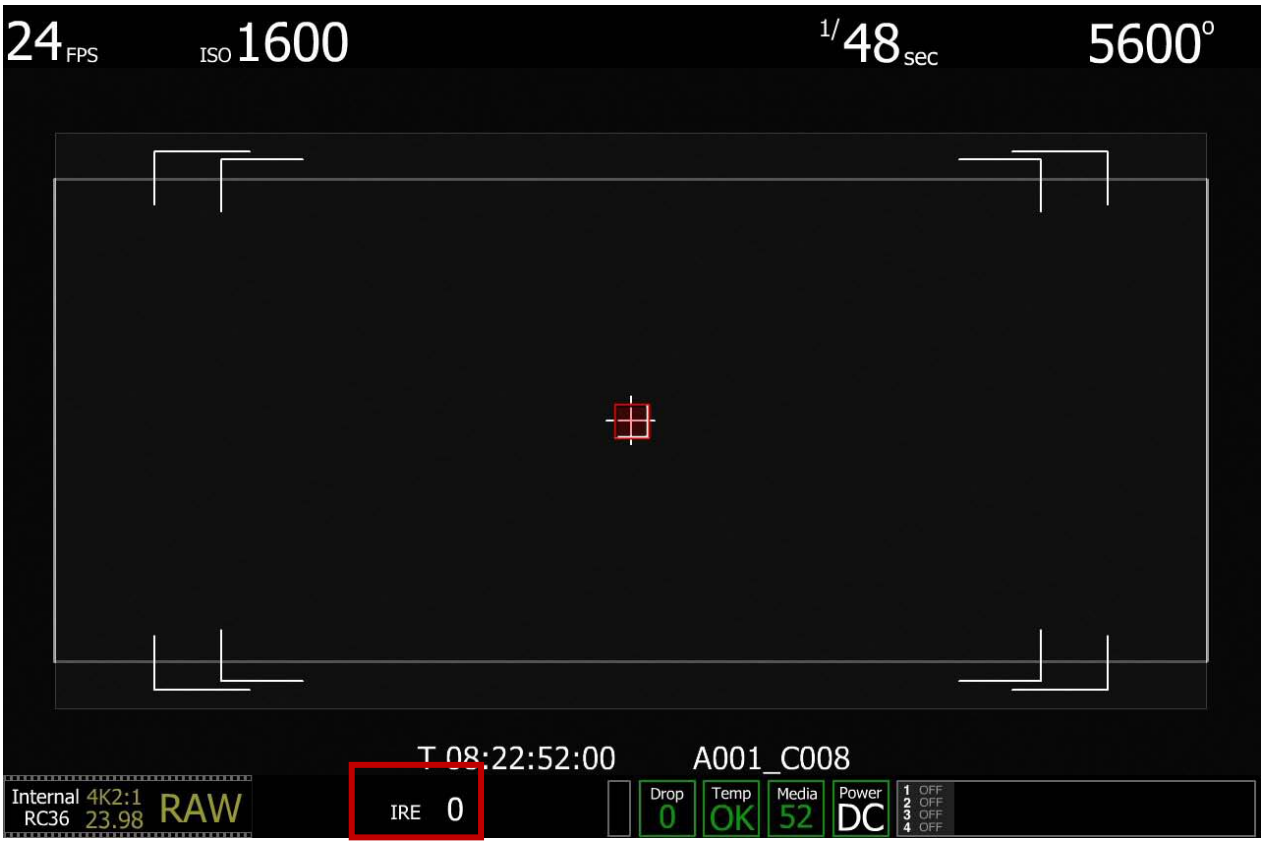
In this example the camera is significantly under exposed. The histogram is piled up to the left, the Sensor RAW meter indicates the sensor is underexposed, and the RGB Clip meter indicates the RGB monitor path is not clipped. When the recorded clip is color corrected in post production, the highlight information will not be clipped, however shadow information will probably be displayed with significant noise.

SPOT METER: A red rectangular box will appear centered on the center cursor of the image. The size of this sample box can be adjusted by rotating the joystick, and its location can be adjusted by moving the joystick in X and Y directions. Push the joystick to fix the sample box. The average IRE value of the pixels in the sample box is shown in the lower section of the full camera display.



ASSISTS

Assists allows the operator to choose a signal analysis waveform. Selections include Waveform Exposure, RGB Parade Histogram, Focus Assist and Focus Overlay.

1. To select and adjust, use joystick to highlight ASSISTS checkbox.
2. Push in or down on joystick to place checkmark in ASSISTS checkbox.
3. ANALYSIS METER box will highlight to allow you to choose between WAVEFORM, RGB PARADE, FOCUS ASSIST or FOCUS OVERLAY.
4. Twist joystick to change the highlighted ANALYSIS METER box to the desired setting.
5. Move joystick left to select and exit.

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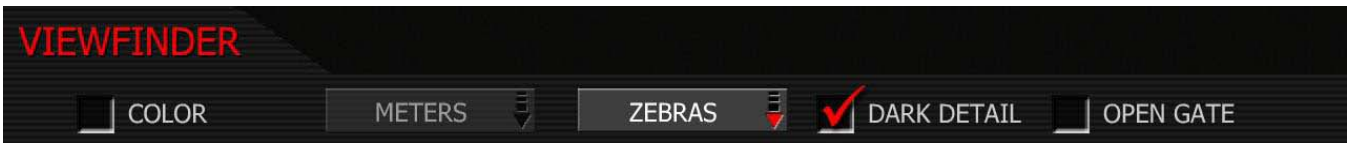
WAVEFORM: A color-coded waveform illustrates the exposure values using the full width of the lower section of the camera display. As exposure reaches maximum, waveform color changes to yellow and then red. At minimum exposure, the waveform color changes to light blue then dark blue. These colors match those used in the False Color Meter.

RGB PARADE: A corresponding histogram illustrates the exposure distribution in the R, G and B channels using the full width of the lower section of the camera display.

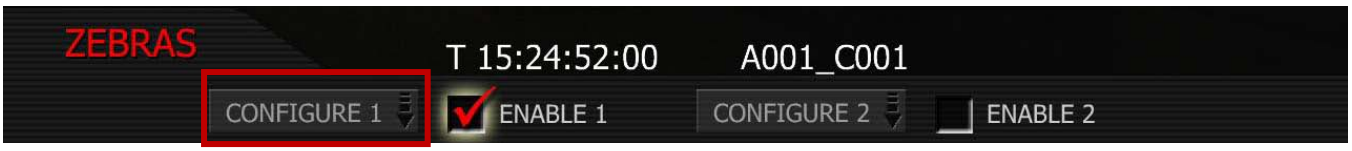
FOCUS ASSIST/FOCUS OVERLAY: A full screen width red rectangular box will appear centered on the center cursor of the image. The vertical position of this sample box can be adjusted by rotating the joystick, and its height can be adjusted by moving the joystick left or right. Push the joystick to fix the sample box. The average focus value of the pixels in the sample box are shown in a full width graph restricted to the lower section of the camera display (Focus Assist) or overlaid in the lower section of the active video (Focus Overlay).

ZEBRAS

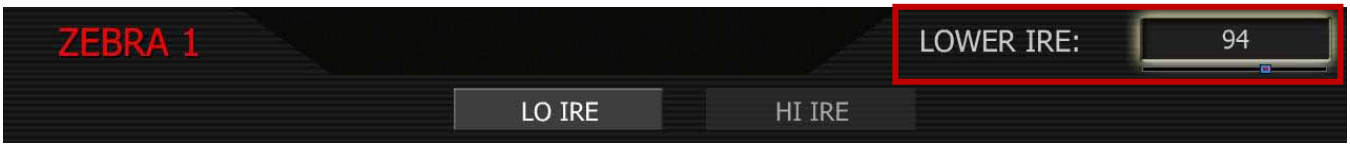
Zebras enable and adjust the upper and lower values for two independent Zebra indicators. One zebra may be used for highlight exposure, and the other for mid tone or shadows. **By default, Zebras Configure 1 is enabled and Configure 2 is disabled.**



CONFIGURE 1: Takes you to ZEBRA 1 sub-menu. Choose between LOW IRE and HI IRE settings.

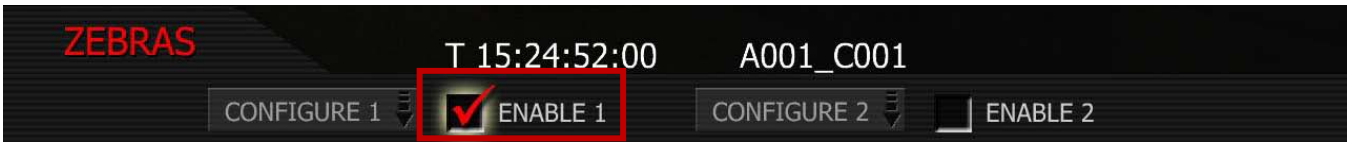


To adjust LO IRE: Select LO IRE and twist joystick to change the LOWER IRE: box to the desired setting between 75 and 103 (default is 101).

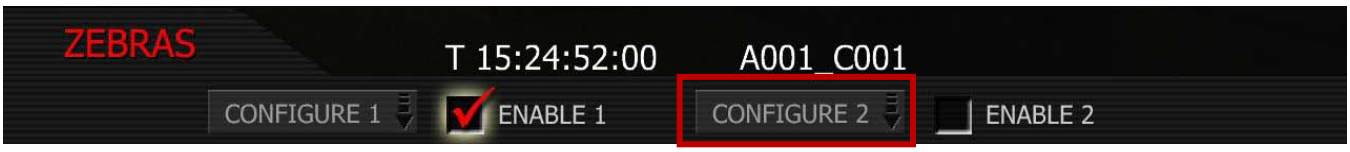


To adjust HI IRE: Select HI IRE and twist joystick to change the UPPER IRE: box to the desired setting between 93 and 108 (default is 108).

ENABLE 1: By selecting this checkbox, settings under CONFIGURE 1 are used. **To select:** Highlight and push in or down on joystick to place checkmark in ENABLE 1 checkbox. **Default is Enabled.**

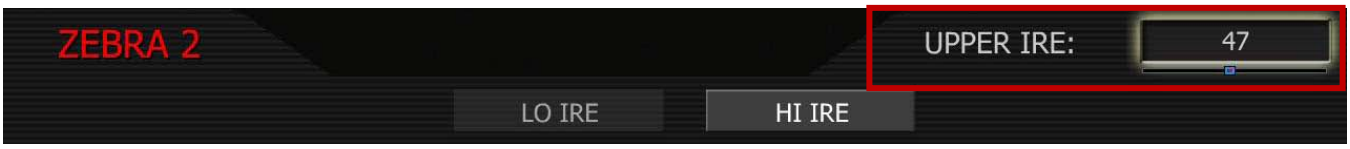


CONFIGURE 2: Takes you to ZEBRA 2 sub-menu. Choose between LOW IRE and HI IRE settings.



To adjust LO IRE: Select LO IRE and twist joystick to change the LOWER IRE: box to the desired setting between 0 and 84 (default is 0).

To adjust HI IRE: Select HI IRE and twist joystick to change the UPPER IRE: box to the desired setting between 5 and 93 (default is 3).



ENABLE 2: By selecting this checkbox, settings under CONFIGURE 2 are used. **To select:** Highlight and push in or down on joystick to place checkmark in ENABLE 2 checkbox. **Default is Disabled.**

ZEBRA CONFIGURE 1: default settings are ENABLED with highlight indication set as LOW IRE: 101 / HI IRE: 108.

ZEBRA CONFIGURE 2: default settings are ENABLED with shadow indication set as LOW IRE: 0 / HI IRE: 3.

Areas of the image exposed within these ranges will be indicated by crosshatched overlays.

Zebra 1 crosshatch pattern is oriented NW/SE and Zebra 2 is oriented NE/SW. If the Zebras overlap, Zebra 1 has display priority.

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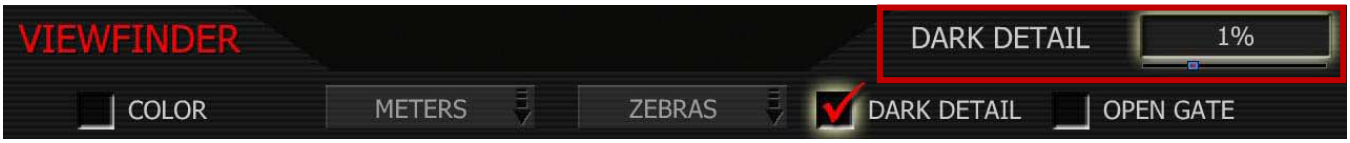
DARK DETAIL

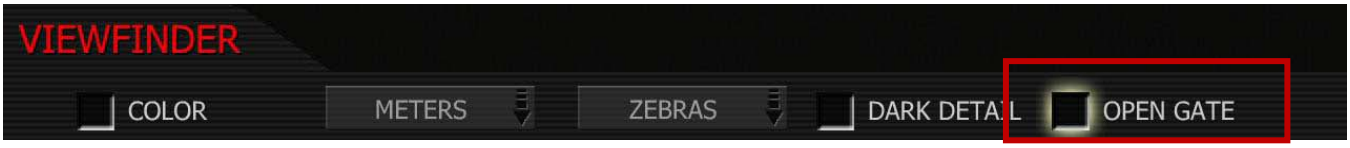
Dark Detail allows the RED™ EVF to view addition information (detail) in dark areas of a scene, or in dimly illuminated nighttime scenes.



1. To select and adjust, use joystick to highlight DARK DETAIL checkbox.
2. Push in or down on joystick to place checkmark in DARK DETAIL checkbox (checkmark is default)
3. DARK DETAIL box will highlight to allow you to choose value between 0% and 50% (default is 1%).
4. Twist joystick to change the highlighted DARK DETAIL box to the desired setting.
5. Move joystick left to select and exit.

OPEN GATE

Open Gate lets the camera preview images at 48Hz (50Hz) update rate when operating in 23.98 or 24.00 fps (25 fps) Project Frame Rates. In record, all monitor path images will be viewed at 48Hz, but recorded at 23.98 or 24.00 fps (viewed at 50Hz, recorded at 25 fps)



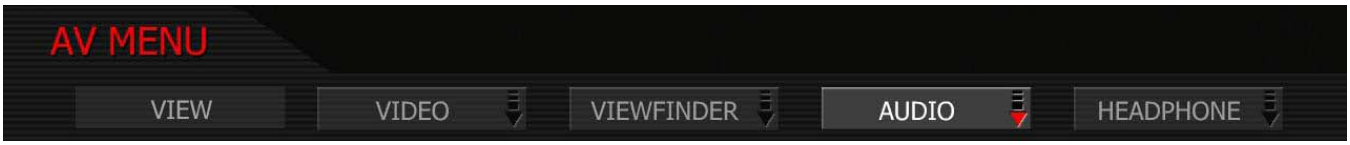
NOTE: Use Open Gate with caution. Due to the doubling of sensor frame rate relative to capture rate the following operational restrictions should be noted.

- Open Gate is not available in Varispeed or Ramp modes.
- Open Gate is not available for 50.00 or 59.94 Project Frame Rates.
- Video Genlock may not be available when operating in Open Gate.
- 360-degree shutter is not available when operating in Open Gate.

NOTE: When deselecting Open Gate mode, it is normal to observe up to a 3 second disruption in the RED™ EVF display.

AUDIO

Audio is recorded at 24-bit 48KHz, which provides high audio fidelity and wide dynamic range.



Line Level and Microphone Level analog audio input signals are routed via a high quality A/D and pre-amplifier, whose gain stage may be controlled using the **Input Level** control to achieve the desired audio reference / recording level.

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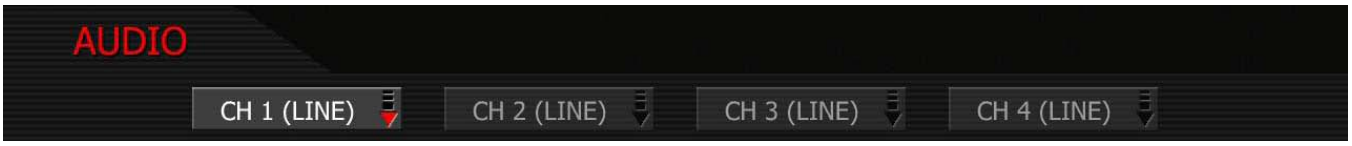
To assist with audio operating reference level setup, the camera provides a color-coded 3dB per division Peak Level meter with 0dBu (-20dbFS) Witness Mark in the Graphical User Interface.

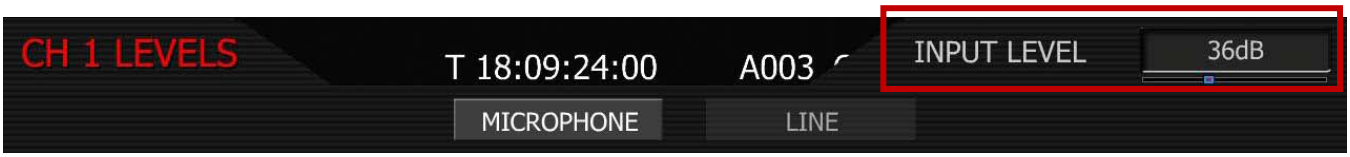
Peak Level meter range is –34dBu to +20dBu (-54dBFS to 0dBFS) and provides clip indication.

1. To adjust, select desired line and microphone/line.
2. INPUT LEVEL box will highlight to allow you to choose desired dB level.
3. Twist joystick to change the highlighted INPUT LEVEL box to the desired setting.
4. Move joystick left or right to select and exit.



MICROPHONE LEVEL INPUTS

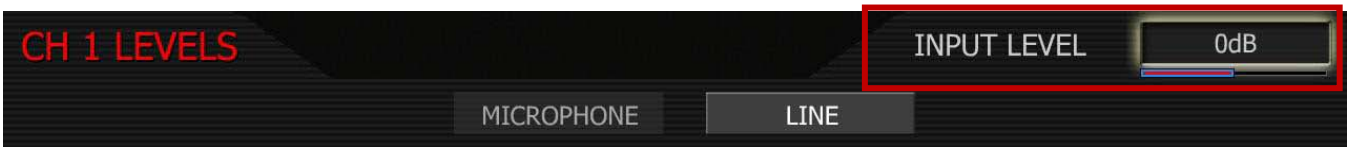
Choose an **Input Level** that aligns the input signal to the reference line drawn vertically through the camera's PPM, indicating 0dBu. This setting provides 18dB headroom above reference level before signal clipping and the digital audio recording will be at maximum Signal to Noise ratio. Range is **+36dB to +54dB**, with a default value of +36dB.



LINE LEVEL INPUTS

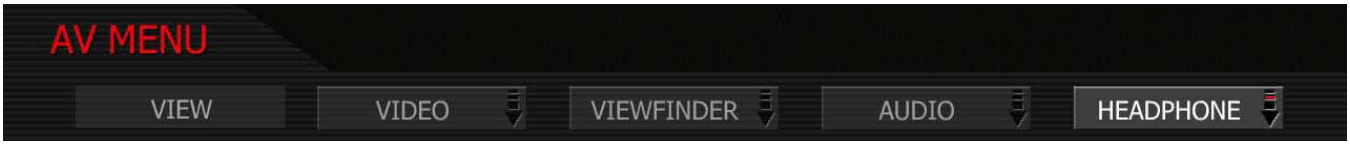
0dB: Line Level audio inputs are designed to operate at unity gain (0dB), therefore use 0dB and set a 0dbu (- 20dBFS) line level output from the production mixer or other external signal source.

+10dB: Select this value to normalize input levels when receiving a TAPE level line input (-10dB).



HEADPHONE

The sub menu provides controls for headphone output volume channel mixing.



1. Select desired setting.
2. VOLUME box will highlight to allow you to choose desired dB level.
3. Twist joystick to change the highlighted VOLUME box to the desired setting.

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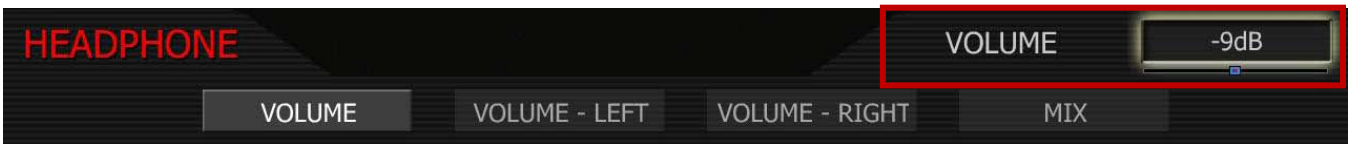
4. Move joystick left or right to select and exit.

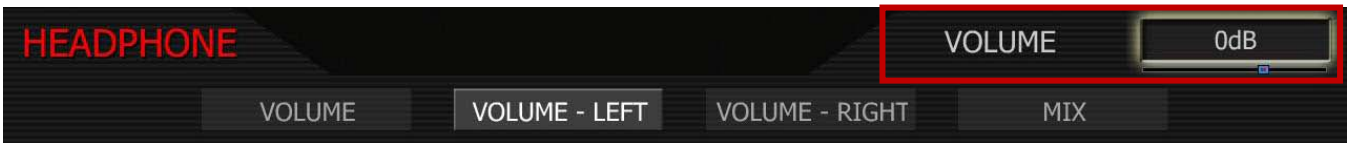
MASTER VOLUME: Adjusts headphone volume equally for Left and Right outputs.

Range is -18dB to 0dB in 1dB steps. Default is -9dB.



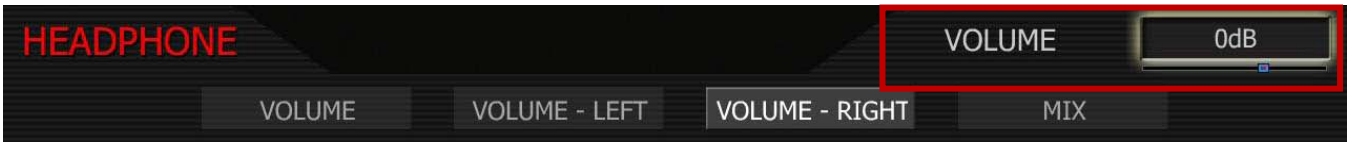
VOLUME LEFT: Trims volume for Left output. **E.g.** Volume –6dB + Volume Left +1dB = -5dB

Range is -12dB to + 6dB in 1dB steps. Default is 0dB.



VOLUME RIGHT: Trims volume for Right output. **E.g.** Volume –6dB + Volume Right -1dB = -7dB

Range is -12dB to + 6dB in 1dB steps. Default is 0dB.

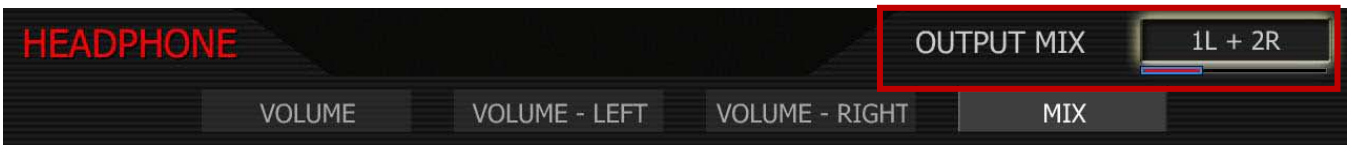


MIX: Selects which audio channels feed the left and right side headphone outputs.

1L + 2R Feeds channel 1 to the left output, channel 2 to the right.

3L + 4R Feeds channel 3 to the left output, channel 4 to the right.

Quad MixFeeds channels 1 plus 2 to the left output, and channels 3 plus 4 to the right.



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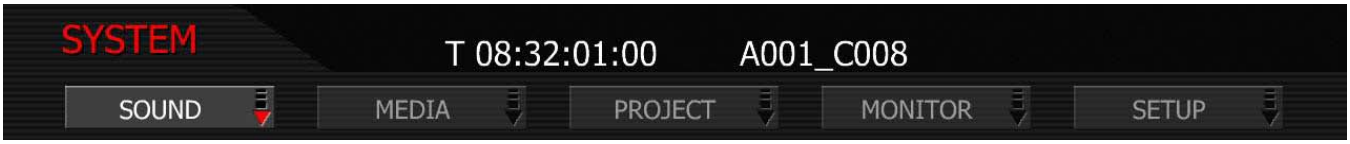
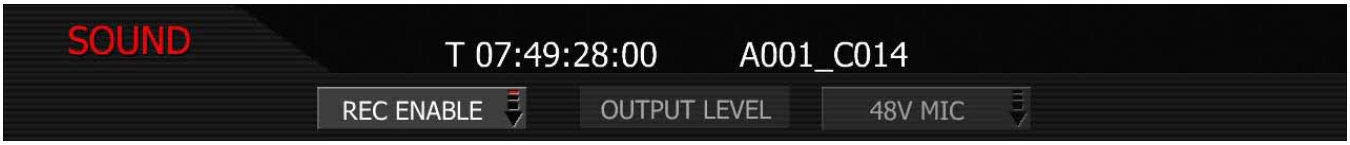
SYSTEM MENU CONTROLS

This section describes the various controls available to configure the camera. These parameters are accessed from the SYSTEM menu key, located below and left of the RECORD button. Options available are SOUND, MEDIA, PROJECT, MONITOR and SETUP.



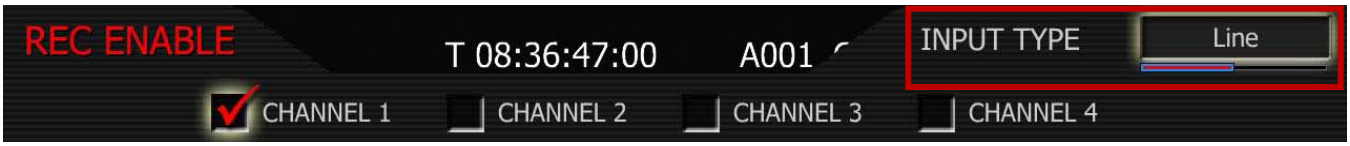
SOUND MENU

Sound menu provides output level adjustment, channel configuration and 48V management. Options available are REC ENABLE, OUTPUT LEVEL and 48V MIC.



REC ENABLE

Push REC ENABLE to access the channel enable sub-menu.

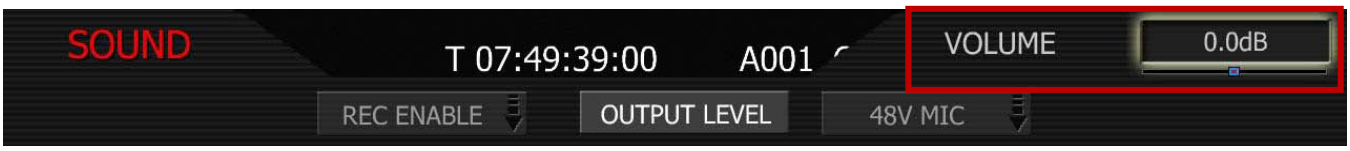


Once enabled, the input type may be selected as either Line Level or Microphone Level. To help protect against accidentally enabling +48V Phantom Power for Line Level input sources, or microphones that are not capable of operating with 48V Phantom Power, 48V selection is provided in a separate sub menu accessed from the 48V ENABLE key of the Sound Menu.

1. Push in or down on joystick to place checkmark in desired channel checkbox.
2. INPUT TYPE box will highlight to allow you to choose between LINE and MIC.
3. Twist joystick to change the highlighted INPUT TYPE box to the desired setting.
4. Move joystick left or right to select and exit.

OUTPUT LEVEL

The OUTPUT LEVEL parameter permits the line level audio monitor output provided from the 5-pin mini-XLR connector to be trimmed to achieve a 0dBu / 0.775V RMS / - 20dBFS when receiving or an equivalent 0dBu / 0.775V RMS / - 20dBFS reference level input.



