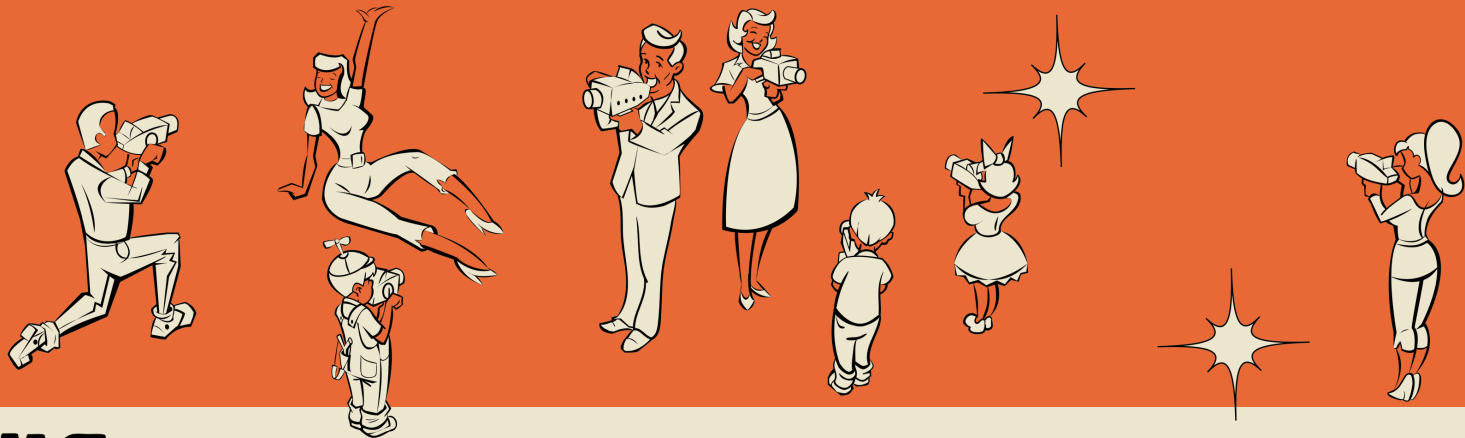# USER MANUAL

Digital BOLEX

DIGITAL CINEMA CAMERA

d16 BOLEX

COMPANY STATEMENT

You are the new owner of a Digital Bolex D16, and we hope you are proud. By selecting our camera, you are helping to preserve the experience and aesthetic of shooting film in the digital age, and supporting an independent camera company that strives to provide the highest quality design standards and components for its products.

Thank you for going on this journey with us. We don't think you'll be disappointed.

Sincerely,

The Digital Bolex Team

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DIAGRAM OF PARTS

d16
BOLEX

MOUNT
CAP

LENS
MOUNT

MIC LEVELS   CRANK 2 (REAR)   CRANK 1 (FORWARD)   CRANK HANDLE

DIAGRAM OF PARTS

COLD
SHOE
MOUNT

12V 4-PIN
XLR (OUT)

HDMI PORT

12V 4-PIN XLR (IN)

AUDIO XLR

1/8 VIDEO
JACK

HEADPHONE
JACK

DIAGRAM OF PARTS

ARTICULATING MONITOR

ACCESSORY MOUNTS (2)

COLD SHOE MOUNT

FAN VENT

LENS MOUNT EXTERNAL SCREWS (3)

MONITOR

MENU BUTTON

DISPLAY BUTTON

ENTER/ 1:1 MODE

CF CARD SLOTS

MEDIA DOOR

RECORD BUTTON

POWER BUTTON

USB3 PORT

MENU

DISP

ENTER

REC

BUTTONS AND NAVIGATION

When in camera menu, ENTER selects highlighted menu option.

Outside of a menu, ENTER zooms in on disply for a 1:1 mode that aids critical focus.

Accesses camera menu.

When powering down, functions as "cancel" button.

When camera is alseep, pressing once wakes up camera.

Press once to record. Press again to stop recording.

MENU

REC

ENTER

Cycle through display overlay options: icons off, third lines, normal.

DISP

Press and hold for 5 seconds to turn on camera.

Hold down to put display to sleep.
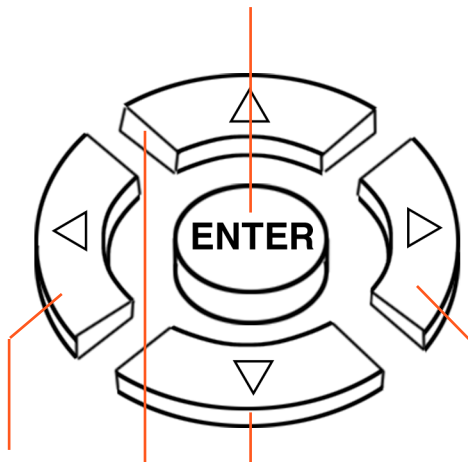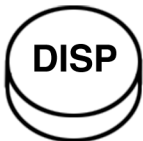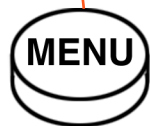
Use the left, right, up, and down buttons to navigate the menu.

In 1:1 mode, use the buttons to move the field of view.

Press and hold for 5 seconds, or press once then hit ENTER to power down.
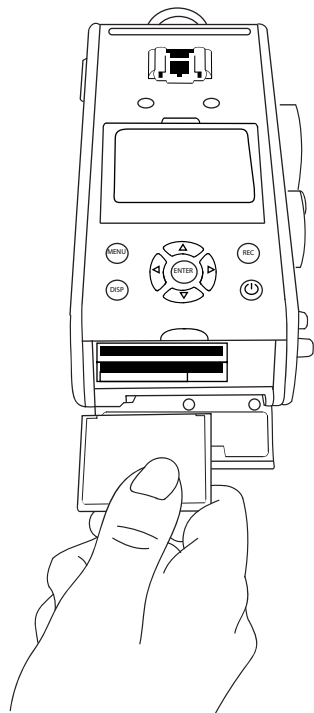
1) Insert two CF cards (*See* "DATA MANAGEMENT" *on* **Page 28**) if you prefer to shoot on cards. If you prefer to use the internal SSD, you do not need additional storage media.

