Operation Manual

Blackmagic Cameras

Blackmagicdesign

English, 日本語, Français, Deutsch, Español, 中文, 한국어 and Русский

Mac OS X™

Windows™

June 2015

Welcome

Thank you for purchasing your Blackmagic Camera!

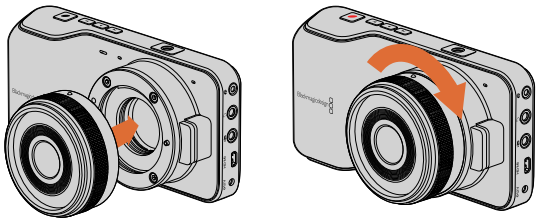
We have worked hard to produce three cameras that have been designed from the ground up to fit any kind of workflow. Our Blackmagic Pocket Cinema Camera is a Super 16 digital film camera with 13 stops of dynamic range that is small enough to take anywhere. The Cinema Camera records lossless compressed CinemaDNG RAW files for pristine images, and our Production Camera 4K is a Super 35 Ultra HD 4K camera with a global shutter and 6G-SDI output.

Our cameras are designed to produce files that are "flat", which means they preserve the wide dynamic range from the sensor, as well as standard file formats that work with all video software. This allows you to make creative decisions by using the included DaVinci color correction software!

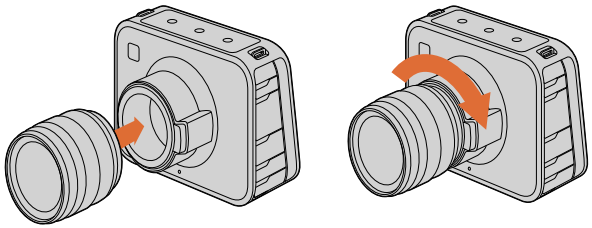
We think this means you get a cinema style shooting experience where you capture and preserve more of the image so you have as many creative options as possible. We have also included large screens on our cameras for easy focus and metadata entry. We hope you connect to our cameras in creative ways and produce some amazing looking images! We are extremely excited to see what creative work you produce!

Grant Petty

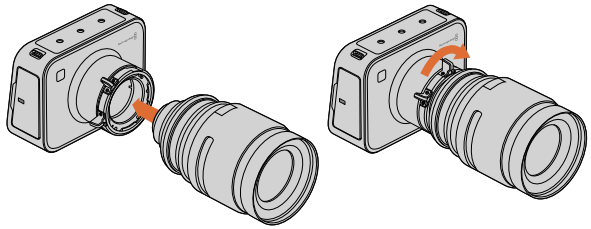
Grant Petty
CEO Blackmagic Design



Attaching and removing a lens on Blackmagic Pocket Cinema Camera.



Attaching and removing an EF lens on Blackmagic Cinema Camera and Blackmagic Production Camera 4K.



Attaching and removing a PL lens on Blackmagic Cinema Camera PL and Blackmagic Production Camera 4K PL.

Attaching a Lens

Getting started with your Blackmagic Camera is as simple as attaching a lens and turning the camera on. To remove the protective dust cap from the EF lens mount, hold down the locking button and rotate the cap counterclockwise until it is released. For the PL mount, rotate the PL locking ring counterclockwise. We recommend always turning off your Blackmagic camera prior to attaching or removing a lens.

To attach an EF or MFT mount lens:

Step 1. Align the dot on your lens with the dot on the camera mount. Many lenses have a visual indicator, for example a blue, red or white dot.

Step 2. Twist the lens clockwise until it locks into place.

Step 3. To remove the lens, hold down the locking button, rotate the lens counterclockwise until its dot or indicator reaches the 12 o'clock position, and gently remove.

To attach a PL mount lens:

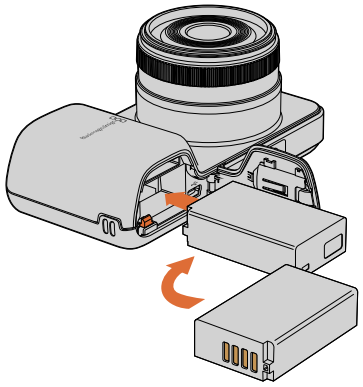
Step 1. Open your camera's PL locking ring by rotating it counterclockwise until it stops.

Step 2. Align one of the lens' four flange notches with the locating pin on the camera mount. Be sure to align the lens for easy viewing of the lens marks.

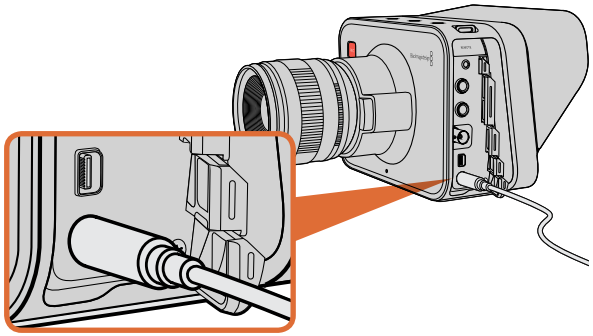
Step 3. Tighten the camera's PL locking ring by rotating it clockwise.

Step 4. To remove the lens, rotate the locking ring counterclockwise until it stops, then gently remove the lens.

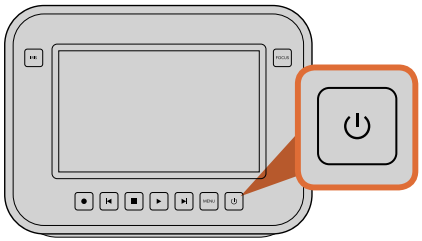
When no lens is attached to the camera, the glass filter covering the sensor is exposed to dust and other debris so you'll want to keep the dust cap on whenever possible.



Inserting the battery into Blackmagic Pocket Cinema Camera.



Use the supplied power adapter to charge the internal battery and power the camera.



Press the power button to turn the camera on.
Press and hold to turn the camera off.

Turning Your Camera On

Blackmagic Pocket Cinema Camera

Before you can operate Blackmagic Pocket Cinema Camera, you need to insert the battery.

Step 1. On the under side of the camera, push the door release towards the lens to access the battery terminal.

Step 2. With the gold contacts facing into the terminal and the white arrow facing the lens, hook the lip of the battery under the orange tab and insert the battery until you feel it press into place. Push the orange tab to release the battery.

Step 3. Close the door to the battery terminal and slide the door release to the right to lock it.

Step 4. Press the power button on the bottom right of the back panel. The status strip will appear along the top of the LCD.

Step 5. Press and hold the power button to switch off the camera.

Congratulations! You are now ready to insert an SD card and start recording!

Blackmagic Cinema Camera and Blackmagic Production Camera 4K

Blackmagic Cinema Camera and Production Camera 4K models have internal batteries that can be charged using the supplied power adapter. The camera can be charged and operated while connected via external power and will switch between power sources without any interruption.

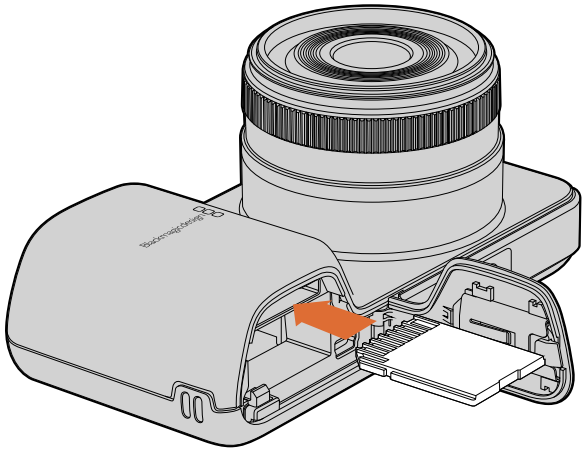
You can also charge the camera via a powered USB connection, however it takes longer to charge so we recommend using the power adapter when possible.

Step 1. Press the power button below the touchscreen. The status strip will appear along the top of the LCD.

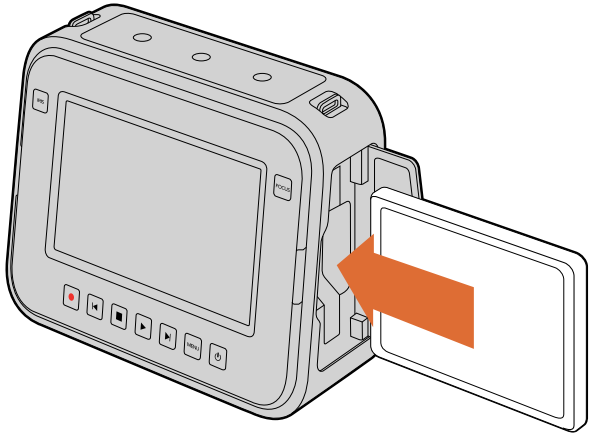
Step 2. Press and hold the power button to switch off the camera.

Congratulations! You are now ready to insert an SSD and start recording!

8 Installing Media



Inserting an SD card into the Blackmagic Pocket Cinema Camera.



Inserting an SSD into the Blackmagic Cinema Camera and the Blackmagic Production Camera 4K.

Using an SD Card

If your camera uses an SD card for recording clips, you can insert an SDXC or SDHC card. To insert an SD card in Blackmagic Pocket Cinema Camera:

Step 1. On the under side of the camera, push the door release towards the lens to access the battery terminal.