1. Select OUTPUT LEVEL and push in or down on Joystick.

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2. VOLUME box will highlight to allow you to choose a volume level between -6.0dB and 6.0dB (default is 0dB).
3. Twist joystick to change the highlighted VOLUME box to the desired setting.
4. Move joystick left, right or up to select and exit.

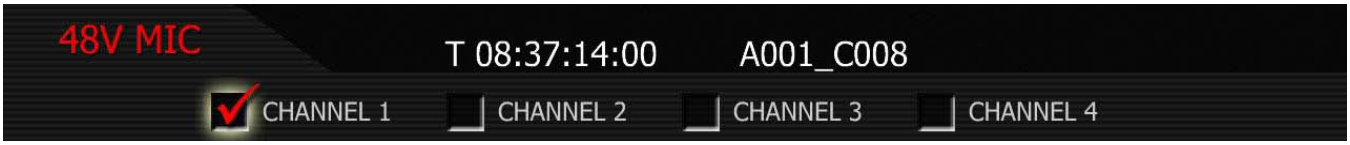
NOTE: The RED-ONE™ camera does not provide a reference level Tone Generator. However an approximately 1 minute digital recording of a reference level Tone Generator provided by an external signal source may be used as a substitute for an internal Tone Generator.

NOTE: Before digital audio recordings can be made, audio inputs need to be enabled.

48V MIC

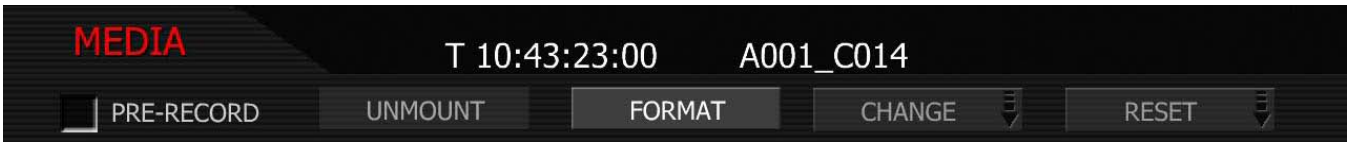
Push 48V MIC to access the channels that you wish to provide 48V Phantom Power on.

NOTE: With firmware prior to Build 18, and all cameras with Rev A audio hardware, the +48V Phantom Power output will be disabled each time the camera is power cycled.



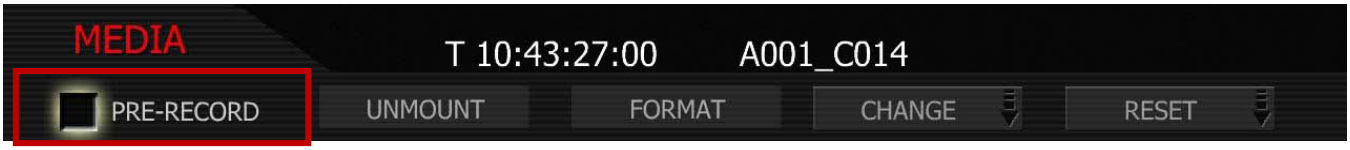
MEDIA MENU

This menu provides various media management functions including digital media formatting. Options available are PRE-RECORD, UNMOUNT, FORMAT, CHANGE and RESET. For detailed instructions on formatting, copying and deleting files from media, go to APPENDIX B: MANAGING DIGITAL MEDIA.



PRE-RECORD

Pre-Record enables a loop recording of definable duration (10 or 30 seconds) that permits continuous video and audio capture for that defined duration "before the actual RECORD event".



When enabled, a GPI trigger (ensure that either GPIO INPUT A or GPIO INPUT B are set to PRE-RECORD) will place the camera into pre-record mode. In this mode, the camera records 1-second chunks of video and audio to the digital magazine. At the end of the defined pre-record duration, the first chunk of video and audio is overwritten by newer video and audio information.

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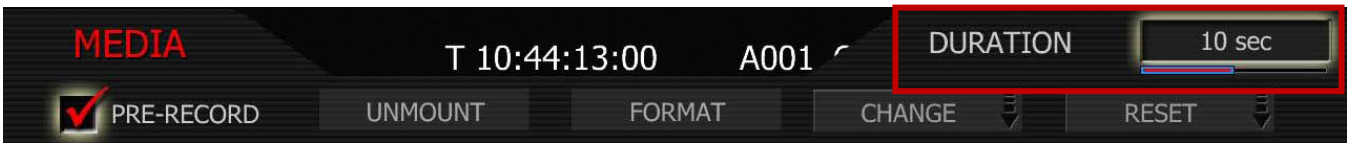
If the RECORD button is pushed while in pre-record, the pre-record mode is terminated and a normal record is enabled. The timecode value and clip name are carried over between pre-record and record modes.

A typical clip folder in this scenario looks as follows:

A001_C001_0519L7.RDC	Today, 6:35 PM	--	Folder
A001_C001_0519L7_001.R3D	Today, 6:35 PM	17.9 MB	RED RAW R3D
A001_C001_0519L7_002.R3D	Today, 6:35 PM	17.9 MB	RED RAW R3D
A001_C001_0519L7_003.R3D	Today, 6:35 PM	17.9 MB	RED RAW R3D
A001_C001_0519L7_004.R3D	Today, 6:35 PM	17.9 MB	RED RAW R3D
A001_C001_0519L7_005.R3D	Today, 6:35 PM	17.9 MB	RED RAW R3D
A001_C001_0519L7_006.R3D	Today, 6:35 PM	17.9 MB	RED RAW R3D
A001_C001_0519L7_007.R3D	Today, 6:35 PM	17.9 MB	RED RAW R3D
A001_C001_0519L7_008.R3D	Today, 6:35 PM	17.9 MB	RED RAW R3D
A001_C001_0519L7_009.R3D	Today, 6:35 PM	17.9 MB	RED RAW R3D
A001_C001_0519L7_010.R3D	Today, 6:35 PM	17 MB	RED RAW R3D
A001_C001_0519L7_011.R3D	Today, 6:35 PM	118.4 MB	RED RAW R3D
A001_C001_0519L7_F.mov	Today, 6:35 PM	64 KB	Quick... Movie
A001_C001_0519L7_H.mov	Today, 6:35 PM	64 KB	Quick... Movie
A001_C001_0519L7_M.mov	Today, 6:35 PM	64 KB	Quick... Movie
A001_C001_0519L7_P.mov	Today, 6:35 PM	64 KB	Quick... Movie

This specific clip includes eleven .R3D files, the first ten of which correspond to the pre-record and the eleventh file corresponds to the normal record period. All have the same clip name.

NOTE: On playback on camera or in the RED Alert! ® or any QuickTime application, these eleven individual .R3D files are seen as a single continuous video clip.



1. To enable PRE-RECORD, push in / down on joystick to place checkmark in PRE-RECORD checkbox.
2. DURATION box will highlight to allow you to choose between 10 sec and 30 sec. Default is 10 sec.
3. Twist joystick to change the highlighted DURATION box to the desired setting.
4. Move joystick right or up to select and exit.

To activate pre-record, push both the UNDO key and the RECORD key on the camera. The camera will commence prerecord, indicated by the record tally light and timecode changing to Yellow.

To record, push the RECORD key. This will be indicated by the record tally light and timecode changing from Yellow to Red. To terminate pre-record, push the RECORD key a second time.

NOTE: When using Pre-Record, the Edge Code written to the digital magazine can become discontinuous between clips, however Time Code is unaffected.

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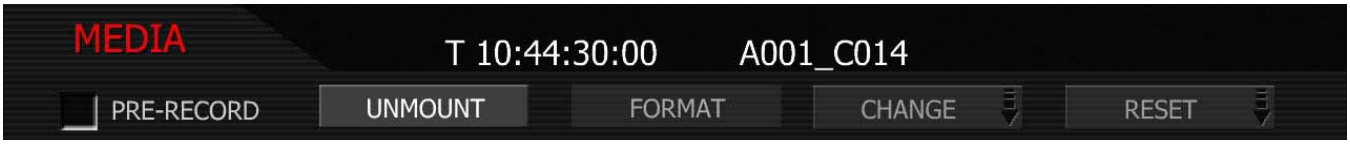
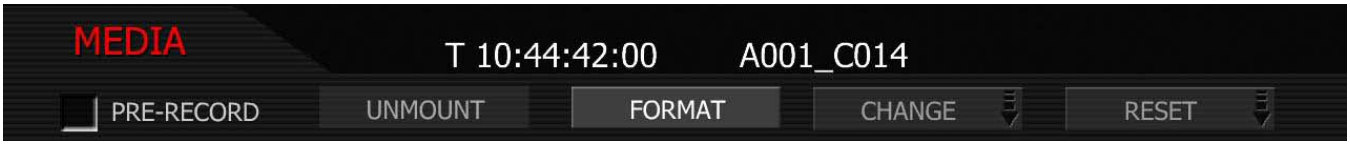
UNMOUNT

Select to un-mount digital media from the RED ONE™ camera in a failsafe manner. The camera operating system will ensure that all files are closed, hard disk heads (if present) are parked, and CF card or RED-DRIVE® magazine is properly powered down. For detailed instructions, go to APPENDIX B: MANAGING DIGITAL MEDIA.



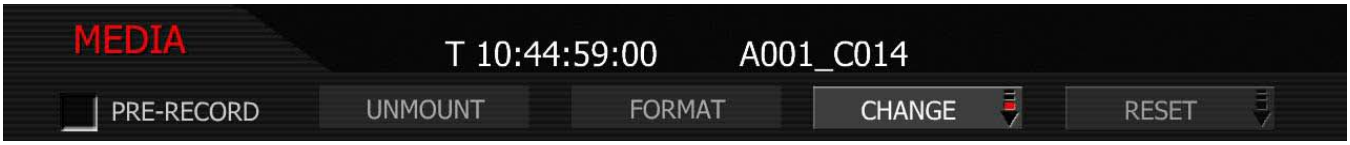
FORMAT

Select to format digital media. The camera will warn that "all data will be erased", and formatting require that a sequence of confirm commands are made before proceeding. For detailed instructions, go to APPENDIX B: MANAGING DIGITAL MEDIA.



CHANGE

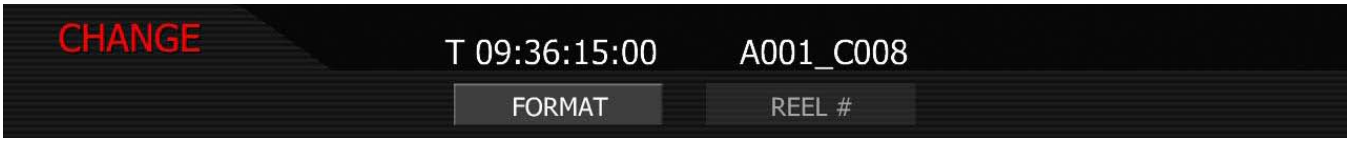
Select this function if you wish to change the reel number allocated by the camera when media is formatted.



1. Select REEL# and press in or down on joystick.
2. Twist joystick to change the highlighted NEW # box reel number between 1 and 999.

NOTE: The default reel number offered by the camera will be the last used value the camera used as the reel number - e.g. if the last used reel number was 56, the change number suggested by the camera will also be 56.

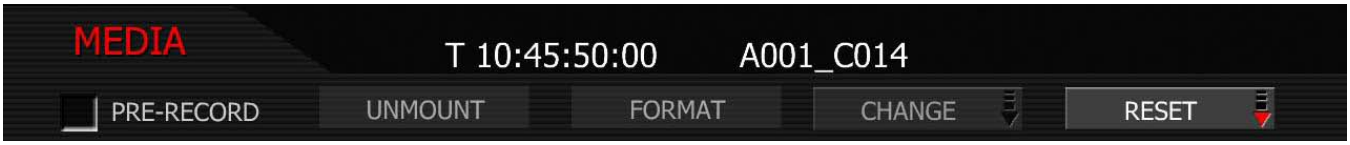
3. Move Joystick to the left and select FORMAT. If the magazine is not empty, a warning and conformation screen will appear, push FORMAT or CANCEL as appropriate.



RESET

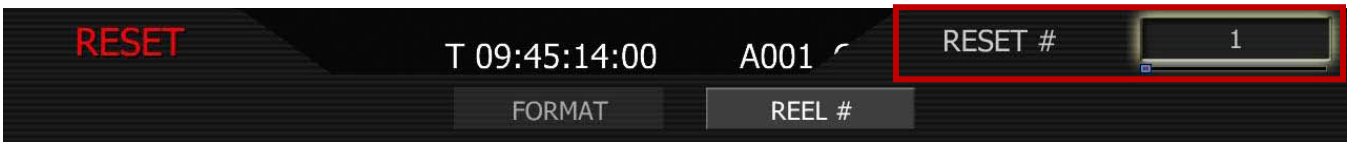
Select this function if you wish to reset the reel number counter used by the camera to allocate reel numbers when the media is formatted.

NOTE: To protect against duplicate magazine and file names, the camera inserts a random two digit alphanumeric number in the file and/or directory names.

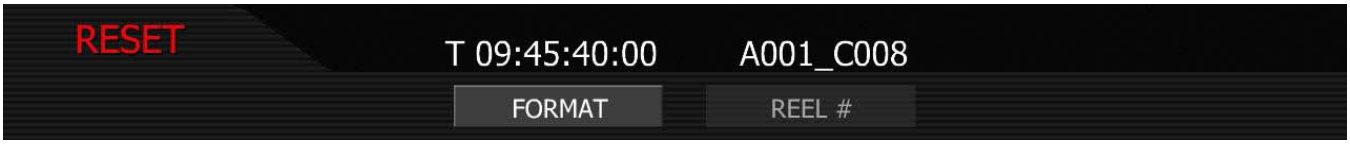


1. Select REEL# and press in or down on joystick.
2. Twist joystick to change the highlighted RESET # box reel number between 1 and 999.

NOTE: The default reel number offered by the camera will be 1. The camera no longer resets this value each time the Project Time Base (formerly Frame Rate) is changed.

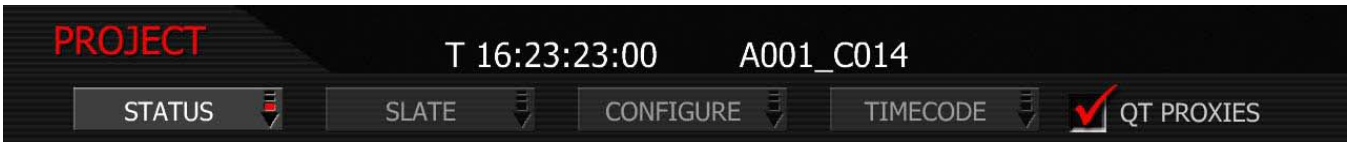


3. Move Joystick to the left and select FORMAT. If the magazine is not empty, a warning and conformation screen will appear, push FORMAT or CANCEL as appropriate. For additional information, go to APPENDIX B: MANAGING DIGITAL MEDIA.



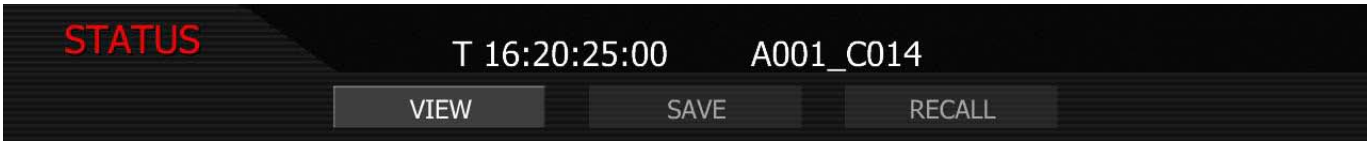
PROJECT MENU

The project menu sets the operating parameters the camera will use for a given project. Options available are STATUS, SLATE, CONFIGURE, TIMECODE, and QT PROXIES.



STATUS

Status menu allows the operator to view the current project settings and save them. If project settings were previously saved, the operator may also recall the desired settings and set the camera to those settings to replicate the desired look and feel.



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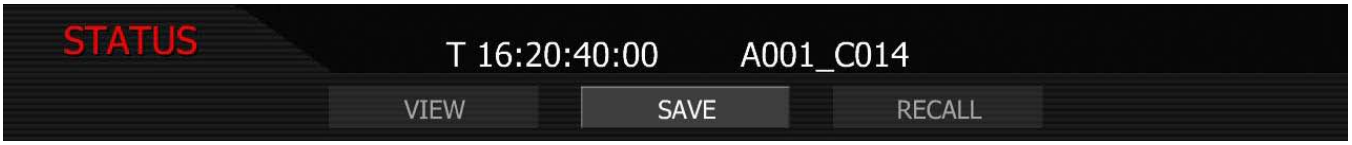
VIEW

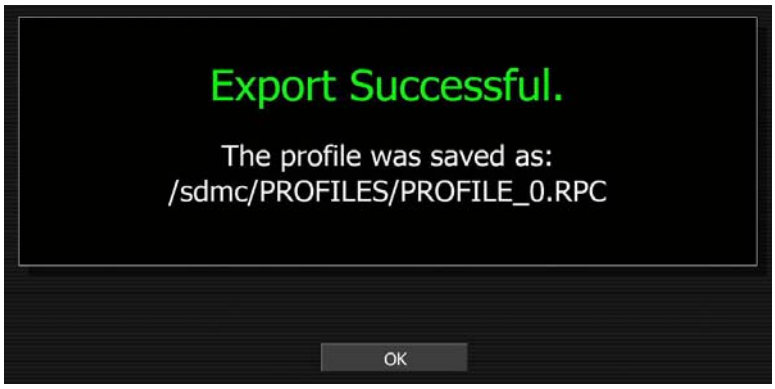
When VIEW is selected, the current project settings for the camera are displayed. This allows the operator to ensure the desired project settings have been made. Press OK to exit screen

SAVE

Allows the operator to save the project settings to the SD card.



When the project settings are saved successfully to the SD card, the following message will be displayed:

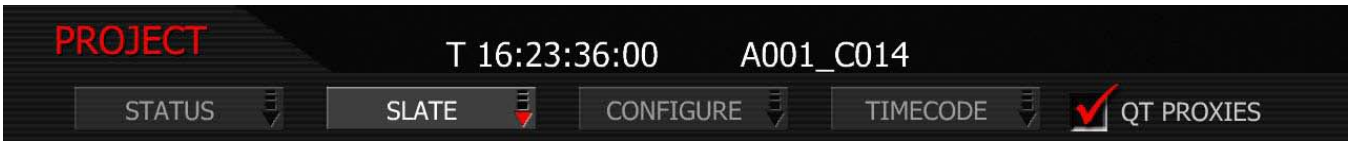


RECALL

When selected, the operator will be able to load the desired saved project settings. If not project settings have been saved, “None Available” will be displayed as a selection. If project setting are available, they will be displayed as selections.

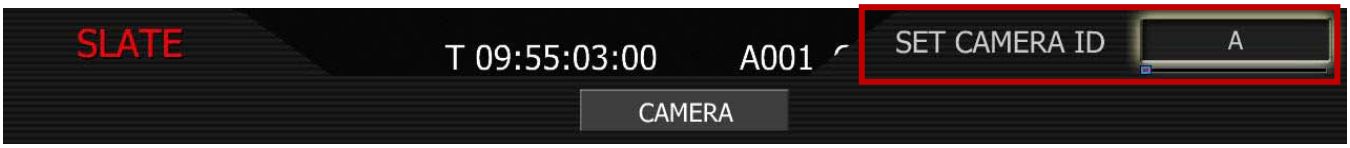
SLATE

Slate lets the operator identify the specific camera used for the project. Combined with reel numbers and clip numbers assigned by the camera, all clips recorded on the digital media may be uniquely identified, simplifying post-production and media archiving workflows.



CAMERA

Camera is a single letter (A-Z) that provides a unique identifier for the camera in a multi-camera production environment.



When you push record, the camera names the clip being recorded on the digital media.

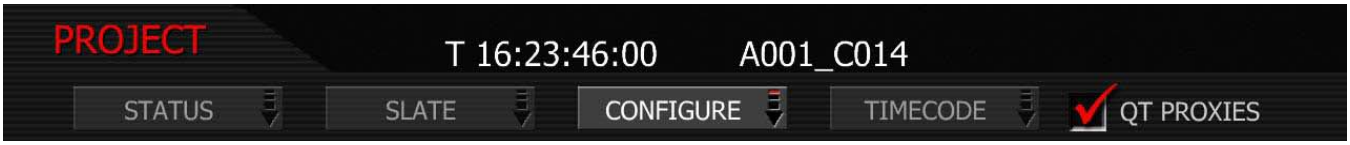
E.g. A001_C001_0515A6.RDC

Where: A = camera A, 001 = reel 001, C001 = clip 001, and 0515 = May 15 and A6 is a two digit alphanumeric random number generated by the camera. This number helps avoid duplicate file names if two cameras are inadvertently named A on the same project.

1. To set camera ID, select CAMERA and press in or down on joystick.
2. Twist joystick to change the highlighted SET CAMERA ID box reel letter between A and Z (default is A).
3. Move Joystick up to select and exit.

CONFIGURE

Configure defines the operation of the camera in a project.



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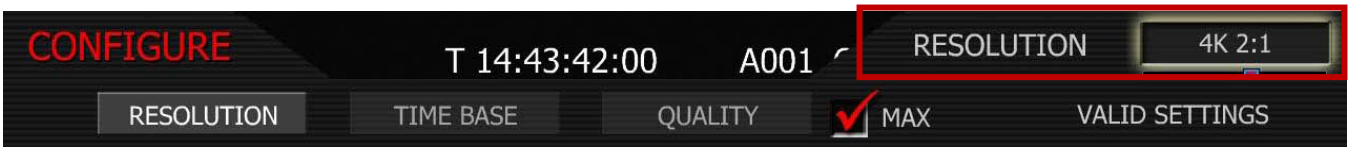
IMPORTANT: Valid combinations of Quality, Resolution and Time Base are indicated by the phrase VALID SETTINGS.

If this is crossed through, it indicates the media is too slow to record that combination of resolution, project frame rate and quality.

RESOLUTION

Choose 4.5K, 4K, 3K or 2K resolutions. Do not use 4.5K, 4K or 3K for S16mm/B4 lenses.

1. To set resolution, select RESOLUTION and press in or down on joystick.
2. Twist joystick to change the highlighted RESOLUTION box to the desired resolution.
3. Move Joystick right or up to select and exit.



The maximum available time base supported by each media type for each resolution is:

REDCODE™ 28	REDFLASH™ 8GB	REDFLASH™ 16GB	RED-DRIVE®	RED-RAM®
2K 2:1	60 fps	60 fps	60 fps	60 fps
2K ANA	60 fps	60 fps	60 fps	60 fps
2K 16:9	60 fps	60 fps	60 fps	60 fps
3K 2:1	50 fps	60 fps	60 fps	60 fps
3K ANA	60 fps	60 fps	60 fps	60 fps
3K 16:9	30 fps	50 fps	50 fps	50 fps
4K 2:1	25 fps	30 fps	30 fps	30 fps
4K ANA	30 fps	30 fps	30 fps	30 fps
4K HD	25 fps	30 fps	30 fps	30 fps
4K 16:9	25 fps	30 fps	30 fps	30 fps
4.5K WS	25 fps	30 fps	30 fps	30 fps

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REDCODE™ 36	REDFLASH™ 8GB	REDFLASH™ 16GB	RED-DRIVE®	RED-RAM®
2K 2:1	60 fps	60 fps	60 fps	60 fps
2K ANA	60 fps	60 fps	60 fps	60 fps
2K 16:9	60 fps	60 fps	60 fps	60 fps
3K 2:1	30 fps	30 fps	50 fps	50 fps
3K ANA	50 fps	60 fps	60 fps	60 fps
3K 16:9	30 fps	30 fps	50 fps	50 fps
4K 2:1	25 fps	30 fps	30 fps	30 fps
4K ANA	25 fps	30 fps	30 fps	30 fps
4K HD	----	25 fps	30 fps	30 fps
4K 16:9	----	25 fps	25 fps	25 fps
4.5K WS	----	25 fps	30 fps	30 fps

REDCODE™ 42	REDFLASH™ 8GB	REDFLASH™ 16GB	RED-DRIVE®	RED-RAM®
4K 2:1	----	25 fps	25 fps	25 fps
4K ANA	----	25 fps	25 fps	25 fps
4K HD	----	25 fps	25 fps	25 fps
4.5K WS	----	25 fps	25 fps	25 fps

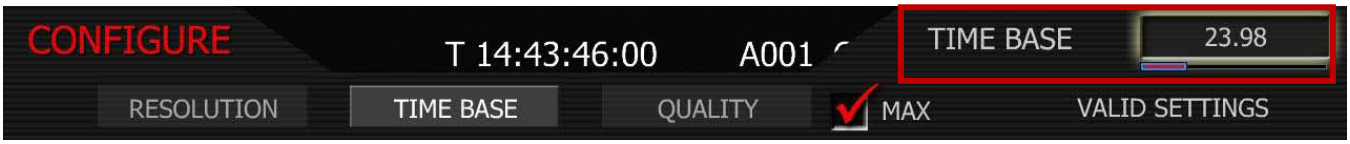
NOTE: Frame rates of "30" and "60" should be read as "29.97" and "59.94" respectively.

NOTE: An individual project should only use one Time Base, as it defines the frame rate used for timecode and editing. To vary the capture frame rate above or below the base frame rate defined by the project's time base, enable VARISPEED in the SHUTTER menu.

NOTE: When in 2K, 3K or 4K ANA mode, RED™ EVF, RED™ LCD and PVW HD-SDI and HDMI outputs will be stretched 2:1 horizontally to provide a 2.40:1 aspect ratio image display.

TIME BASE

Time base allows the user to set the project time base - the playback & editing frame rate.



1. To set time base, select TIME BASE and press in or down on joystick.
2. Twist joystick to change the highlighted TIME BASE box to select between 23.98 and 29.97.
3. Move Joystick right or up to select and exit.

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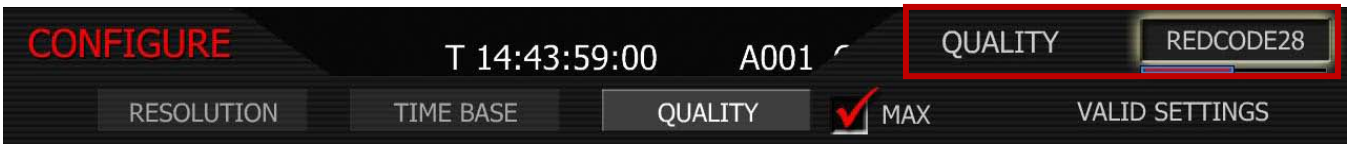
QUALITY

Quality allows the user to set the project quality at either REDCODE™ 28, REDCODE™ 36 or REDCODE™ 42.

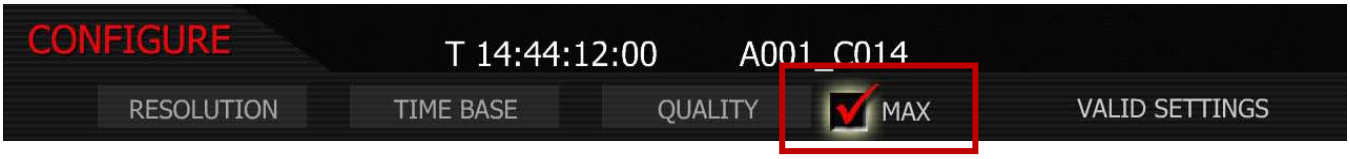
NOTE: REDCODE™ 36 and REDCODE™ 42 will limit maximum frame rate and resolutions available using CF cards.



1. To set quality, select QUALITY and press in or down on joystick.
2. Twist joystick to change the highlighted QUALITY box to either REDCODE™ 28, REDCODE™ 36 (default) or REDCODE™ 42.
3. Move Joystick right or up to select and exit.