2) Attach a lens to the C-mount (or other mount) on the front of the camera.
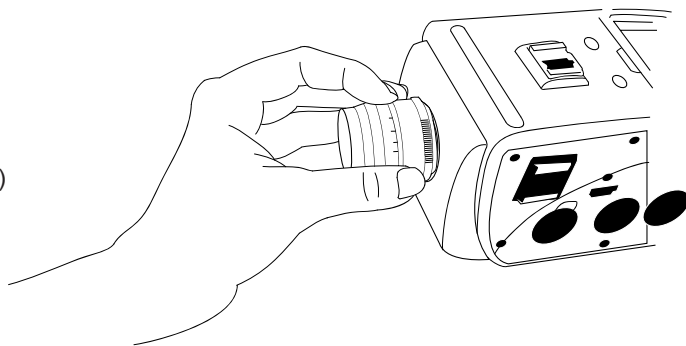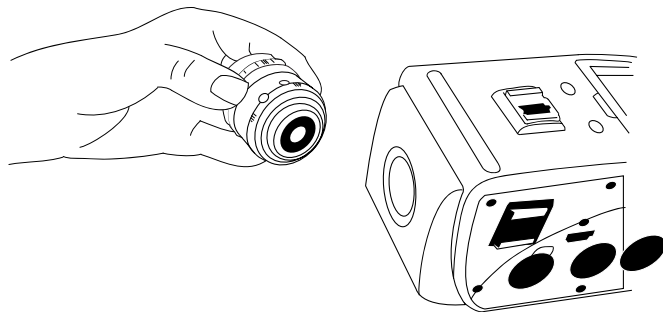
3) Attach the pistol grip if you plan to shoot handheld. Place camera on a tripod or shoulder mount for steadier shots.
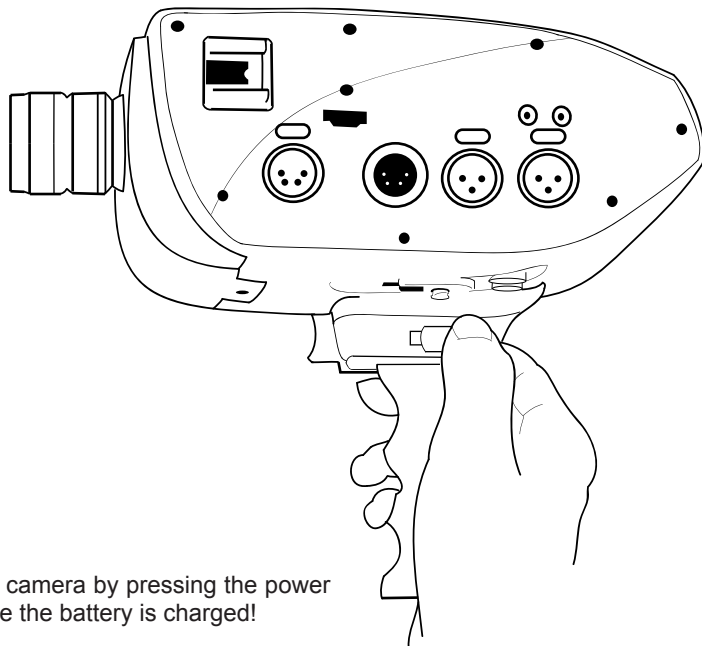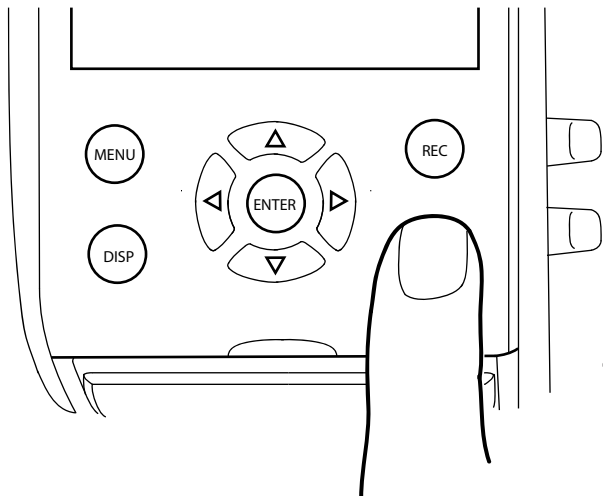
4) Power on the camera by pressing the power button. Make sure the battery is charged!

QUICK GUIDE TO SHOOTING... In 8 Easy Steps!

5) Attach a microphone to the XLR ports or Line-in port if you want to record audio (*See* "RECORDING AUDIO" *on* **Page 32**). Use the menu to navigate to the SOUND submenu and adjust the CH 1 and CH 2 MIC settings to turn on the audio channels for your microphone. Adjust the CH 1 and CH 2 PHTM settings to turn on phantom power if necessary.
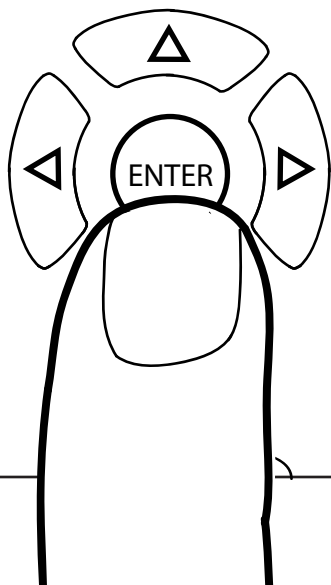
6) Remove the lens cap and use the onboard monitor (*See* "VIDEO MONITORING**"** *on* **Page 18**) to **check your focus**.

Use the ENTER BUTTON to see your footage in a 1:1 ratio for easier focusing. Reframe your focus area by using the left, right, up and down arrows. Exit 1:1 mode by pressing the ENTER BUTTON again.

7) Press the record button to start shooting. Press the record button again to stop recording.
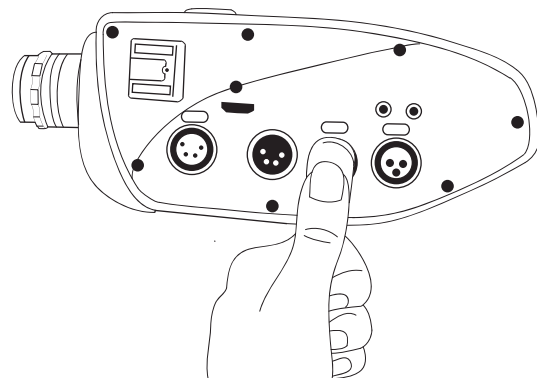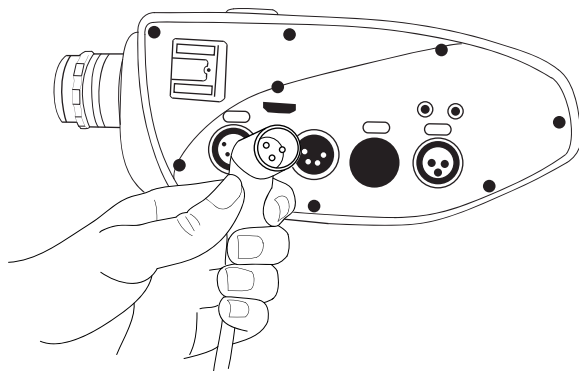
QUICK GUIDE TO SHOOTING... In 8 Easy Steps!

8) Power down your camera and connect it to your computer via USB3 cable (*See* "Data Management" *on* **Page 28**) to access your footage.

The camera's internal SSD drive will appear on your desktop like any external hard drive, allowing you to copy footage to a safe destination.

Warning: Do not turn on your camera while it is still mounted to the desktop. This may cause errors to your SSD. Always eject your camera's drive from the computer before turning it on.

To delete footage from the camera, navigate to the FORMAT menu (*See* "Data Management", *on* **Page 28**.) and format the drive in camera.

