RED SCARLET-W + RAVEN

CAMERA SPECIFIC FEATURES

-16.5 stops of Dynamic Range
- Shoots slow motion video with up to 240 FPS at a 2K resolution
- Have the ability to shoot simultaneous REDCODE RAW and Apple Pro-res recording

RED identifies their camera bodies as "brains" The processing power and sensor size beneath the hood differentiates the models. While both Red Scarlet-W and Raven bodies contain the Dragon sensor, the sensor size, max resolution, and data rates differ between them.

There is however NO image difference between the cameras at *common* resolution, compression, and settings.

SCARLET-W

Features a 5K Dragon sensor that measures 25.6mm x 13.5mm with a max resolution of 5120 x 2700. It's a true Super 35 sized sensor

Max Frame Rates
50 fps at 5K Full Format (5120 x 2700), 60 fps at 5K 2.4:1 (5120 x 2160)
120 fps at 4K Full Format (4096 x 2160), 150 fps at 4K 2.4:1 (4096 x 1728)
150 fps at 3K Full Format (3072 x 1620), 200 fps at 3K 2.4:1 (3072 x 1296)
240 fps at 2K Full Format (2048 x 1080), 300 fps at 2K 2.4:1 (2048 x 864)

RAVEN

Consists of a smaller cut of the Dragon sensor that measures 23.04mm x 10.8mm. It is slightly smaller than Academy 35 and very close to APS-C size. The Raven maxes out at 4.5K (4608 x 2161)

Available frame rates/compression /resolution
120 fps at 4.5K Full Format (4608 x 2160), 120 fps at 4.5K 2.4:1 (4608 x 1944)
120 fps at 4K Full Format (4096 x 2160), 150 fps at 4K 2.4:1 (4096 x 1728)
150 fps at 3K Full Format (3072 x 1620), 200 fps at 3K 2.4:1 (3072 x 1296)
240 fps at 2K Full Format (2048 x 1080), 300 fps at 2K 2.4:1 (2048 x 864)

LIABILITY/COST/INSURANCE

Scarlet-W kits cost about $25,000 each
Ravens kits cost about $18,000 each

For your protection, insurance is recommended for all shoots. A detailed guide on insurance procedures and release forms is available on the FMSA support site

http://fmsasupport.ecuad.ca/insurance/

KIT CONTENTS AND ASSEMBLY:

Lens
All of the RED cameras in our fleet are equipped with EF lens mounts. Each kit comes with a zoom lens 18-35mm for Ravens and 24-70mm for Scarlet-W's however there are a range of prime lenses available that you can borrow from Media Resources separately. Take a look at our equipment list for details.

LCD
WARNING: DO NOT use a RED display as a handle to lift or carry the camera. Damage to a RED display or other components of the camera system caused by using the display as a handle are not covered under warranty.
WARNING: DO NOT try to turn an LCD past its tilt or swivel range.
Damage to a RED display or other camera components caused by excessive force is not covered under warranty.
Do not use any cleaning products on the screen- we have provided a microfibre cloth that is the only thing you should use

Top Handle
Make sure you securely fasten the top handle with the correct hex key. Make sure it is secure but do not overtighten

Battery

ANO CORE 98 v-lock batteries- power consumption approx 1h15 minutes runtime
Charging takes 2.5 hrs to complete. When not in use, remove the battery from the camera or charger and store the battery in a cool, dry place.

WARNING: DO NOT expose the battery to excessive heat.

WARNING: Danger of explosion if an incorrect battery is charged with the RED Charger or is used to power the camera and accessories. Replace only with the same or equivalent type battery.

WARNING: Batteries in the kits may only be charged with the RED charger. Charging batteries with alternate chargers can damage the batteries.

Storage Media

Kits come with Mini Mag SSD drives with 120gb storage. There are additional cards available to borrow from Media Resources separately from the kits.

No Hotswapping!

Modules, expanders, SSD cards and lens mounts are NOT HOT SWAPPABLE, meaning you cannot remove or install these items while the camera is turned on. Before installing or removing these items, you MUST turn off the camera. Failure to do so may result in damage to the item or camera that is not covered under warranty.

INS + OUTS + PORTS

Interface connections

(DC IN), HDMI, 3G-SDI (HD-SDI), CTRL and SYNC ports (for timecode and genlock), as well as a 3.5mm microphone input and a 3.5mm line-level headphone out.