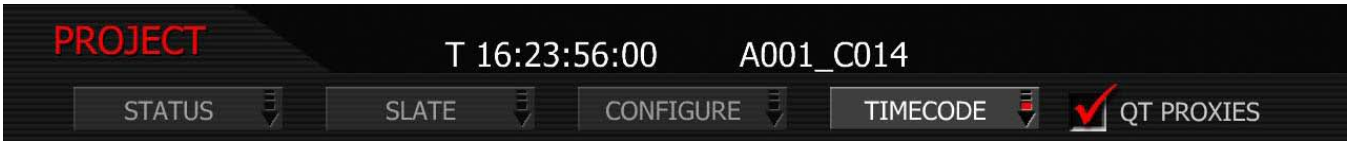
MAX

Leave checked for maximum image quality recording. If shooting at 23.98 fps and 4K HD resolution, you may wish to uncheck the MAX mode box before recording. This lowers the absolute image quality, but permits real time .R3D decoding and scaling to 1920 x 1080 progressive RGB when using commonly available CPU based post production applications.



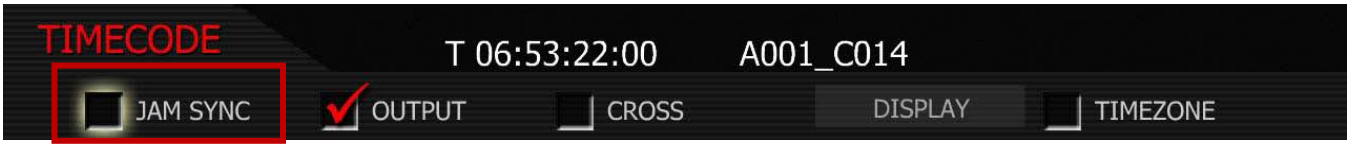
TIMECODE

Select to change displayed timecode track, force Jam sync or reset camera clock.



JAM SYNC

Jam Sync instructs the camera to replace its internal Time of Day value with external timecode read from the 5pin LEMO connector. This value is updated at the first frame of each recording, provided a valid external timecode source is present. If the external source is not present, the camera auto-increments the timecode until the external source is re-connected.



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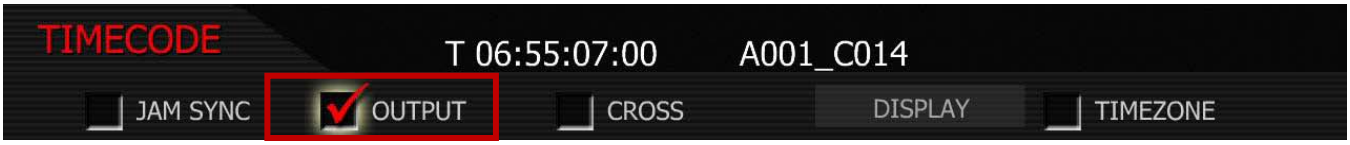
CHAIN LINK ICON

When JAM SYNC is checked and an external timecode generator source is connected to the TIMECODE connector (refer to TIME CODE INPUT / OUTPUT under APPENDIX D: INPUT/OUTPUT CONNECTORS) and set to the same frame rates as the camera's project TIME BASE, a CHAIN LINK icon will be displayed at the top of the EVF, LCD and all external monitors. This indicates a valid timecode signal is available to the camera.

NOTE: Once Jam Synced, the camera will maintain Sync even if the external timecode source is removed, until the next power cycle.

TIME CODE OUTPUT

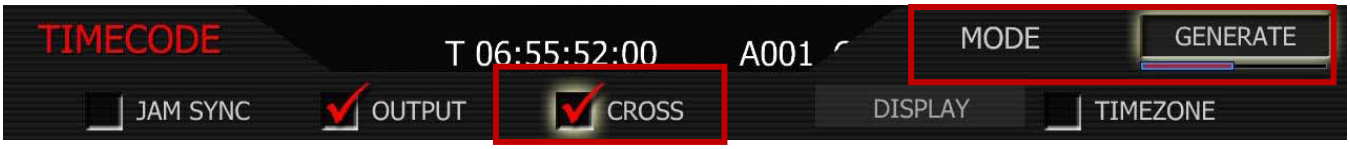
Checked by default, when un-checked, timecode is disabled on the 5-pin LEMO timecode I/O connector. If checked, the current Time Code value is provided on the 5-pin LEMO timecode I/O connector. Time Code is always embedded in HD-SDI irrespective of this setting.



CROSS

Cross allows user to select between Cross JAM and Cross GEN.

1. Push in or down on joystick to place checkmark in CROSS checkbox.
2. MODE box will highlight to allow you to choose between GENERATE or JAM.
3. Twist joystick to change the highlighted MODE box to the desired setting.
4. Move joystick left or right to select and exit.



CROSS JAM: Cross Jam activates 23.98 from 29.97 fps time code sync. The RED-ONE camera will accept a 29.97 fps time base external Time Code signal and generate a synchronized 23.98 Time Code signal for use with the camera's 23.98 fps recording. **Normally used with OUTPUT off**.

CROSS GENERATE: Cross Gen activates 29.97 from 23.98 fps time code sync. The RED-ONE camera will generate a 23.98 Time Code signal for use with the camera's 23.98 fps recording, and also generates a synchronized 29.97 fps Time Code signal for use by an external device, available as an output from the 5-pin timecode I/O connector. **Normally used with JAM SYNC off**.

DISPLAY

Display lets the operator select whether Edge Code or Time Code is displayed in the status displays. This selection also determines which of the two recorded timecode tracks will be used in the QuickTime reference movies, and the primary timecode track in HD-SDI outputs.

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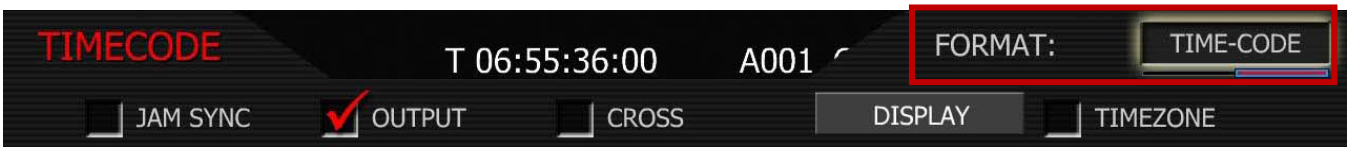
1. To set display, select DISPLAY and press in or down on joystick.
2. Twist joystick to change the highlighted FORMAT box to either EDGE-CODE or TIME-CODE.
3. Move Joystick right or up to select and exit.

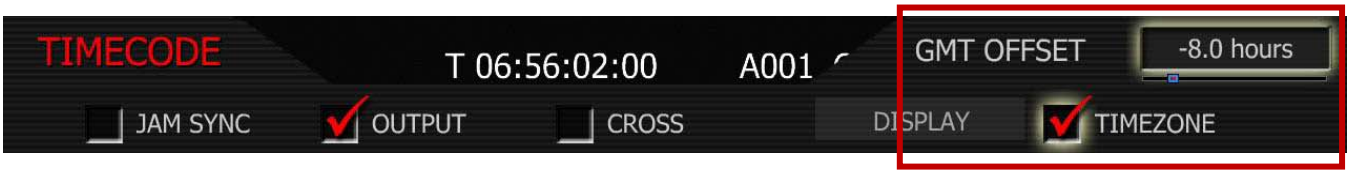


EDGE-CODE: If Edge Code is selected, “E” precedes the value shown in the status display.

TIME-CODE: If Time Code is selected, "T," precedes the value shown in the status display. Default setting is Time Code.

TIMEZONE

Applies a time offset to the SET CLOCK value established for the camera.



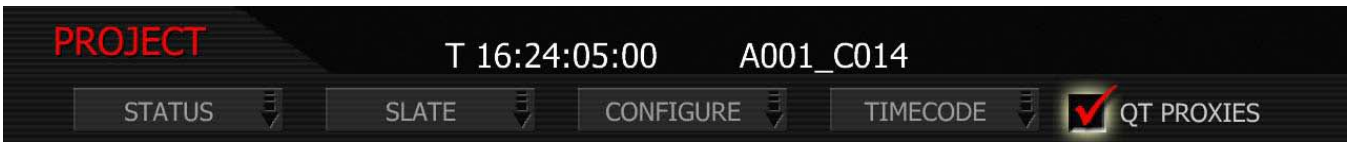
1. Push in or down on joystick to place checkmark in TIMEZONE checkbox.
2. GMT OFFSET box will highlight to allow you to choose between -12.0 hours and 14.0 hours.
3. Twist joystick to change the highlighted GMT OFFSET box to the desired setting.
4. Move joystick left or up to select and exit.

If camera Date and Time are set to GMT, and then set TIMEZONE to –8 for West Coast US (Pacific) time etc. Or set Date and Time to local time, and set the TIMEZONE value to 0.

NOTE: Current GMT date and time can be found using this web site or equivalent service – http://wwp.greenwichmeantime.com/info/current-time.htm

QT PROXIES

When checked, the camera will create a QuickTime reference movie at the completion of each clip record. These movies are placed in the same folder as the .R3D file. While the movies are being created the camera reports “POST” in the status display. Checked by default.



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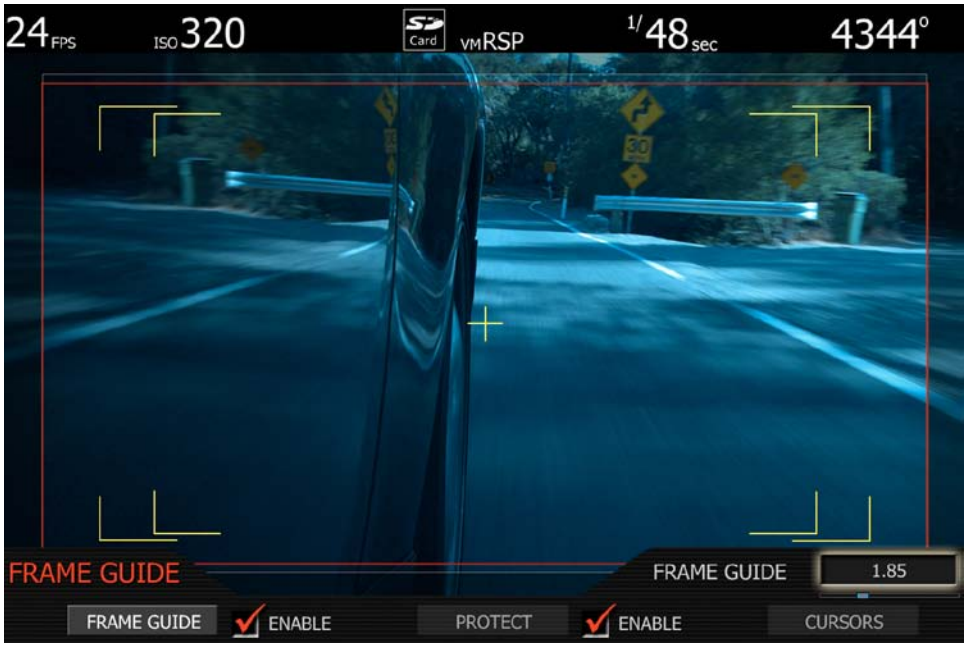
MONITOR

The monitor menu provides controls for the framing guides and test patterns. Options available are FRAME GUIDE, PREVIEW, TEST SIGNAL, PVW REFRESH and EVF REFRESH.

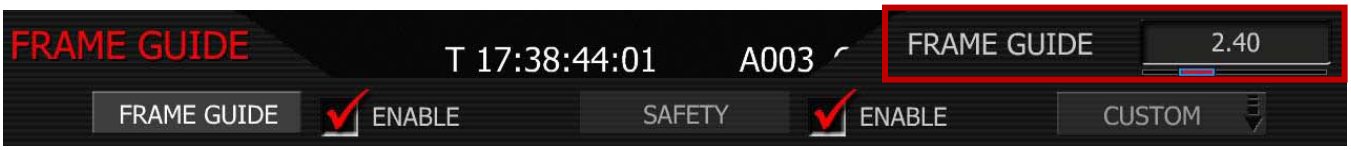
FRAME GUIDE

This sub-menu provides a selection of frame guides and safe action and safe title guides. User definable safe action and safe title guides may be saved as a USER PREFERENCE, thereby permitting the camera guides to be fully customized for any application.



FRAME GUIDE

Displays film projection areas with 1.85 or 2.40 aspect ratios and television display areas with 16:9 or 4:3 aspect ratios.



1. To change frame guide aspect ratio, select FRAME GUIDE.
2. FRAME GUIDE box will highlight to allow you to choose from FULL to 16:9. Default is 2.40.
3. Twist joystick to change the highlighted FRAME GUIDE box to the desired setting.
4. Move joystick left, right or up to select and exit.

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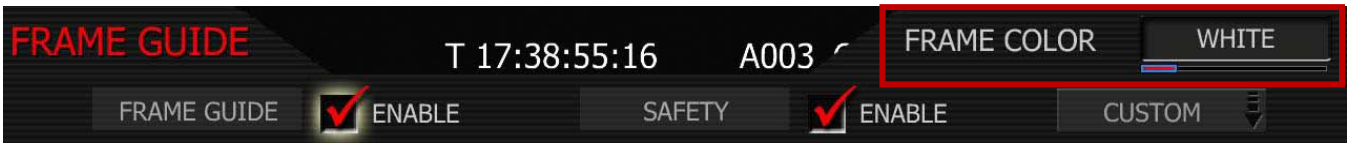
FRAME GUIDE ENABLE

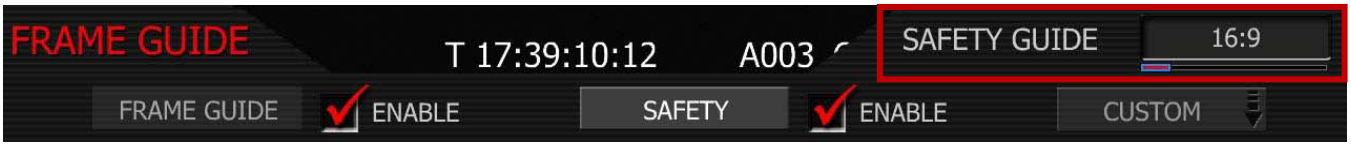
Allows you to set the frame guide line color to White, Black, Blue, Yellow or Red for maximum color contrast with the scene you are shooting.



1. To select frame guide enable color, push in or down on joystick to place checkmark in ENABLE checkbox.
2. FRAME COLOR box will highlight to allow you to choose the desired color. Default is WHITE.
3. Twist joystick to change the highlighted FRAME COLOR box to the desired setting.
4. Move joystick left, right or up to select and exit.

SAFETY (PREVIOUSLY PROTECT)

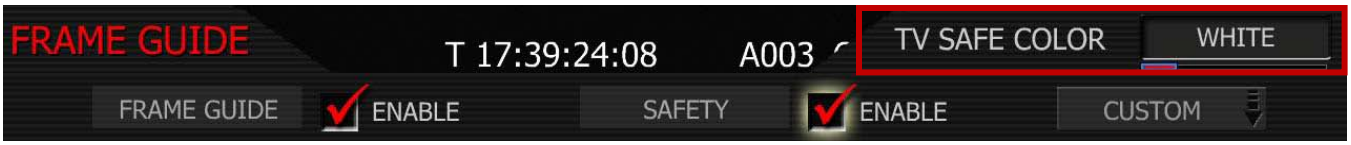
Safety displays film projection safe areas with 1.85 or 2.40 aspect ratios and television safe areas with 16:9, 14:9 or 4:3 aspect ratios, or User Areas.



1. To change frame guide aspect ratio, select PROTECT.
2. SAFETY GUIDE box will highlight to allow you to choose from 16:9 to USER AREAS.
3. Twist joystick to change the highlighted SAFETY GUIDE box to the desired setting. Default is 16:9.
4. Move joystick left, right or up to select and exit.

SAFETY ENABLE (PREVIOUSLY PROTECT ENABLE)

Allows you to set the safe area color to White, Black, Blue, Yellow or Red for maximum color contrast with the scene you are shooting.



1. To select safe area color, push in or down on joystick to place checkmark in ENABLE checkbox.
2. TV SAFE COLOR box will highlight to allow you to choose the desired color.
3. Twist joystick to change the highlighted TV SAFE COLOR box to the desired setting. Default is WHITE.
4. Move joystick left, right or up to select and exit.

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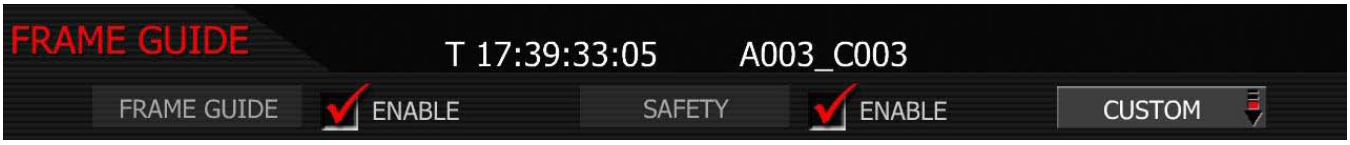
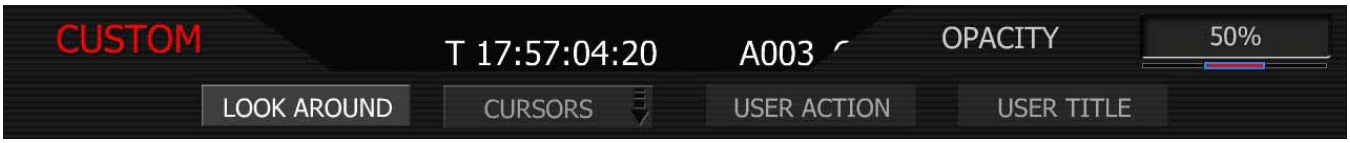
CUSTOM (PREVIOUSLY PROGRAM)

Custom allows the use to program the specific PROTECT areas to be used.



Select CUSTOM to access the CUSTOM sub menu.



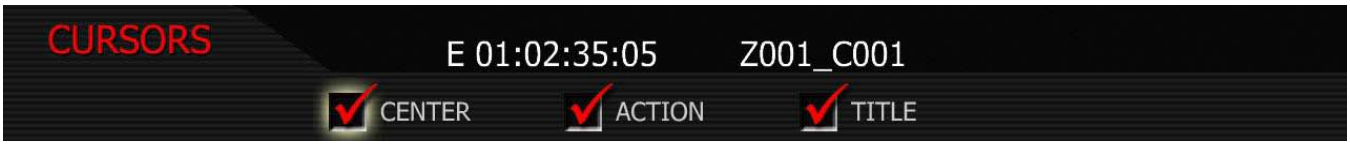
LOOK AROUND

LOOK AROUND allows the OPACITY of the LOOK AROUND area to be set to 0% , 50% and 100%. Default value is 50%.

CURSORS

Enables / disables image center cursor. Select **Cursors** to enable Center, Safe Action or Safe Title cursors.

CENTER: Enables / disables image center cursor. Check or uncheck to select. Default is checked.



ACTION: Enables / disables guide. Style may be specified as a corner marker or a rectangle. Default is checked.

TITLE: Enables / disables user guide. Style may be specified as a corner marker or a rectangle. Default is checked.

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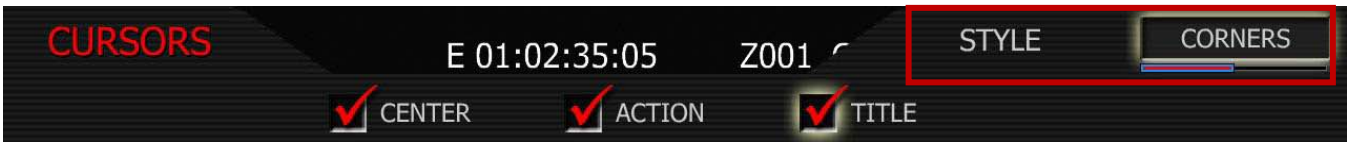
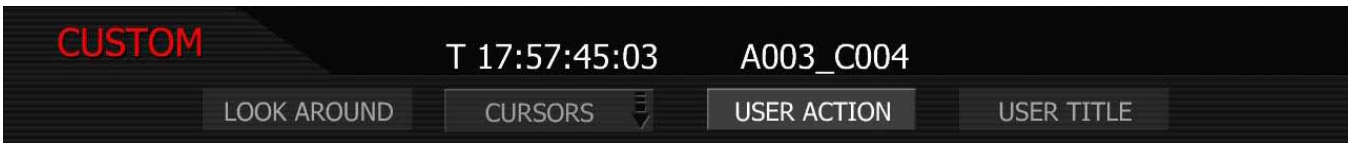


1. **To set ACTION or TITLE**, push in or down on joystick to place checkmark in ACTION or TITLE checkbox.
2. STYLE box will highlight to allow you to choose between CORNERS or RECTANGLE.
3. Twist joystick to change the highlighted STYLE box to the desired setting.
4. Move joystick left, right or up to select and exit.

USER ACTION

Push to program a custom Safe Action area. Area may be adjusted for width, height, and center offset. User Action values may be saved in USER PREFERENCE files.



1. To adjust, select desired setting to modify.
2. Twist joystick to change the highlighted the desired setting.
3. Push up or in on Joystick or push EXIT button to set and exit (you cannot go back to the menu).

WIDTH: Adjusts the width of the guide. Maximum width of the guide is 1280 pixels.

HEIGHT: Adjusts the height of the guide. Maximum height of the guide is 720 pixels.

NOTE: The camera will display the aspect ratio of the guide based on these two values.

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X POSN: Adjusts the horizontal center position of the guide.

Y POSN: Adjusts the vertical center position of the guide.

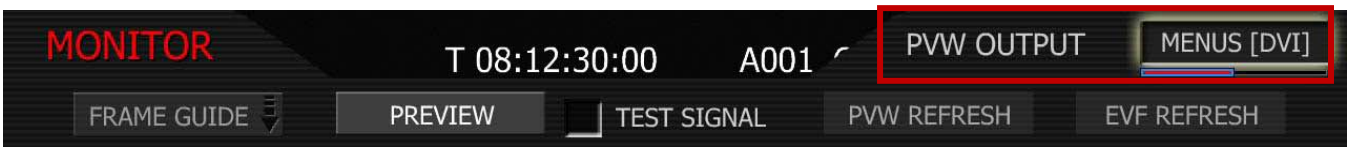
SET: Push **SET** to save these parameters to non-volatile memory, exits menu and returns to normal operation.

USER TITLE

Enables the user to program a custom Safe Title area. Operation is the same as USER ACTION. Refer to the previous procedure for USER ACTION to modify settings.

PREVIEW

This sub-menu selects the operating mode of the HD Preview output.



If only one of either a RED™ EVF or RED™ LCD are present, the HD-SDI and HDMI outputs will support Surround View, frame guides and safe action / title overlays, waveforms overlaid on a 1280 x 720 pixel video signal. Both of these outputs include up to 4 channels of 24-bit 48KHz audio. The HDMI output is compatible with HDMI equipped 720p compatible HDTV monitors.

As a user choice, the HDMI (but not the three HD-SDI outputs) can support a 1280 x 848 pixel output with Surround View, frame guides and safe action / title overlays, waveforms, and camera status and operation menus. This signal is compatible with most DVI equipped SXGA computer monitors, but is not compatible with HDMI equipped HDTV displays.

If both a RED™ EVF and RED™ LCD are present, the HD-SDI and HDMI outputs will be forced to 1280 x 720 (with Surround View) irrespective of the Preview Output parameter setting.

NOTE: The video format of the HD-SDI Preview output will also be affected by the HD-SDI refresh rate and PLAYBACK resolution selections described elsewhere in this guide.

To select between 720p and 848p output options, select VIDEO (720p) or MENUS (DVI). The default is VIDEO (720p) The Preview output setting will be held in camera memory.

TEST SIGNAL

Permits the video monitor outputs to be replaced with a video test pattern.

To enable/disable a test signal check the box and select the desired test signal to display. Available test signals include the following:

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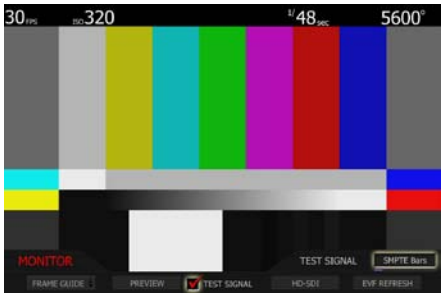
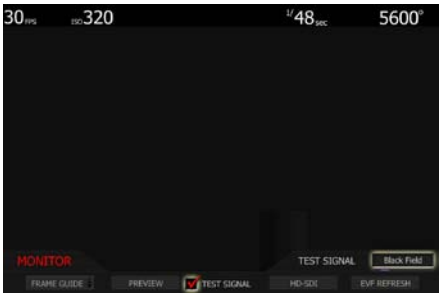
1. To set test pattern, push in or down on joystick to place checkmark in TEST SIGNAL checkbox.
2. TEST SIGNAL box will highlight.
3. Twist joystick to change the highlighted TEST SIGNAL box to the desired setting.
4. Move joystick left, right, up or push in to select.

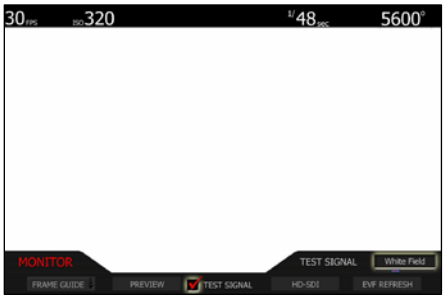
SMPTE BARS



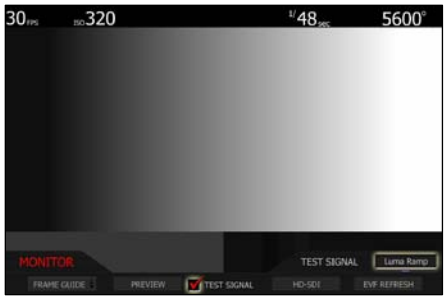
BLACK FIELD



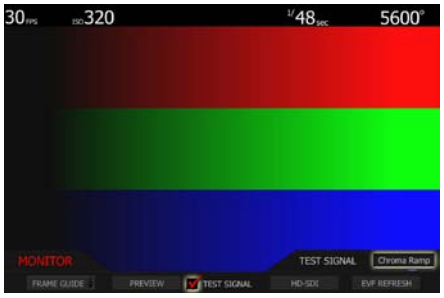
WHITE FIELD



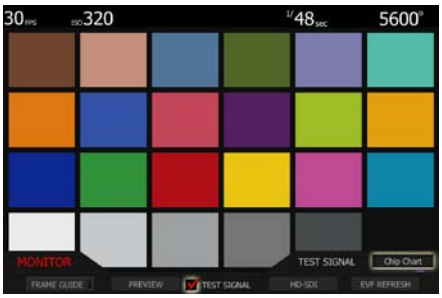
LUMA RAMP



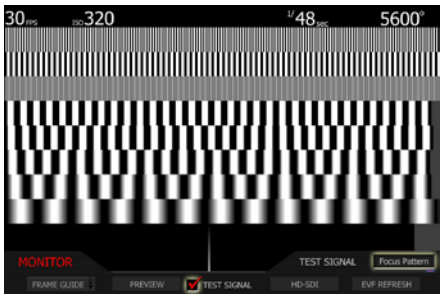
CHROMA RAMP



CHIP CHART



FOCUS PATTERN



NOTE: The RED ONE™ test signals are not recordable, they are provided to help align external video monitors connected via the HD-SDI or HDMI outputs.