Step 2. With the gold contacts on the SD card facing towards the lens, insert the SD card until you feel it lock into place. Push on the SD card to release it.

Step 3. Close the door to the battery terminal and slide the door release to the right to lock it.

Step 4. Power on the camera. The status strip will display a moving dot while the camera checks the SD card and then it will say 'ready'.

The supplied SD card is for software installation only and not suitable for video recording. You'll find a list of recommended SD cards on page 14.

Using an SSD

If your camera uses an SSD to record clips, you can insert a 2.5" 9.5 mm SSD formatted in either the HFS+ or exFAT file systems. To insert an SSD into Blackmagic Cinema Camera and Blackmagic Production Camera 4K:

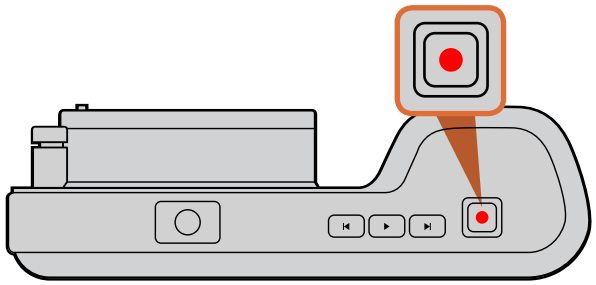
Step 1. Open the SSD door on the right hand side of the camera.

Step 2. With the gold SATA contacts facing towards the camera door, insert the SSD until you feel it press into place. Close the SSD door.

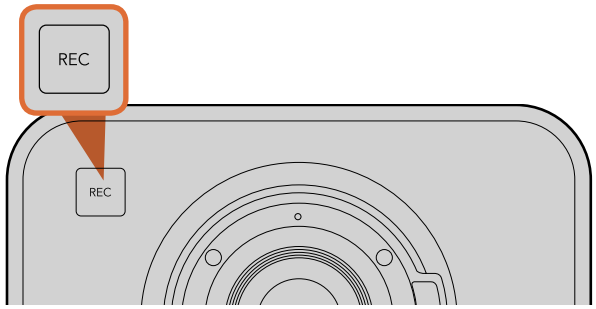
Step 3. Power on the camera. The status strip will display a moving dot while the camera checks the SSD and then it will say 'ready'

You'll find a list of recommended SSDs on page 12.

9 Recording



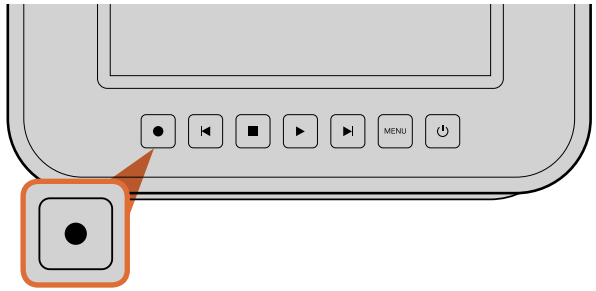
To record a clip, press the 'rec' button on the top of Blackmagic Pocket Cinema Camera.



To record a clip on Blackmagic Cinema Camera or Production Camera 4K, press the 'rec' button on the front face.

or

on the transport control panel.



Recording Clips

Press the 'rec' button on your camera to begin recording immediately. Press 'rec' again to stop recording.

Choosing the Recording Format

Blackmagic cameras record to several different formats, depending on which model you are using.

Blackmagic Pocket Cinema Camera	Blackmagic Cinema Camera	Blackmagic Production Camera 4K
Apple ProRes 422 HQ	Apple ProRes 422 HQ	Apple ProRes 422 HQ
Apple ProRes 422	Apple ProRes 422	Apple ProRes 422
Apple ProRes 422 LT	Apple ProRes 422 LT	Apple ProRes 422 LT
Apple ProRes 422 Proxy	Apple ProRes 422 Proxy	Apple ProRes 422 Proxy
Lossless compressed CinemaDNG RAW	Lossless compressed CinemaDNG RAW	Lossless compressed CinemaDNG RAW
	Avid DNxHD	

You may decide to experiment to see which format best suits your workflow.

You can choose from 4 different Apple ProRes formats. This lets you fit more video on your SSD or SD card. ProRes 422 HQ provides the highest quality video with the lowest compression. Alternatively, ProRes 422 Proxy gives you far more recording time with greater compression.

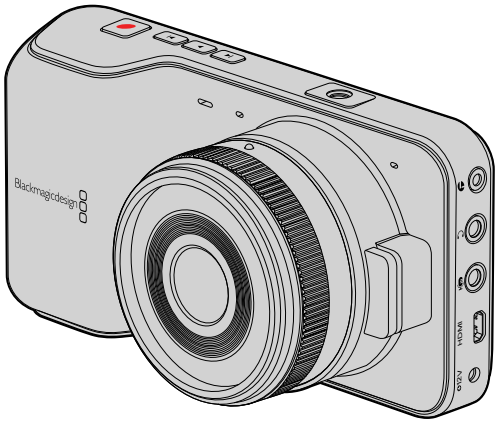
To select your desired video format:

Step 1. Press the 'menu' button to open the dashboard and select Settings.

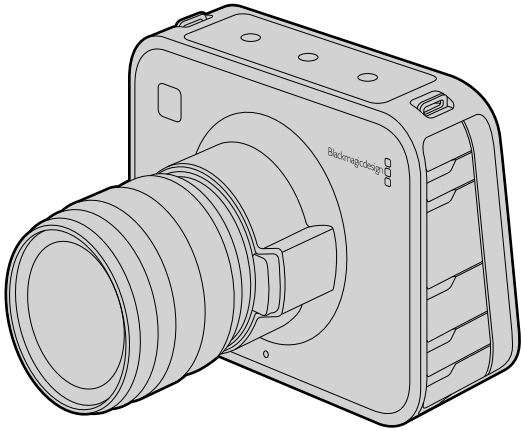
Step 2. Select the 'recording' menu and use the selection arrows to set the desired recording format.

Step 3. Press the 'menu' button twice to exit.

Your camera is now ready to record in the video format you have selected. The current recording format is shown on the LCD status strip.



Blackmagic Pocket Cinema Camera

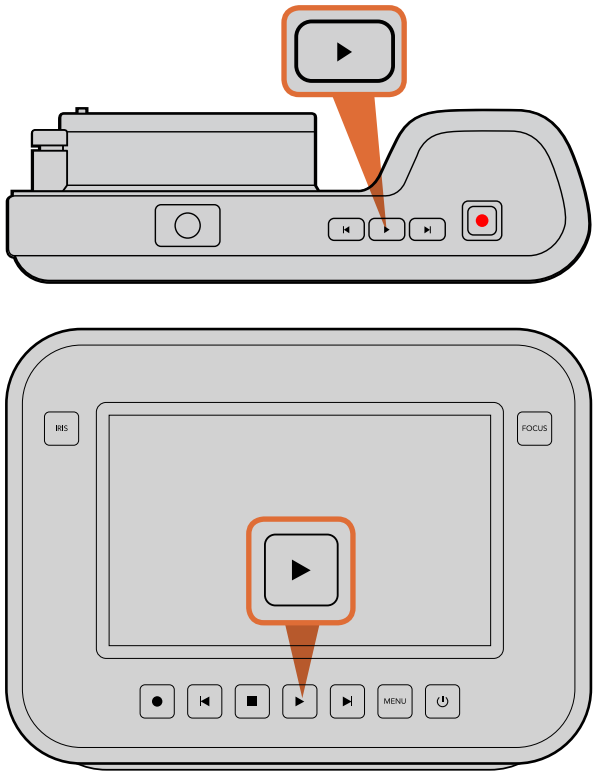


Blackmagic Cinema Camera

Blackmagic Cameras Supported Video Formats

Blackmagic Pocket Cinema Camera	Blackmagic Cinema Camera	Blackmagic Production Camera 4K
1920 x 1080p23.98	2400 x 1350 12-bit 2.5K RAW	4000 x 2160 12-bit 4K RAW
1920 x 1080p24	1920 x 1080p23.98	3840 x 2160p23.98
1920 x 1080p25	1920 x 1080p24	3840 x 2160p24
1920 x 1080p29.97	1920 x 1080p25	3840 x 2160p25
1920 x 1080p30	1920 x 1080p29.97	3840 x 2160p29.97
	1920 x 1080p30	3840 x 2160p30
	1920 x 1080i50 (output)	1920 x 1080p23.98
	1920 x 1080i59.94 (output)	1920 x 1080p24
		1920 x 1080p25
		1920 x 1080p29.97
		1920 x 1080p30

11 Playback



To immediately view your recorded clip on a Blackmagic Camera simply press the 'play' button on the transport controls.