Audio

-Built in reference mics are located on front of camera
-Headphone jack
-3.5mm jack to sync with external recording device

* The built in audio recording capability is very limited in these cameras so you will likely be recording audio separately with a Roland or Sound Devices Recorder and using the built in system for reference tracks only.

STORAGE MEDIA/CODECS

RED cameras record onto SSD cards called RED mini mags and are **capable of recording in** REDCODE RAW (.R3D) Apple Pro res or Avid DNx HDR

WHAT IS REDCODE RAW?

REDCODE RAW (.R3D) is a proprietary file format that efficiently encodes measurements from a camera's digital sensor in a way that maximizes post-production capabilities.

REDCODE SETTINGS

REDCODE permits a wide range of compression settings to suit your particular storage and usage requirements. Settings are specified as file size ratios compared to an equivalent uncompressed data stream, with higher ratios denoting more compression. **These range from 3:1 all the way up to 18:1, with integer precision throughout this range**

Just below 3:1 is mathematically lossless, but settings in the range of 5:1 to 8:1 are typically visually lossless and advisable for most usage scenario

12 bits of color depth

RECORDING FORMATS + CAPACITIES

Recording times will vary depending on settings such as resolution, frame rate and compression.

Examples:
Shooting in 4K 16:9 with a frame rate of 24 fps with a compression of 5:1 you will get approximately 67 minutes of record time

If Shooting in 2.5K (WS) at 24fps with a compression rate of 5:1 you would get approximately 197 minutes of record time.

Shooting in 5K full frame RAW at 24 fps will get you approximately 40 minutes of recording time.

RED has an online tool to help you calculate recording times here: http://www.red.com/tools/recording-time

Powering On

There is an Auto Boot on Power Switch located on top of camera (identified by a white star). If the Auto Boot Toggle switch is set to On The camera turns on automatically when it is connected by the DC IN power.

•If you are powering the camera with a battery, please ensure the auto boot on power switch is off (identified by the black star). The camera will not not turn on automatically.

Fully press and hold the PWR/REC key for two (2) seconds to turn on/off. The system takes about 90 seconds to power on fully. If you have just turned off the camera please wait at least 3 seconds before powering back on.

auto-calibrate happens when the camera is powering on. Please leave lens cap on while sensor is calibrating during startup.

When the camera is powered on, if you fully press and then release the PWR/REC key it will toggle record start/stop – this can be problematic if you press this button for too long it will power down. For this reason we recommend using the second record button which is located on the front left hand side of the camera

Buttons 1 and 2 located on the top/bottom of the record button at the front of the camera are programmable buttons
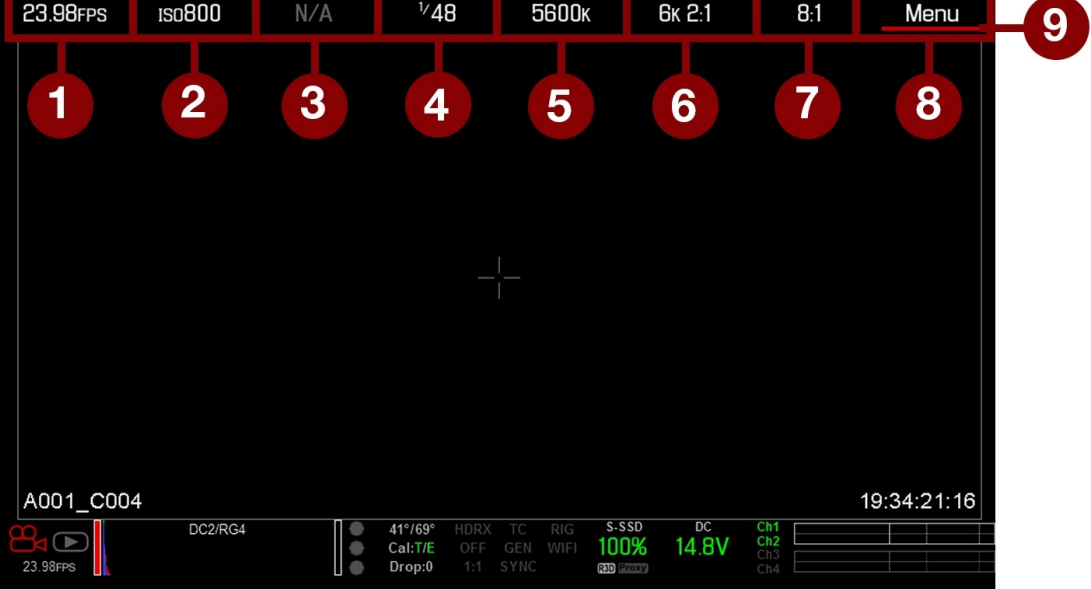
Menu Functions