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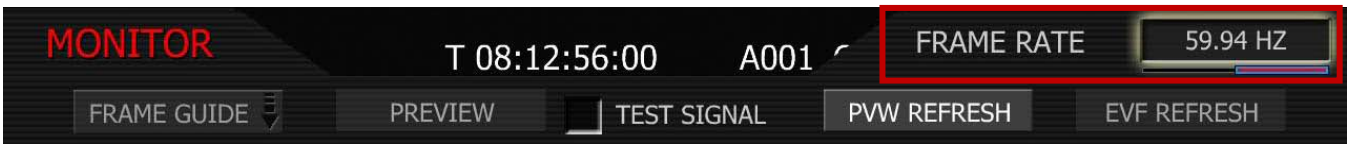
PVW REFRESH (FORMERLY HD-SDI)

Sets the1280 x 720p HD-SDI and HDMI monitor signal update rate to 50.00 or 59.94 Hz.



1. To change frame rate aspect ratio, select PVW REFRESH.
2. FRAME RATE box will highlight to allow you to choose from 50.00 HZ or 59.94 HZ (default is 59.94 (720p 59.94)).

NOTE: If in Europe you may wish to select 50.00 (720p/50.00).

3. Twist joystick to change the highlighted FRAME RATE box to the desired setting.
4. Move joystick left, right, up or push in to select.

HDMI

The camera includes a standard HDMI connector on its right side panel. This output provides a HDTV compatible 1280 x 720 video signal or P.C monitor compatible 1280 x 848 pixel signal.

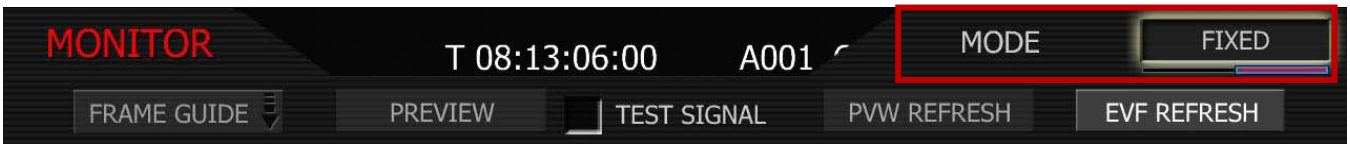
NOTE: If the PLAYBACK resolution is set to 1080p in the PLAYBACK menu, the HDMI output is 1280 x 720 pixels when in preview and record, but switches to 1920 x 1080 pixels in playback.

If after connecting the camera to an external monitor and the camera display is not shown completely on the monitor display, go to MONITOR under SYSTEM MENU CONTROLS and try the following:

- Select PREVIEW and change setting between MENUS [DVI] or VIDEO [720p].
- Select HD-SDI and change setting between 50.00 HZ or 59.94 HZ.

EVF REFRESH

EVF Refresh: permits the operator to select the display refresh rate used by the RED™ EVF.



FIXED: The default mode is FIXED, which uses 2:3 or other appropriate pull down as required to display images at a fixed frequency of 59.94 Hz (or 50Hz) at all image capture frame rates. This mode minimizes display flicker, but will exhibit a 2:3 motion stutter on 24fps images.

SYNCED: The alternative mode is SYNCED. This avoids 2:3 pull down, and instead doubles the capture frame rate – for example displaying 24fps images at 48Hz (50Hz for 25.00 fps). The display may exhibit luminance flicker due to the lower frame update rate, but it will not stutter.

NOTE: When in SYNCED mode, EVF display may blank for up to 3 seconds:

- **When existing OPEN GATE mode**
- **After exiting MAGNIFY mode when in 4K record resolution**
- **After changing between certain Varispeed frame rates**

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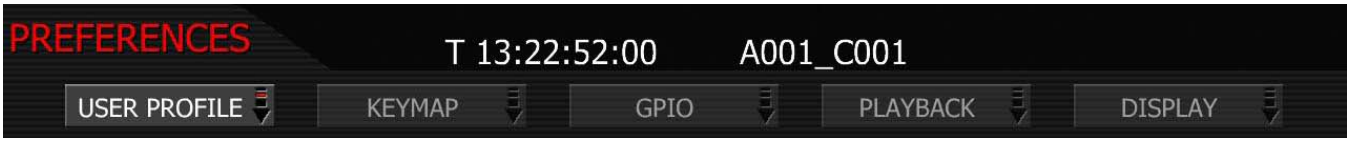
SETUP

This menu permits a variety of system maintenance tasks to be accomplished. Options available are PREFERENCES, MAINTENANCE, SET CLOCK, and REMOTE.

PREFERENCES

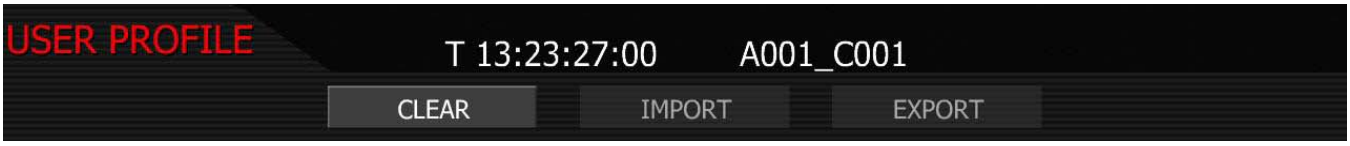
Preferences permit the user to define system preferences.



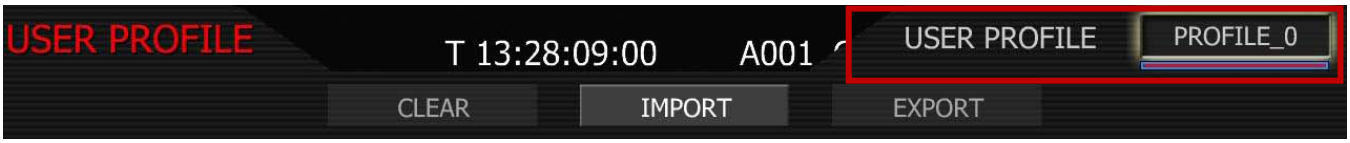
USER PROFILE

User profile permits the camera setup to be saved to or recalled from the SD card. Choices are CLEAR, IMPORT and EXPORT

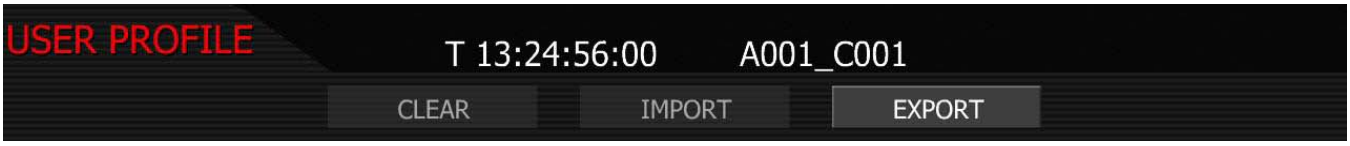
CLEAR: allows a User Profile to be cleared from memory.



IMPORT: allows a User Profile to be read from the SD card.

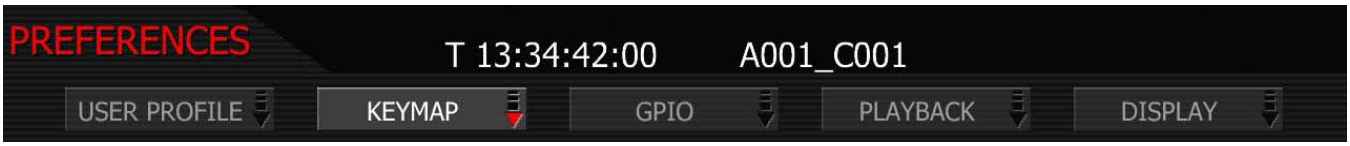


EXPORT: the current USER PROFILE parameters are stored to the SD Card. The camera generates a file name of the format PROFLE_**.RPF. For detailed information on exporting USER PROFILE files, go to APPENDIX C: SAVING LOOK/USER PROFILE.



KEY-MAP

Key Map selects the Key Map Preferences sub-menu. This menu permits selected menus or functions to be mapped to specific User Keys on the camera body. User keys are also referred at as Buttons.



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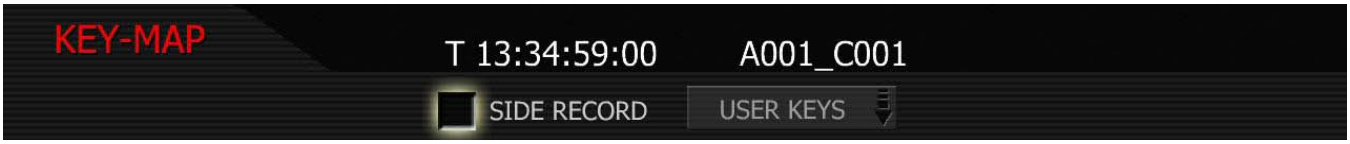
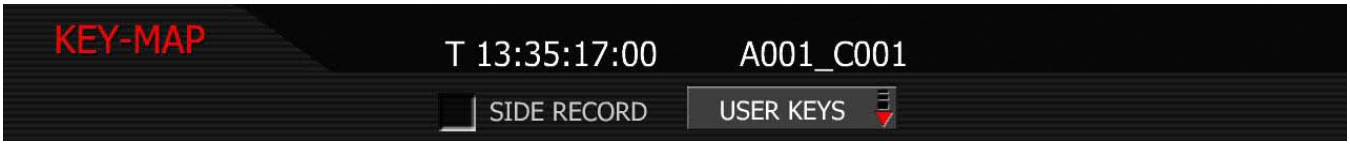
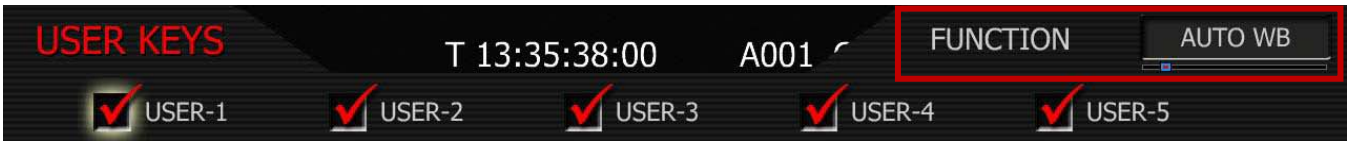
SIDE RECORD: When checked, the side RECORD key is enabled. Default is enabled. This is the record button located on the left front side of the camera.



USER KEYS: When selected permits USER KEYS 1 thru 5 to be programmed. Multiple keys may be programmed to the same function.



1. To change user key preferences, push in or down on joystick to place checkmark in the desired user key checkbox.
2. FUNCTION box will highlight.
3. Twist joystick to change the highlighted FUNCTION box to the desired function.
4. Move joystick left, right, up or push in to set function.



USER-1: User Key 1 is the upper user key (button) on the camera side. Default is **Auto WB**. When checked, USER-1 key is enabled, and its function is defined in the associated list.

USER-2: User Key 2 is the lower user key (button) on the camera side. Default is **Magnify.** When checked, USER-2 key is enabled, and its function is defined in the associated list.

USER-3: User Key 3 is the upper user key (button) on the RED™ EVF. Default is **Color**. When checked, USER-3 key is enabled, and its function is defined in the associated list.

USER-4: User Key 4 is the lower user key (button) on the RED™ EVF. Default is **VIEW RAW.** When checked, USER-4 key is enabled, and its function is defined in the associated list.

USER-5: User Key 5 is the left hand side key (button) on the RED™ LCD. Default is **Color**. When checked, USER-5 key is enabled, and its function is defined in the associated list.

NOTE: To reset keys to default settings, go to RESTORE. A reboot of the camera may be necessary to restore defaults.

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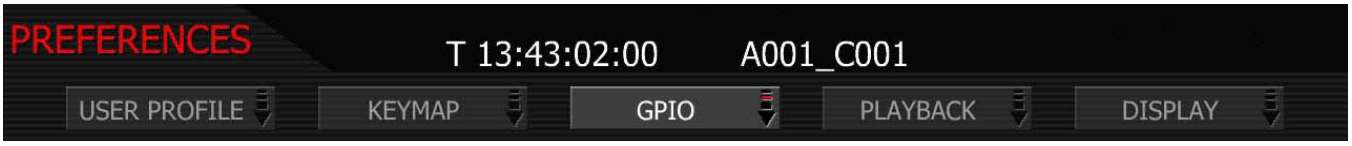
Available functions that may be allocated to the User Keys are:

Function	Description	Function	Description
Record	Initiates camera record start / stop	**Zebra 2**	Toggles Zebra 2 On / Off
Magnify	Initiates camera monitor path magnify function	**+ Volume 1**	Increases volume of Channel 1 (when in microphone mode)
View RAW	Toggles VIEW RAW selection On/Off	**- Volume 1**	Decreases volume of Channel 1 (when in microphone mode)
Auto WB	Initiates camera Auto White Balance	**+ Volume 2**	Increases volume of Channel 1 (when in microphone mode)
Color	Toggles the EVF Color selection On/Off	**- Volume 2**	Decreases volume of Channel 1 (when in microphone mode)
Meter	Toggles the EVF Meter Assist selection On/Off	**+ ISO**	Increases camera Sensitivity
Ramp	Initiates Variable Speed Ramp	**- ISO**	Decreases camera Sensitivity
Time-lapse	Initiates Time-lapse Record Mode	**+ Shutter**	Increases camera Shutter Speed
Zebra 1	Toggles Zebra 1 On / Off	**- Shutter**	Decreases camera Shutter Speed

GPIO

GPIO selects the GPIO preferences sub-menu.



INPUT A/B

Permits the function of GPI A and B to be defined as:

RECORD (Default): starts standard mode (video and audio) record. Subsequent trigger stops record.

PRE-RECORD: activates Pre-record. Subsequent triggers start / stop record. Refer to SYSTEM MENU CONTROLS > MEDIA MENU > PRE-RECORD for complete information.

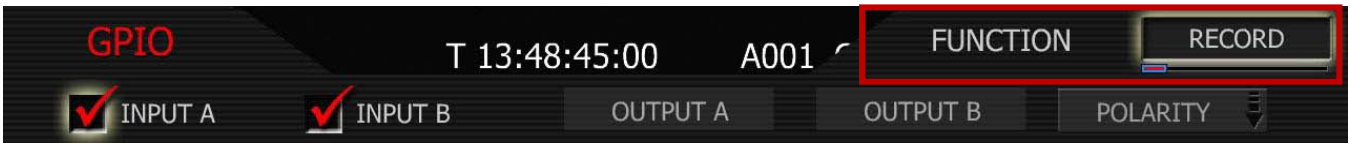
TIMELAPSE: activates Time-lapse. Subsequent trigger activates one-shot or burst recording.

RAMP: initiates variable frame rate ramp speed change.

SHUT DOWN: initiates a controlled camera power down

PLAY CLIP: causes the selected Clip to play back at normal speed

NEXT CLIP: cues the selected clip to end. If at end, cues to beginning of next clip.



OUTPUT A/B

Permit the function of GPO A and B to be defined as either:

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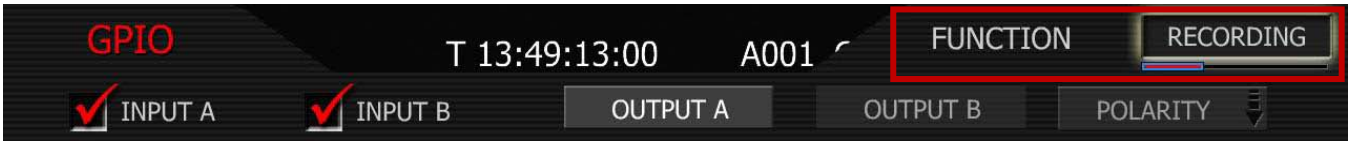
RECORDING: Transitions the output of the GPO at the Start and End of a recording.

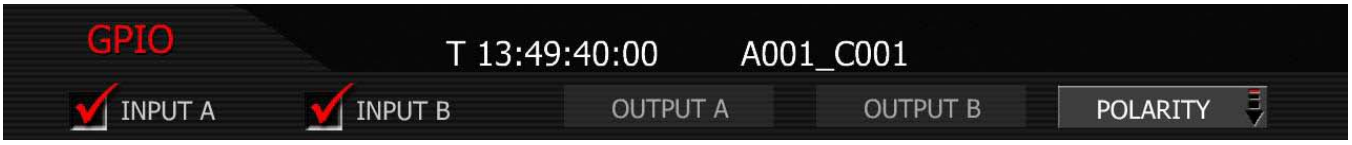
NOTE: if in Time-lapse mode, GPO will maintain status until Time-lapse mode has been exited.

PLAYING: Transitions the output of the GPO when a Clip is playing in Playback mode.

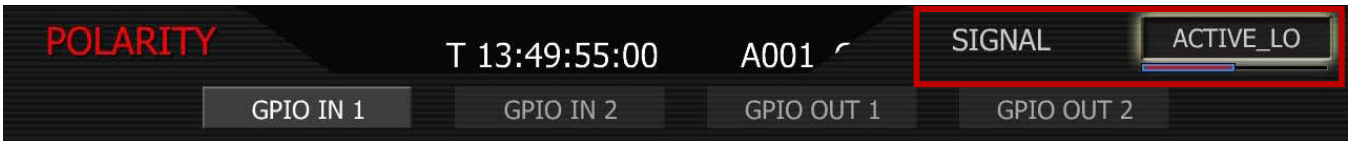
CUED: Transitions the output of the GPO when a Clip is cued for Playback.



POLARITY



This menu permits the signal polarity of GPIO IN 1 and 2 and GPIO OUT 1 and 2 to be defined as either ACTIVE_LO or ACTIVE_HI.



GPIO IN: ACTIVE_LO is the default, which means the GPIO IN command will be activated on a high to low edge of an external control pulse. Set to ACTIVE_HI to use a low to high edge.

GPIO OUT: ACTIVE_HI is the default, which means the GPIO OUT tally output will be high when in normal, burst or ramp record modes, and low when not. Set to ACTIVE_LO to reverse this.

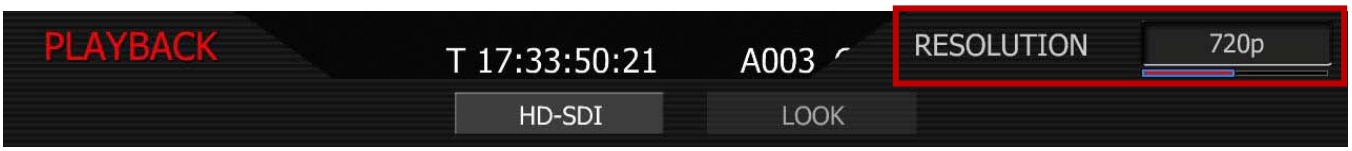
PLAYBACK

Playback selects the Playback Video Format sub-menu. This menu permits the video format and look used by the camera on playback to be specified.

HD-SDI

HD-SDI sets the video format to be used by the HD-SDI output when camera is in PLAYBACK mode to 720p or 1080p. Default is 720p.

NOTE: When 1080p is selected, the HDMI output will not be compatible with the majority of DVI or HDMI based computer monitors; therefore it should be considered as deactivated.



720p: Video output is 1280 x 720 pixels. For 4K images the monitored image width corresponds to 4,096 pixels scaled down to 1280 pixels. This signal is available on the HD Preview (HD-SDI and HDMI), HD Program (Dual Link HD-SDI), RED™ EVF, and RED™ LCD outputs.

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1080p: Video output is 1920 x 1080 pixels. For 4K images the monitored image width corresponds to 3,840 pixels scaled down to 1920 pixels. This signal is available on the HD Preview (HD-SDI), HD Program (Dual Link HD-SDI), RED™ EVF, and RED™ LCD outputs. RED™ EVF and RED™ LCD will display a 1280 x 720 pixel center cut of the larger 1920 x 1080 image.

LOOK

Look permits the look used by the camera on playback to be specified (default is CLIP).

NOTE: When viewing clips recorded on cameras with Build 21 v21.1.0 or later firmware, the camera will playback the clip using the LOOK and VIEW parameters used when the clip was recorded.

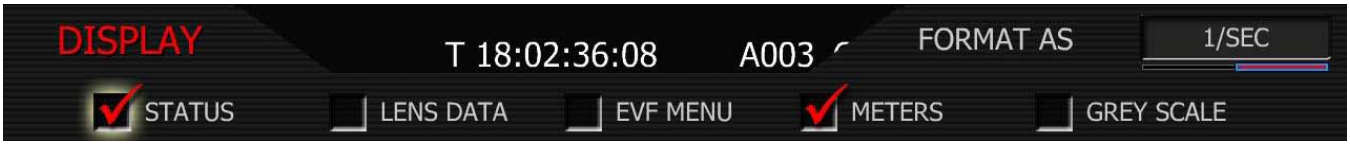
CAMERA: forces the camera to use current LOOK values to color process recorded RAW data files when played back on-camera.

CLIP: Forces the camera to use recorded LOOK metadata values to color process recorded RAW data files when played back on-camera.

DISPLAY

Display permits specific elements of the camera external monitor display to be disabled.

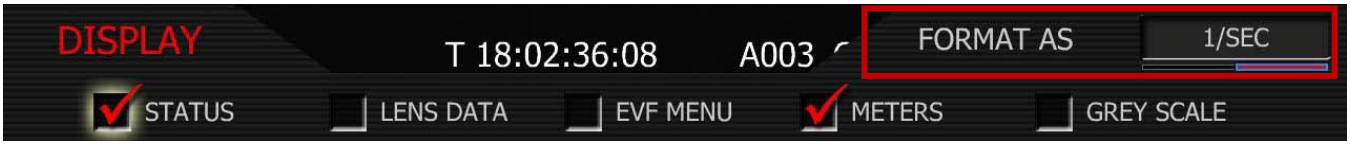
NOTE: Enabling/disabling these items effects selected item on all external monitor outputs. Disabling the EVF Menu display also disables the EVF menu controls.



STATUS (PREVIOUSLY SHUTTER)

When checked, displays frame rate and sensor status on upper edge of all external monitors. Also allows the user to choose if camera shutter value is reported in Degrees or 1/Seconds format.

NOTE: Status values are always input in 1/seconds format, irrespective of this choice.



1. To change status preferences, push in or down on joystick to place checkmark in the STATUS checkbox.
2. FORMAT AS box will highlight.
3. Twist joystick to change the highlighted FORMAT AS box to the desired setting.
4. Move joystick right, up or push in to set.

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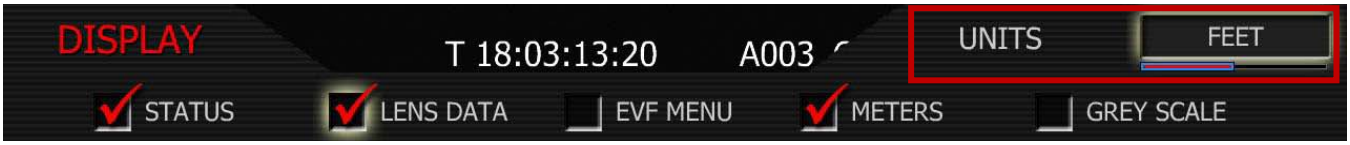
LENS DATA

When checked focus / zoom / iris data on all external monitors mid-upper edge will be displayed. Also allows the user to choose if Distance is reported in Feet or Meters.



1. To change lens data preferences, push in or down on joystick to place checkmark in the LENS DATA checkbox.
2. UNITS box will highlight.
3. Twist joystick to change the highlighted UNITS box to the desired setting.
4. Move joystick right, up or push in to set.

EVF MENU

When checked, activates the rotary switch on the EVF and displays a Gray "OFF" box on left side of EVF and all external monitors.

Activating this feature allows adjustment of the following parameters directly using the rotary switch:

INT: Adjusts EVF backlight display intensity

CH1: Adjusts Ch 1 microphone audio level

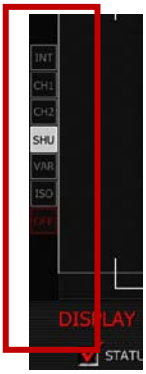
CH2: Adjusts Ch 2 microphone audio level

SHU: Adjusts Shutter speed

VAR: Adjusts Varispeed frame rate

ISO: Adjusts Sensitivity rating of monitoring

OFF: EVF control – Active / Disabled



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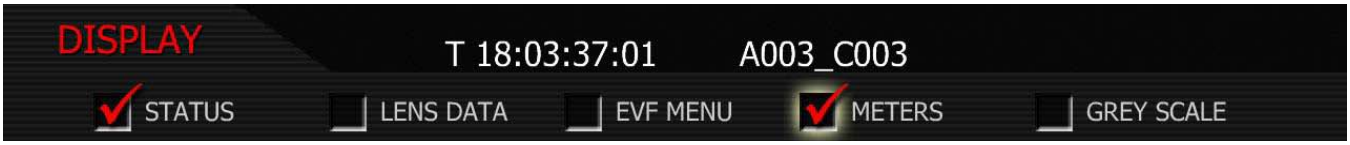
To use the rotary switch to make adjustments:

1. Push the rotary switch once.
2. Rotate the rotary switch until the white selection box overlays the parameter you wish to adjust.
3. Push the switch to lock that selection in.
4. Rotating clockwise increases the parameter value, counterclockwise decreases the parameter value.
5. Push the switch once more to lock the parameter and exit the parameter adjust mode.

METERS (PREVIOUSLY STATUS)

When checked, displays media, exposure and audio status on lower edge of all external monitors.



When unchecked, lower edge of all external motors will be blank.

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GREY SCALE

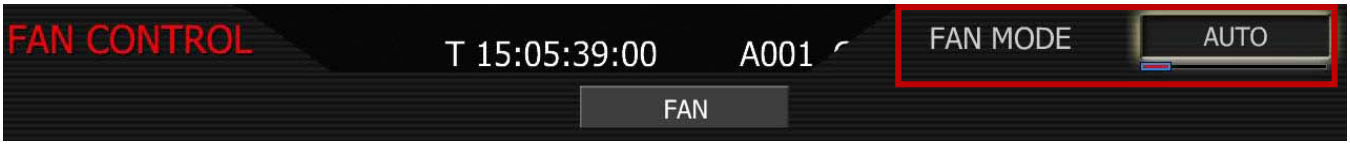
When checked, displays an 11 step grey scale on right edge of all external monitors.

MAINTENANCE

The maintenance sub-menu defines how the cooling fan behaves, adjusts Black level, resets user settings to factory defaults, and enables software updates.

FAN

Fan specifies how long the cooling fan operates. The camera's fan speed can be changed depending on the ambient air temperature and recording application. The default setting is AUTO.



1. FAN MODE box will highlight to allow you to choose from between AUTO, VARIABLE, HOT, STANDARD, QUIET and SILENT (default is AUTO).
2. Twist joystick to change the highlighted FAN MODE box to the desired setting.
3. Move joystick left, up or push in to select.

AUTO: This setting combines VARIABLE speed fan operation while not recording, with SILENT mode when in record. This mode is recommended for extended duration dialog recordings.

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VARIABLE: This setting is most useful when the ambient temperatures are below 50°F/10°C. In variable mode, the fan runs at a continuously variable speed in both preview and record. At low ambient temperatures the fan will run at minimum speed. At higher ambient temperature, the fan will run faster to maintain the camera body within its operating temperature limits.

HOT: This setting is most useful when the ambient temperature is between 86°F/32°C and 104°F/40C. In hot mode, the fan runs at its maximum speed. Other camera cooling precautions may be necessary, such as shading the camera from sunlight and use of a cold gel pack.

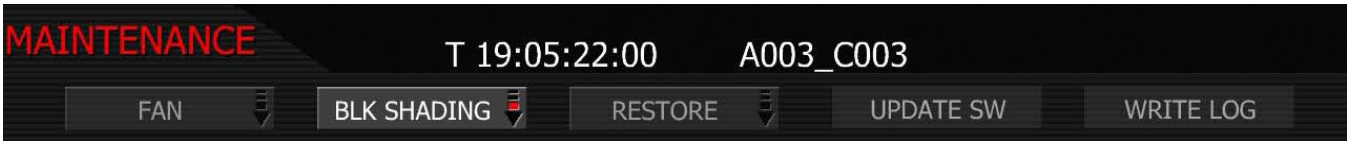
STANDARD: This setting is most useful when the ambient temperature is below 86F/ 32C. In standard mode, the fan will run at half its maximum speed when in record.