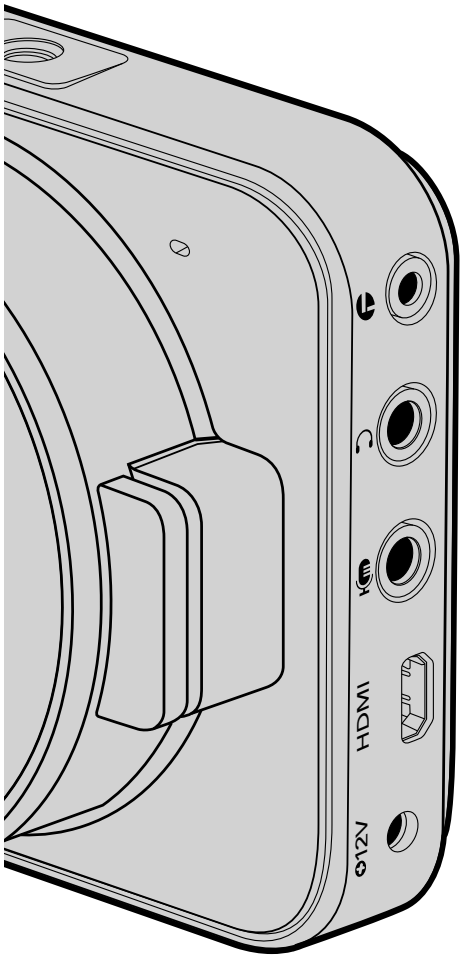
Playing Back Clips

Once you have recorded your video, you can use the transport control buttons to play back your video on the LCD.

Press the play button once for instant playback and you'll see your video on the LCD and on any display connected to the HDMI or SDI output. Hold down the forward or reverse buttons to fast forward or reverse through the clip. Playback will finish when the end of the current clip is reached.

The controls of your camera work just like a CD player, so pressing the forward button will skip to the start of the next clip. Press the reverse button once to go to the start of the current clip or press twice to skip back to the start of the previous clip.

On Blackmagic Cinema Camera and Production Camera 4K you can also connect to a Mac or Windows PC via the Thunderbolt port and monitor your clips using Blackmagic UltraScope. You can check exposure with the waveform scope, clipping on color channels using RGB parade, color balance using the vectorscope, audio levels, phase, and more.



Blackmagic Pocket Cinema Camera

LANC Remote Control

The remote port on your camera is used to remotely control record starting and stopping, iris adjustments and manual focus adjustments when using a compatible lens.

The port is a 2.5 mm stereo jack using the standard LANC protocol.

Headphones

Monitor audio while recording or playing back clips by plugging your headphones into the 3.5mm stereo headphones jack.

Audio In

The 3.5mm stereo audio connector accepts microphone or line level audio. It's important to select the appropriate setting or your audio may sound too quiet or too loud. The camera automatically switches to line level if the audio is too loud for a sustained period.

HDMI Out

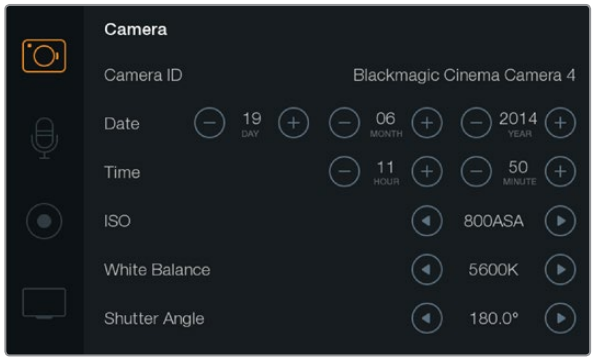
The micro HDMI port outputs 10-bit uncompressed HD1080p video, even while recording. It can be used to output video to routers, monitors, capture devices, broadcast switchers and other HDMI devices.

Power

Use the 0.7mm 12 – 20V power input for connecting your power supply and to charge the battery.

USB

Use the USB port to connect your Blackmagic Pocket Cinema Camera to your computer and update the internal software. The USB port can be found inside the battery compartment.



The 'camera' settings screen.

ISO

ISO settings are helpful when you are shooting in a variety of light conditions. The optimum ISO setting for the Blackmagic Pocket Cinema Camera and Cinema Camera is 800ASA with a maximum ISO of 1600ASA. For Production Camera 4K the optimum setting is 400ASA with a maximum ISO of 800ASA.

Depending on your situation, however, you may choose a lower or higher ISO setting. For example, in low light conditions 1600ASA would be suitable, or 800ASA for Production Camera 4K, but may introduce some visible noise. In bright conditions 400ASA, or 200ASA on Production Camera 4K, would be best to record richer colors.

Adjust the ISO settings using the arrow icons in the menu.

White Balance

Blackmagic Cameras include white balance presets for a variety of color temperature conditions. Each light source emits a warm or cool color. Warm appears red and cool appears blue, so the white balance setting adds opposing red or blue to compensate. This makes sure white stays white in your image. Color temperature also changes depending on the position of the sun and the cloud conditions. For example, light is warm at sunrise, cools down until midday, then warms up again as the sun sets. Shady areas in your picture, including overcast conditions, will generally appear blue. Use the following guide to set your white balance to compensate for the changing light conditions:

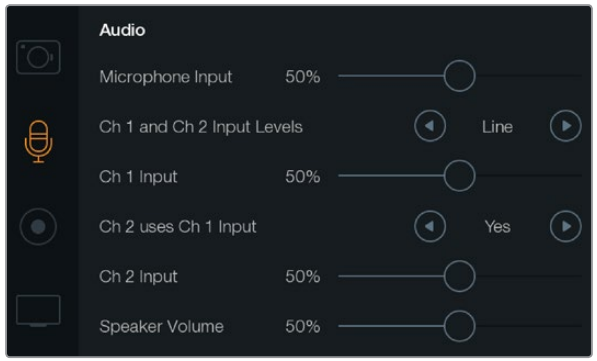
- 2500, 2800, 3000, 3200, 3400, 3600, 4000, 4500 and 4800K for various conditions under tungsten, incandescent or fluorescent light, or under dull natural light including candle light, sunrise/sunset, morning, and after noon light.
- 5000, 5200, 5400 and 5600K for outdoors on a clear, sunny day.
- 6000, 6500, 7000, 7500 and 8000K for a variety of daylight conditions.

Adjust the White Balance settings using the arrow icons in the menu.

Shutter Angle

Shutter angle complements the ISO setting by regulating the amount of light on the sensor. 180 degrees is the optimum shutter angle, however as lighting conditions change you may need to adjust accordingly. For example, 360 degrees is considered 'wide open' and allows maximum light onto the sensor. This is useful for low light conditions. If you notice lights are flickering, 172.8 degrees will minimize this effect when shooting 24p in countries with 50 hertz power supplies.

Adjust the 'shutter angle' settings using the arrow icons in the menu.



The 'audio' settings screen lets you adjust the microphone input level, input level type, audio channel levels, mirror ch 1 audio to ch 2, and adjust the headphones or speaker volume.

Audio Settings

To adjust audio input and audio monitoring settings on your Blackmagic Camera, press the 'menu' button to open the dashboard, select the 'settings' icon, then select the microphone icon to the left of the settings menu.

Microphone Input

Microphone input adjusts the recording levels of the built in microphone. Move the audio slider left or right to increase or decrease levels. Blackmagic Pocket Cinema Camera has a built in stereo microphone and Blackmagic Cinema Camera and Production Camera 4K have built in mono microphones. The built in microphones record to audio channels 1 and 2 when no external audio source is connected.

Channel 1 and 2 Input Levels

External audio connectors accept audio at microphone level or line level. It's important to select 'mic' or 'line' level audio as appropriate to avoid your external audio sounding almost inaudible or too hot and distorted.

Set the external audio input levels by using the left and right arrows. To prevent damage, the camera will automatically switch to line level input if the input levels are over the limit for a sustained period of time.

Channel 1 Input Level

Move the audio slider icon left or right to increase or decrease levels for channel 1. The external audio input overrides the built in microphone and is recorded to audio channel 1.

Channel 2 uses Channel 1 Input

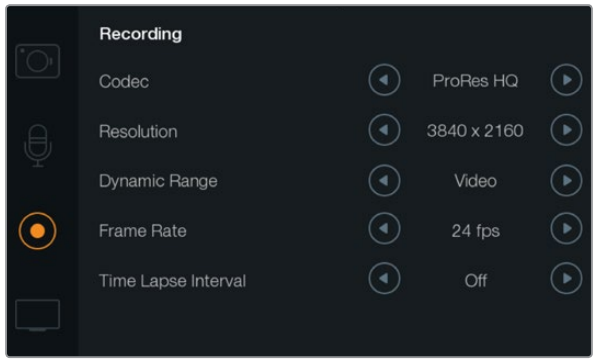
Select Yes if you only have channel 1 input and want to record the same external audio to channels 1 and 2. You can leave this set to No if you only want to record one channel of audio.

Channel 2 Input Level

Move the audio slider icon left or right to increase or decrease levels for channel 2. The external audio input overrides the built in microphone and is recorded to audio channel 2.

Headphone and Speaker Volume

When headphones are connected, a headphone icon will be displayed. When no headphones are detected, a speaker icon will be displayed. Headphones will always be active when recording or playing back, however speakers will only work when playing back. Move the volume slider left or right to increase or decrease audio monitoring levels.



The 'recording' settings screen lets you set your recording format, frame rate and time lapse interval, and select between film and video dynamic range.

Recording Settings

The recording settings are used to set the video format recorded to your SD card or SSD. Press the 'menu' button to open the dashboard, select the Settings icon, then select the circular record icon to the left of the settings menu.

Recording Format

Blackmagic Pocket Cinema Camera

Press the left and right arrow buttons to switch between ProRes HQ, ProRes 422, ProRes LT, ProRes Proxy or RAW recording formats.

Blackmagic Cinema Camera

Tap the arrow icons to switch between 2.5K RAW, ProRes HQ, ProRes 422, ProRes LT, ProRes Proxy or DNxHD recording formats.