Touchscreen

To enter advanced settings for each selection press and hold down point on touch screen until new menu opens up (eg selecting advanced on frame rate is the equivalent to Menu>Settings>Project>Frame Rate
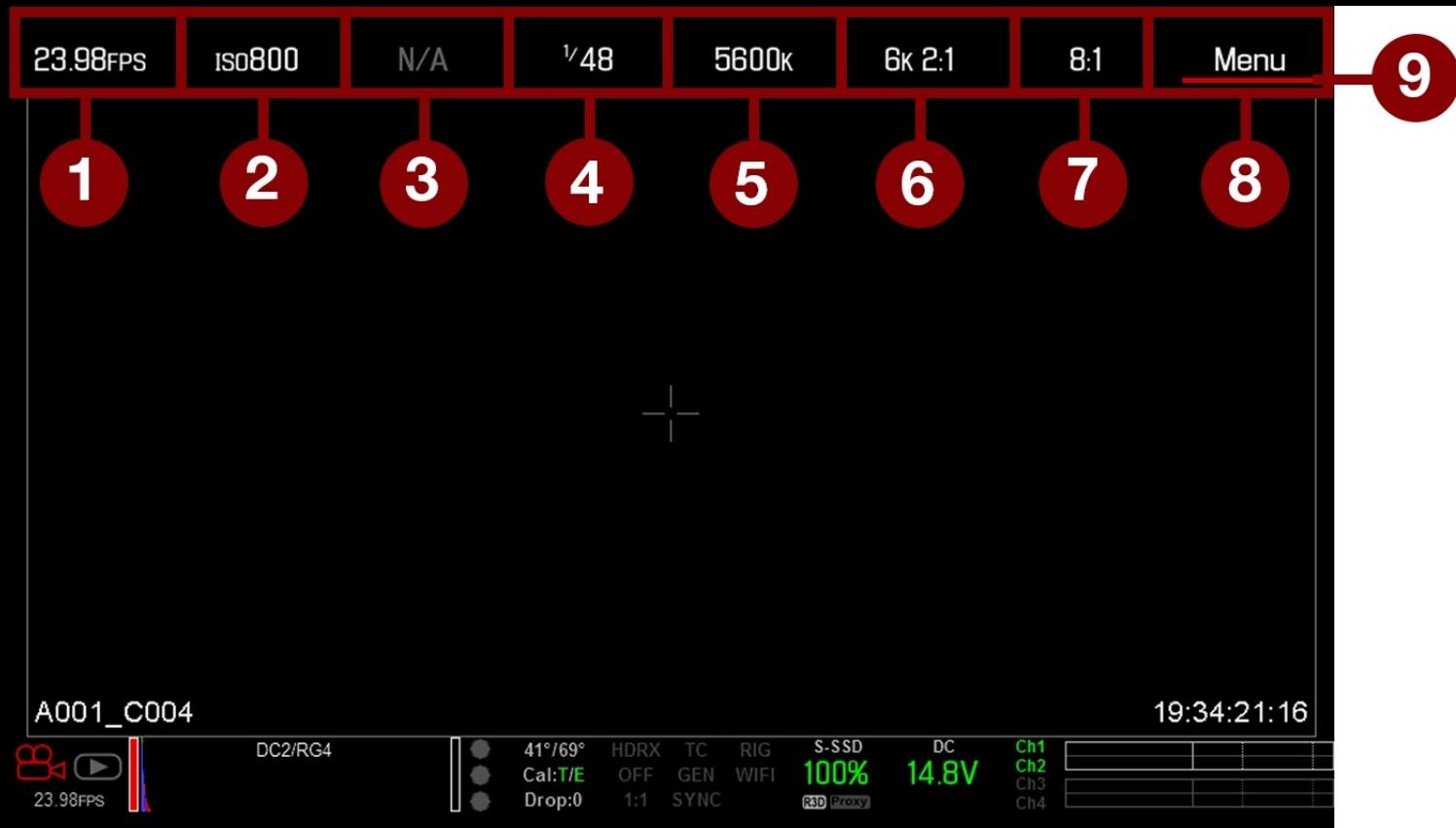
The area up top is called the upper status row or " basic menu" it displays basic project parameters such as frame rate, aperture, ISO, shutter speed etc.