Warning: Never delete footage directly from the hard drive through your computer. This may cause the hard drive to perform abnormally.

If you copied footage to CF cards, power down the camera, remove your cards, and place them in a card reader attached to your computer.

8 simple steps.
That's all there is to it!

THE BATTERY

The D16 has an internal 12V, 40Wh LiPo battery with a life expectancy of 1000 charge cycles. The battery is not removable.

Charging the battery

When your camera arrives, the internal battery may not be fully charged. In order to ensure the longest life from your battery, you should charge your camera before you begin shooting, and always charge the battery to 100% whenever possible.

To charge the battery, connect the AC power adapter via the 4-PIN XLR input on the left side of the camera.

When the AC power adapter is properly connected and your battery begins charging, a "lightning bolt" icon will appear over the battery icon on your camera's display, and a white 4-PIN XLR icon will appear next to the battery.

BATTERY ICON

4-PIN ICON appears when AC charger or external power is connected.

When charging is complete, the "lightning bolt" icon will disappear and the battery icon will appear full. The 4-PIN XLR icon will remain as long as the AC power adapter is connected.

You may also charge the internal battery by connecting third party battery solutions via the 4-PIN XLR port.

If the 4-PIN XLR icon on your display appears red instead of white, **something is wrong** and the battery may not be charging properly.

You will want to determine the source of the problem before you continue shooting, or you may risk the camera shutting down.

To determine whether the problem is caused by the internal battery or your AC power adapter, try plugging the camera into a different 12V power source **that you know works correctly**.

If the battery charges normally, you will need to replace your AC power adapter. If the problem does not go away, it may be time to replace your battery.

(*See* "Replacing the battery" *on* **Page 13** *for more details.*)

Shooting time

When fully charged, your battery will last around 3 hours of shooting time, depending on your shot length and environment.

Hot and cold temperatures affect your battery life, as does continuous shooting and shooting long takes.

Your battery icon displays the percentage charge of the battery. It will also update while charging, until the battery is full (100%).

We suggest plugging into your AC power adapter when the battery life drops below 10% to ensure continuous shooting.

To maximize the shooting time and life of your internal battery, we suggest keeping the camera powered down when not in use, keeping AUTO SLEEP mode activated, and having the AC power adapter connected when possible.

Auto Power Off

The D16 has the ability to auto power off after 1 or 5 minutes of inactivity. This helps to save power between shots. You can activate or disable auto power off by navigating to the POWER MGMT submenu. (*See* "DISPLAYS AND MENUS" *on* **Page 25.**)

Note: You can temporarily put your display to sleep and save power by pressing and holding the DISP button for 3 seconds. To wake the camera from sleep, press the MENU button once.

Using external power sources

The Digital Bolex D16 is designed for use with external power sources for versatility while shooting in different conditions.

Any 12V power source or battery with a 4-PIN XLR connection can be used to charge your camera. We recommend keeping the camera plugged into your AC power adapter or an external power source whenever possible to ensure long battery life.

Replacing the battery

Your Digital Bolex D16 comes with a standard 1 year warranty. While your camera's internal battery comes with an estimated shelf life of 5 years, after a certain number of charge cycles, or if a problem occurs, your battery may need to be replaced.

Replacement of the D16 battery requires professional repair services, which must be performed at an authorized repair center. Use of an unauthorized facility will void your warranty, if you are still within your one year warranty period.

Please contact us if you are in need of assistance regarding your battery via our website, **www.digitalbolex.com/contact**.

Storage & Inactivity

The D16's LiPo battery is designed for continual use, and will degrade if left unused for long periods of time. If planning to store the D16, it is optimal to store the camera at a 40% to 50% battery charge. Storing at 0% or 100% may decrease the longevity of the battery more rapidly.

THE INTERCHANGEABLE LENS MOUNT

Your D16 comes with a C-mount, the same mount used on 16mm Bolex film cameras, allowing you to use legacy 16mm and Super 16mm lenses right out of the box with no crop factor.

Attaching a Lens

To attach a lens to your C-mount camera, unscrew the **mount cap** on your camera, unscrew the **protective cap** at the bottom of your lens, and attach the lens to the camera via the screw threading on the front of the lens mount.
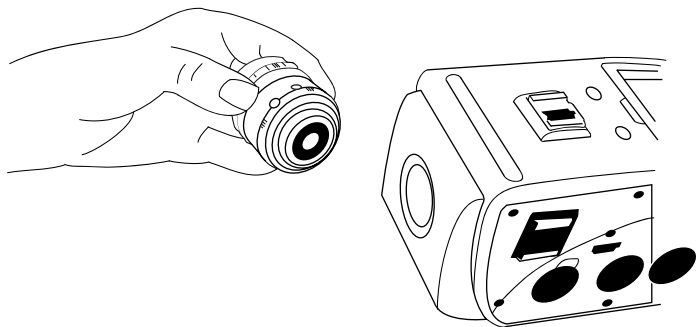
Note: Only C-mount lenses are compatible with the C-mount.

Changing the Lens Mount

The D16 has an interchangeable lens mount system that allows you to natively use a variety of popular mounts like EF, PL, Micro 4/3, and C-Mount turret on your camera. The process of changing mounts is easy and fast, you only need a screwdriver.

Before you change the mount

If you would like to use lenses for a different mount system other than the default C-mount, you will first need to power down the camera, remove any lens you have attached to the mount, and make sure the mount cap is in place.

Make sure you have a safe place to store screws and the C-mount so that you can use it again in the future.

Removing the C-Mount

There are 3 outer screws on the outside of the C-mount, two on the top of the camera (**A**), one on either side of the fan vents, and one on the underside of the lens mount (**B**).

With a Philips-head screwdriver, carefully remove the 3 screws and store them in a safe place.
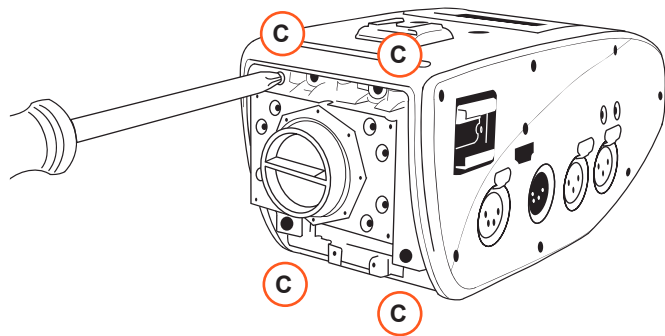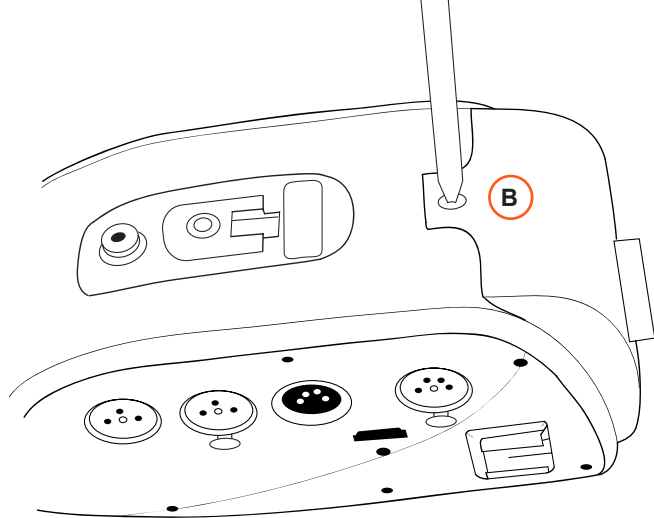
When these are removed, you will be able to remove the outer shell of the C-mount to access the mounting block. There are 4 screws here (**C**), two on the top and two on the bottom, that also need to be removed.