Blackmagic Production Camera 4K

On Production Camera 4K, tap the arrows on the 'codec' setting to select from RAW, ProRes HQ, ProRes 422, ProRes LT, or ProRes Proxy recording formats. After setting your codec, tap the arrows on the 'resolution' setting to select from 4K, Ultra HD, or HD video resolutions. The resolutions available will depend on your chosen codec.

Dynamic Range

Blackmagic Cameras have two dynamic range settings:

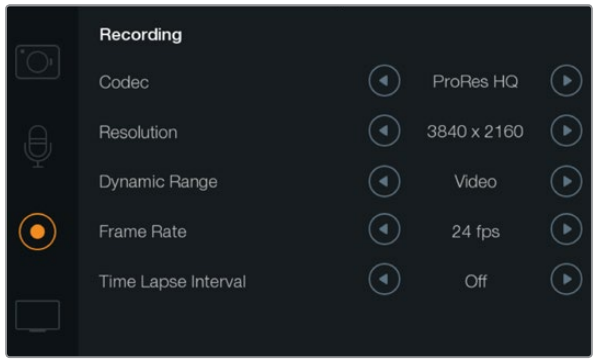
Film

The film setting shoots video using a log curve and gives you 13 stops of dynamic range on both Blackmagic Pocket Cinema Camera and Cinema Camera, or 12 stops on Blackmagic Production Camera 4K. The 'film' dynamic range setting maximizes the information in your video signal to help you get the most out of color grading software, such as DaVinci Resolve. When recording in CinemaDNG RAW formats, only the film dynamic range setting is available.

Video

The video setting uses the REC709 standard for high definition video. This lets you work faster by recording directly to the compressed video formats your camera supports, which are compatible with popular post production software.

Adjust the dynamic range settings using the arrow icons in the menu.



The 'recording' settings screen.

Frame Rate

Your Blackmagic Camera has five different frame rate settings for shooting common film and video frame rates: 23.98 fps, 24 fps, 25 fps, 29.97 fps, 30 fps.

Adjust the frame rate setting using the arrow icons in the menu.

Time Lapse Interval

This setting allows you to record a still frame at the following intervals:

Frames: 2 - 10

Seconds: 1 - 10, 20, 30, 40, 50

Minutes: 1 - 10

For example, you can set the camera to record a still frame every 10 frames, 5 seconds, 30 seconds, 5 minutes etc.

The time lapse feature offers many creative options. For example, if the time lapse interval is set to record a frame at 2 frame intervals, this will give your recorded video a high speed effect when played back.

The format of each still frame is based on your recording format, so if you set the camera to record in ProRes 422 HQ, the time lapse setting will maintain this format. The frame rate will be based on the video frame rate you have set the camera to, i.e., 24fps, so your time lapse footage can be incorporated into your workflow easily.

When the 'rec' button is pressed in time lapse mode, the 'time lapse record' icon will replace the standard record icon. The timecode counter updates when a frame of video is recorded, meaning the rate of timecode increments depends on the time lapse interval setting.

Use the arrow icons to choose a time lapse interval or leave it set to 'off' if you do not want to use the time lapse feature.

File Naming Convention

Blackmagic Pocket Cinema Camera

Blackmagic Pocket Cinema Camera uses the following file naming convention when recording video.

[Camera ID]_[Reel Number]_[yyyy-mm--dd]_[hhmm]_C[Clip number].mov

The table below shows an example of the file naming convention.

BMC01_1_2012-08-08_1631_C0002.mov	QuickTime Movie Filename
BMC01_1_2012-08-08_1631_C0002.mov	Camera ID
BMC01_**1**_2012-08-08_1631_C0002.mov	Reel Number
BMC01_1_**2012-08-08**_1631_C0002.mov	Date (2012 Aug 08)
BMC01_1_2012-08-08_**1631**_C0002.mov	Time (16:31pm - 24hrs)
BMC01_1_2012-08-08_1631_**C0002**.mov	Clip Number

For CinemaDNG files, the folder of the image sequence will also be named the same way.

Blackmagic Cinema Camera and Production Camera 4K

Clips are recorded to your SSDs in the CinemaDNG RAW format or to a ProRes or DNxHD QuickTime movie, depending upon which recording format you have chosen. Blackmagic Cinema Camera and Production Camera 4K use the following file naming convention when recording video.

[Camera ID]_[Reel Number]_[yyyy-mm--dd]_[hhmm]_C[Clip number].mov

The table below shows an example of the file naming convention.

BMC01_1_2012-08-08_1631_C0002.mov	QuickTime Movie Filename
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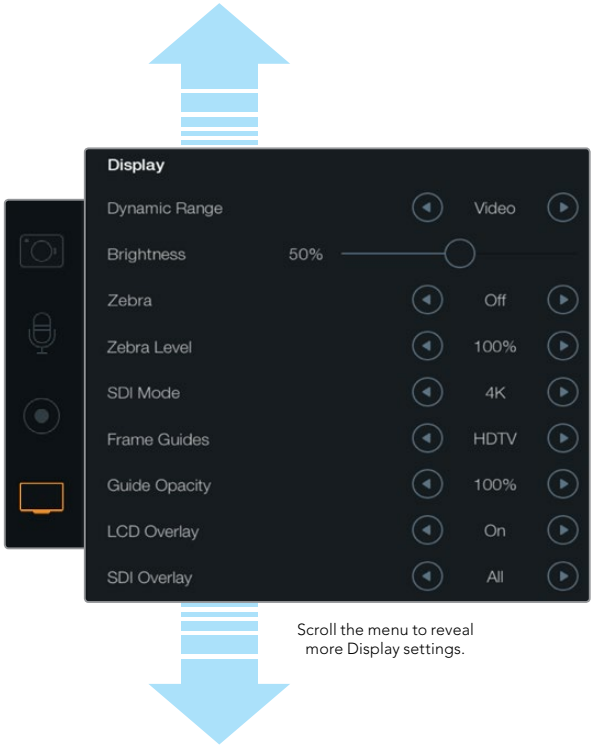
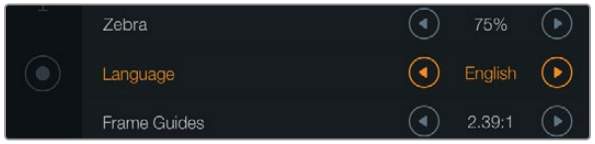
BMC01_1_**2012-08-08**_1631_C0002.mov	Date (2012 Aug 08)
BMC01_1_2012-08-08_**1631**_C0002.mov	Time (16:31pm - 24hrs)
BMC01_1_2012-08-08_1631_**C0002**.mov	Clip Number

For CinemaDNG files, the folder of the image sequence will also be named the same way.



The 'display' settings screen on Blackmagic Production Camera 4K. Display settings on Blackmagic cameras lets you set the brightness of the LCD, turn LCD overlays on or off, adjust the display dynamic range and zebra settings. You can also choose what overlays are visible on your camera's SDI or HDMI output and select your desired frame guides.



Blackmagic Pocket Cinema Camera lets you change the 'language' setting so you can view the menu in various languages.

Display Settings

To adjust the display settings for the LCD and SDI or HDMI output, press the 'menu' button to open the dashboard, select the 'settings' icon, then select the television icon to the left of the settings menu.

Dynamic Range

The LCD allows you to view your video as you are recording. You can set the dynamic range of the LCD by selecting 'video' or 'film'.

The dynamic range setting of the LCD is independent to the dynamic range set in the recorder settings. Some people prefer to monitor video with the LCD set to 'video' even when the recording format is set to 'film'.

Adjust the dynamic range setting of the LCD using the arrow icons in the menu.

Brightness

Move the slider icon left or right to adjust brightness settings for the LCD.

Zebra

The zebra feature helps you achieve optimum exposure by displaying diagonal lines over areas of the video that exceed your set zebra level. Turn the zebra feature on or off and adjust the 'zebra level' by tapping the left and right arrow icons. Setting the zebra to 100% shows which areas are clipped.

Language

The Blackmagic Pocket Cinema Camera menu can be set to display various languages.

To set the language:

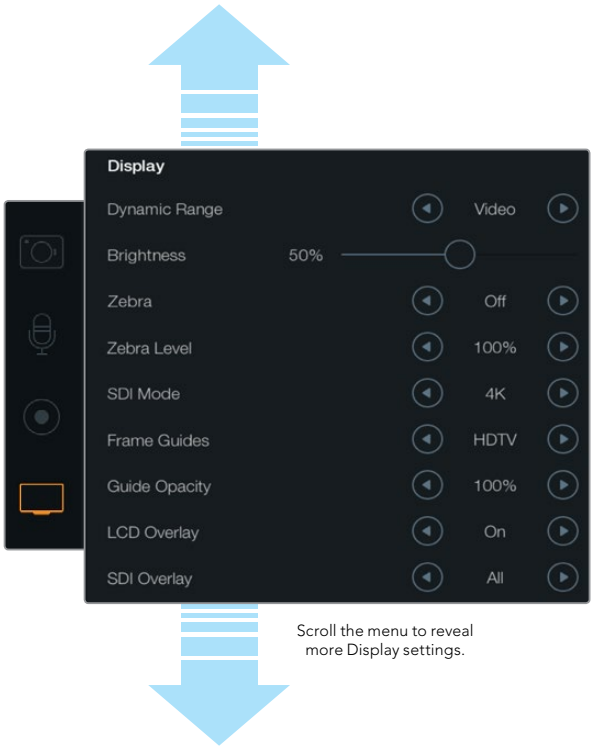
Step 1. Press the 'menu' button to open the dashboard on the LCD. You can also bypass the dashboard by pressing and holding the 'menu' button. Select 'settings' using the navigation buttons and press 'ok'.