A001_C004   19:34:21:16

| DC2/RG4 | 41°/69° | HDRX | TC | RIG | S-SSD | DC | Ch1 |
| | Cal:T/E | OFF | GEN | WIFI | 100% | 14.8V | Ch2 |
23.98FPS | | Drop:0 | 1:1 | SYNC | R3D Proxy | | Ch3 / Ch4 |

1) Frame rate: The options here will vary according to the resolution settings you have selected.

2) ISO: Red has a native ISO of 800 – it is recommended to shoot with ISO 800 whenever possible

3) Aperture: Lens aperture (f-stop) information

4) Shutter Speed: shutter speed should be twice the frame rate so if you are shooting at 24fps shutter speed should be 1/48

5) White Balance: WB is selectable and you will see the difference between settings in real time. There is also an auto white balance button option you can access through the main menu
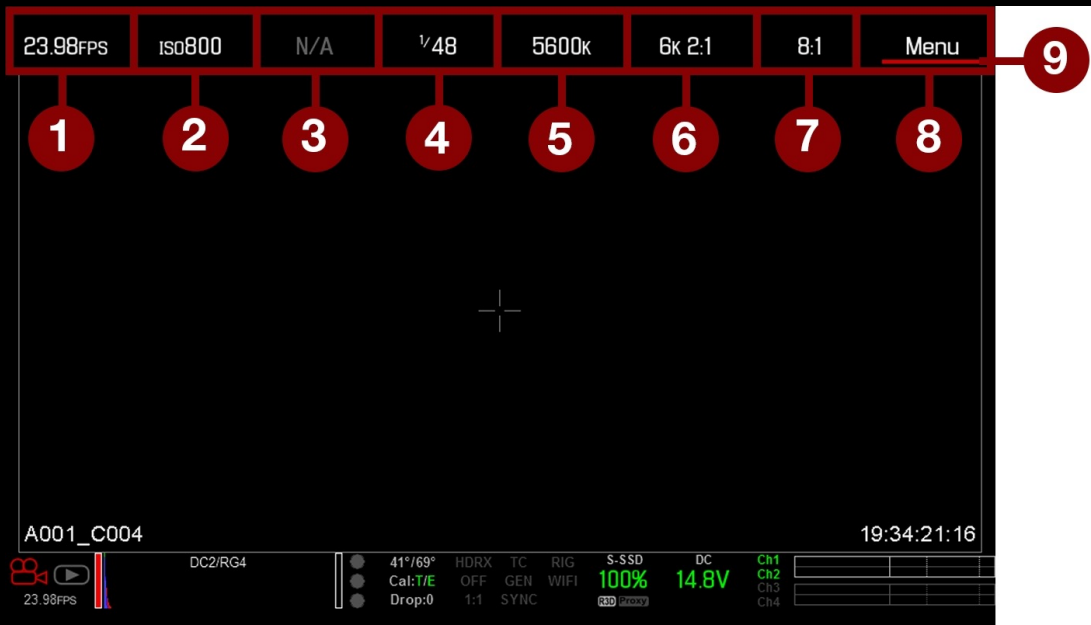
6) **Resolution:** Record Resolution

Top status bar values: 23.98FPS | ISO800 | N/A | ¹/48 | 5600K | 6K 2:1 | 8:1 | Menu — labeled 1 through 9.

Bottom status bar: A001_C004 — 19:34:21:16

DC2/RG4 | 41°/69° HDRX TC RIG | S-SSD | DC | Ch1
Cal:T/E OFF GEN WIFI 100% 14.8V Ch2
Drop:0 1:1 SYNC R3D Proxy Ch3 Ch4

23.98FPS

7) Compression: REDCODE range is 2:1 to 22:1.

If the camera is able to achieve the target compression ratio, the compression ratio displays in white. If the camera is unable to achieve the target compression ratio, the compression ratio displays in yellow, and the camera uses the next possible compression ratio.

The current compression ratio is automatically recalculated when changes are made to the project resolution, aspect ratio, anamorphic setting, frame rate, HDRX® mode, media, or the target REDCODE compression ratio.