With the C-mount detached, you may now attach your preferred mount to the camera. Each mount may have slightly different instructions for installation, so consult the instructions that came with your mount. When all screws are back in place, attach a lens, and power on the camera. You are now ready to shoot.

Crop Factor

With a sensor plane similarly sized to a Sumer 16mm film plane, the D16 is designed for best use with **Super 16mm** (in 2K mode) and **16mm** (in 1080p mode) cinema lenses.

Lenses designed for other popular formats, such as MFT (Micro 4/3) or 35mm can be used on the D16, but that may result in a crop (slight to moderate zoom) or vignetting, depending on the properties of that lens.

In Super16mm mode, using 35mm lenses on the D16 will result in a 2x crop; MFT lenses will be an approximately 1.43x crop. Using a 16mm lens on 2K mode may result in slight vignetting.

In 16mm mode, using 35mm lenses on the D16 will result in a a 2.3x crop; MFT lenses will be an approximately 1.65x crop.

DISPLAYS AND MENUS

Home Screen

The D16 features an easy-to-use menu system and clear icon display so that you can easily identify and adjust your settings.

XLR Power

Battery

SSD Drive

CF Cards

Crosshair
Display on/off via Display Button

Date / Time
Display on/off via Settings Menu

Mic Volume

Mic On/Off indicator

Audio Format
Adjust via Audio Menu

Crank Mode

Frames Remaining

Frames Per Second
Adjust via Menu or by using Crank

Resolution
Adjust via Image Menu

Recording Indicator

Temperature Gauge

White Balance
Adjust via Image Menu

Shutter Angle
Adjust via Image Menu

ISO
Adjust via Image Menu

Front Crank
Adjust/disable via Crank 1 Menu

Rear Crank
Adjust/disable via Crank 2 Menu

100%	50% SSD use
71716 Remaining	24FPS 2K
1 AIFF 08/13/14	2 48K 12:10:35

Alternate Displays

When on your home screen, a number of alternate display options are available for use. Click the DISP button to cycle through options like SHOW THIRD LINES or HIDE HOME SCREEN ICONS.

These modes will stay active when you press record. Future displays will be available via firmware updates.

HIDE HOME SCREEN ICONS. Record button will still display.
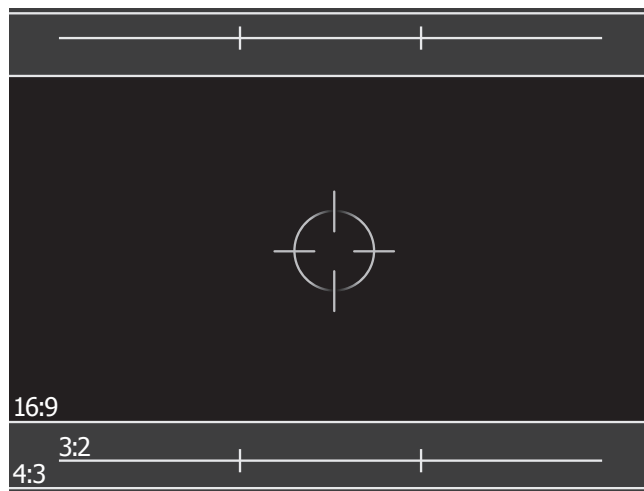
SHOW THIRD LINES. Record button will still display.

Menus

When you press the MENU button on your camera, the menu will display in your onboard monitor. The menu consists of a **MAIN MENU** and seven submenus: **IMAGE, SOUND, DATA, CRANK, DISPLAY**, **SHOT MODE**, and **SETTINGS**.

To navigate, use ▲▼ to scroll ▶◀ to select and return

📹	IMAGE	Adjust settings that affect image capture
🔊	SOUND	
◀	DATA	
🔆	CRANK	
🖥	DISPLAY	
📷	SHOT MODE	
⚙	SETTINGS	

MENU TO EXIT
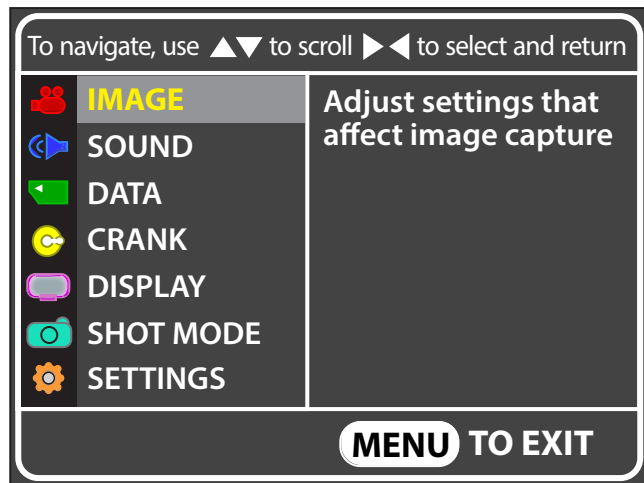
MAIN MENU OF THE D16. HIT THE MENU BUTTON TO OPEN; MENU AGAIN TO CLOSE.

Navigation

Use the arrow buttons to scroll through the submenus. Use right to select a setting to change, up/down to scroll to your preferred option for that setting, and press and right again (or ENTER) to save your selection. Then use left to return to the submenu and adjust other settings, or hit MENU to exit the menu display.

Image Menu

The IMAGE menu settings control the look of the image, like RESOLUTION, FRAME RATE, ISO, SHUTTER ANGLE, and DEAD PIXEL CORRECTION. These items all affect the look of your recorded image beyond stored metadata. Always make sure that these settings are correct before you begin to shoot.