Step 2. Navigate to the 'display' settings and select 'language'.

Step 3. Cycle through the different languages by pressing the right and left navigation buttons and press 'ok' to confirm. You can also confirm your language setting by pressing the 'menu' button. It may take a second to two for the display to update.

SDI Mode

Use this setting to switch Blackmagic Production Camera 4K's 6G-SDI output between 4K and HD video. This can be handy when monitoring Ultra HD using Blackmagic UltraScope which is compatible with HD video signals.



Scroll the menu to reveal more Display settings.

The frame guides setting on Blackmagic Cameras lets you display overlays on the camera's LCD and SDI/HDMI output.

Frame guides provide helpful markers so you can accurately compose your shots for various television, online and cinema aspect ratios, for example the popular 2.39:1 flat widescreen ratio as shown above.

SDI/HDMI Overlays

You can monitor your video on an external display using the HDMI port on Blackmagic Pocket Cinema Camera, or the SDI port on Blackmagic Cinema Camera and Production Camera 4K.

The 'SDI overlay' or 'HDMI overlay' setting lets you display useful information on your monitor. Use the arrow icons to select which overlays to display on your SDI or HDMI feed.

All: displays both frame guides and recording information.

Status: displays only the recording information, such as f-stop number, frame rate, battery life etc.

Guides: displays only the frame guides.

Off: gives you a clean feed.

You can also view guides on the camera LCD by opening the dashboard and selecting the 'frame guides' icon.

LCD Overlay

You can turn the frame guides on or off for the LCD independently of the SDI/HDMI output. For example, you may want to view frame guides on the LCD, but output a clean video feed over the camera's SDI/HDMI output.

Frame Guides

You can choose from several different frame guides to display on your Blackmagic camera's LCD. The frame guides can also be viewed on the SDI output, or the HDMI output on Blackmagic Pocket Cinema Camera. Frame guides include aspect ratios for various cinema, television and online standards, plus a rule of thirds composition grid. Use the 'frame guides' setting arrow icons to select your desired frame guide.

HDTV: Displays action and title safe regions of your image within a 1.78:1 aspect ratio compatible with 16:9 HD television and computer screens.

4:3: Displays the 4:3 aspect ratio compatible with SD television screens, or to help frame shots when using 2x anamorphic adapters.

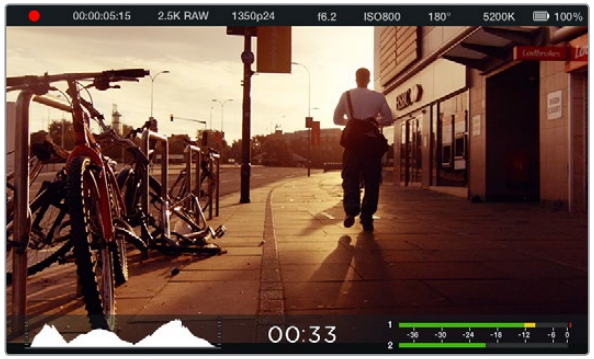
2.35:1, 2.39:1 and 2.40:1: Displays the broad widescreen aspect ratio compatible with anamorphic or flat widescreen cinema presentation. The three widescreen settings differ slightly based on the changing cinema standards over time. 2.39:1 is one of the most prominent standards in use today.

1.85:1: Displays another common flat widescreen cinema aspect ratio. This ratio is slightly wider than HDTV 1.78:1 but not as wide as 2.39:1.

Thirds: Displays a grid with two vertical and horizontal lines placed in each third of the image. Thirds are an extremely powerful tool to help compose your shots. For example, the human eye

typically looks for action near the points where the lines intersect, so it's helpful to frame key points of interest in these zones. An actor's eyeline is commonly framed along the top third of the screen, so you can use the top horizontal third to guide your framing. Thirds are also useful to maintain framing consistency between shots.

Guide Opacity: Aspect ratios are displayed as mattes on the top and bottom of your touch screen and fold out monitor. You can adjust the opacity of the matte by adjusting the 'guide opacity' setting. For example, if you prefer to view your guides as solid mattes, select 100%. Alternatively, if you would like to view guides at maximum transparency, set the guide opacity to 25%.



On screen meters and status strip on the Blackmagic Cinema Camera. Swipe up from the bottom of the screen to reveal the meters.

On Screen Meters

Your Blackmagic Camera features meters such as recording time remaining, histogram and peak audio to assist when setting optimum exposure, checking how much space is left on your media, and to prevent your audio from clipping.

View meters by swiping up from the bottom of the touchscreen with your finger. Hide the meters by swiping down. On the Blackmagic Pocket Cinema Camera, press the 'up' directional button to reveal the meters, and press the 'down' button to hide them. On screen meters can also be opened or hidden by selecting or deselecting the 'meters' feature on the dashboard.

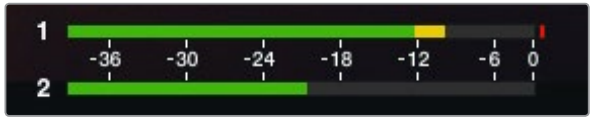
For optimum exposure, open or close your aperture until the histogram curve sharpens to a point at the bottom edges. A flat vertical edge on the sides of the histogram means your blacks or whites are clipped.

Histogram

The histogram display shows the distribution of the luminance in your video. Pure black is on the far left side of the display and pure white is on the far right of the display. Keeping your video signal within these limits prevents your shadows and highlights from being clipped and preserves detail in the tonal ranges.

Recording Time Remaining

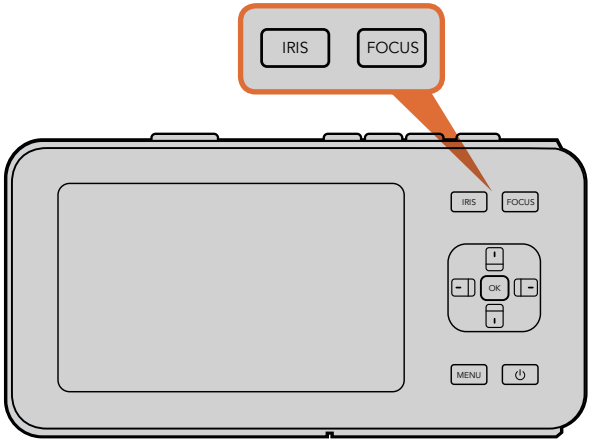
The recording time remaining indicator shows the remaining recording time for your SSD or SD card. The time is shown in hours and minutes and will vary according to your selected frame rate and codec. For example, ProRes 422 HQ at 24 frames per second. The indicator will automatically recalculate if either of these settings are changed. When there is approximately 5 minutes remaining on your SSD or SD card, the indicator will turn red, and will blink intermittently when there is only 2 minutes remaining.



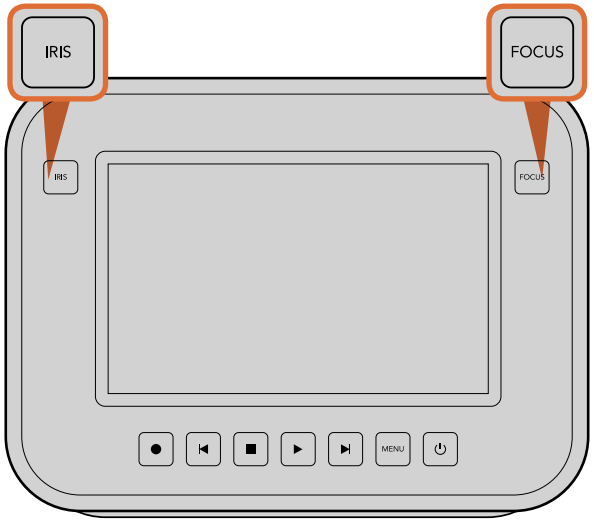
For optimum audio quality, adjust your audio levels until the peak averages at -12dB, but does not peak beyond 0dB.

Peak Audio

The peak audio meters display audio levels for channels 1 and 2 when using the internal microphone, or via external audio when connected. The display is calibrated to dBFS units and features peak hold indicators which stay visible for a short time so you can clearly see the maximum levels reached. To achieve optimum audio quality, ensure your audio levels never rise above 0 dBFS. If your audio rises above 0 dBFS, the peak hold indicators will turn red, indicating that audio is clipped.



On Blackmagic Pocket Cinema Camera, press the 'iris' button, then use the left and right directional buttons to adjust aperture control. Press the 'focus' button for focus peaking.



On Blackmagic Cinema Camera and Production Camera 4K EF models, press the 'iris' button, or use the transport controls to adjust aperture control. Press the 'focus' button for focus peaking. The 'focus' button also activates auto focus on EF mount models using a compatible lens.