The RECODE compression affects the overall quality of the footage. A lower compression (for example: 2:1) increases the quality of the footage, while a higher compression (for example: 22:1) lowers the quality.

A recommended compression ratio can be set to 8:1 which is visually lossless

Camera status display showing:

1	2	3	4	5	6	7	8
23.98FPS	ISO800	N/A	¹/48	5600K	6K 2:1	8:1	Menu

A001_C004   19:34:21:16

23.98FPS   DC2/RG4   41°/69° HDRX TC   RIG   S-SSD   DC   Ch1
            Cal:T/E   OFF   GEN WIFI   100%   14.8V   Ch2
            Drop:0   1:1   SYNC   R3D Proxy   Ch3
                                                        Ch4

8) Menu- Press and hold to access the main menu. Within this menu you can access all advanced functions of the camera. We recommend formatting the card in the camera through this menu. Playback is also found in the menu tab so you can review your clips here – you can also power down the camera in and check battery life in the Power menu.

9) **Cursor** – indicates currently selected Upper Status Row element

23.98FPS   ISO800   f/3.5   ¹/48   5600K   6K 2:1   8:1   Menu

Focal Length: 18mm
Focus Dist.: 7'3" - inf

AF:Confirm

1

2

3

4

5

6

A001_C004

19:38:13:12

DC2/RG4   40°/66°   HDRX   TC   RIG   S-SSD   DC   Ch1
Cal:T/E   OFF   GEN   WIFI   100%   14.8V   Ch2
23.98FPS   Drop:0   1:1   SYNC   R3D Proxy   Ch3
Ch4

Live Action Area

1) Lens Information
2) AF Status
3) Center Crosshair and Spot Focus Guide
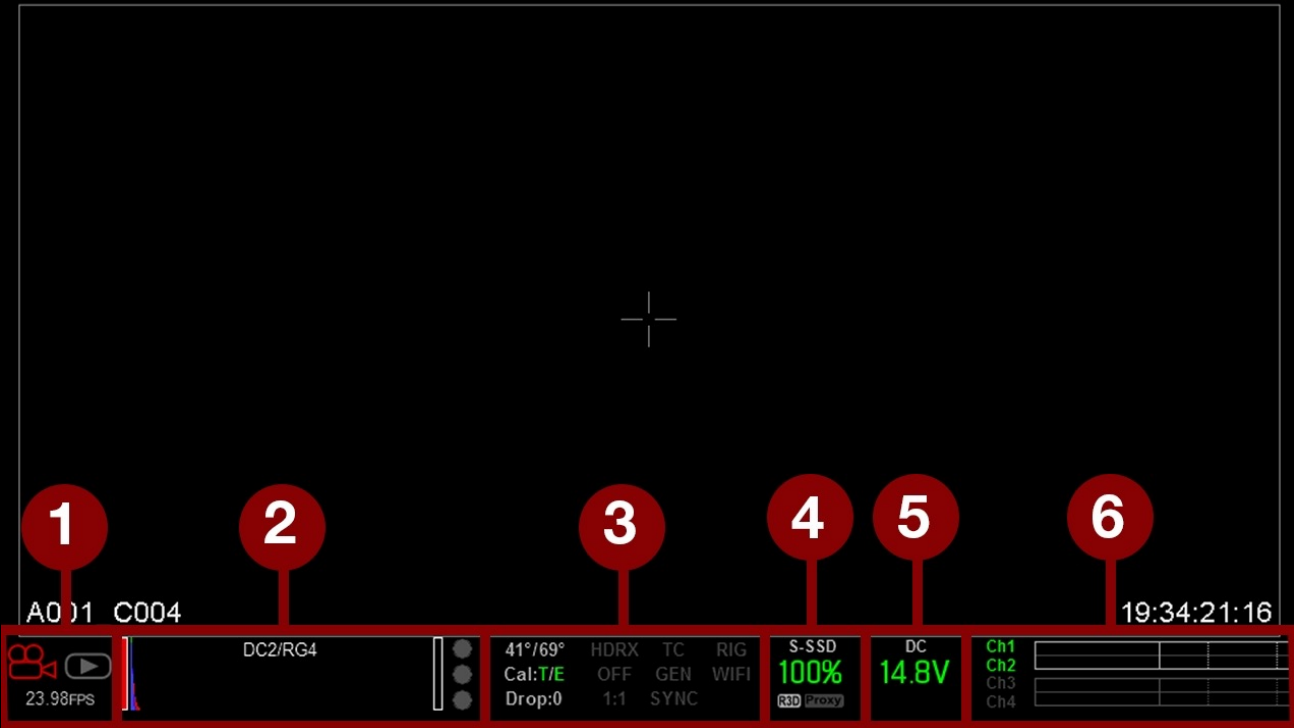4) Frame Guides
5) Clip Filename
6) Timecode Value