To navigate, use ▲▼ to scroll ▶◀ to select and return

📹	RESOLUTION	Adjust resolution
	FORMAT	
	ISO	
	FPS	2048 x 1152 (2K)
	SHUTTER ANG	
	WHT BALANCE	
	DPC FILTER	

MENU TO EXIT
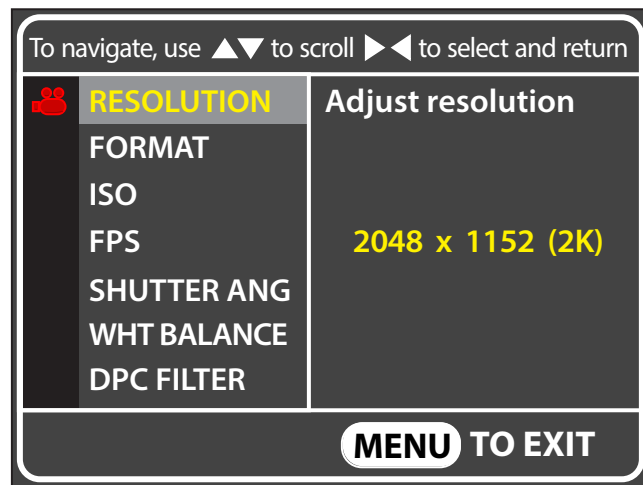
WHT BALANCE

This setting allows you to select one of three white balances for your footage: DAYLIGHT, TUNGSTEN, or FLUORESCENT. The balance you select will be reflected in both your onboard and any external monitors, as well as your raw metadata.

Your metadata and white balance is changeable in post without degrading your image, an advantage of the CinemaDNG raw format, but the white balance you select here will create an "as shot" starting off point for your transcoding sotware.

```
To navigate, use  ▲▼ to scroll ▶◀ to select and return

  RESOLUTION      RGB DAYLIGHT
  FORMAT          RGB TUNGSTEN
  ISO             RGB FLUORESCENT
  FPS
  SHUTTER ANG
  WHT BALANCE
  DPC FILTER

                        MENU  TO EXIT
```
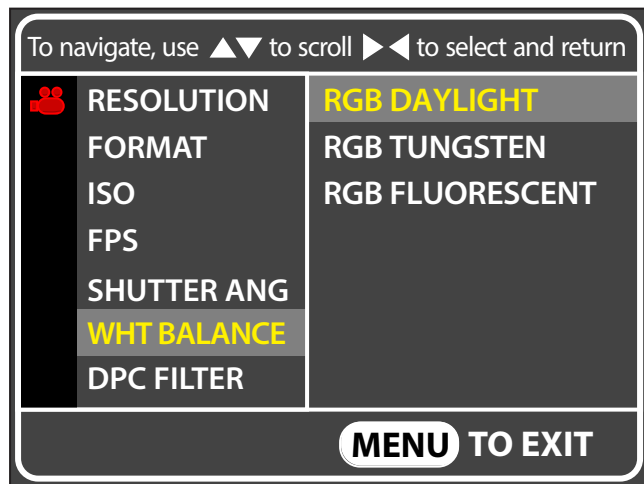
Sound Menu

In the SOUND menu, you can choose to change your FORMAT from 96khz to 44.1khz, change each audio channel to OFF, ON, or LINE IN, turn on/off PHANTOM POWER for your LEFT and RIGHT channels, select whether you want the AUDIO VOLUME METERS to display on your home screen, and adjust your HEADPHONE VOLUME.

```
To navigate, use  ▲▼ to scroll ▶◀ to select and return

  FILE FORMAT     OFF
  CH 1 MIC        MIC 1 ON
  CH 2 MIC        Line 1 In ON
  L PHTM PWR
  R PHTM PWR
  VOL DISPLAY
  HP VOL

                        MENU  TO EXIT
```
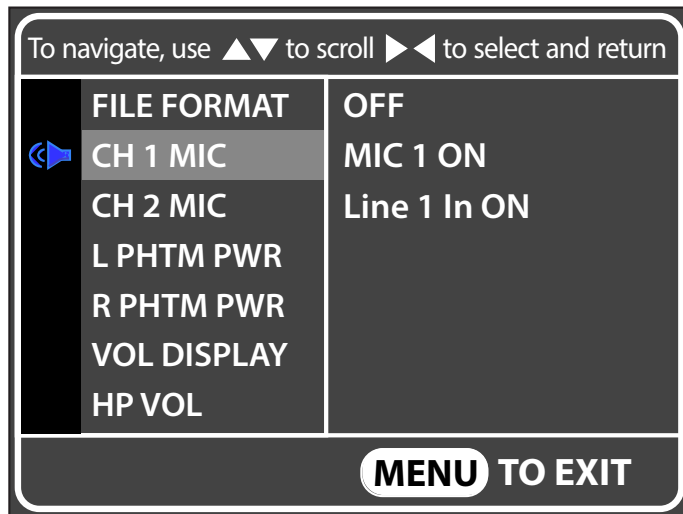
Headphone volume is one of the on-the-fly options that can be assigned to a crank wheel in the CRANK menu for easy adjustment in the field. (*See* "CRANK MENU" *on* **Page 24**.)

Data Menu

The DATA menu is where you control the data storage of the camera. There are options to FORMAT your SSD and CF CARDS, COPY data from the camera to a computer, and edit the name of the directory where your footage is stored.

FORMAT SSD

Before you start shooting, and after your SSD is full, you will need to format the SSD inside the camera.

Warning: before you format the SSD, make sure all of your footage is backed up to an external hard drive or CF cards. To transfer directly from the SSD to a computer, see "TRANSFERING VIA COMPUTER" on PAGE 22.

In the DATA menu, select the SSD FORMAT option and press ENTER to start formatting your drive.

COPY DATA	Format SSD
SSD FORMAT	
◄ CF FORMAT	
DIR NAME	
	It is recommended to format the SSD to clear all data on the camera
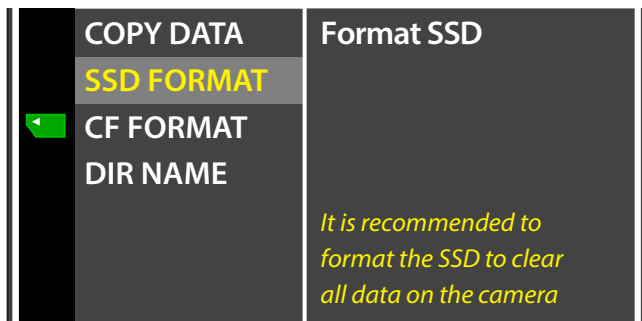
On the next screen, confirm that you want to format the drive.

> Are you sure you want to format?
> Formatting will erase all data.
>
> NO
> YES
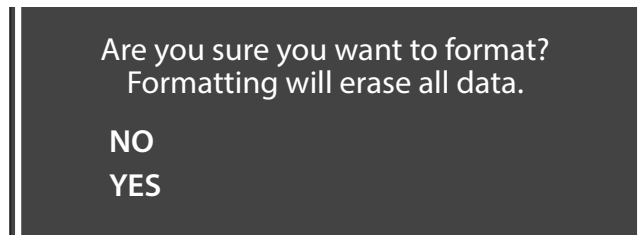
Once you press YES to confirm, you must keep the camera on until formatting is completed.