Adjusting Settings

Blackmagic Pocket Cinema Camera, Cinema Camera EF and Production Camera 4K EF support electronic lens control, which allows you to adjust lens controls from the camera such as aperture and auto focus. Cinema Camera MFT and PL mount camera models have a passive lens mount if you want to use manual lenses without electronic control. The focus peaking feature creates a green edge around the sharpest parts of the image so you can easily confirm your focus. Focus peaking is visible on the LCD and via SDI or HDMI out with overlays set to 'on', but does not affect your recorded picture.

Iris Button

When using 'video' dynamic range settings, a single press of the 'iris' button will set an average exposure based on the highlights and shadows in your shot. When using film dynamic range settings, pressing the 'iris' button sets your exposure to the brightest highlight in your shot.

To set your aperture manually on Blackmagic Pocket Cinema Camera press the left and right directional buttons on the back panel.

To set your aperture manually on Blackmagic Cinema Camera and Production Camera 4K press the forward and reverse buttons on the transport controls.

Focus Button

When using a compatible auto focus lens with Blackmagic Pocket Cinema Camera, or Cinema Camera and Production Camera 4K EF models, press the 'focus' button once to auto focus. A quick double press of the focus button activates focus peaking.

When using a manual lens, press the focus button once for focus peaking.

Focus Zoom

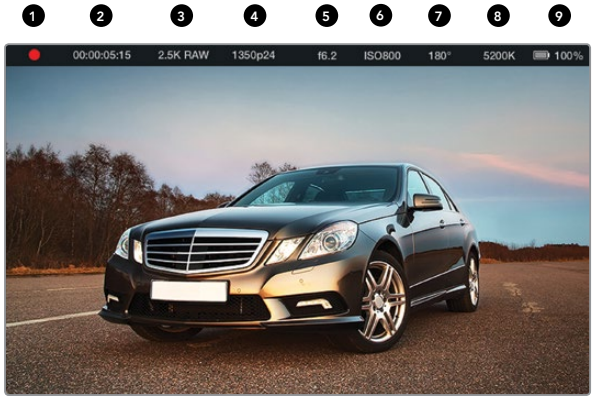
When using Blackmagic Pocket Cinema Camera, double press 'ok' to zoom in for adjusting focus at the 1:1 pixel scale. Double press 'ok' again to zoom out.

On Blackmagic Cinema Camera and Production Camera 4K, double tap the touchscreen display to zoom into the image for adjusting focus at the 1:1 pixel scale. Double tap the display again to zoom out.

Image Stabilizer

Blackmagic Pocket Cinema Camera, Cinema Camera EF and Production Camera 4K EF support the image stabilizer (IS) feature found in many active lenses. Simply set the stabilizer switch to 'on' to use it with your camera. If your lens also features a stabilizer mode switch, set it to the appropriate mode for still shots or for movement.

When using battery power, the camera will only activate the image stabilizer while recording, as the lens draws additional power from the camera to operate the image stabilizer. When external power is connected to the camera, the image stabilizer will be active any time you set the lens stabilizer switch to 'on'.



1. Media and Recording Status
2. Timecode
3. Recording Format
4. Video Format/Frame Rate
5. F-Stop
6. ISO Setting
7. Shutter Angle
8. White Balance
9. Battery Life Indicator

Status Strip

Your chosen settings are always displayed on a status strip, which runs the length of the LCD, showing a convenient summary of the camera's current settings.

Battery Life Indicator

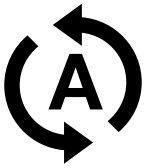
When the remaining charge drops below 25% capacity, the status strip will show the battery status in red to warn you that battery life is running low.

SD/SSD Activity Icons

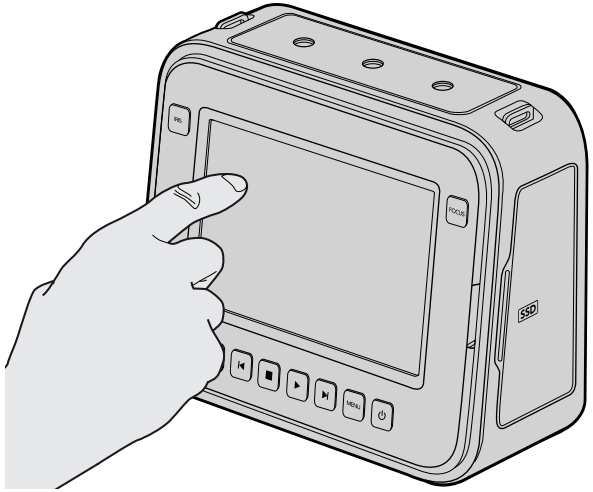
The status strip displays important information showing the state of the inserted media.

Moving Dots	When you see the moving dots, the camera is checking and preparing the media.
No Card/SSD	This means no media is detected or present in the camera.
Ready	Ready to record.
Red Icon	Recording.
Flashing Red Icon	Dropped frames were detected.
Card/Disk Full	Appears when SD card or SSD is full.
Playback mode	Displays play, fast forward and reverse icons.
Timecode	Displays the duration of clips during recording and playback from your SD card or SSD.

The 'slate' feature lets you include metadata information in your clip files for post production.



Select the auto-increment icon if you want the scene, shot or take number to auto increment.



On Blackmagic Cinema Camera and Production Camera 4K you can simply tap the display once with your finger and the slate will appear.

What is the Slate?

The LCD on your Blackmagic camera has many purposes, one of which is to allow you to easily log metadata directly into the camera using the slate feature. Metadata is stored in the recorded files and is easily accessed by editing software.

Blackmagic Pocket Cinema Camera

Step 1. Press 'ok' once to make the slate appear, or press the 'menu' button to open the dashboard and select 'metadata'.

Step 2. Use the directional buttons to select the text you wish to change and press 'ok'. An onscreen keyboard will appear. Use the directional buttons to select characters on the keyboard and press 'ok' to confirm each character selection.

Step 3. Once you have typed in your information, select 'save' and press 'ok' to return to the metadata screen.

Step 4. If you want the scene, shot or take number to auto-increment, select the corresponding auto-increment icon so it is illuminated and press 'ok'.

Entering words into the 'keywords' field allows them to be used as search terms in your library database. This may be particularly useful for large projects with lots of material. The use of keywords narrows down the number of clips to search through, saving valuable time when you are editing.

All metadata is compatible with popular software such as Final Cut Pro X and DaVinci Resolve.

Blackmagic Cinema Camera and Production Camera 4K

Step 1. Tap the touchscreen once to make the slate appear. You can also access the slate from the dashboard by pressing 'menu', then selecting the metadata icon.

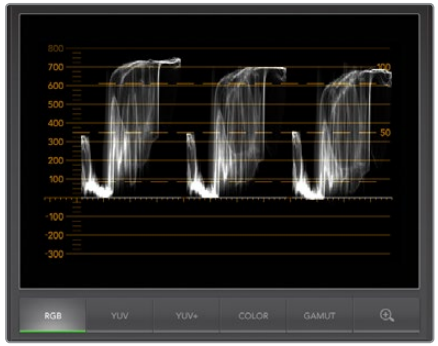
Step 2. To enter or change details, tap the text you wish to change and an onscreen keyboard will appear. Type in the desired information and press the save button.

Step 3. If you want the scene, shot or take number to auto-increment, tap the corresponding auto increment icon so it is illuminated. Tap it again if you want to turn off the auto increment feature.

Entering words into the keywords field will allow you to use them as search terms in your library database. This may be particularly useful for large projects where you have lots of material. The use of keywords narrows down the number of clips to search through, saving valuable time when you are editing.

All metadata is compatible with popular software such as Final Cut Pro X and DaVinci Resolve.

2-up view



RGB parade display

Screen Resolution Requirements for Display Views

- Full screen view: 1920 x 1200 pixels or 1920 x 1080 pixels. If your monitor doesn't support these resolutions, then full screen view will not be available.
- 2-up view: minimum resolution of 1280 x 800 pixels.

Blackmagic UltraScope Displays

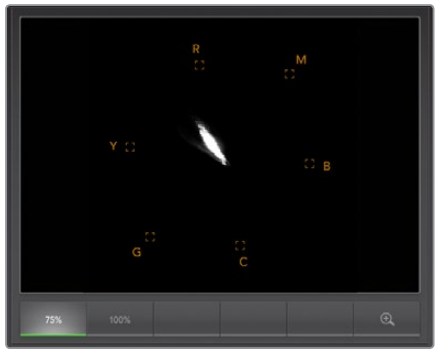
Blackmagic UltraScope software is a great tool for maintaining accurate video and audio levels from your Blackmagic camera so you can make the most of your digital footage in post-production. Scopes used to monitor your levels include vectorscope, RGB parade, histogram and audio metering display.

RGB Parade Display

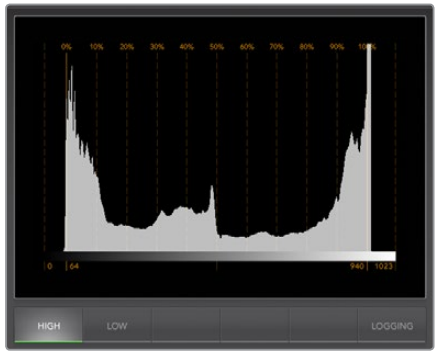
RGB parade displays the red, green and blue channels of your Blackmagic camera's image. If one of the channels is elevated, it will indicate the presence of a color cast. For instance, any excessive elevation of a color channel will indicate that your white balance is incorrect.