The bottom row is referred to as the Lower status Row. It provides access to key system information and camera values (from left to right)

1) Playback button: Camera Mode - Swipe up to toggle Motion/Stills/Playback modes- tap to enter playback mode

2) Histogram: Tap to open the Tools menu. The Histogram is used for measuring exposure. The goal posts on either sides will show a red stop light to indicate when we are losing information. So when the goal posts go red you know that you are losing image data.

3) System Status Indicators Tap to open the system status menu Camera sensor and core temperature Temperatures are indicated beside the histogram: sensor temperature and core temperature (L to R) green T and E = temperature or exposure

23.98FPS   ISO800   N/A   ¹⁄48   5600K   6K 2:1   8:1   Menu

1   **2**   **3**   **4**   **5**   **6**

A001 C004

19:34:21:16

DC2/RG4

41°/69°   HDRX   TC   RIG
Cal:T/E   OFF   GEN   WIFI
Drop:0   1:1   SYNC

S-SSD
100%
R3D Proxy

DC
14.8V

Ch1
Ch2
Ch3
Ch4

23.98FPS

4) Media Status You will see how much space is left on card in SSD

5) Power Indicator how much battery life or DC power

6) Audio levels Audio levels indicated on the meters here

Initial Camera Set up

All Reset
Go to Menu >Settings >Maintenance >Restore System>Reset Defaults

Project Settings

Menu>Settings>Project
Set up your frame rate and project time base (project time base is the rate your project will play back at)

Menu>Settings>Project>Format
Here your will set the aspect ratio.

Menu>Settings>Project>Exposure
Here you can dial in the shutter angle

CHOOSE CODEC:

Menu>Settings>Recording>Codec

Start by selecting the recording format you want, .R3D Prores or simultaneous recording of both .R3D and Prores. Once you select the recording format it will tell you what compression ratios are available to you in that setting. You can change the resolution in this menu as well as the codec.

COLOR SPACE + GAMMA CURVE

Menu>Image>Image Pipeline> Options

With these cameras the only mode option in camera is Legacy. These settings affect how digital values are translated into visible tones.

You then select the color space and gamma curve here in this tab.

For more information about color space and gamma please go the picture tutorials on our fmsa support site.

In practice, gamma can be specified both in-camera and from within Red's post production software REDCINE-X Pro. In either case, the setting is embedded as metadata and does not affect the recorded data until the .R3D file gets converted into another format.

FORMAT MEDIA:

16) Media>Device – Under the media menu is where you can see what type of storage media (SSD) you have installed . You can format it here and eject it.

SET UP EXTERNAL MONITORS

9) Menu>Monitoring>Monitors

Here you will find tools for setting up and monitoring your display outputs whether you want to have frame guides on your screen or which kind of looks you want to have sent to your different outputs. You can control your SDI and HDMI outputs here as well as the RED LCD and ECVF outputs as well. So you can choose different LUTS to apply to your different monitors .