> **Copying to CF...**
>
> WARNING : DO NOT POWER OFF CAMERA WHILE COPYING
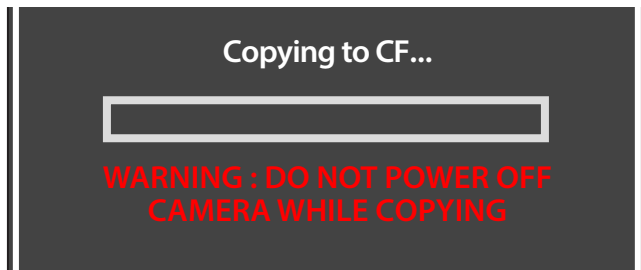
When formatting is complete, you may now shoot.

To format a CF card, using the CF CARD A and CF CARD B options and repeat this process as needed to prep CF cards before shooting, and after backing up full CF cards.

TRANSFERRING TO CF CARDS

Clips will not automatically transfer from the SSD to the CF cards. However, you can choose to transfer footage to the CF cards after you shoot by using the COPY DATA option.

To navigate, use ▲▼ to scroll ▶◀ to select and return	
COPY DATA	**SSD to PC by USB 3**
SSD FORMAT	**SSD to CF Cards**
CF FORMAT	
DIR NAME	
	MENU TO EXIT
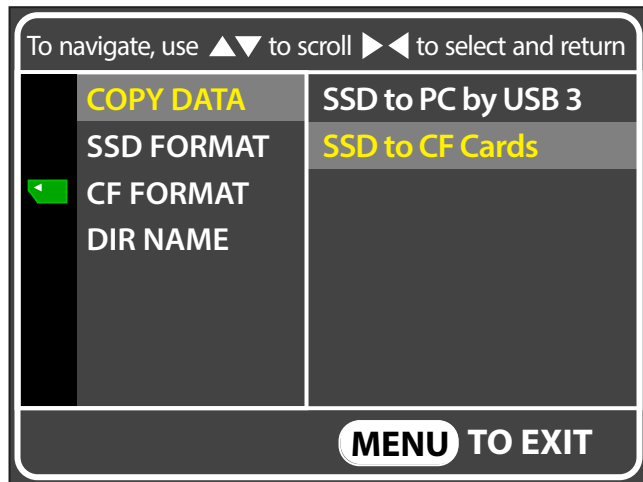
In the DATA menu, navigate to COPY DATA, and select to transfer data from the internal SSD drive to CF cards. Your copy will start immediately, and continue until all footage is copied. Make sure you are using empty CF cards of an appropriate size, so that you won't have an error copying your footage.

Copying to CF...

WARNING : DO NOT POWER OFF CAMERA WHILE COPYING
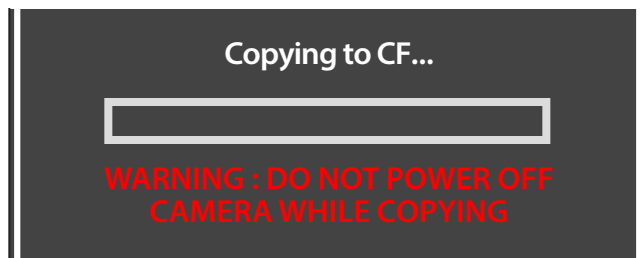
You may cancel the copy any time, however you will not be able to pick up where you left off if you cancel. If you fill your CF card but there is still footage to be copied, you will be prompted to enter a new card. The copy will then pick up where it left off.

CF Card Full.

Please insert a new CF Card.

MENU TO EXIT

TRANSFERING VIA COMPUTER

To transfer footage directly from the internal SSD to a computer via USB3, power down the camera and connect the USB3 cable to the back of the camera. Wait for the drive to show up on your computer as an external drive.

Warning: The first time you connect your camera to a computer, it may take up to 10 minutes for the computer to recognize and pair with the camera. This is normal. Unplugging the camera before it has properly connected could result in your computer crashing.

Copying SSD by USB 3.0...

WARNING : DO NOT POWER OFF
CAMERA WHILE COPYING

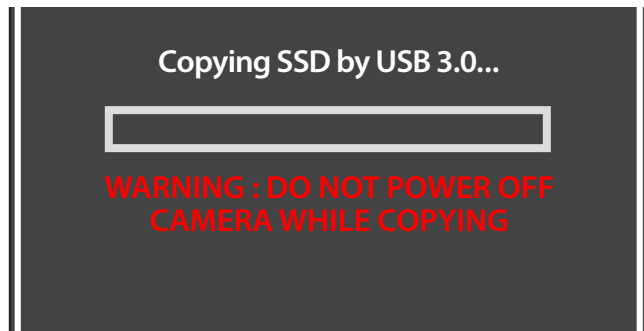Once the drive has mounted, you will be able to access your camera's internal drive like any external hard drive.

On PC: Most Windows users will need an additional program to access the footage from your camera, called an HFS reader. The HFS reader enables you to read the type of drive installed in the camera, which works natively with Mac computers.

For Windows users we recommend the free HFS Explorer by Catacombae. Instructions and download can be found online: **http://www.catacombae.org/hfsx.html**

When your camera is powered off and plugged in via USB3, HFS Explorer "D16SSD" will appear under 'My Computer'. Drag and drop the folders inside to your preferred destination.

Warning: Do not delete footage from the camera via Windows Explorer or Mac Finder. This could damage the write structure of your SSD. Always delete footage by formatting your drive using the FORMAT SSD option in the camera's DATA menu**.**

TRANSFERRING WITHOUT SHUTTING DOWN

If you do not wish to shut down the camera to copy footage, for example if you are on set and simply need to check playback of a take via LightPost (See "Pʟᴀʏʙᴀᴄᴋ" on **Page 35**) you may transfer to a Mac computer while still powered on. Connect the USB3 cable to the back of the camera. Navigate to the DATA TSFR option and select to transfer your footage vial USB3. Wait for the drive to show up on your computer.

Note: This option will not work on Windows computers.

KEEP YOUR CAMERA POWERED AT ALL TIMES

Data transfer may take a long time depending on how much footage you have to copy, whether you are using fast CF cards, and whether your computer is equipped with USB3 capabilities. To ensure proper copying of your data if the camera is still powered on, make sure to keep your camera plugged in while you copy.

If the battery gets too low, you will receive one warning to plug in your charger or an external battery. If you are not able to connect to a power source, your camera may shut down, causing errors to the SSD and potentially corrupting CF cards.

WARNING:

Battery Low.
Plug in Charger.
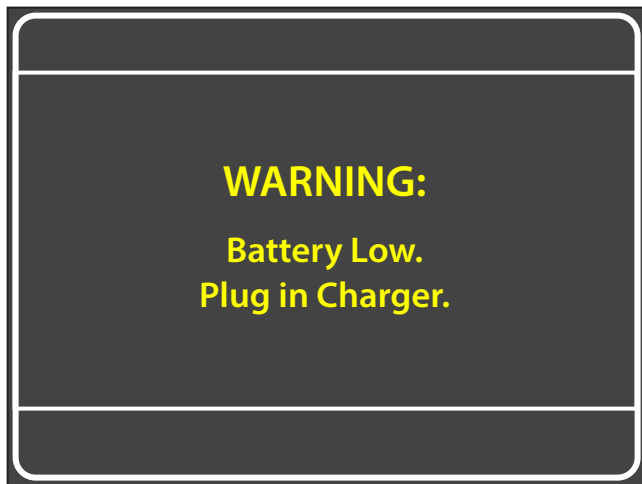
DIR NAME

By default, the D16 records footage to a folder labeled with the date of your shoot, and inside that a Scene number starting with Scene-001.