You may want a certain color effect in your shot, for example when using a colored filter on your lens, like a warming filter. An elevated red channel will be normal, but you can also check the other color channels aren't being overly crushed. The same applies if using intensely colored gels on your lights. Remember that any "look" you create in camera can be easily enhanced during post-production using a vectorscope and RGB parade in DaVinci Resolve.

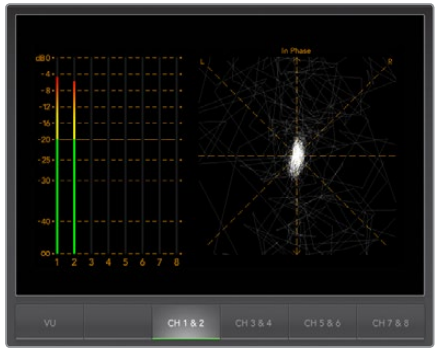
The waveform of the RGB parade is great for checking if your Blackmagic camera's image is clipped or crushed. Any clipping of highlights will be visible by a flat horizontal line at 100 IRE, or the upper level of your scope. Clipping results in a loss of image detail, so if there is image detail in your highlights that you want to preserve, adjust your lighting or exposure accordingly. Remember, it's easy to clip out image information during color grading in DaVinci Resolve, but if detail is not present in the original exposure then it cannot be recovered in the grade.



Vectorscope display



Histogram display



Audio metering display

Vectorscope Display

Vectorscope is useful for monitoring the color balance and saturation of your Blackmagic camera's video signal. If your signal has a dominant green color cast then the majority of image information will be located towards the green area of the vectorscope. In comparison, an image with a neutral color balance will have information evenly distributed around the center.

The center of the vectorscope represents zero saturation. The further an object is from the center, the more saturated it appears. For example, if shooting green screen for compositing, you want the green screen to be as saturated as legally possible to achieve the best key or matte. Broadcast legal colors are maintained by ensuring the saturation levels don't go beyond the graticule boxes on your vectorscope display.

The vectorscope can also be used to check your camera's white balance on location. When zooming into a white object so it fills the camera's frame, the vectorscope will show a cluster of information. Correct white balance will display information evenly clustered around the center. Adjust your camera's white balance setting to see how it affects the display.

Histogram Display

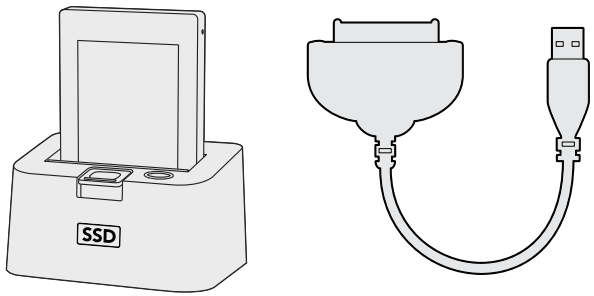
Using histogram is another way to check for clipping, crushing and image contrast in your Blackmagic camera signal. The horizontal axis represents the luminance range with black on the left (0 in a 10 bit image) and white on the right (1023 in a 10 bit image). Clipping is displayed as image information clustered at the 1023 mark. Crushing is displayed as information clustered at the 0 mark. An image with good contrast will display information covering the entire horizontal axis, whereas a low contrast image will display information predominantly in the middle.

Audio Metering Display

Audio metering display shows you the audio levels embedded in your Blackmagic Camera's video signal. The 2 channels of embedded audio are displayed in either dBFS or VU format. dBFS is essentially a meter of the overall digital audio signal and is common on modern digital equipment. The VU meter shows average signal levels, is easy to use and very common on older equipment.

To monitor your audio levels, watch the VU meter and ensure the levels never peak above 0dB. Peaking above 0dB means your audio is clipping.

You can also monitor audio phase and balance using the audio metering display.



Edit directly from the SSD by removing it from your camera and mounting it on your computer using an eSATA Thunderbolt dock or USB 2.0 docking cable.

Working with Files from SSDs

To import your clips from a SSD:

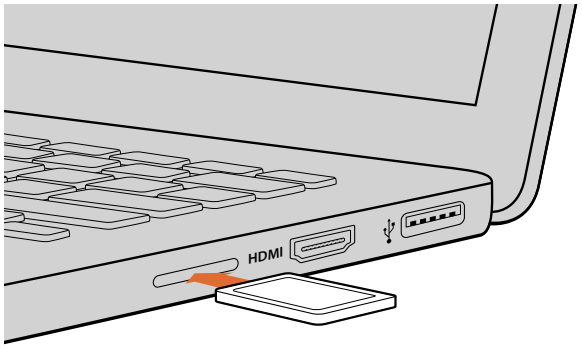
Step 1. Remove the SSD from your Blackmagic Cinema Camera or Production Camera 4K.

Step 2. You can mount the SSD to your Mac OS X or Windows computer using either an eSATA or Thunderbolt dock, for example Blackmagic MultiDock. You can also use an eSATA to USB adapter cable to plug the SSD straight into a USB port on your computer. USB 3.0 is preferable as USB 2.0 is not fast enough to edit video in real time.

Step 3. Double click on the SSD to open it and you should see a list of QuickTime movie files or folders that contain your CinemaDNG RAW image files. Depending on the format you chose to record in, you might have a mixture of files, but they will all use the same naming convention.

Step 4. Now you can simply drag the files you want from the SSD onto your desktop or another hard drive, or you can access the files straight from the SSD using your NLE software. CinemaDNG RAW files are saved to the SSD as separate DNG images for each frame. This is an open format and you can use many software applications to view your RAW 2.5K images as a video sequence.

Step 5. Before you unplug the SSD from your computer, it's always a good idea to eject the SSD safely using either Mac OS X or Windows first.



Insert your SD card into any computer with an SD card slot to access your clips immediately.

Working with Files from SD Cards

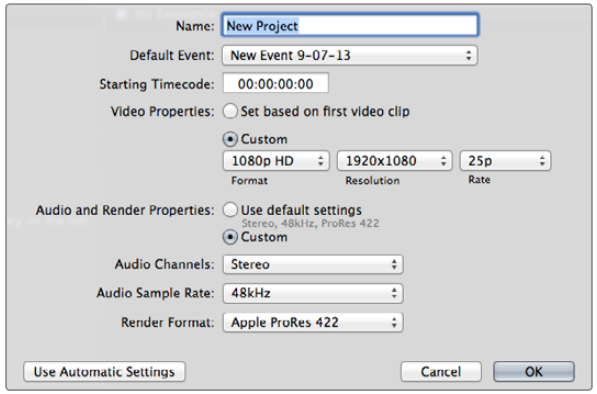
You can access your ProRes or CinemaDNG files straight from your SD card with any Mac OS X or Windows computer that features an SD card slot or by using an SD card reader.

Step 1. Remove the SD card from your Blackmagic Pocket Cinema Camera and insert it into the SD card slot of your computer, or SD card reader. The SD card can be accessed the same way as you would an external hard drive, USB drive or any other media storage device attached to your computer.

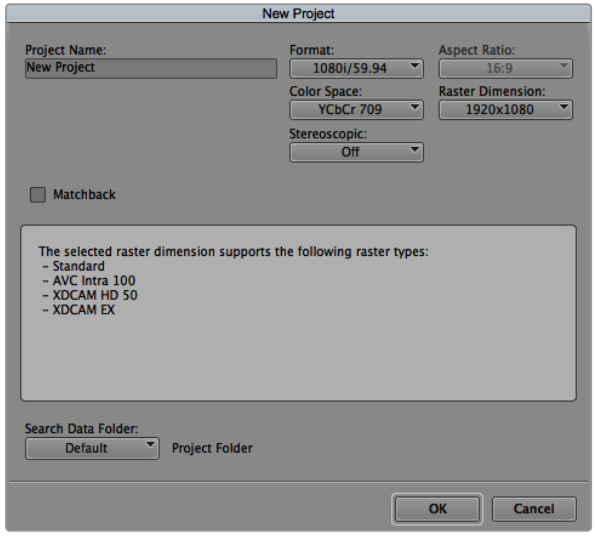
Step 2. Double click on the SD card to open it and you should see a list of QuickTime movie files or folders which contain your CinemaDNG RAW image files. Depending on the format you chose to record in, you might have a mixture of files and folders, but they will all use the same naming convention.

Step 3. Now you can simply drag the files you want from the SD card onto your desktop or another hard drive, or you can access the files straight from the SD card using your NLE software.

Step 4. Before you physically remove the SD card from the SD card slot, it's always a good idea to eject the SD card safely using either Mac OS X or Windows first.



Final Cut Pro X project settings.



Setting the project name and project options in Avid Media Composer 7.

Working with 3rd Party Sofware

If you have your own favourite editing software you'd like to use, you can easily copy your clips to an internal/external drive or RAID and then import your clips into the software. If you want to, you can even edit your clips directly from the SD card or SSD using a card reader, external SATA adaptor or SSD Dock.

Using Final Cut Pro X

To edit Apple ProRes 422 (HQ) clips using Final Cut Pro X, you need to create a new project matching your clips' video format and frame rate. For this example, clips are set using ProRes 422 (HQ) 1080p25 camera settings.

Step 1. Launch Final Cut Pro X, go to the menu bar and select 'file/new project'. A window will open containing project settings.

Step 2. Name your project and select the 'custom' checkbox.