On topic of monitors I wanted to point out buttons on the side fo the LCD monitor/touch panel.
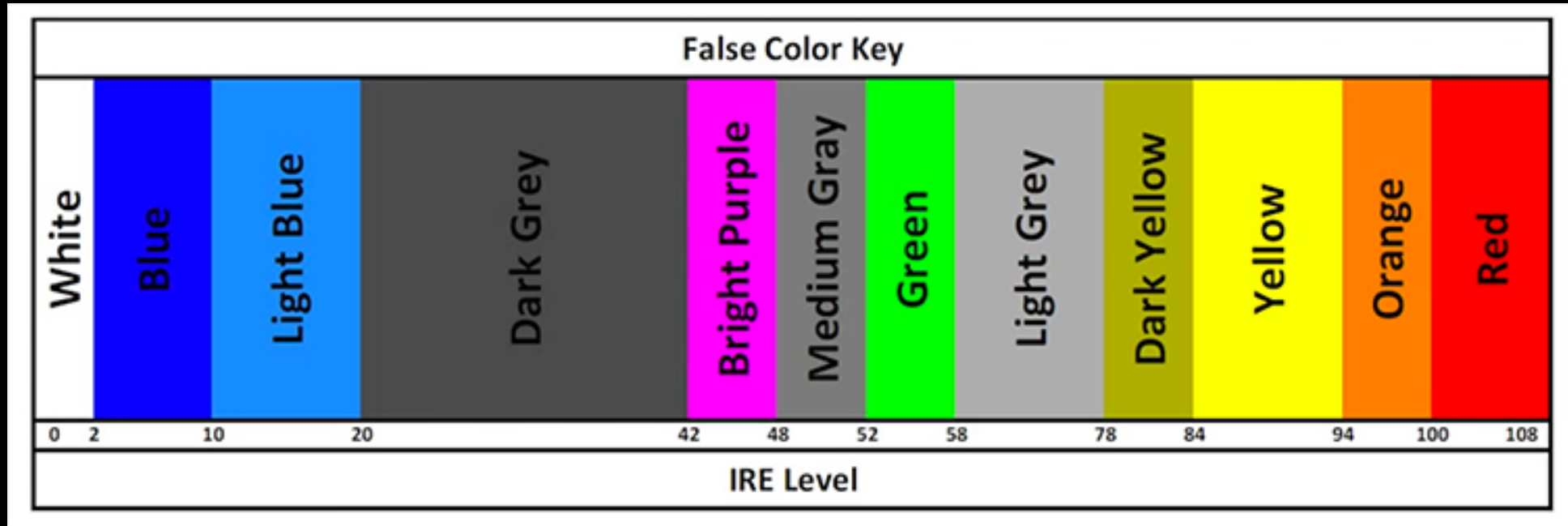
Button one magnify for focus

Button two produces false color – a tool for setting exposure

Up and down arrows adjust brightness of screen (does not affect recorded image)

Exposure

On the side of the LCD monitor press the 2 button which brings up false color (This helps determine brightness values)

False Color Key

White | Blue | Light Blue | Dark Grey | Bright Purple | Medium Gray | Green | Light Grey | Dark Yellow | Yellow | Orange | Red

0 2 · 10 · 20 · 42 · 48 · 52 · 58 · 78 · 84 · 94 · 100 · 108

IRE Level

The key to exposing quickly and accurately using false color is to focus on skin tones first. Typically, skin tones should fall in the 70 IRE range, which will appear as light grey. Once you set your exposure so that your talent's skin tone appears grey, you know the image is well exposed — at least as far as the talent is concerned. From there, you can simply scan the frame for any areas that are over or underexposed and make lighting or framing adjustments accordingly.

ASSIGNABLE BUTTONS

8) Menu>Settings>Set up>Keys

here you can assign smart keys so you can control many of the common settings that you will be adjusting from the different hotkeys on your monitor or camera body

SET UP METADATA

1) Menu>Settings>Project> Slate>

This tab allows you to set up information like scene number, location etc essentially the metadata that will be attached to your files

1) Menu>Settings>Project> Slate>Project

Here you can put in your production director, DOP etc

1) Menu>Settings>Project> Slate>Camera

Here you can set up your camera ID if you are using multiple cameras you can differentiate which shot came from which camera

Accessories/Rigs

Each support system has been approved to handle the weight of each specific camera configuration. Compatible models are indicated on equipment list

- Follow Focus
- Tripods
- Monitors - HDMI and SDI out
- Matte Box
- Color Checker

Additional Resources

FMSA support site for placing bookings, technical support, insurance information etc
fmsasupport.ecuad.ca

MANUAL SCARLET-W
http://docs.red.com/955-0116_v7.0/REV-H/PDF/955-0116_v7.0%20Rev-H%20%20%20RED%20PS%2C%20WEAPON-SCARLET-W%20Operation%20Guide.pdf

MANUAL RED RAVEN
https://www.manualslib.com/manual/1061552/Red-Raven.html#manual

RED's online training resources
Among other things there are tools on this site to help you calculate crop factor, recording time, depth of field, exposure etc https://www.red.com/crop-factor

REDCINE-X PRO: RED's proprietary NLE. Download REDCINE-X PRO from
https://www.red.com/downloads?category=Software&release=final

Contact
FMSA tech office
D1324
fmsatech@ecuad.ca