QUIET: This setting is most useful when the ambient temperature is below 72°F/25°C. In quiet mode the fan runs at one quarter its maximum speed when in record.

SILENT: This setting is most useful when the ambient temperature is below 60°F/15°C. In silent mode the fan runs at its minimum speed when in record.

BLACK SHADING

Black Shading allows the camera to self-calibrate sensor output for optimum black levels.

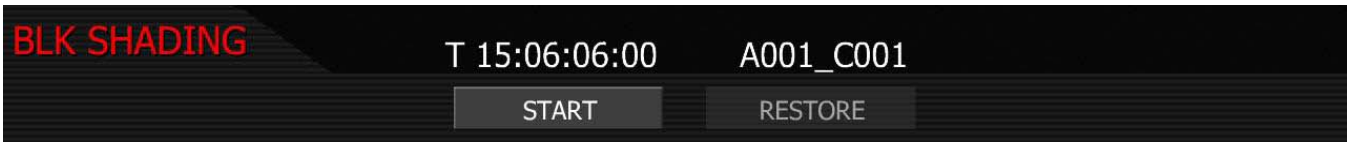


NOTE: before starting a Black shading calibration, ensure that you place a lens cap that blocks all light on your lens. Insert a formatted CF card into the camera (or attached a formatted RED-DRIVE). Ideally re-format the media before proceeding to ensure sufficient space is available to perform the record task.

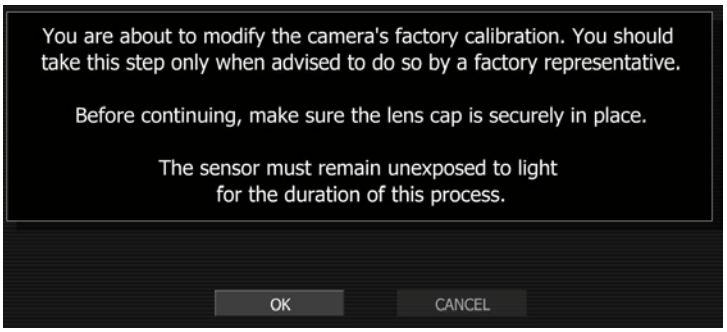
NOTE: It is very important that no light reaches the sensor. If Black Shading is performed without capping the lens, the black level calculation will be incorrect. To rectify, repeat the Black shading procedure with a lens cap installed.

START BLACK SHADING

1. Select BLACK SHADING, camera monitoring outputs will display:



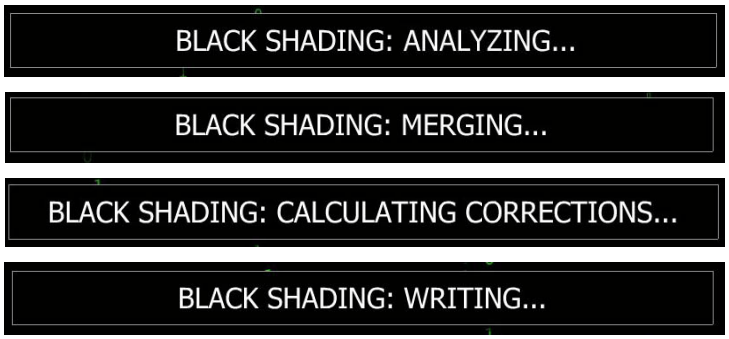
2. Select START, camera monitoring outputs will display:



3. Select OK, camera monitoring outputs will display:

4. The camera records 100 frames of sensor data that is used to analyze the precise black level of each pixel. This will take about 2 minutes. During this time, the camera will display (camera LCD will display "Calibrating…"):

5. After analyzing sensor, the camera will display:



6. As the last step in the process the camera will display:

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7. Installation of the new data takes about 3 minutes. The camera will confirm process is complete:

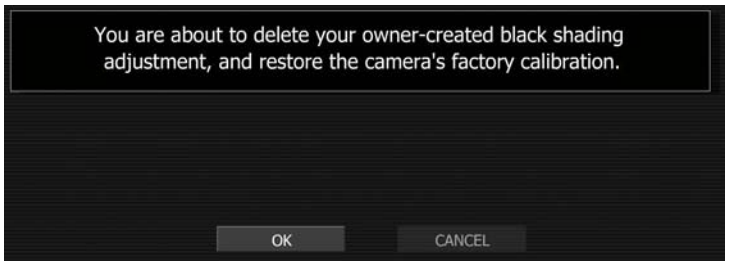
8. Select OK and restart the camera as instructed.

RESTORE BLACK SHADING

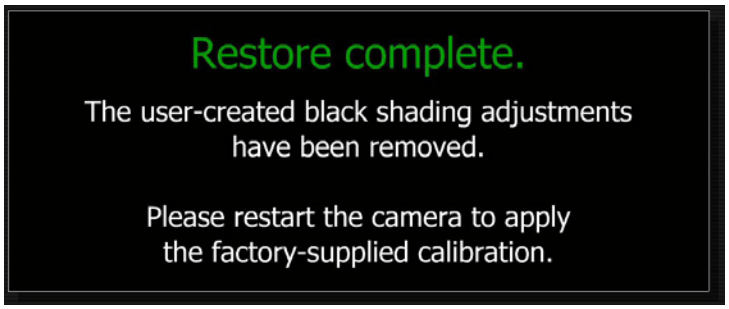
Restore will reset any user defined black shading data to factory default values.

1. Select BLACK SHADING, camera monitoring outputs will display:

2. Select RESTORE, camera monitoring outputs will display:



3. Select OK, camera monitoring outputs will display:



4. Restart the camera as instructed.

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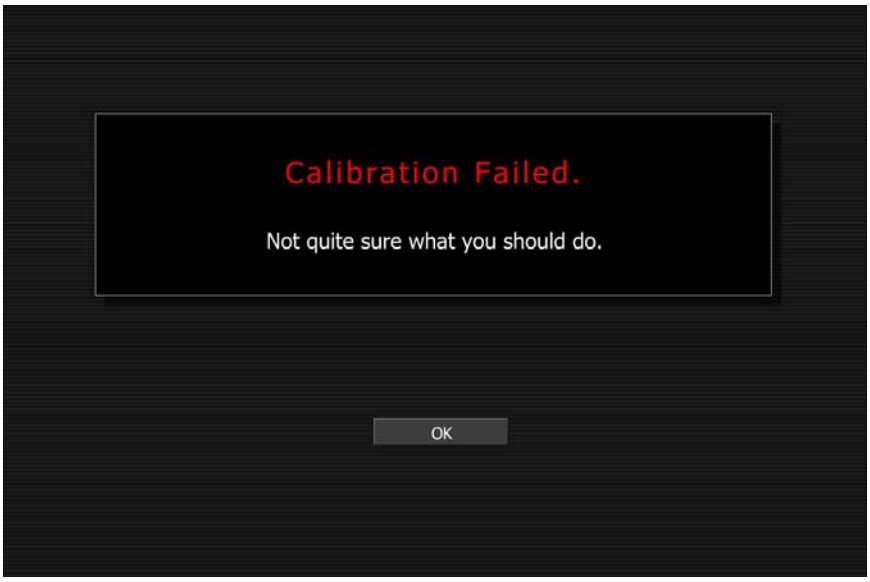
BLACK SHADING ERRORS

CALIBRATION FAILED - If the CF card installed in the camera is full or is removed during the Black Shading Calibration, the following error will be displayed:



If necessary, save media files to computer, reformat CF card and perform the Black Shading Calibration again. Refer to APPENDIX B: MANAGING DIGITAL MEDIA.

UNABLE TO CALIBRATE – If there is no CF card installed in the camera when attempting to perform a Black Shading Calibration, the following error will be displayed:

Connect formatted CF card to the camera and perform the Black Shading Calibration again.

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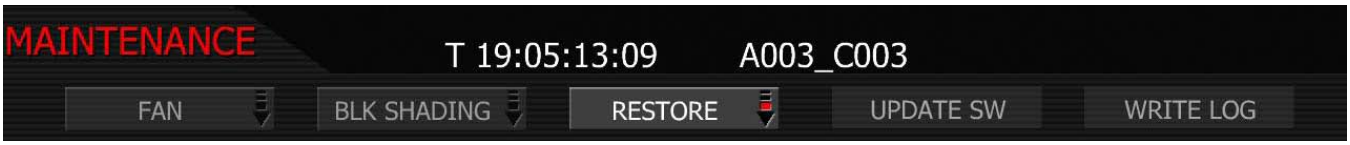
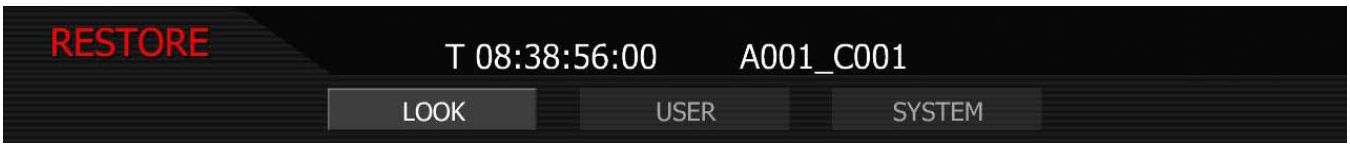
RESTORE

RESTORE resets LOOK / USER / SYSTEM back to the factory defaults.

NOTE: When a RESTORE is performed, RESOLUTION, TIME BASE and QUALITY settings ARE NOT reset to factory defaults and should be manually adjusted if desired.



NOTE: It is recommended that you reboot the camera following a RESTORE USER or RESTORE SYTEM operation.



SYSTEM: Allows all camera configuration parameters to be reset to the factory default values. When selected and reset, the external monitors will display:

LOOK: Allows all image processing parameters to be reset to the factory default values. When selected and reset, the external monitors will display:

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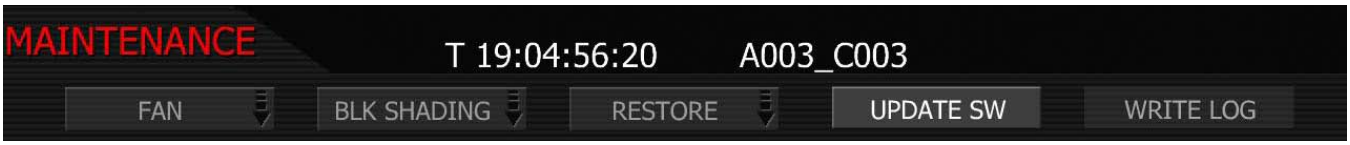
USER: Allows all user preference parameters to be reset to the factory default values. When selected and reset, the external monitors will display:

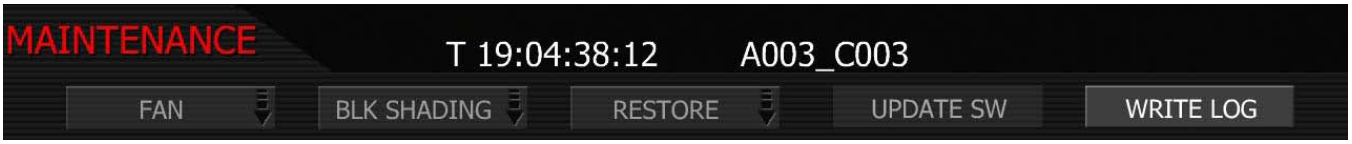
UPDATE SW

Update SW initiates a camera software (firmware) update.



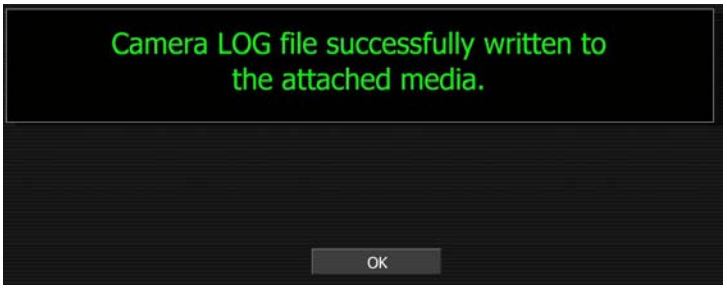
For complete, detailed procedure, go to APPENDIX A: UPDATING CAMERA FIRMWARE.

WRITE LOG



Select to write camera's .LOG file to CF card or RED-DRIVE® magazine. The .LOG file is a diagnostic tool that can assist RED™ with camera troubleshooting. After capture, upload the .LOG file to the RED™ customer service team contactable at **www.RED.com/support**.

After successfully writing log file to media, external monitors will display:



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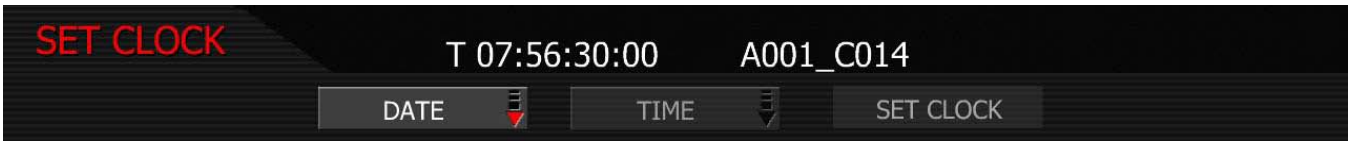
SETTING SYSTEM CLOCK

Set Clock allows the camera's real time clock to be adjusted. Select SET CLOCK and push joystick in or down to display SET CLOCK menu.

NOTE: Current GMT date and time can be found using this web site or equivalent service:
http://wwp.greenwichmeantime.com/info/current-time.htm

If camera **Date** and **Time** are set to GMT, and then set TIMEZONE to –8 for West Coast US (Pacific) time etc. Or set Date and Time to local time, and set the TIMEZONE value to 0. To set TIMEZONE refer to TIMEZONE under TIMECODE in NEW PROJECT section under SYSTEM MENU CONTROLS.

SET DATE

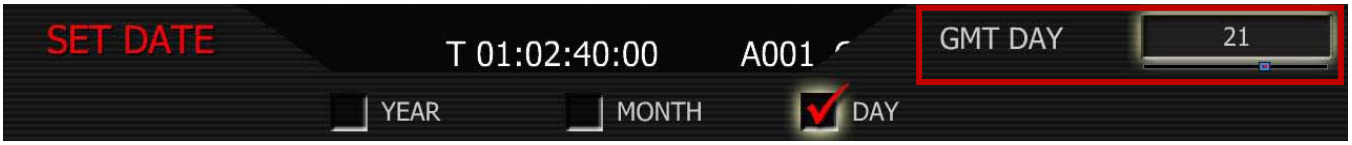


1. To change date, push in or down on joystick to place checkmark in the desired checkbox.
2. Box on lower right will highlight.
3. Twist joystick to change the highlighted box to the desired setting.
4. Move Joystick up or push in to set.

YEAR: allows the operator to enter a new value for the year between 2007 and 2020.

MONTH: allows the operator to enter a new value for the monthbetween 1 and 12.

DAY: allows the operator to enter a new value for the day between 1 and 31.



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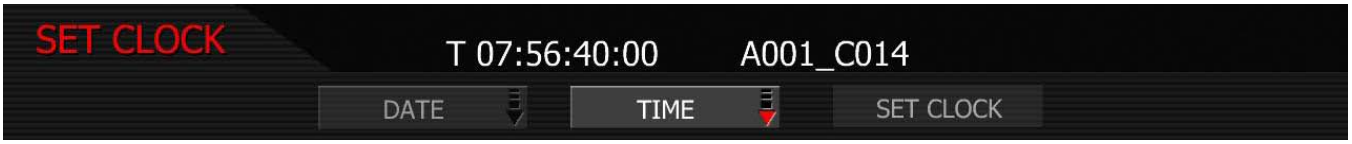
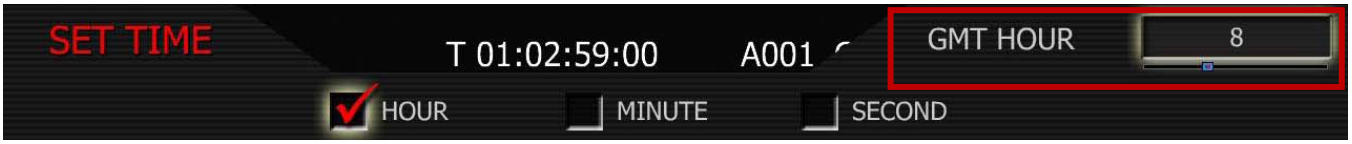
SET TIME

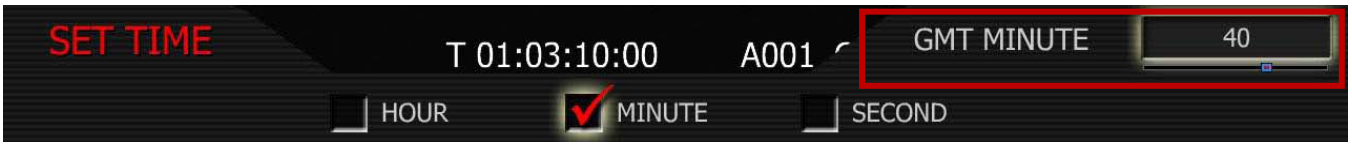


1. To change time, push in or down on joystick to place checkmark in the desired checkbox.
2. Box on lower right will highlight.
3. Twist joystick to change the highlighted box to the desired setting.
4. Move Joystick up or push in to set.

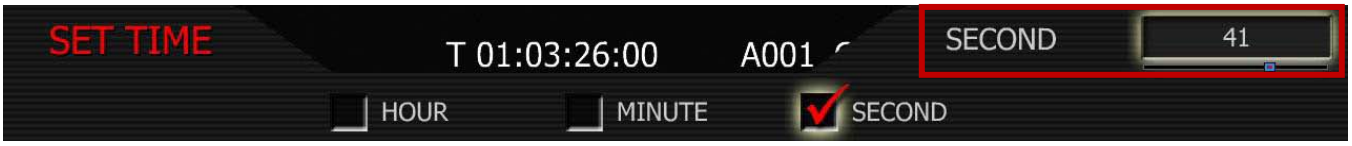
HOURS: allows the operator to enter new value for hours (24 hour format) between 0 – 23.



MINUTES: allows the operator to enter new value for minutes between 0 – 59.

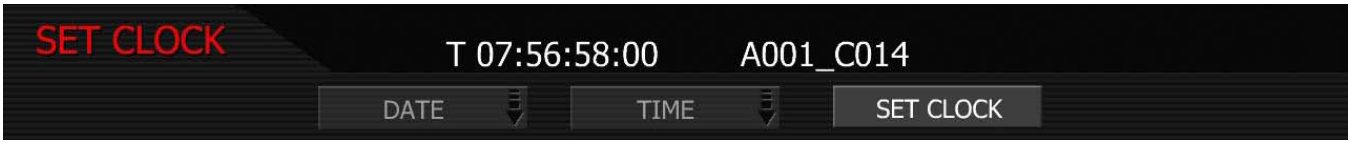


SECONDS: allows the operator to enter new value for seconds. Range 0 – 59.



SET CLOCK

Set Clock loads the selected Date and Time parameters into the camera's system memory.



NOTE: After pushing this key the camera will require re-boot as displayed. The new parameters will take effect, and be visible as TIME CODE, on completion of the re-boot cycle.

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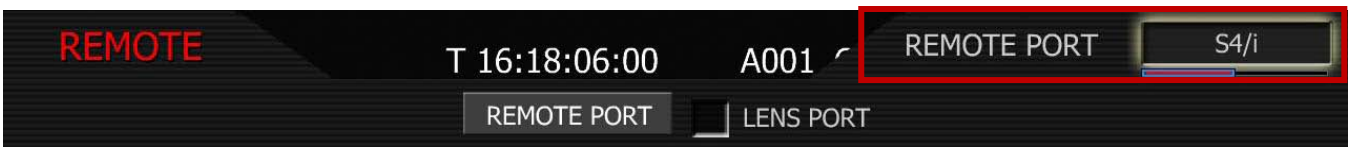
REMOTE

Used to enable (and reset if necessary) the S4/i Lens Data Port. Controls include REMOTE PORT and LENS PORT check box.

REMOTE PORT

Allows you to select between S4/I and AUX 232 (default is S4/i).



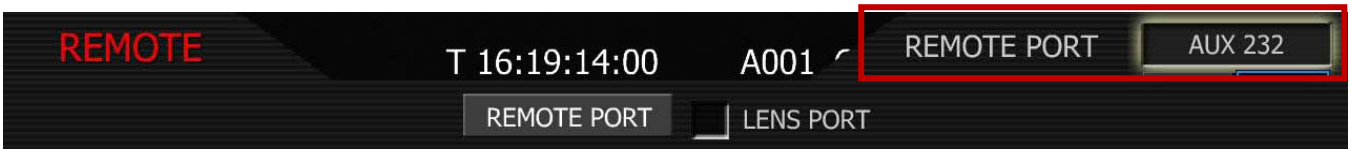
S4/i

Select S4/i to enable communication between the RED ONE™ and an S4/i compatible lens, and to enable recording of the lens data as metadata in the RED ONE™ .R3D files. Refer to LENS DATA under DISPLAY located in PREFERENCES under SETUP in SYSTEM MENU SETTNGS.

NOTE: S4/i communications requires appropriate hardware to be present in the camera body and P/L lens mount. Cameras shipped prior to Sept 15 2008 will require a factory installed hardware upgrade to enable this function.

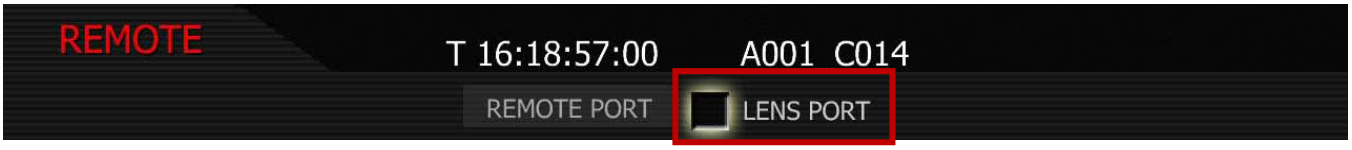
AUX 232

This setting is reserved for factory use. If selected, the S4/i port will not be active.



LENS PORT

When active, the check box will automatically be checked by the camera. If the camera needs to de-activate the lens data port for any reason, this menu will indicate by unchecking the LENS PORT check-box. The lens data port may then be re-activated by checking the checkbox.



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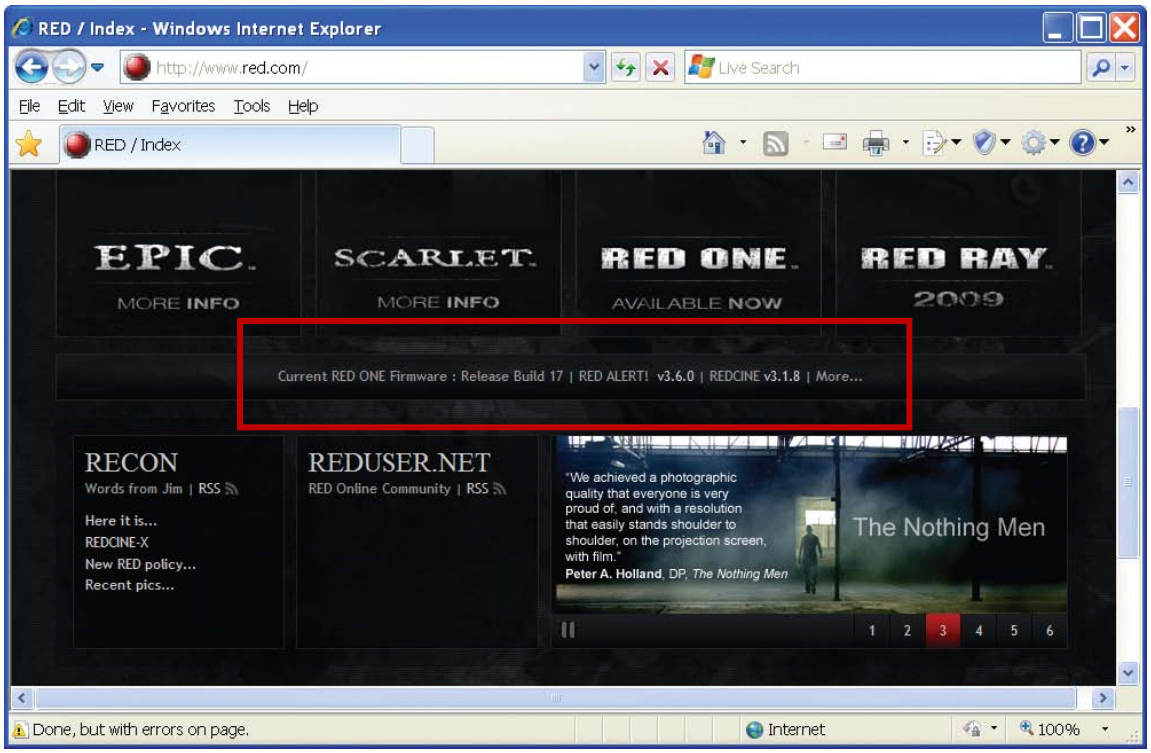
APPENDIX A: UPGRADING CAMERA FIRMWARE

RED ONE™ camera functionality may be upgraded by installing the latest firmware.

Camera firmware and software are identified by the build and version number. This is displayed by the camera on the LCD display and all external monitors during power up. Refer to POWER UP / DOWN under BASIC OPERATION. A higher number reflects a later release. The current RED ONE™ release available for download and upgrade is shown on the home page of the **www.RED.com** web site.



Go to **www.RED.com/support** for a complete listing of firmware revisions available for the camera, complementary QuickTime codec, postproduction software, and Operation Guide.

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VERIFY CURRENT CAMERA FIRMWARE

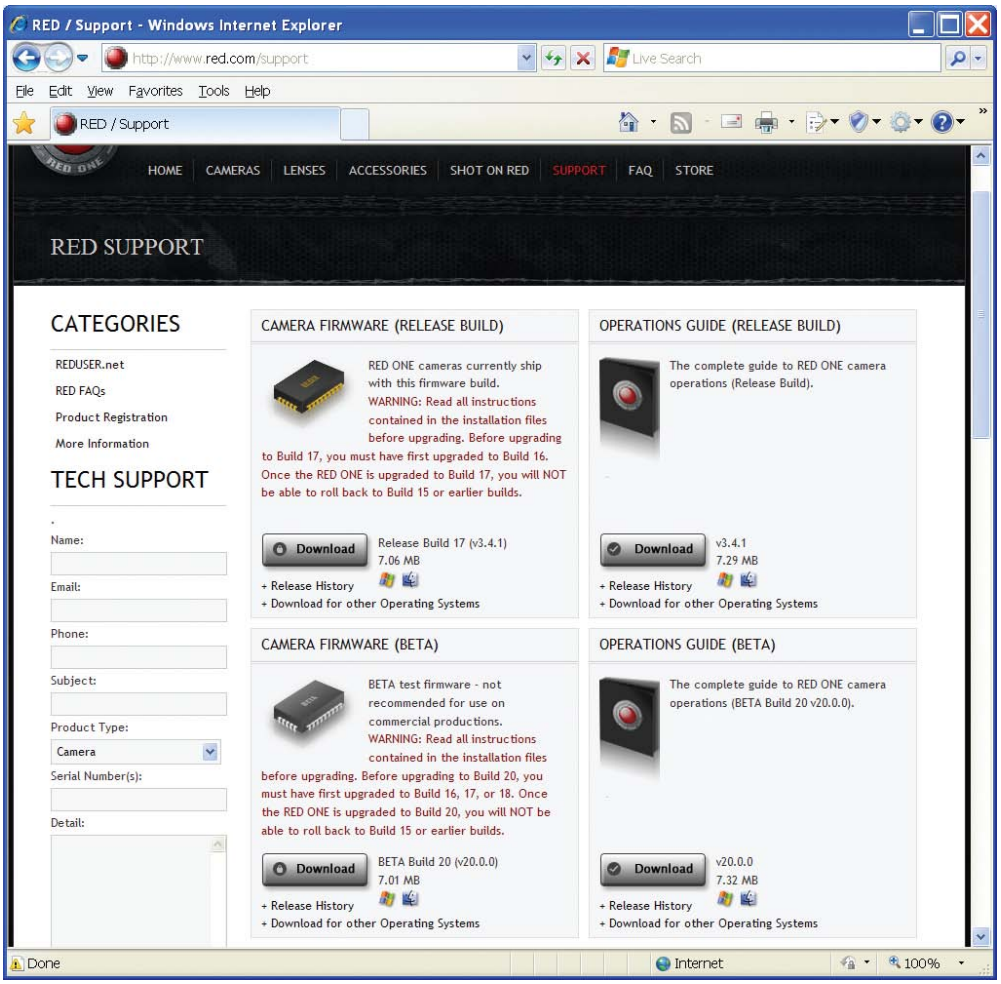
There are 2 ways to verify the current level of firmware installed on the camera.