Step 3. Set the 'video properties' settings to 1080p HD, 1920x1080 and 25p.

Step 4. Set your 'audio and render properties' settings to 'stereo, 48kHz, and Apple ProRes 422 HQ'

Step 5. Click 'ok'.

To import your clips into your project, go to the menu bar and select 'file/import/media'. Choose your clips from your SSD or SD Card.

You can now drag your clips onto the timeline for editing.

Using Avid Media Composer

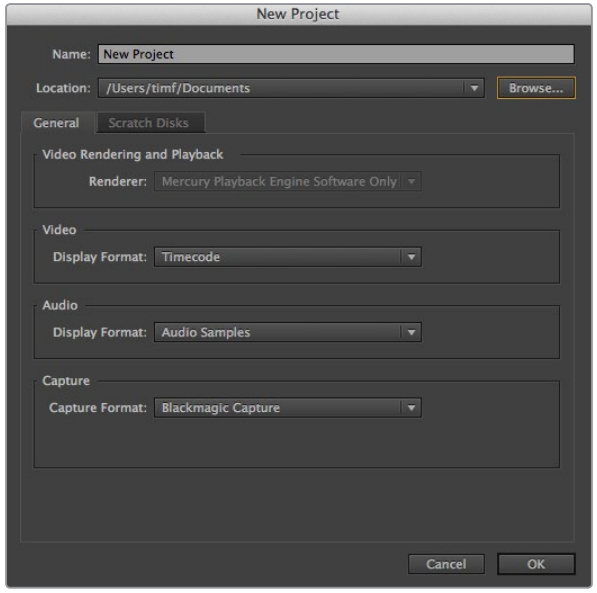
To edit your DNxHD clips using Avid Media Composer 7, create a new project matching the clip's video format and frame rate. For this example, clips are set using DNxHD 1080i59.94 camera settings.

Step 1. Launch Media Composer and the 'select project' window will appear. Click the 'new project' button.

Step 2. In the 'new project' window name your project.

Step 3. Go to the 'format' dropdown menu and select 1080i/59.94.

Step 4. Go to the 'color space' dropdown menu and select YCbCr 709.



Setting the project name and project options in Adobe Premiere Pro CC.

Step 5. Go to the 'raster dimension' dropdown menu and select 1920x1080. Click 'ok'.

Step 6. Select 'tools>background services' and click the 'start' button if background services are not already running and then click 'ok'.

Step 7. Select the media bin where you wish to import your files.

Step 8. Select 'file>AMA link...' and select the files that you wish to import and then click 'ok'.

When the clips appear within the media bin you can drag your clips onto the timeline and begin editing.

Using Adobe Premiere Pro CC

To edit your Apple ProRes 422 HQ or DNxHD clips using Adobe Premiere Pro CC, you need to create a new project matching your clips' video format and frame rate. For this example, clips are set using ProRes 422 (HQ) 1080p25 camera settings.

Step 1. Launch Adobe Premiere Pro CC. In the 'welcome' window select 'create new/new project'. A window will open containing project settings.

Step 2. Name your project. Choose the location for your project by clicking 'browse' and selecting your desired folder. Once you've selected your location folder click 'ok' in the 'welcome' window.

Step 3. Go to the Adobe Premiere Pro CC menu bar, select 'file/import' and choose the clips you want to edit. Your clips will appear in the 'project' window.

Step 4. Drag the first clip you wish to edit onto the 'new item' icon at the bottom right of the 'project' window. A new sequence will be created matching your clip settings.

You can now drag your clips onto the sequence timeline for editing.

Using Autodesk Smoke 2013

To edit your clips using Autodesk Smoke 2013, create a new project matching the clips' video format, bit depth, frame type and frame rate. For this example, clips were shot using ProRes 422 (HQ) 1080p25 camera settings.

Step 1. Launch Smoke and the project and user settings window will appear. Click on the 'new' button under the project heading.

Step 2. The 'create new project' window will open. Name your project.

Step 3. From the resolution dropdown menu, select 1920x1080 HD 1080.

Setting the project name and project options in Autodesk Smoke 2013.

Step 4. Make sure bit depth is set to 10-bit and frame type is progressive.

Step 5. From the config template dropdown menu select 1920x1080@25000p.cfg.

Step 6. Leave the 'preferred format' set to ProRes 422 HQ and click 'create'.

Step 7. Click on the 'new' button under the user heading.

Step 8. When the 'create new user profile' window opens, type your user name and click 'create'.

Step 9. When the project and user settings window reopens, click the start button.

Step 10. From the menu bar, select 'file>import>file' and select your clips to import.

Step 11. Once the clips appear in the media library you can drag your clips onto the timeline and begin editing.

York 1020 Black Magic Pocket Camera

Recommended Settings:

Dashboard>Settings>Camera

ISO: 800 ISO (although other ISO settings influence your F-Stop and Depth of Field)

White Balance: 3200K for Tungsten lights, 5600K for Daylight (available light)

Shutter Angle: 180’

Dashboard>Settings>Audio

Microphone Input: 0%

Ch 1 Input: 0%

Ch 2 Input: 0%

Speaker Volume: 0%

Dashboard>Settings>Recording

Recording format: ProRes 422 (Do not shoot your 1020 projects on RAW setting)

Resolution: 1920 x 1080

Dynamic Range: Film

Frame Rate: 24p

Time Lapse Interval: Off

Dashboard>Settings>Display

Dynamic Range: Film

Brightness: 50%

Zebra: ON

Zebra Level: 90% (or set to 100% to only identify peak whites in your frame)

Frame Guides: 1.85:1

Menu>

Focus Peaking: ON

Meters: ON (if you want to consider the Histogram display)

Prime Lenses: Kern and Kern-Paillard Switar C mounts:

Wide angle: 10mm

Normal lens: 25mm

Telephoto: 75mm

Metabones EF to C mount lens adaptor

Zacuto Z-finder viewfinder extension and hood for the view screen

Getting Help

The fastest way to obtain help is to go to the Blackmagic Design support pages and check the latest support material available for your camera.

Blackmagic Design Online Support Pages

The latest manual, software and support notes can be found at the Blackmagic Design support center at www.blackmagicdesign.com/support.

Contacting Blackmagic Design Support

If you can't find the help you need in our support material, please use the "send us an email" button on the support page to email a support request. Alternatively, click on the "find your local support team" button on the support page and call your nearest Blackmagic Design support office.

Checking the Software Version Currently Installed

To check which version of Blackmagic Camera Setup software is installed on your computer, open the 'about Blackmagic Camera setup' window.

- On Mac OS X, open Blackmagic Camera Setup from the 'applications' folder. Select 'about Blackmagic Camera Setup' from the application menu to reveal the version number.
- On Windows, open Blackmagic Camera Setup from your 'start' menu or 'start' screen. Click on the 'help' menu and select 'about Blackmagic Camera Setup' to reveal the version number.

How to Get the Latest Software Updates

After checking the version of Blackmagic Camera Setup software installed on your computer, please visit the Blackmagic Design support center at www.blackmagicdesign.com/support to check for the latest updates. While it is usually a good idea to run the latest updates, it is wise to avoid updating any software if you are in the middle of an important project.

Battery Replacement

Blackmagic Cinema Camera and Production Camera 4K's built in battery is not user-servicable. Should the battery require replacement, you will need to send it to your nearest Blackmagic Design service center for replacement. If the camera is outside of its warranty period, the battery replacement will incur a small service fee for the cost of the battery, labor and return of the camera to you. Please contact Blackmagic Design Support to find out details of where to send your camera, how to package it safely and how much the replacement will cost in your country.

12 Month Limited Warranty

Blackmagic Design warrants that this product will be free from defects in materials and workmanship for a period of 12 months from the date of purchase. If a product proves to be defective during this warranty period, Blackmagic Design, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, you the Customer, must notify Blackmagic Design of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. The Customer shall be responsible for packaging and shipping the defective product to a designated service center nominated by Blackmagic Design, with shipping charges pre paid. Customer shall be responsible for paying all shipping charges, insurance, duties, taxes, and any other charges for products returned to us for any reason.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Blackmagic Design shall not be obligated to furnish service under this warranty: a) to repair damage resulting from attempts by personnel other than Blackmagic Design representatives to install, repair or service the product, b) to repair damage resulting from improper use or connection to incompatible equipment, c) to repair any damage or malfunction caused by the use of non Blackmagic Design parts or supplies, or d) to service a product that has been modified or integrated with other products when the effect of such a modification or integration increases the time or difficulty of servicing the product. THIS WARRANTY IS GIVEN BY BLACKMAGIC DESIGN IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED. BLACKMAGIC DESIGN AND ITS VENDORS DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. BLACKMAGIC DESIGN'S RESPONSIBILITY TO REPAIR OR REPLACE DEFECTIVE PRODUCTS IS THE WHOLE AND EXCLUSIVE REMEDY PROVIDED TO THE CUSTOMER FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES IRRESPECTIVE OF WHETHER BLACKMAGIC DESIGN OR THE VENDOR HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES. BLACKMAGIC DESIGN IS NOT LIABLE FOR ANY ILLEGAL USE OF EQUIPMENT BY CUSTOMER. BLACKMAGIC IS NOT LIABLE FOR ANY DAMAGES RESULTING FROM USE OF THIS PRODUCT. USER OPERATES THIS PRODUCT AT OWN RISK.