If you would like to change the name of the directory your footage is stored in, you may do so here. Select the DIR NAME option in the DATA menu, then use the up/down arrows to select letters or numbers. Hit enter or back to save your folder name.

To navigate, use ▲▼ to scroll ▶◀ to select and return

COPY DATA
SSD FORMAT
CF FORMAT
DIR NAME

Folder Name :
S c e n e - 0 0 1

Press ENTER to store

MENU TO EXIT
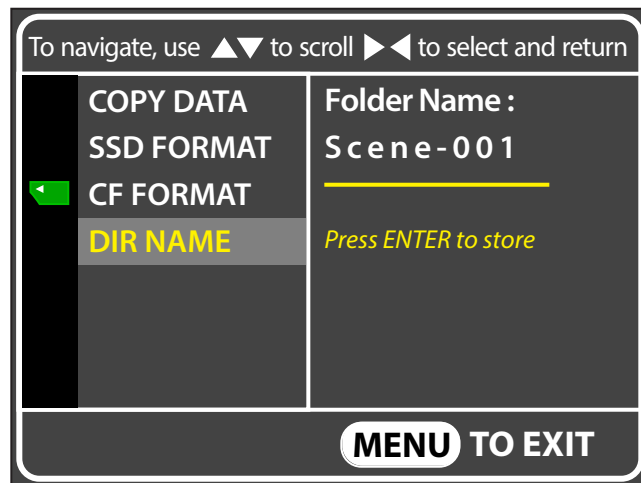
Crank Menu

The CRANK menu allows you to assign different functions to the front and rear crank wheels on the left side of the camera, allowing you to adjust those settings while recording without needing to re-enter the menu.

Settings include SHUTTER ANGLE, LCD GAIN, HEADPHONE VOLUME, ISO, COLOR MODE, and LCD ZOOM, which allows you to zoom in to a 1:1 view of your footage, perfect for checking focus. Select OFF when not using cranks to avoid accidentally changing these settings while shooting.

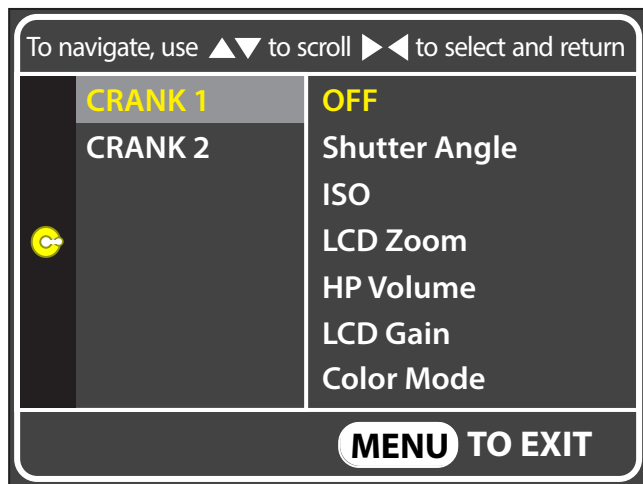| To navigate, use ▲▼ to scroll ▶◀ to select and return	
CRANK 1	**OFF**
CRANK 2	**Shutter Angle**
	ISO
	LCD Zoom
	HP Volume
	LCD Gain
	Color Mode
MENU TO EXIT	

Display Menu

The DISPLAY menu lets you change the look of your home screen and external monitor.

To navigate, use ▲▼ to scroll ▶◀ to select and return	
LCD GAIN	**LOW**
ICONS LCD	**MED**
COLOR MODE	**HIGH**
OVERSCAN	**Enhanced 1**
MIRROR LCD	**Enhanced 2**
HDMI OUT	
SD VIDEO OUT	
MENU TO EXIT	
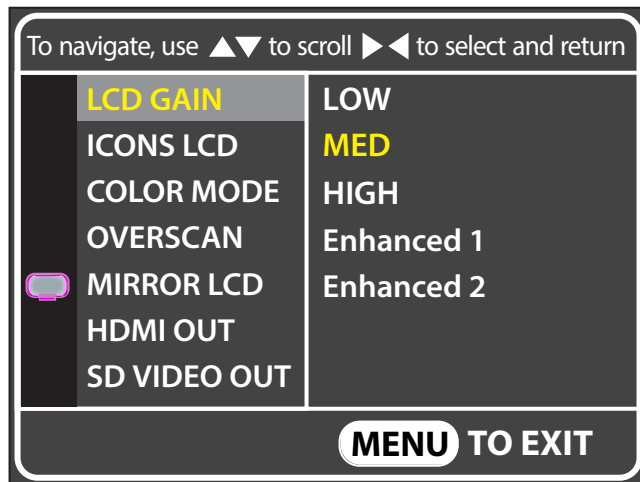
LCD GAIN controls the brightness of the onboard monitor. It is recommended to leave this setting on MED whenever possible.

ICONS LCD allows you to choose whether your home screen icons appear on your onboard display; these can also be removed temporarily by cycling through the alternate displays with the DISP button (See "Alternate Displays" on **Page 17**.)

OVERSCAN guarantees you see the full image being recorded when using external monitors. Some monitors and EVFs crop the 2K image to 1080, not showing you the entire frame being recorded, which can lead to accidentally recording elements outside the 1080 view. With this mode ON, you know that you are seeing the complete recorded image.

MIRROR LCD flips the image on your LCD.

HDMI OUT and SD VIDEO OUT ned to be turned on when you have an external monitor connected via HDMI or SD port.

Warning: Using RAW mode while LCD GAIN is set to LOW may make it difficult to judge proper exposure.

COLOR MODE

COLOR MODE allows you to choose whether your monitor displays a color image while shooting. If you do not want to preview your image in color, you may choose to show your monitors in BLACK & WHITE or NON-DEBAYERED mode instead, which is useful for checking accurate exposure and sharpness of their footage. Shooting with one of these alternate modes will not effect your metadata or recorded color image.

Warning: RAW mode will appear to show a grid on your monitor. This grid will not appear on your final image

Settings Menu

The SETTINGS Menu allows you to adjust the DATE and TIME of your camera, to set up whether your want your camera to power down after one or five minutes of inactivity, and to restore the factory default settings.

You can also view the camera's firmware and hardware versions, control the speed of the camera's built-in fan, and access diagnostic information useful for troubleshooting.