A. With the camera ON, press and hold the UNDO button, then press in on the joystick. The camera's unique PIN and current firmware version will be displayed on the camera's LCD. To exit, press one of the menu buttons.

B. During camera boot up when turned on, the current firmware version will be displayed on the camera's LCD, RED EVF, RED LCD and all external monitors.

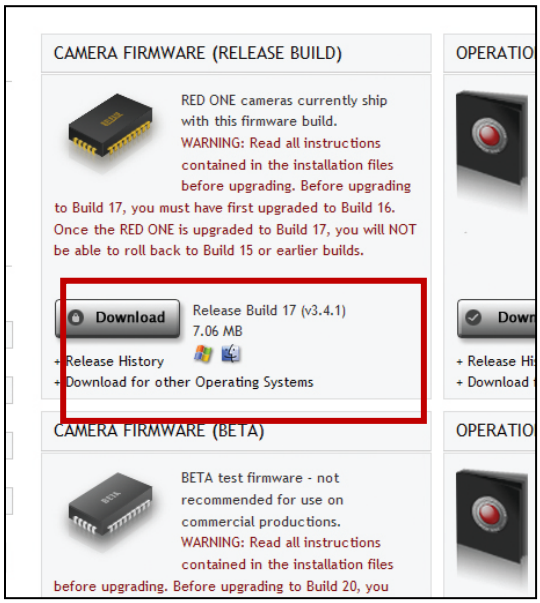
UPGRADE PROCEDURE

1. To download the latest firmware (Build), go to **www.RED.com/support**.



2. Click on the desired build link and download to your desktop or directory of your choosing.

NOTE: Before the download starts you will be prompted to enter your account and password or the camera's P.I.N.



3. After downloading the build, you will see the new compressed (zipped) folder on your desktop.
4. Open the new compressed folder and note 2 folders, one for Windows (it will be the same name as the compressed folder) and one for Macintosh OS X (_MACOSX).
5. Open the folder for your operating system (for Macintosh OS X you will have to open a second folder with the same as the compressed folder) and verify there is a .txt read me file (containing installation instructions), and a "UPGRADE" folder.
6. Connect an SD/Compact Flash (CF) card or USB memory device to the computer. Ensure the card has been formatted by the camera. For detailed instructions on formatting, go to APPENDIX B: MANAGING DIGITAL MEDIA.
7. Open the SD/CF card or USB memory device on the computer and copy ONLY the "UPGRADE" folder for your specific operating system from the compressed folder onto the card.
8. Remove the SD/CF card or USB memory device from the computer.
9. With the camera OFF, insert the SD/CF card into its corresponding slot in the camera. Connect the USB memory device to the USB port on the side of the camera.
10. Turn the camera ON.

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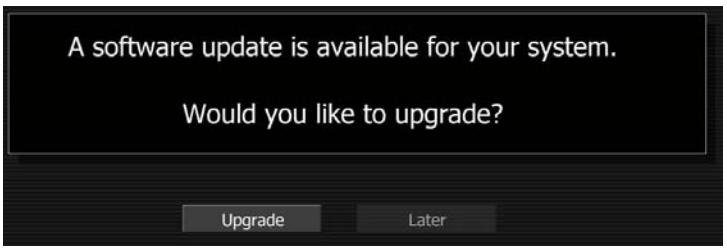
11. If there is valid upgrade firmware (build) version on the SD/CF card or USB memory device, all monitor outputs will display:



NOTE: If you choose to upgrade later, the camera will continue to operate on the current firmware version.

NOTE: If the camera does not automatically display the upgrade, to manually upgrade the camera, go to SYSTEM > SETUP > MAINTENANCE > UPDATE SW and the upgrade will be identified and the upgrade message will be displayed. Refer to UPDATE SW in MAINTENANCE under SETUP in SYSTEM MENU CONTROLS.

12. Push joystick in or down to begin upgrade procedure. Camera LCD will display "Upgrading…" and all monitor outputs will display:

13. After the upgrade completes (approx. 5 minutes), camera LCD will display "OK. Cycle Power" and all monitor outputs will display:

14. Cycle the camera OFF and back ON to return to normal operation. During the camera power up process, the camera will display the camera P.I.N and the upgraded firmware Build and Version number.

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APPENDIX B: MANAGING DIGITAL MEDIA

The RED ONE™ camera supports two types of media for recording - compact flash and external hard disk.

Compact Flash (CF) media requires a REDFLASH™ (CF) module mounted to the left side of the camera body. Hard disk media is housed in a RED-DRIVE® magazine connected via a custom16-pin SATA interface cable (POWER connector) located at the rear of the camera body.

REDFLASH ™ (CF) compact flash media is available with capacities of 8GB and 16GB. Record duration is dependent on resolution, quality and frame rate, but a 8GB CF card will typically provide 4 minutes of 24fps 4K RAW, 7 minutes of 24fps 3K RAW, or 16 minutes of 24fps 2K RAW recording.

RED-DRIVE® media is available with capacities of 320GB or 640GB. Record duration is dependent on resolution, quality and frame rate, but a RED-DRIVE 320GB will typically provide 160 minutes of 24fps 4K RAW, 280 minutes of 24fps 3K RAW, or 640 minutes of 24fps 2K RAW recording.

RED-RAM® media is available with capacities of 64GB or 128GB. Record duration is dependent on resolution, quality and frame rate, but a RED-RAM™ 64GB will typically provide 32 minutes of 24fps 4K RAW, 56 minutes of 24fps 3K RAW, or 128 minutes of 24fps 2K RAW recording.

FORMATTING MEDIA

Media must be formatted prior to using it for recording. Formatting is performed on camera, although media may be erased on a Macintosh OS X personal computer, allowing the camera to just add the necessary project profile and clip log data.

NOTE: Media formatted on-camera will use a name and root volume in the format:

Camera Letter + Reel Number + Month + Day + ** where ** is a two digit alphanumeric random number generated by the camera for each file e.g. A001_0512A6.RDM

Clips recorded to the media follow similar naming conventions

A001_C001_0512A6_001.RDC **and** A001_C001_0512A6_H.mov etc…

IMPORTANT: Media must always be un-mounted prior to removal or disconnection from the camera. This ensures power is removed from the digital media and any open data files are closed. Failure to do so may result in lost data or corrupted files. Refer to REMOVE MEDIA FROM CAMERA (UNMOUNT).

This procedure outlines the formatting of Compact Flash cards or RED-DRIVE®/RED-RAM® magazine using the RED ONE™ camera. Formatting a CF card or RED-RAM® will take about 10 -15 seconds; a RED-DRIVE® formats in less than a minute.

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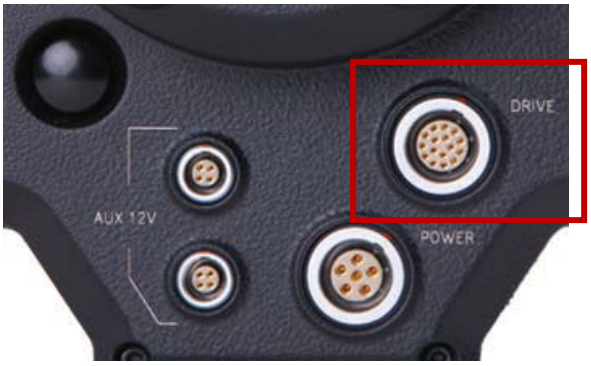
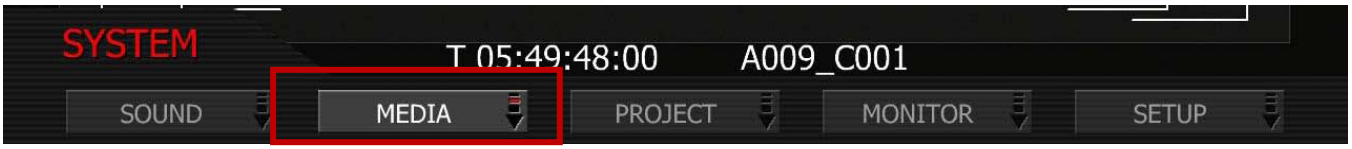
1. Insert or connect media to camera.
   - Insert the CF card with the manufacturer's label facing outward (away from camera body). Push the CF firmly into the CF slot, but without using excessive force to prevent damage.

   - **Or** attach a RED-DRIVE® or RED-RAM® magazine to the DRIVE connector (e-SATA port) located on the rear of the camera using the 16-pin e-SATA cable provided.



2. When a CF card is inserted into the camera or RED-DRIVE® or RED-RAM® magazine is connected, the camera will recognize the media is unformatted and display "DISK UNFORMATTED" in the LCD display and the lower left corner of the external monitors will display "UNFORMATTED".

3. To format the media push the SYSTEM menu button.
4. Select MEDIA and press Joystick in or down to enter. Camera LCD will display SYSTEM MEDIA Menu.



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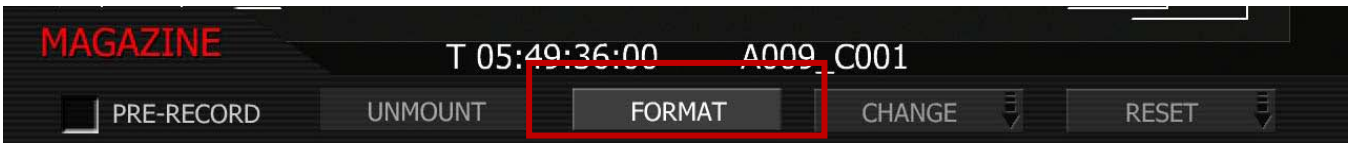
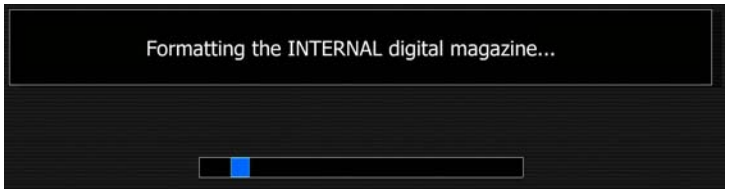
5. Select FORMAT and press Joystick in or down to enter. Camera LCD will display MAGAZINE FORMAT.



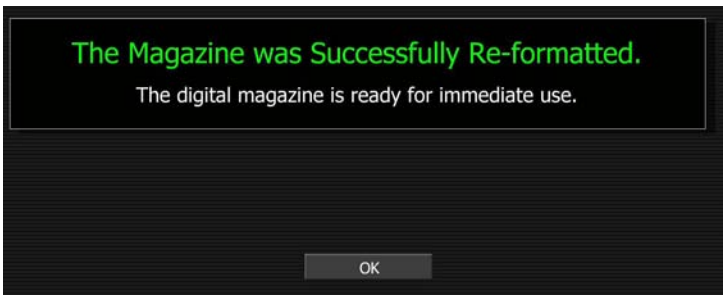
- If the media **IS** blank, camera LCD will display "FORMATTING…" and all external monitors will display:



- If the media **IS NOT** blank, refer to RE-FORMATTING MEDIA.

NOTE: If when selecting FORMAT, the display indicates FORMAT FAILED, refer to MEDIA ERRORS.

6. Once formatting is completed the camera LCD will display "FORMAT DONE" and all external monitors will display:

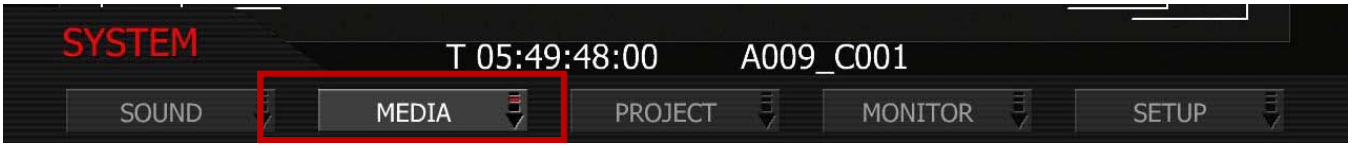


7. Press Joystick in or down to select OK. Camera will return to normal operation.

RE-FORMATTING MEDIA

Re-formatting a previously used CF card or RED-DRIVE® or RED-RAM® magazine follows a similar procedure to formatting.

1. Insert or connect media to camera. Refer to FORMATTING.
2. To re-format the media push the SYSTEM menu button.
3. Select MEDIA and press Joystick in or down to enter. Camera LCD will display SYSTEM MEDIA Menu.



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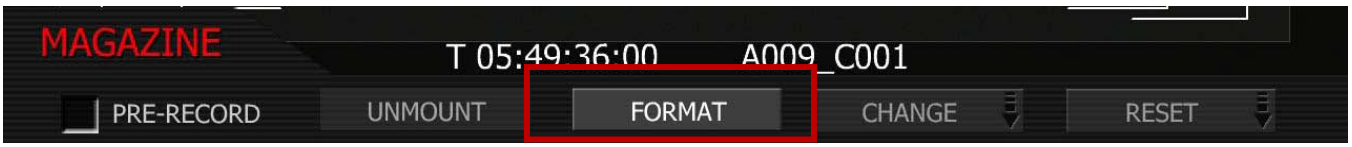
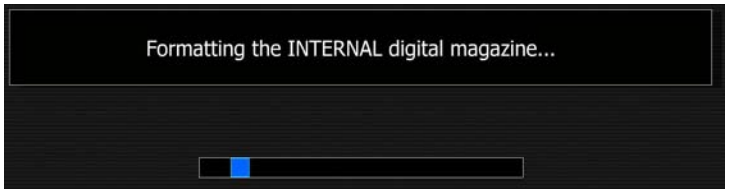
4. Select FORMAT and press Joystick in or down to enter. Camera LCD will display MAGAZINE FORMAT.



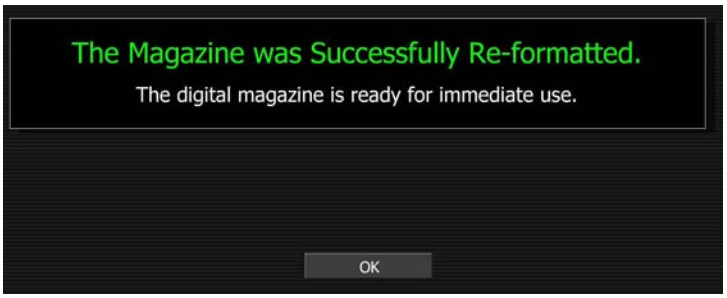
5. Camera LCD will display FORMAT? CANCEL / FORMAT and all external monitors will display:

- If CANCEL is selected, camera will return to normal operation.
- If FORMAT is selected, camera will display:



NOTE: If when selecting FORMAT, the display indicates FORMAT FAILED, refer to MEDIA ERRORS.

8. Once re-formatting is completed camera LCD displays "FORMAT DONE" and all external monitors will display:



9. Press Joystick in or down to select OK. Camera will return to normal operation.

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MEDIA CAPACITY REMAINING STATUS

During a recording, the rear status screen, and monitor outputs will display the % of remaining media capacity in the MEDIA box (100% is shown).

At 10% remaining capacity the media status box will turn yellow, at 5% it will turn red. At 2% remaining the camera will cease recording. This reserves a small amount of capacity for ancillary data to be written to the media.

REMOVE MEDIA FROM CAMERA (UNMOUNT)

IMPORTANT: Media must always be un-mounted prior to removal or disconnection from the camera. This ensures power is removed from the digital media and any open data files are closed. Failure to do so may result in lost data or corrupted files.

Removing a CF card or disconnecting a RED-DRIVE® or RED-RAM® without first un-mounting it will not physically damage the media, however it does increase the risk of file corruption, so it's good operational practice to un-mount the media if possible before removing or disconnecting.

IMPORTANT: Un-mounting the digital media takes a few seconds, protects the integrity of your recorded data and helps clips mount instantly to your workstation once in postproduction, so it's a recommended habit to develop. If you don't un-mount the media the camera will offer a warning – your files may not be damaged, but you will have been warned!

NOTE: The camera will respond to physical removal of the media without un-mounting and display the following warning:

UNMOUNTING of digital media can be performed in one of two ways:

Procedure A

1. Push and hold the UNDO button.
2. While holding the UNDO button, push the EXIT button.

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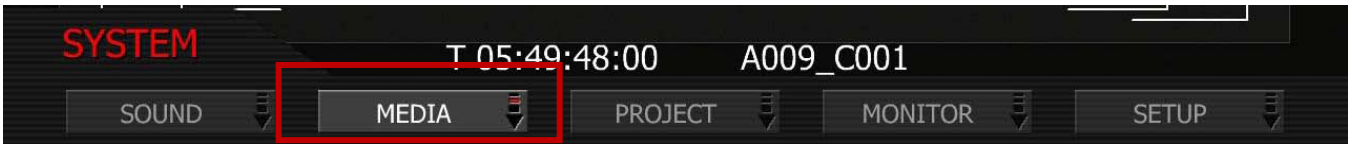
3. Camera LCD will display MEDIA X and the lower left corner of the external monitor will display "SAFE TO REMOVE" in Red text. The White text with the counter and media name at the bottom edge of the display will disappear. You may now remove the CF or disconnect the RED-DRIVE® or RED-RAM® safely.

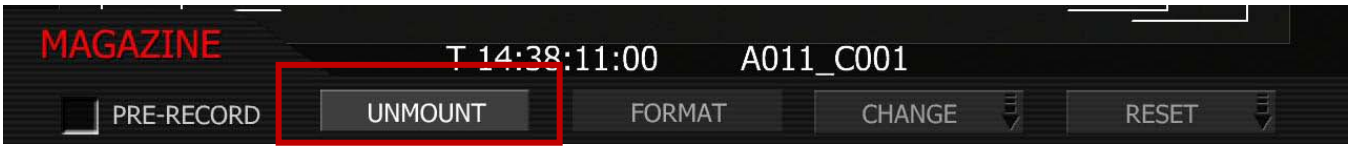
NOTE: The camera will display this message until media is removed or disconnected. Once media is removed or disconnected, the camera LCD will display NO DIGMAG and the lower left corner of the external monitor will display NONE ATTACHED in Red text until media is inserted.

Procedure B

1. Push the SYSTEM button.
2. Select MEDIA, push joystick down or in to enter.



3. Select UNMOUNT, push joystick down or in to enter.



4. Camera LCD will display MEDIA X and the lower left corner of all external monitors will display "SAFE TO REMOVE" in Red text. The White text with the counter and media name at the bottom edge of the display will disappear. You may now remove the CF or disconnect the RED-DRIVE® or RED-RAM® safely.

5. Push EXIT button to exit menu.

COPYING MEDIA

For use when media is connected directly to your computer. When copying media, it is recommended that you drag the complete .RDM folder on the digital magazine to the archive storage media. This copies all the media and metadata files. You won't need to copy the log and magazine profile files, but if you do so, it will do no harm.

CAUTION: REDFLASH 16GB Compact Flash cards transfer data at extremely high rates. RED recommends a high-performance, professional UDMA reader (from a reputable manufacturer) when downloading from 16GB CF Cards. Using inexpensive or low-quality readers may cause damage to the cards and/or corruption/loss of media files stored on them.

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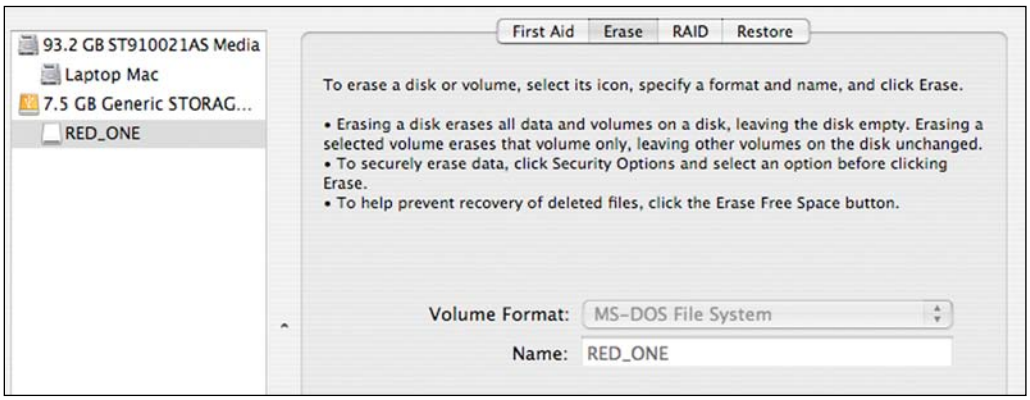
ERASING MEDIA USING MACINTOSH OS X

1. Connect the CF card via a CF card reader, or the RED-DRIVE® or RED-RAM® via a standard FireWire 400 / 800 cables.
2. Open the Disk Utility.



3. Carefully choose the drive from the list on the left.
4. Select the Erase tab.
5. Choose MS-DOS (FAT) as the Volume Format. You can add a Name if desired, however the camera will overwrite this.

IMPORTANT: BEFORE PERFORMING THE NEXT STEP, DOUBLECHECK THAT THIS IS THE CORRECT CF CARD OR RED-DRIVE® OR RED-RAM® THAT YOU WISH TO ERASE DATA FROM.

6. Select Erase. When the pop up window appears click on the Erase button.
7. When the media is erased, drag its icon to the trash can and physically disconnect it.
8. The media will need to be formatting by the camera before use. Refer to FORMATTING.

ERASING MEDIA USING WINDOWS

1. Connect the CF card via a CF card reader, or the RED-DRIVE® or RED-RAM® via a standard FireWire 400 / 800 cable or USB cable and power supply.
2. Open Windows Explorer (go to my computer icon, right click and select EXPLORE).
3. Double-click on the dive you wish to erase files from.
4. Select all the files on the drive you wish to erase.

IMPORTANT: BEFORE PERFORMING THE NEXT STEP, DOUBLECHECK THAT THIS IS THE CORRECT CF CARD OR RED-DRIVE® OR RED-RAM® THAT YOU WISH TO ERASE DATA FROM.

5. Press the “DELETE” key on the keyboard, select FILE > DELETE or right-click on selected file and choose DELETE. When the pop up window appears click YES.
6. The media will need to be formatting by the camera before use. Refer to FORMATTING MEDIA.

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MEDIA ERRORS

INCOMPATIBLE PROJECT/DIGIMAG

The following error may be displayed inserting a CF card or connecting a RED-DRIVE® or RED-RAM® (the camera LCD will display DISK INCOMPATIBLE):

When this error is present, the camera will not record and will display the following message at the top of the screen (the camera LCD will display INCOMPATIBLE_DIGMAG):

This may be caused by one of the following:

- The camera settings were changed while the media was removed and/or disconnected.
- The media was formatted on a different camera with different settings.

To resolve this error, connect the CF card or RED-DRIVE® /RED-RAM® to a computer and save the files from the media to the computer. Then you can either erase the CF card or RED-DRIVE® /RED-RAM® using the computer or format the CF card or RED-DRIVE® /RED-RAM® using the camera for which you want to use the media.

MAGAZINE FORMATTING FAILED

If when selecting FORMAT, camera LCD displays “FORMAT FAILED” and the external monitors display the message below.

Select OK and try again. If error continues, unmount media, install again and repeat format procedure.

OUT OF SPACE

Displays when 2 percent or less media is available for recording. Media is full and files should be downloaded and formatted or different formatted media should be connected.

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SD MEMORY CARD / USB MEMORY DEVICES

SD MEMORY CARD

The left front of the camera has a receptacle for an SD memory card (refer to CAMERA CONTROLS under CAMERA CONTROLS AND CONNECTORS). The SD memory card allows you to upload camera firmware updates (refer to APPENDIX A: UPGRADING CAMERA FIRMWARE) as well as save LOOK/USER settings (refer to APPENDIX C: SAVING LOOK/USER PROFILE). When an SD memory card is installed in the camera, the camera displays the SD CARD icon at the top of the EVF, LCD and all external monitors.

USB MEMORY DEVICE

A USB memory device may be plugged into the USB connector located on the right side of the camera (refer to CAMERA CONNECTORS under CAMERA CONTROLS AND CONNECTORS). You can use a USB memory device to upload camera firmware (refer to APPENDIX A: UPGRADING CAMERA FIRMWARE), however the camera CANNOT write to the USB memory device. When a USB memory device is plugged into the camera, the camera displays the USB icon at the top of the EVF, LCD and all external monitors.

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APPENDIX C: SAVING LOOK/USER PROFILE

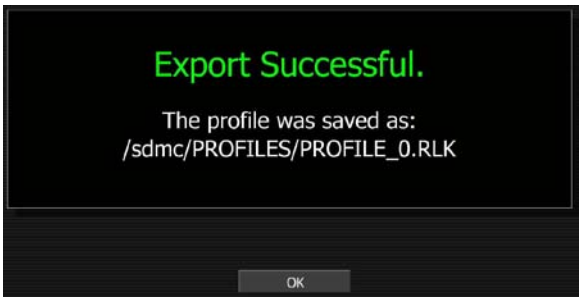
The following information lists the specific camera information stored when saving a LOOK or USER PROFILE file. Before attempting to EXPORT data, ensure that an SD card is inserted into the slot at the right front of the camera. LOOK and USER PROFILE information can easily be shared between cameras by IMPORTING data from the SD Card.

LOOK

EXPORT LOOK

To export LOOK information, perform the following:

1. Press the VIDEO menu button on the rear of the camera.
2. Select VIDEO menu.
3. Select LOOK menu.
4. Select EXPORT.
5. External monitors and camera LCD will confirm profile was exported successfully. External monitors will display filename for profile with the extension ".RLK".
6. Press Joystick once to acknowledge and clear the "export successful" confirmation message.



NOTE: You may edit LOOK filenames on a computer, but do not change its extension (.RLK) or the camera will not recognize it. It is recommended that you restrict file names to 12 characters as the camera cannot display the last 4 characters of a 16 character name.

NOTE: If a SD Card is not inserted into the slot at front left of camera, camera will display:

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When saving LOOK, the following monitor path color correction information is recorded:

COLOR menu: Saturation, Exposure, Brightness, Contrast

VIDEO menu: Master, Red Gain, Blue Gain, Green Gain

TONE menu: Enable, X and Y values for Black, Toe, Center, Knee, and White

IMPORT LOOK

To import LOOK information, perform the following:

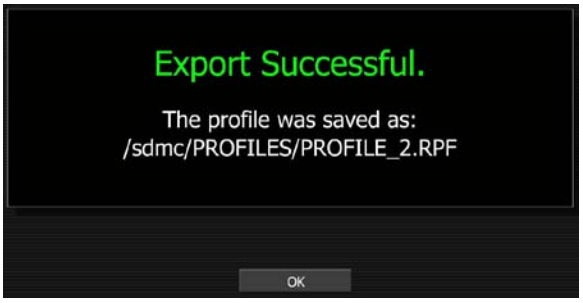
1. Press the VIDEO menu button on the rear of the camera.
2. Select VIDEO menu.
3. Select LOOK menu.
4. Select IMPORT and scroll to the desired file.
5. Press Joystick to confirm LOOK file selection.

USER PROFILE

EXPORT USER PROFILE

To export USER PROFILE, perform the following:

1. Press the SYSTEM menu button on the rear of the camera.
2. Select SETUP menu.
3. Select PREFERENCES menu.
4. Select USER PROFILE menu.
5. Select EXPORT.
6. External monitors and camera LCD will confirm profile was exported successfully. External monitors will display filename for profile with the extension ".RPF".
7. Press Joystick once to acknowledge and clear the "export successful" confirmation message.



NOTE: You may edit USER PROFILE filenames on a computer, but do not change its extension (.RFP) or the camera will not recognize it. It is recommended that you restrict file names to 12 characters as the camera cannot display the last 4 characters of a 16 character name.

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NOTE: If SD Card is not inserted under left front of camera, camera will display:

When saving USER PROFILE, the following camera configuration information is recorded:

VIEWFINDER menu:	Color: Enable and overly type setting Meters: Enable and meter type setting Zebras: Enable and Zebra 1, 2 Hi / Lo settings
SOUND menu:	Record enable and Line / Mic setting
KEYMAP menu:	Enable and User Key settings
GPIO menu:	Enable and GPIO settings
PLAYBACK menu:	Settings
DISPLAY menu:	Enables and Shutter display settings
MONITOR menu:	Settings
FRAME GUIDE menu:	Enable and settings, including user defined Action and Title areas

IMPORT USER PROFILE

To import USER PROFILE, perform the following:

1. Press the SYSTEM menu button on the rear of the camera.
2. Select SETUP menu.
3. Select PREFERENCES menu.
4. Select USER PROFILE menu.
5. Select IMPORT and scroll to the desired file.
6. Press Joystick to confirm USER PROFILE file selection.

DATA NOT SAVED DURING EXPORT

The data that is NOT saved when saving LOOK or USER PROFILE is:

- Project Time Base
- Resolution
- Quality
- Timecode Settings
- White Balance
- ISO
- Shutter Speed
- Varispeed
- Audio Levels

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APPENDIX D: INPUT/OUTPUT CONNECTORS

RIGHT SIDE OF CAMERA

A	Headphone	**H**	USB-2 (computer)
B	Program HD-SDI (A)	**I**	Audio Monitor
C	Program HD-SDI (B)	**J**	Timecode
D	Preview HD-SDI	**K**	Audio Ch 1 – 4 (1-2 Upper Left - Right, 3-4 Lower Left - Right)
E	Video Genlock	**L**	RED™ EVF
E	HDMI Out	**M**	RED™ LCD
G	USB-2 (peripheral)	**N**	Aux / RS232

TIME CODE INPUT / OUTPUT

This connector supports SMPTE Timecode input and output. Pins 2 and 3 may be used together to receive a balance SMPTE 12M serial time code input, or pin 2 may be used by itself (leave pin 3 open) to receive a single-ended SMPTE 12M serial time code input. Pin 5 is time code output.

View into camera Timecode connector

Mating Connector: LEMO FGG.0B.305.CLAD42Z

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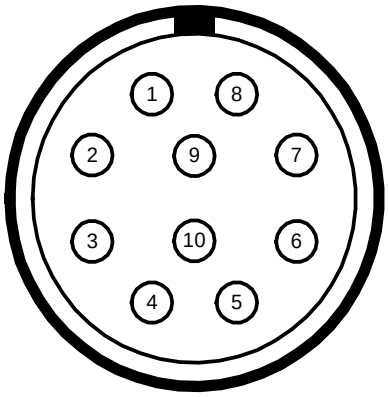
Pin:	Signal	Description	Direction
1	Ground	Camera ground	-
2	TIMECODE_IN_P	Serial timecode input, positive	In
3	TIMECODE_IN_N	Serial timecode input, negative	In
4	-	- No connect -	-
5	TIMECODE_OUT	Serial timecode output	Out

NOTE: Pin 4 is a not used. Do not tie-in to ground.

AUX / RS232 PORT

The Auxiliary / RS232 port provides up to 500mA of regulated +12V power to motorized 2/3" B4 mount lenses. The two inputs labeled SW1 and SW2 are fixed function inputs that activate Record Start / Stop and Playback of the last recorded clip respectively. These are typically triggered by the B4 lens, or by a controller such as Preston MDR-2 using an appropriate adaptor cable.

WARNING: Do not attempt to power a cinema lens motor from this connector. Depending on your maximum current requirement, extract power from one of the two Auxiliary Power outputs, or the D-Tap connector on the battery V-Plate.



View into camera Auxiliary / RS232 connector

Mating connector: LEMO FHG.1B.310.CLAD62Z

Pin:	Signal	Description	Direction
1	GND	Camera ground	--
2	RTX	RS232 Transmit Data	Out
3	+12V	Regulated 12V output, 500mA max.	Out
4	-	-- Reserved: do not connect --	--
5	SW1	"W Reserved: do not connect	In
6	-	-- Reserved: do not connect --	--
7	SW2	"W Reserved: do not connect -a	In
8	RRX	RS232 Receive Data	In
9	-	-- Reserved: do not connect --	--
10	-	-- Reserved: do not connect --	--

NOTE: Pins 4, 6, 9 and 10 are reserved for future use.

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VIEWFINDER (RED EVF) INTERFACE

The RED™ EVF interface is a custom digital video and power interconnection between the camera and a RED™ EVF. Due to the requirement for absolute data integrity that requires custom cable construction, the pin-out of this interface is not published.

Contact RED™ technical support for available RED™ EVF cable lengths.

MONITOR (RED LCD) INTERFACE

The RED™ LCD interface is a custom digital video and power interconnection between the camera and a RED™ LCD. Due to the requirement for absolute data integrity that requires custom cable construction, the pin-out of this interface is not published.

Contact RED™ technical support for available RED™ LCD cable lengths.

NOTE: The Aux/RS232, RED™ EVF and RED™ LCD connectors use the same shell size. Do not attempt to force fit a 10-pin Aux/RS232 cables into a 16-pin RED™ EVF or RED™ LCD connector, or force fit a 16-pin RED™ EVF or RED™ LCD cable into a 10-pin Aux/RS232 connector.

LINE LEVEL / MICROPHONE LEVEL AUDIO INPUTS

A three-pin mini-XLR connector is provided for each of the camera's Line / Microphone inputs. Audio is recorded at 24-bit 48KHz, which provides high audio fidelity and wide dynamic range. The Line Level and Microphone Level analog audio input signals are routed via a high quality A/D and pre-amplifier, whose gain stage may be controlled using the Input Level control to achieve the desired audio reference / recording level.

To assist with audio operating reference level setup, the camera provides a color-coded Peak Level meter with 0dBu (-20dbFS) Witness Mark in the Graphical User Interface.

Peak Level meter range is –34dBu to +20dBu (-54dBFS to 0dBFS) and provides clip indication.

Microphone / Line Audio Input Signals (3-pin mini-XLR) Connector

Pin:	Signal	Description	Direction
1	GROUND	Camera ground	--
2	IN+	Mic/Line input (+48V phantom power)	In
3	IN-	Mic/Line input (+48V phantom power)	In

Line Level Audio Inputs

Line Level audio inputs are designed to operate at unity gain (0dB **Input Level**); therefore an appropriate line output level should be established by your production mixer or other signal source.

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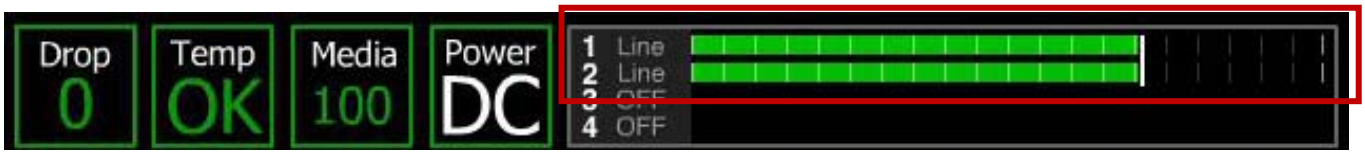
Reference signal level for Line inputs is 0dBu / 0.775 volts RMS / -20dBFS when operating at 0dB **Input Level**. The maximum input signal that can be applied before the onset of input signal clipping is +18dBu / 6.5 volts RMS / - 2dBFS. This provides a guaranteed minimum of 18dB of input signal headroom above reference, in combination with maximum Signal to Noise Ratio for the resulting 24-bit digital recording.



Peak Level Meter response to 0dBu (-20dBFS) Reference Level

NOTE: If sending the camera a TAPE level line output (-10dBu), adjust the Input Level to +10dB.

MICROPHONE LEVEL AUDIO INPUTS

The 24-bit digital recording level of each Microphone Level input is affected by the sensitivity of the attached microphone and the **Input Level** setting applied to each of the audio pre-amplifiers.

Pre-amplifier **Input Level** range is +36dB to +54dB, with a default value of +36dB.

Choose an **Input Level** that aligns the input signal to the reference line drawn vertically through the camera's PPM, which indicates 0dBu. This setting provides a guaranteed minimum of 18dB of input signal headroom above reference, in combination with maximum Signal to Noise Ratio for the resulting 24-bit digital recording.

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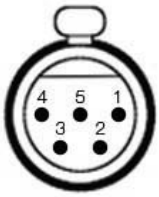
NOTE: The above notes apply to cameras configured with Rev B audio hardware. Cameras shipped prior to Sept 15 2008 (and not yet upgraded to Rev B) were supplied with Rev A audio hardware, with the following operational restrictions.

- **You should always use a RED DIGITAL CINEMA™ XLR to mini-XLR adaptor cable, which provides a -4dB pad, to achieve an appropriate input signal level.**
- **The 48 V Phantom Power source is automatically disabled on each power cycle.**
- **Low sensitivity phantom powered microphones may exhibit excessive noise, so consider an external +48V phantom power source, or use a dynamic microphone.**
- **Input Level range for Microphone Inputs is +36dB to +54dB.**
- **Input Level for Line Level inputs may not be adjusted.**

LINE AUDIO OUTPUT

A 5-pin mini-XLR connector supports two channels of balanced analog audio output.

The camera's four audio channels may be monitored in user selectable pairs (either channels 1 & 2 or 3 & 4 or a quad mix of both pairs) based on the 'Headphone MIX' parameter.



Line Audio Output Signals (5-pin mini-XLR) Connector

Pin:	Signal	Description	Direction
1	LEFT+	Line output, left channel	Out
2	GROUND	Camera Ground	-
3	LEFT-	Line output, left channel	Out
4	RIGHT+	Line output, right channel	Out
5	RIGHT-	Line output, right channel	Out

NOTE: Maximum output level for the balanced analog audio outputs are +8dBu.

NOTE: The above notes apply to cameras configured with Rev B audio hardware. Cameras shipped prior to Sept 15 2008 (and not yet upgraded to Rev B) were supplied with Rev A audio hardware, with the following operational restrictions. ***The Camera Ground connection on Pin 2 should be considered unreliable / floating*****.**

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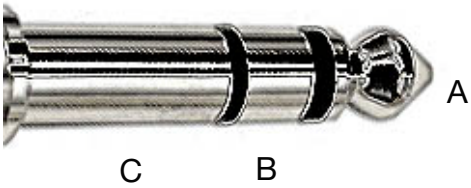
HEADPHONE AUDIO OUTPUT

A 3.5mm stereo phone jack provides two channels of adjustable level audio to headphones.



Headphone Output Connector

Pin:	Signal	Description	Direction
A (TIP)	LEFT	Left channel audio	Out
B (RING)	RIGHT	Right channel audio	Out
C (SLEEVE)	GND	Camera ground	--

The camera's four audio channels may be monitored in pairs: either 1L - 2R or 3L - 4 R or a quad mix of 1+3L – 2+4R based on the MIX parameter, and the Volume adjusted as follows.

Volume: (master volume) Adjusts headphone volume equally for Left and Right outputs.

Range is -18dB to 0dB in 1dB steps. Default is -9dB.

Volume Left: Trims volume for Left output. E.g. Volume –6dB + Volume Left +1dB = -5dB

Range is -12dB to + 6dB in 1dB steps. Default is 0dB.

Volume Right: Trims volume for Right output. E.g. Volume –6dB + Volume Right -1dB = -7dB

Range is -12dB to + 6dB in 1dB steps. Default is 0dB.

NOTE: The above notes apply to cameras configured with Rev B audio hardware. Cameras shipped prior to Sept 15 2008 (and not yet upgraded to Rev B) were supplied with Rev A audio hardware, with the following operational restrictions.

- **For maximum output signal quality, only use high impedance headphones.**

USB-2 MASTER

This port permits the camera to operate as the Slave camera in a Master / Slave camera pair. To establish control, plug the square end of a USB-2 cable into the lower USB port of the RED ONE™ camera to act as a Slave, and the rectangular end of a USB-2 cable into the upper USB port of the RED ONE™ camera to act as the Master. Then power cycle both cameras. On boot up the two cameras will automatically establish Master / Slave mode.

Once connected using the USB cable, User Interface commands and remote triggers received by the Master camera are transmitted to the Slave camera.

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SUPPORTED COMMANDS

Supported commands include:

PROJECT	SENSOR	TRANSPORT
TIME BASE QUALITY RESOLUTION	ISO (SENSITIVITY) COLOR TEMP TINT GENLOCK ENABLE SHUTTER MODE SHUTTER SPEED SHUTTER SYNCRO SHUTTER PHASE	RECORD GPI RECORD TRIGGER PRE-RECORD PLAY FAST FORWARD FAST REVERSE NEXT CLIP PREV CLIP EXIT

NOTE: When not used in this mode, the GUI status of the Slave camera will update to reflect new values transmitted from the Master camera, but the GUI menus do not follow.

NOTE: When used in Master / Slave mode, each of the cameras should still be provided with Genlock (tri-level sync) and External Timecode signals.

NOTE: Media formatting must be performed independently for each camera. The Master / Slave mode will not format the media attached to two cameras at the same time.

USB-2 SLAVE

This port permits the camera to operate as the Slave camera in a Master / Slave camera pair. To establish control, plug the square end of a USB-2 cable into the lower USB port of the RED ONE™ camera to act as a Slave, and the rectangular end of a USB-2 cable into the upper USB port of the RED ONE™ camera to act as the Master. Then power cycle both cameras. On boot up the two cameras will automatically establish Master / Slave mode.

GENLOCK INPUT

A single DIN 1.0/2.3 coaxial connector accepts a Tri-Level Sync signal for video genlocking.

When operating at 23.98, 24.00, 25.00 or 29.97 Project Time Bases, set the genlock signal generator to SMPTE 274 progressive scan format, at the same frame rate as the project TIME BASE. Do not use PsF or interlaced signals.

Using an Ambient ACL202CT, set dip switches as follows: D = down, U = up, R = right, L = left

NOTE: After changing any of the above dip switch settings, power cycle the ACL202CT unit.

Frame Rate	Dip Switch Settings
23.98 fps	1D, 2U, 3D, 4D, 5U, 6U, 7U, AR, BR
24.00 fps	1D, 2U, 3U, 4D, 5U, 6U, 7U, AR, BR
25.00 fps	1U, 2U, 3U, 4D, 5U, 6U, 7U, AR, BR
29.97 fps	1D, 2D, 3U, 4D, 5U, 6U, 7U, AR, BR

When operating at 50.00 or 59.94 Project Time Bases, set the genlock signal generator to SMPTE 296 progressive scan format, at the same frame rate as the project TIME BASE.

Using an Ambient ACL202CT, set dip switches as follows:

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D = Down, U = up, R = right, L = left

Frame Rate	Dip Switch Settings
50.00 fps	- settings not verified at this time -
59.94 fps	1D, 2D, 3U, 4D, 5U, 6D, 7U, AR, BR

Connect the camera Genlock input to the ACL202CT VIDEO/WORD output using a BNC cable.

Pin:	Signal	Description	Direction
Center	GENLOCK	SMPTE 274M-2005 Tri-level Sync	In
Shield/Screen	GROUND	Camera ground	--

Genlock Input Signal

PROGRAM (DUAL-LINK) HD-SDI

Two DIN 1.0/2.3 connectors labeled HD-SDI support progressive scan HD Program signals.

Pin:	Signal	Description	Direction
Center	HD-SDI	SMPTE-292M HD-SDI	Out
Shield/Screen	GROUND	Camera ground	--

Program HD-SDI Output (each connector)

In record, the Program output provides two independent outputs of 1280 x 720p 10-bit 4:2:2 progressive scan video, at 59.94 or 50.00 Hz.

In playback, if PLAYBACK is set to 720p, the Program output provides two independent outputs of 1280 x 720p 10-bit 4:2:2 progressive scan video, at 59.94 or 50.00 Hz.

If PLAYBACK is set to 1080p, the Program output provides a 1920 x 1080p 10-bit 4:4:4 RGB progressive scan video signals at 23.98, 24.00, 25.00, or 29.97 Hz.

NOTE: The Program HD-SDI output provides 4 channels of embedded audio plus timecode.

NOTE: When in Varispeed, the Program output will be blanked.

NOTE: RED ONE™ outputs progressive scan video, it does not support 1080PsF format.

NOTE: If an ANAMORPHIC record mode has been selected (2K ANA, 3K ANA, 4K ANA) the video visible on the Program HD-SDI output has been stretched 2:1 to illustrate the final 2.40:1 aspect ratio of the final image projection. The actual recorded image is 1.2:1 aspect.

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PREVIEW HD-SDI

A single DIN 1.0/2.3 connector labeled PVW provides a high definition video preview output.

Pin:	Signal	Description	Direction
Center	HD-SDI	SMPTE-292M HD-SDI	Out
Shield/Screen	GROUND	Camera ground	--

Preview HD-SDI Output

NOTE: If PREVIEW type is set to MENUS (DVI) the PVW output is disabled.

In record, the Preview output provides a 1280 x 720p 10-bit 4:2:2 progressive scan video, at 59.94 or 50.00 Hz.

In playback, if PLAYBACK is set to 720p, the Preview output provides a 1280 x 720p 10-bit 4:2:2 progressive scan video, at 59.94 or 50.00 Hz.

If PLAYBACK is set to 1080p, the Preview output provides a 1920 x 1080p 10-bit 4:2:2 progressive scan video signals at 23.98, 24.00, 25.00, or 29.97 Hz.

NOTE: the Preview HD-SDI output provides 4 channels of embedded audio plus timecode.

NOTE: The embedded timecode value is equal to the Time Code value of the recorded frame previewed by the PVW output. I.e. the timecode sequence will be discontinuous.

NOTE: RED ONE™ outputs progressive scan video, it does not support 1080PsF format.

NOTE: If an ANAMORPHIC record mode has been selected (2K ANA, 3K ANA, 4K ANA) the video visible on the Preview HD-SDI output has been stretched 2:1 to illustrate the final 2.40:1 aspect ratio of the final image projection. The actual recorded image is 1.2:1 aspect.

HDMI

An HDMI Type A connector provides an HDTV compatible 720p video and audio signal, or a DVI / SXGA compatible 1280 x 848 progressive scan video signal, at 50.00 or 59.94 Hz.

Selection between these two modes is made in SYSTEM / MONITOR / PREVIEW. The default setting is VIDEO (720p). In this mode, the HDMI output replicates the HD Preview video output.

The alternative mode is MENUS (DVI). In this mode, the HDMI output is compatible with most DVI based SXGA or higher resolution computer monitors. Use is as an external Viewfinder.

NOTE: HDMI output is not active when PLAYBACK is set to 1080p.i.e. no output is available when the RED-ONE camera is placed into playback.

NOTE: If an ANAMORPHIC record mode has been selected (2K ANA, 3K ANA, 4K ANA) the video visible on the HDMI output has been stretched 2:1 to illustrate the final 2.40:1 aspect ratio of the final image projection. The actual recorded image is 1.2:1 aspect.

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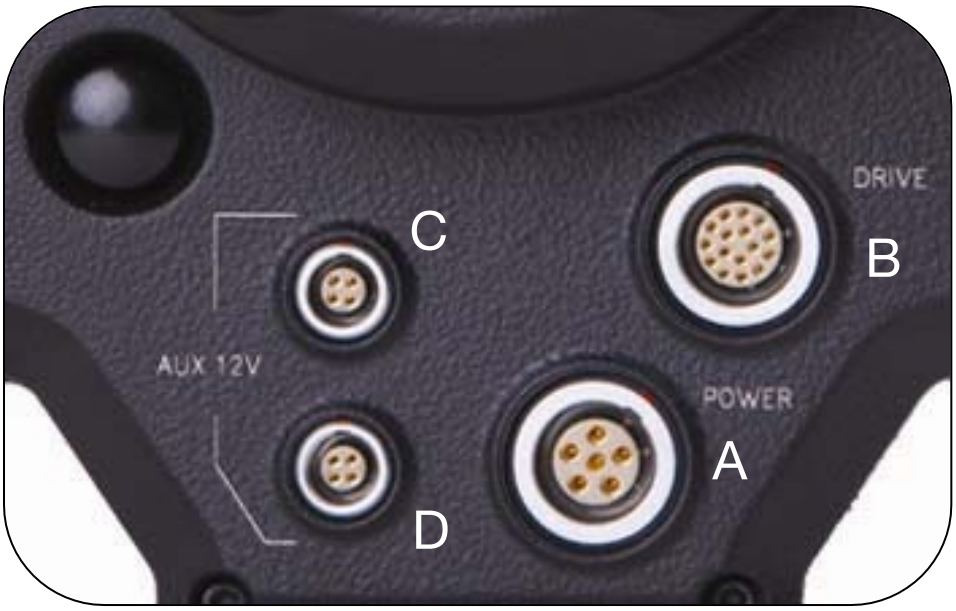
REAR OF CAMERA



A	Camera DC Power Input 11.5 – 17V	**C**	Aux Power / GPIO A
B	e-SATA Interface (to RED-DRIVE or RED-RAM digital magazine)	**D**	Aux Power / GPIO B

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DC POWER INPUT

The POWER input connector (A) accepts a DC voltage between +11.5 and +17V DC. When used with a RED-BRICK® 140 battery, the camera also receives battery status information. The power input is protected against reverse-polarity connection, ESD, under voltage, and over current.

View into camera Power Input connector

Mating Connector: LEMO FGG.2B.306.CLAD62Z

Pin	Signal	Description
1	+VBATT	Power input, +11.5 to +17VDC
2		
3	GROUND	Power Return (Camera Ground)
4		
5	SCL_BATT	Battery pack I2C bus clock
6	SDA_BATT	Battery pack I2C bus bi-directional data

WARNING: It is very important that both pairs of +VBATT and GROUND pins are wired up. DO NOT fabricate power cables with just one each of +VBATT and GROUND pins wired, as this will cause damage to the camera's power supply; this is not covered by Warranty.

DRIVE INTERFACE

The Drive Interface (B) is a custom e-SATA and power connection for RED-DRIVE® and RED-RAM® media. Due to the requirement for absolute data integrity that requires custom cable construction, the pin-out of this interface is not published.

Contact RED™ technical support for details of available drive interface cable lengths.

NOTE: The Drive Interface and D.C Power Input connectors use the same connector shell size. It is very important you do not try to force a 16-pin Drive Interface cable into the 6-pin D.C Power connector, or 6-pin D.C Power cable into the 16-pin Drive Interface connector.

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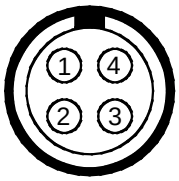
AUXILIARY POWER OUTPUTS

The camera provides two auxiliary power output connectors (C, D) on its back panel. Each output supplies un-regulated +11.5 to 17V battery pass-through power between pins 1 and 4. Maximum sustained current draw is 1.5 Amp per output. These power output pins are over-current protected, and are only activated by the camera on boot up. If the over-current circuits trip, power cycle the camera to re-activate the outputs.



View into camera Auxiliary Power Output connector

Mating Connector: LEMO FGG.0B.304.CLAD42Z

Pin	Signal	Description
1	GROUND	Auxiliary power return (Camera Ground)
2	GPI	Input (Trigger)
3	GPO	Tally
4	+VOUT	Auxiliary power output

Each connector also provides a low voltage trigger input (GPI) and tally output (GPO) on pins 2 and 3, whose functions can be configured in the GPIO preferences menu. The upper connector contains GPI A and GPO A, the lower connector contains GPO A and GPO B. The default setting for both GPI A and B is Record Start/Stop and for GPO A and B is Record Tally.

1. To activate a GPI trigger, momentarily short pin 2 to 1.
2. When active, the GPO tallies present 3.3 V @ 0.04 amps maximum between pins 1 and 3.

WARNING: If creating a GPI trigger cable it is very important not to short pin 4 to pin 3, as this could cause damage to the camera's power supply; this is not covered by Warranty.

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APPENDIX E: POST PRODUCTION

RED™ workflow is quite easy to understand, especially if you have experience with photographic RAW image processing, or shoot 16mm or 35mm film followed by a telecine transfer to a non-linear video editor and on-line conform.

RAW data has a wide dynamic range and color space, so you can freely change the white balance of the footage, adjust exposure and alter highlight and shadow tonality in post-production.

The RED ONE™ camera records RAW sensor data using wavelet based REDCODE™ RAW compression to a CF card, or RED-DRIVE® digital magazine. The compressed RAW data is then transferred from the digital media via FireWire or USB-2 to a Macintosh OSX workstation running RED Alert! ® or REDCINE®, or to a Windows XP workstation running REDCIINE® post production software. These applications do not directly edit or conform the RAW data themselves, but prepare the RAW data for editing and conforming by RGB domain post-production software applications.

If you are using CF media, copy the clips onto the workstation's hard drive. If you are recording to a RED-DRIVE, it can be directly mounted as an external drive using FireWire if desired which eliminates the media copy step.

In film processing terms, RED Alert! ® and REDCINE® act as an integrated film laboratory, telecine, and one light color corrector. They convert recorded REDCODE™ RAW data to RGB video, and provide basic one light image processing and color correction. Using REDCINE® footage can also be cropped, resized, or repositioned. These functions lessen the amount of time required for color correction or re-framing of shots after the final cut has been completed.

RED Alert! ® can generate QuickTime reference movies suitable for use in dailies applications, and export a sequence of 2K or 4K resolution RGB image files as TIFF or DPX files for DI use.

REDCINE® can also encode 4K or 2K RAW footage into a variety of uncompressed RGB and compressed 4:2:2 video formats. Provided the appropriate QuickTime codec's are available on the host computer workstation, compressed video choices include ProRes, DNxHD, DV100 and M-JPEG QuickTime movies at 1080p or 720p resolution. For film out, multi-media or special effects applications, REDCINE® may export a sequence of 2K or 4K image files in TIFF, Open EXR, DPX, JPEG, or Photoshop PSD file formats.

Creating 4:2:2 at 1080p or 720p resolution QuickTime movies provides compatibility with the majority of non-linear editing systems.

Depending on the QuickTime movie resolution, material may be taken directly to a broadcast delivery videotape format, or after the editorial decisions have been made, video can be conformed at full image resolution by replacing the lower resolution edit proxy (e.g. 720p at 8 bit quality) with a high resolution 4K, 2K or 1080p image file.

SOFTWARE TOOLS

RED DIGITAL CINEMA™ provides a variety of software tools to aid postproduction. For proper color rendition using a Macintosh OSX computer, your monitor should be set to Adobe 1998, or to SMPTE-C display profile. If you use the HD Cinema display profile, adjust the gamma to 2.2.

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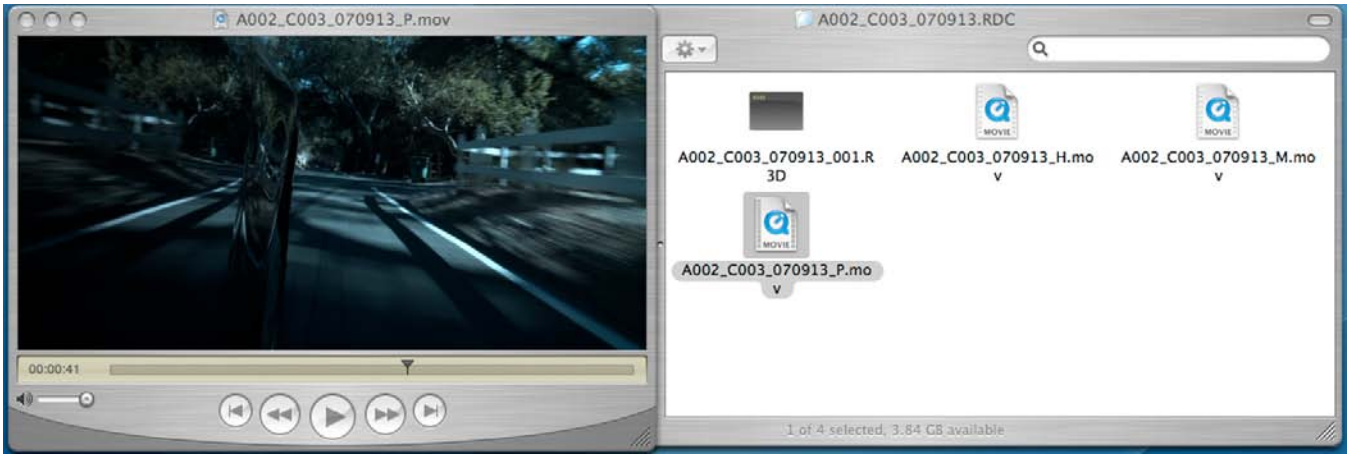
RED™ QUICKTIME CODEC

(Use V3.9.0 or higher for Build 21 footage)

NOTE: V3.9.0 is currently not compatible with Build 21 camera color matrix – therefore camera footage should be white balanced before editing or other image processing)

The RED™ QuickTime codec permits REDCODE™ RAW footage to be displayed on Macintosh OSX personal computers running QuickTime Player V7.4.5 or higher.



Render performance of computers will vary based on CPU speed, number of cores and disk speed. The RED ONE™ camera, RED Alert! ® and REDCINE® offer QuickTime reference movies at _F full, _H half, _M medium and _P proxy resolution. Choose the resolution that is most appropriate to your requirement for playback frame rate on your specific computer. If the footage is to be viewed at distant location – e.g. dailies - export the footage as a standalone movie using MPEG-4 or other low bit rate codec.

NOTE: The QuickTime reference movies work by partially decoding the wavelet data, which means that the original RAW recording must be available on a drive accessible to your computer. For remote use, conversion to a standalone movie avoids this issue.

NOTE: If an ANAMORPHIC record mode has been selected (2K ANA, 3K ANA, 4K ANA) any video captured from the camera HD-SDI outputs has been stretched 2:1 to illustrate the final 2.40:1 aspect ratio of the final image projection. The actual recorded image is 1.2:1 aspect, and the QuickTime reference movies will reflect that aspect ratio.

RED ALERT! ®

(Use Build 21 / Version 21.0.0 or higher for Build 21 footage)

RED Alert! ® is available for Intel based Mac OSX computers only.

In addition to performing white balance and one light color correction, RED Alert! ® can export a clip at 4K and 2K resolution via 10-bit DPX or 16-bit TIFF files, or create color corrected QuickTime reference movies for editing or other uses by applications that use the RED™ QuickTime Codec. As RED ONE™ shoots progressive scan images, all QuickTime movies created by RED Alert! ® will also be progressive scan.

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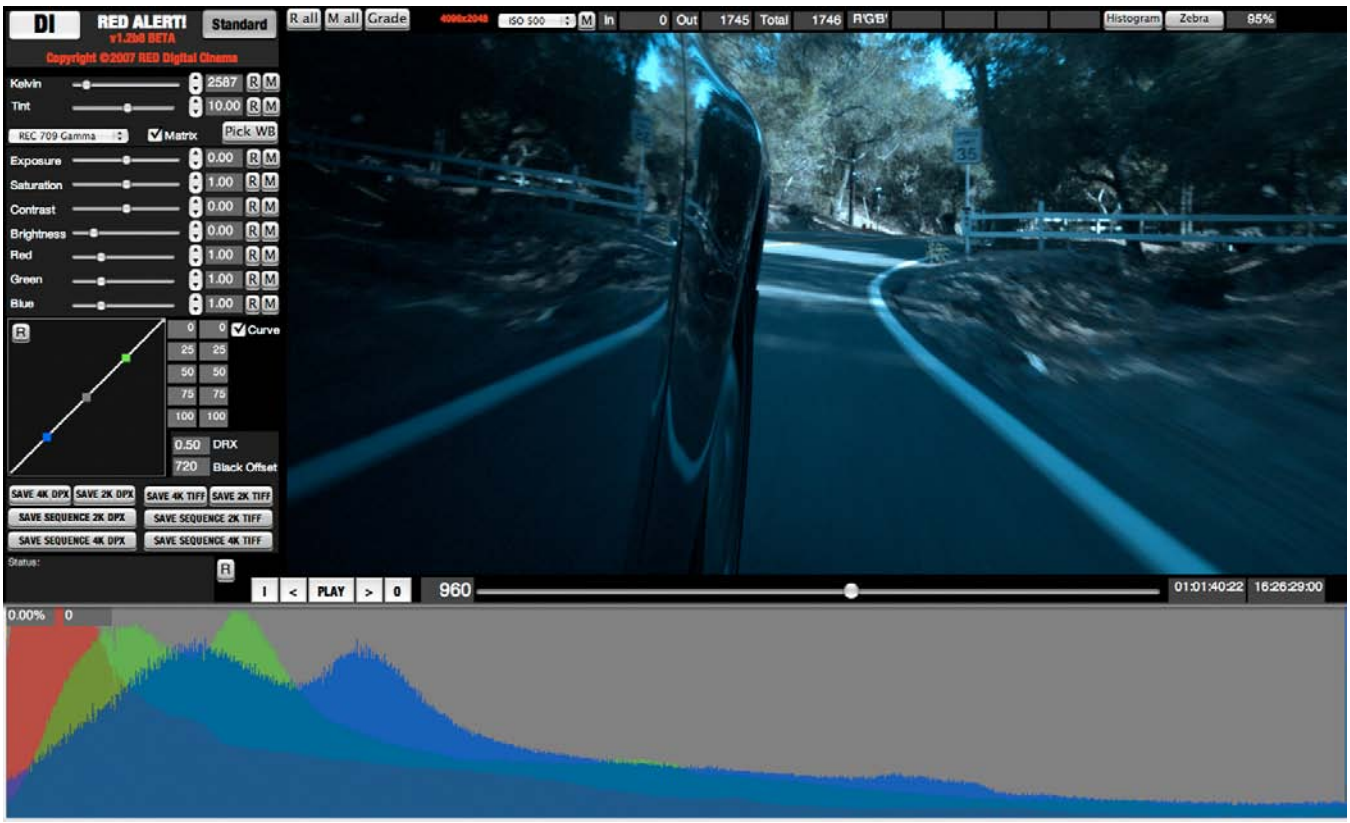
The upper panel in the display provides information about the levels in the selected clip. Exposure and White Balance may be altered, R G and B digital values may be sampled from the image, and a Zebra exposure indicator can be selected.

NOTE: If an ANAMORPHIC record mode has been selected (2K ANA, 3K ANA, 4K ANA) any video captured from the camera HD-SDI outputs has been stretched 2:1 to illustrate the final 2.40:1 aspect ratio of the final image projection. The actual recorded image is 1.2:1 aspect, and the .R3D files decoded by RED Alert! will reflect that aspect ratio.



A composite RGB histogram is available, which appears below the main display area. This provides a view of the exposure distribution for the Red, Green and Blue channels.

A one light color correction panel permits adjustment of Color Temperature, Saturation, Contrast, Brightness, Red Gain, Green Gain and Blue Gain. These parameters match those available in the RED ONE™ camera.

NOTE: The range and resolution of these color correction parameters is greater than those available in the camera UI. This reflects the need for greater range and precision for the controls in post-production than for monitoring images during image capture.

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RED Alert! ® reads the metadata recorded for each color correction parameter by the RED ONE™ camera. Values can be adjusted by dragging the appropriate slider, or by entering a new numeric value in its box. Clicking R will reset the value back to its default setting. Clicking M will restore the recorded metadata value. R ALL or M ALL will affect all parameters, GRADE will revert all values back to those last used in your color grade.

Presets may be saved in RED Alert! ® to allow a consistent “look” to be established across multiple clips, or alternative color treatments may be made for the same clip.

NOTE: Looks may be transferred to the camera by entering RED Alert! ® values into the UI.

The image may be displayed in a variety of color spaces. For most applications, select REDspace. For special effects select Linear, and for Digital Intermediates select a Log.

The timeline control plays the selected clip and marks IN and an OUT point, between which the TIFF or DPX file sequence will be extracted. For QuickTime reference movies the entire clip will be referenced, as trimming will be performed downstream. If a single frame is to be exported, push Save 4K or 2K DPX, or 4K or 2K TIFF. If a sequence of frames is desired, push Save Sequence 4K or 2K DPX, or 4K or 2K TIFFS.

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REDCINE®

(Use V20.0.0 or higher for Build 20 footage)

REDCINE® is available on Intel based Mac OSX and Windows XP platforms. In addition to performing white balance and one light color correction, REDCINE® provides image pan/scan, crop and scaling operations. The application can export either a single clip, or a sequence of clips, as 4K or 2K resolution 10-bit DPX or 16-bit TIFF files. REDCINE® can also render clips as standalone QuickTime movies using specific HD video codecs. As RED ONE™ shoots progressive scan images, all QuickTime movies created by REDCINE® are also progressive scan.

Tutorial video as are available at the following locations:

- **http://red.cachefly.net/redcine/interface_overview.mov**
- **http://red.cachefly.net/redcine/project_settings.mov**
- **http://red.cachefly.net/redcine/shot_settings.mov**
- **http://red.cachefly.net/redcine/color_settings.mov**
- **http://red.cachefly.net/redcine/output_settings.mov**
- **http://red.cachefly.net/redcine/library.mov**

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APPENDIX F: POSSIBLE ERRORS, ISSUES AND SOLUTIONS

For errors or issues beyond those listed below, please contact support through our web site at **www.red.com/support**.

A. Camera shuts down upon movement - Battery is not seated properly to the battery plate. Disengage and reengage the RED-BRICK® to the BATTERY PLATE.

B. **Error Message: "Black Shading Failed"** - Check recording media/connections and reattempt Black Shading. Refer to BLACK SHADING ERRORS in BLACK SHADING under MAINTENANCE in SETUP under SYSTEM MENU CONTROLS.

C. The image looks soft - Re-adjust back focus and make certain the lens is properly collimated. Refer to BACK FOCUS ADJUSTMENT under BASIC OPERATION.

D. **Error Message: "Record Error: NO_DIGMAG"** - No media is being detected. Reattempt to mount, check connection and CF pins in Module, power cycle, or try another media.

E. **Error Message: "Valid Settings"** - Establish the maximum PROJECT settings for the media you are using and change the settings accordingly. Refer to PROJECT SETUP under BASIC OPERATION.

F. **Error Message: "Record Error: RE: INCOMPATIBLE_DIGMAG"** - Make sure that you establish the original time base for the media's project or reformat media. Refer to MEDIA ERRORS under APPENDIX B: MANAGING DIGITAL MEDIA.

G. **Error Message: "The Magazine Formatting Failed - No digmag found. Nothing to format"** - The magazine was not recognized during formatting, check your media and connections. Refer to APPENDIX B: MANAGING DIGITAL MEDIA.

H. **Error Message: "The Magazine Formatting Failed - The magazine isn't fast enough to support the current project. Please change the project settings before formatting this media."** - Check to make sure you have the valid PROJECT settings for that particular piece of media. Refer to PROJECT SETUP under BASIC OPERATION.

I. **Error Message: "WARNING! Media removed prior Unmount Data Integrity Risk"** - Media needs to be removed properly. Use the dual key command UNDO+EXIT, or the menu option SYSTEM > MEDIA > UNMOUNT. Refer to APPENDIX B: MANAGING DIGITAL MEDIA.

J. **Error Message: "The CF Card has not been Speed Verified for use on this camera. Only 2k resolution recordings are possible. There is a unquantifiable risk of drop frames"** - This may occur if you are using Non-RED CF cards and/or you have a damaged CF card.

K. **Error Message: "Record Error: NO_MEDIA_PATH"** - When you have a card in the camera that is reading unformatted and you should continue by formatting the media. Refer to APPENDIX B: MANAGING DIGITAL MEDIA.

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SENSOR MENU BUTTON

FLOWCHART CONCEPT XL FILMS LTD.

DEFAULT VALUES ARE DISPLAYED IN WHITE

SENSOR — SENSITIVITY Menu
- **SENSITIVITY** — SENSITIVITY: ISO 320 (100 TO 2000 ISO)

SENSOR — COLOR TEMP Menu
- **COLOR TEMP** — AUTO WB
- **COLOR TEMP** — TUNGSTEN (3200° KELVIN)
- **COLOR TEMP** — DAYLIGHT (5600° KELVIN)
- **COLOR TEMP** — MANUAL WB: 5600°k (1500° TO 10000° KELVIN)
- **COLOR TEMP** — TINT: 0 (MAGENTA OR GREEN -25 TO +25)

SENSOR — SHUTTER Menu
- **SHUTTER** — GENLOCK ✓
- **SHUTTER** — MODE: NORMAL (NORMAL, SYNCHRO, RELATIVE)
- **SHUTTER** — SPEED: 1/48 SEC (1 SEC TO 1/2000 SEC)
- **SHUTTER** — SYNCHRO: 50 (10 TO 90)
- **SHUTTER** — PHASE: 0° (-45° TO +45°)

SENSOR — VARISPEED Menu
- **VARISPEED** — VARISPEED ✓
- **VARISPEED** — *RAMP: < Disabled > (✓ = ON-RECORD, ON-EVENT; * Automatically selects VARISPEED when RAMP is checked)
- **VARISPEED** — FRAME RATE: 12 fps (2K: 1 TO 120 fps, 3K: 1 TO 60 fps, 4K: 1 TO 30 fps, 4.5K: 1 TO 30 fps)
- **VARISPEED** — TIME: 5 SEC (1 TO 100 SEC)
- **VARISPEED** — END / RATE: 25 fps (2K: 1 TO 120 fps, 3K: 1 TO 60 fps, 4K: 1 TO 30 fps, 4.5K: 1 TO 30 fps)

SENSOR — TIME LAPSE Menu
- **TIMELAPSE** — ENABLE: < Disabled > (✓ = INTERVAL, ONE-SHOT)
- **TIMELAPSE** — SPEED: 1/48 SEC (1 TO 1/2000 SEC)
- **TIMELAPSE** — STEP PRINT: 1 FRAMES (1 TO 10 FRAMES)
- **TIMELAPSE** — INTERVAL: 5 SEC (1 TO 1024 SEC)
- **TIMELAPSE** — BURST TYPE: REPEATED (UNIQUE, REPEATED)

VIDEO MENU BUTTON

A/V MENU — VIEW Menu
- **VIEW** — VIEW: REDspace (RAW, REC 709, REDspace)

A/V MENU — VIDEO Menu
- **VIDEO** — LOOK Menu
  - **LOOK** — CLEAR
  - **LOOK** — IMPORT: NONE AVAIL.
  - **LOOK** — EXPORT
- **VIDEO** — COLOR Menu
  - **COLOR** — SATURATION: 1.0 (0 TO +2.0)
  - **COLOR** — EXPOSURE: 0.0 (-2.0 TO +4.0)
  - **COLOR** — BRIGHTNESS: 0.0 (-10 TO +10)
  - **COLOR** — CONTRAST: 0.0 (-1.0 TO +1.0)
- **VIDEO** — GAIN Menu
  - **GAIN** — MASTER: 1.0 (0 TO +4.0)
  - **GAIN** — RED GAIN: 1.0 (0.0 TO +4.0)
  - **GAIN** — BLUE GAIN: 1.0 (0.0 TO +4.0)
  - **GAIN** — GREEN GAIN: 1.0 (0.0 TO +4.0)
- **VIDEO** — TONE Menu
  - **TONE** — CURVE ✓
  - **TONE** — DEFINE: TOE (BLACK, TOE, CENTER, KNEE, WHITE)
  - **TONE** — * TOE X: 25 (0 - 100)
  - **TONE** — * TOE Y: 25 (0 - 100)
  - * Will change based on DEFINE selection

A/V MENU — VIEWFINDER Menu
- **VIEWFINDER** — COLOR: < Disabled > (✓ = MONOCHROME, FALSE COLOR, EDGE HIGHLIGHT)
- **VIEWFINDER** — METERS Menu
  - **ANALYSIS** — METER: RGB HIST (SPOT METER, LUMA HIST, RGB HIST, MONO HIST, RAW HIST)
  - **ANALYSIS** — ASSISTS: < Disabled > (✓ = WAVEFORM, RGB PARADE, FOCUS ASSIST, FOCUS OVERLAY)
- **VIEWFINDER** — ZEBRAS Menu
  - **ZEBRAS** — CONFIGURE 1 Menu
    - **ZEBRA 1** — LO IRE: 101 (75 TO 103 IRE)
    - **ZEBRA 1** — HI IRE: 108 (93 TO 108 IRE)
  - **ZEBRAS** — ENABLE 1 ✓
  - **ZEBRAS** — CONFIGURE 2 Menu
    - **ZEBRA 2** — LO IRE: 0 (0 TO 84 IRE)
    - **ZEBRA 2** — HI IRE: 3 (2 TO 93 IRE)
  - **ZEBRAS** — ENABLE 2 ✓
- **VIEWFINDER** — DARK DETAIL: 1 % (✓ = 1 - 50%)
- **VIEWFINDER** — OPEN GATE ✓ (48 Hz)

A/V MENU — AUDIO Menu
- **AUDIO** — CH 1-4 (LINE) Menu
  - **CH 1 LEVELS** — MIC / LINE: 36 dB / 0 dB
  - **CH 2 LEVELS** — MIC / LINE: 36 dB / 0 dB
  - **CH 3 LEVELS** — MIC / LINE: 36 dB / 0 dB
  - **CH 4 LEVELS** — MIC / LINE: 36 dB / 0 dB
  - ALL: MICROPHONE: +36 dB TO +54 dB; LINE: 0 dB TO +10 dB

A/V MENU — HEADPHONE Menu
- **HEADPHONE** — VOLUME: -9 dB (-18 dB TO 0 dB)
- **HEADPHONE** — VOLUME - LEFT: 0 dB (-12 dB TO +6 dB)
- **HEADPHONE** — VOLUME - RIGHT: 0 dB (-12 dB TO +6 dB)
- **HEADPHONE** — MIX: 1L + 2 R (1L + 2R, 3L + 4R, QUAD (1L + 2R, 3L + 4R))

RED ONE™

TITLE: SENSOR / VIDEO MENU MAP

BUILD: 21.3.1 BETA

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SHEET 1 OF 1

REV B

SYSTEM MENU BUTTON

FLOWCHART CONCEPT XL FILMS LTD.

DEFAULT VALUES ARE DISPLAYED IN WHITE

SYSTEM → SOUND Menu
SYSTEM → MEDIA Menu
SYSTEM → PROJECT Menu
SYSTEM → MONITOR Menu
SYSTEM → SETUP Menu

PROJECT → STATUS Menu
PROJECT → SLATE Menu
PROJECT → CONFIGURE Menu
PROJECT → TIMECODE Menu
PROJECT → QT PROXIES ✓

SLATE: CAMERA — A — A TO Z

TIMECODE: JAM SYNC ✓ | OUTPUT ✓ | CROSS < Disabled > (✓ = GENERATE JAM) | DISPLAY TIME-CODE (TIME-CODE, EDGE-CODE) | TIME ZONE < Disabled > (✓ = GMT OFFSET -12 HRS TO +14 HRS)

STATUS: * VIEW | SAVE | RECALL

* Displays current project settings screen

CONFIGURE: RESOLUTION 4K 2:1 (2K 2:1, 2K 16:1, 2K ANA, 3K 2:1, 3K 16:9, 3K ANA, 4K 2:1, 4K HD, 4K 19:9, 4K ANA) | TIME BASE 23.98 fps (2K & 3K: 23.98, 24.00, 25.00, 29.97, 50.00, 59.94; 4K: 23.98, 24.00, 25.00, 29.97) | QUALITY REDCODE 36 (REDCODE 28, REDCODE 36, REDCODE 42) | MAX ✓

MEDIA: PRE-RECORD < Disabled > (✓ = 10 SEC, 30 SEC) | UNMOUNT (UNMOUNT SHORTCUT: Press EXIT + UNDO) | * FORMAT | CHANGE Menu | RESET Menu

CHANGE: * FORMAT | REEL # 1

* Camera Letter + Reel Number + Year + Month + Day
Example: A001_080815

RESET: * FORMAT | REEL # 1

SOUND: REC ENABLE Menu | OUTPUT LEVEL 0.0 dB (-6 dB TO 6 dB) | 48V MIC Menu

48V MIC: CHANNEL 1 ✓ | CHANNEL 2 ✓ | CHANNEL 3 ✓ | CHANNEL 4 ✓

REC ENABLE: CHANNEL 1 < Disabled > (✓ = LINE MICROPHONE) | CHANNEL 2 < Disabled > (✓ = LINE MICROPHONE) | CHANNEL 3 < Disabled > (✓ = LINE MICROPHONE) | CHANNEL 4 < Disabled > (✓ = LINE MICROPHONE)

MONITOR: FRAME GUIDE Menu | PREVIEW VIDEO [720p] (MENUS [DVI] VIDEO [720p]) | TEST SIGNAL < Disabled > (✓ = SMPTE BARS, BLACK FIELD, WHITE FIELD, LUMA RAMP, CHROMA RAMP, CHIP CHART, FOCUS PATTERN) | PVW REFRESH 59.94 Hz (50.00 Hz, 59.94 Hz) | EVF REFRESH FIXED (SYNCED (48 Hz), FIXED (59.94 Hz 3:2 PULLDOWN))

Fixed at frame rates other than 23.98, 24 & 25 fps

FRAME GUIDE: FRAME GUIDE 2.40 (FULL, 2.40, 1.85, 4:3, 16:9) | ENABLE ✓ WHITE (✓ = WHITE, BLACK, BLUE, RED, YELLOW) | SAFETY 16:9 (16:9, 14:0, 4:3, 1.85, 2.40, USER) | ENABLE ✓ WHITE (✓ = WHITE, BLACK, BLUE, RED, YELLOW) | CUSTOM Menu

CUSTOM: LOOK AROUND 50% (0%, 50%, 100%) | CURSORS Menu | USER ACTION (WIDTH / HEIGHT / X POSN / Y POSN / SET) | USER TITLE

CURSORS: CENTER ✓ | ACTION ✓ CORNERS (✓ = RECTANGLE, CORNERS) | TITLE ✓ CORNERS (✓ = RECTANGLE, CORNERS)

SETUP: PREFERENCES Menu | MAINTENANCE Menu | SET CLOCK Menu | WRITE LOG Menu | REMOTE Menu

REFER TO SYSTEM MENU 2 OF 2

PREFERENCES: USER PROFILE Menu | KEYMAP Menu | GPIO Menu | PLAYBACK Menu | DISPLAY Menu

REFER TO SYSTEM MENU 2 OF 2

USER PROFILE: CLEAR | IMPORT NONE AVAIL. | EXPORT

KEY-MAP: SIDE RECORD ✓ | USER KEYS Menu

USER KEYS: USER - 1 ✓ AUTO WB | USER - 2 ✓ MAGNIFY | USER - 3 ✓ COLOR | USER - 4 ✓ VIEW RAW | USER - 5 ✓ COLOR

✓ = RECORD, MAGNIFY, AUTO WB, COLOR, VIEW RAW, METER, RAMP, TIMELAPSE, ZEBRA 1, ZEBRA 2, + VOLUME 1, - VOLUME 1, + VOLUME 2, - VOLUME 2, +ISO, - ISO, + SHUTTER, - SHUTTER

RED ONE™

TITLE: SYSTEM MENU MAP

BUILD: 21.3.1 BETA

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SHEET 1 OF 2

REV A

SYSTEM MENU BUTTON

DEFAULT VALUES ARE DISPLAYED IN WHITE

SYSTEM: SOUND Menu | SYSTEM: MEDIA Menu | SYSTEM: PROJECT Menu | SYSTEM: MONITORS Menu | SYSTEM: SETUP Menu

REFER TO SYSTEM MENU 1 OF 2

SETUP: PREFERENCES Menu | SETUP: MAINTENANCE Menu | SETUP: SET CLOCK Menu | SETUP: REMOTE Menu

PREFERENCES: USER PROFILE Menu | PREFERENCES: KEYMAP Menu | PREFERENCES: GPIO Menu | PREFERENCES: PLAYBACK Menu | PREFERENCES: DISPLAY Menu

REFER TO SYSTEM MENU 1 OF 2

REMOTE: REMOTE PORT — S4/i (S4/i, AUX 232) | REMOTE: S4/i LENS — ✓

SET CLOCK: DATE Menu | SET CLOCK: TIME Menu | SET CLOCK: SET CLOCK

PLAYBACK: HD-SDI — 720p (720p, 1080p) | PLAYBACK: LOOK — CLIP (CAMERA, CLIP)

SET TIME: HOUR — < Disabled > (✓ = 0 TO 23) | SET TIME: MINUTE — < Disabled > (✓ = 0 TO 59) | SET TIME: SECOND — < Disabled > (✓ = 0 TO 59)

DISPLAY: STATUS — 1/SEC (✓ = DEGREES, 1/SEC) | DISPLAY: LENS DATA — < Disabled > (✓ = FEET, METERS) | DISPLAY: EVF MENU — ✓ | DISPLAY: METERS — ✓ | DISPLAY: GREY SCALE — ✓

SET DATE: YEAR — < Disabled > (✓ = 2007 TO 2020) | SET DATE: MONTH — < Disabled > (✓ = 1 TO 12) | SET DATE: DAY — < Disabled > (✓ = 0 TO 31)

MAINTENANCE: FAN Menu | MAINTENANCE: BLK SHADING Menu | MAINTENANCE: RESTORE Menu | MAINTENANCE: UPDATE SW | MAINTENANCE: WRITE LOG

GPIO: INPUT A — RECORD (✓ = RECORD, PRE-RECORD, TIMELAPSE, RAMP) | GPIO: INPUT B — RECORD (SHUT DOWN, PLAY CLIP, NEXT CLIP) | GPIO: OUTPUT A — RECORDING (RECORDING, PLAYING, CUED) | GPIO: OUTPUT B — RECORDING (RECORDING, PLAYING, CUED) | GPIO: POLARITY Menu

FAN CONTROL: FAN — AUTO (AUTO, VARIABLE < 50° F, HOT 86° F TO 104° F, STANDARD < 86° F, QUIET < 72° F, SILENT < 60° F)

RESTORE: LOOK | RESTORE: USER | RESTORE: SYSTEM

BLK SHADING: START (5 MIN) | BLK SHADING: RESTORE

POLARITY: GPIO IN 1 — ACTIVE_LO (ACTIVE_LO, ACTIVE_HI) | POLARITY: GPIO IN 2 — ACTIVE_LO (ACTIVE_LO, ACTIVE_HI) | POLARITY: GPIO OUT 1 — ACTIVE_HI (ACTIVE_LO, ACTIVE_HI) | POLARITY: GPIO OUT 2 — ACTIVE_HI (ACTIVE_LO, ACTIVE_HI)

RED ONE™

TITLE: SYSTEM MENU MAP

BUILD: 21.3.1 BETA

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SHEET 2 OF 2

REV A

RED DIGITAL CINEMA

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