To navigate, use ▲▼ to scroll ▶◀ to select and return

DATE / TIME
POWER MGMT
SET DEFAULT
CAMERA INFO
FAN CONTROL
⚙ DIAGNOSTICS

MENU TO EXIT
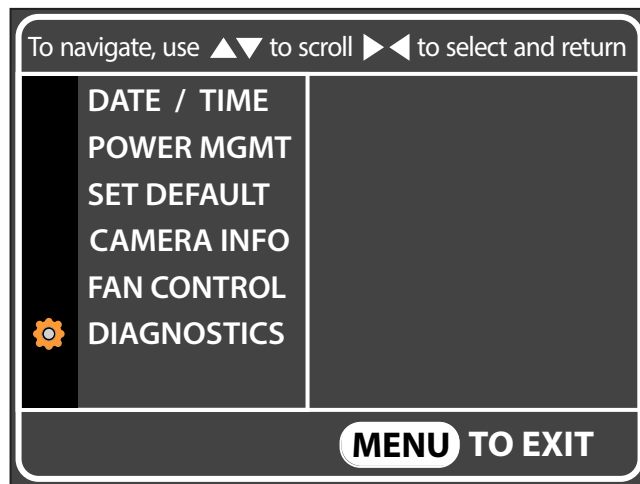
UPDATING THE FIRMWARE

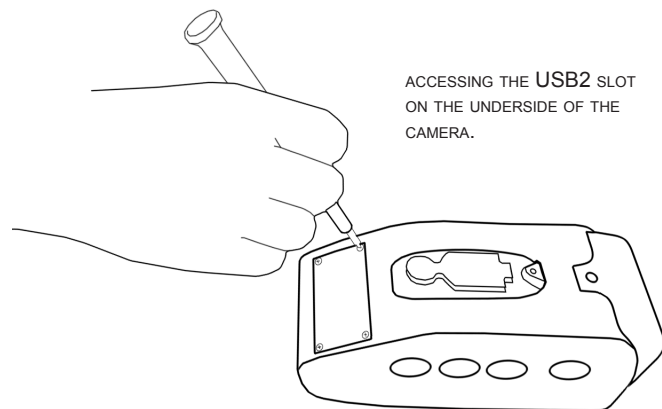When a new version of the D16 firmware is released, you will want to update your camera.

Before you begin, make sure you have downloaded our BOLEX UTILITIES program and the latest version of your firmware, always available on our website at **www.digitalbolex.com/downloads**.

ACCESSING THE USB2 SLOT ON THE UNDERSIDE OF THE CAMERA.

(Check which version of the firmware you have currently installed in the "SETTINGS MENU" on **Page 25**.)

On the bottom of the camera is a small hatch attached via 4 small screws. Using a philips head screwdriver, unscrew this hatch to expose the USB2 port. This port is what you will use to upgrade your firmware.

To start, move the switch on the lefthand side up towards the lens port to engage Update Mode.

USB Port
Towards lens = Update Mode
Away from lens = Normal Mode
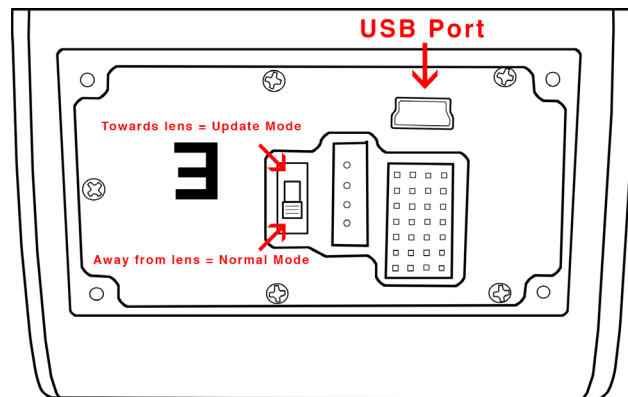
Connect the USB2 cord to the computer, and open our BOLEX UTILITES program. (If you do not currently have this installed, please see "INSTALLING THE SOFTWARE" on **Page 38**.)

Hold the power button for 3 seconds to turn on the camera. Keep the camera connected to an external power supply to ensure the camera does not lose power during your upgrade.

If you have switched into Update Mode properly, color bars will appear on your onboard LCD in place of the normal D16 startup screen.
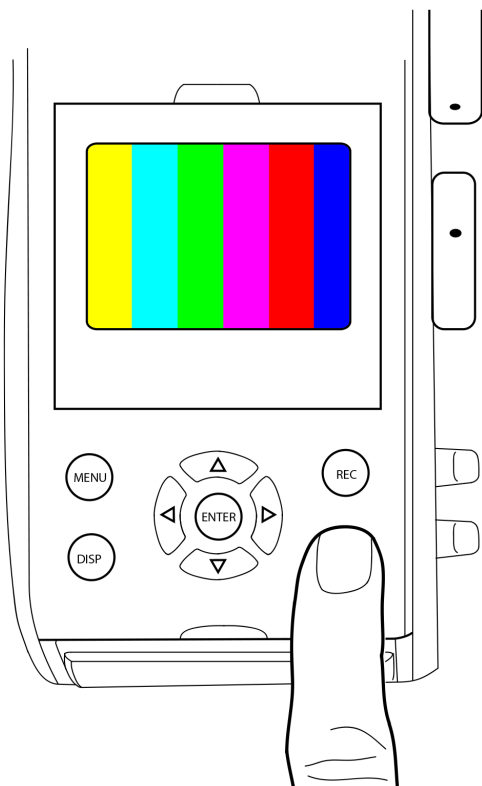
The firmware will automatically begin to download onto your camera. The progress bar on the Firmware Updater software willt tell you how fast the update is occuring andwill give you a time estimate remaining on the update.

Time remaining :   0 sec

Please make sure not to power down the camera or unplug the USB2 cable until the firmware has been installed successfully and you exit the Updater software.

When the firmware has been installed, your camera will automatically power down. Now is the time to unplug the USB2 cable, reset the Update switch to Normal Mode, and replace the plastic cover with your screwdriver. You may also close out of the Digital Bolex Utilities application.
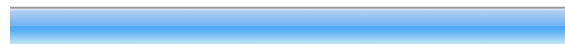
Power your camera back on to access the new features and changes available in the latest firmware.

Additional menus and special features may become active in later versions of the firmware so be sure to make sure your camera is always up to date with the latest version, available for download at **www.digitalbolex.com/downloads**.

DATA MANAGEMENT

Managing data on your D16 is easy. The D16 records two file types, .CinemaDNG and .aiff, to CF cards and an internal 256GB or 512GB Enterprise-class SSD.

The internal SSD acts as a redundant backup system and buffer for the CF cards; footage shot will write first to the SSD and then may be transferred to CF cards, if desired, ensuring no data-loss on the cards. This means you can use any CF cards with the D16, even if without the highest write speeds.

Using CF cards

The D16 can handle CF cards of any size and write speed. We recommend using CF cards of at least 16GB each, as the D16 writes 5GB per minute of footage, and CF cards can fill quickly. Both CF cards do not need to be the same size, but it is recommended. You do not need to two CF cards to shoot, you may use only one at a time.

Inserting the CF cards

To insert the CF cards into your D16, open the door on the rear of the camera. There are two CF slots: A (top) and B (bottom).
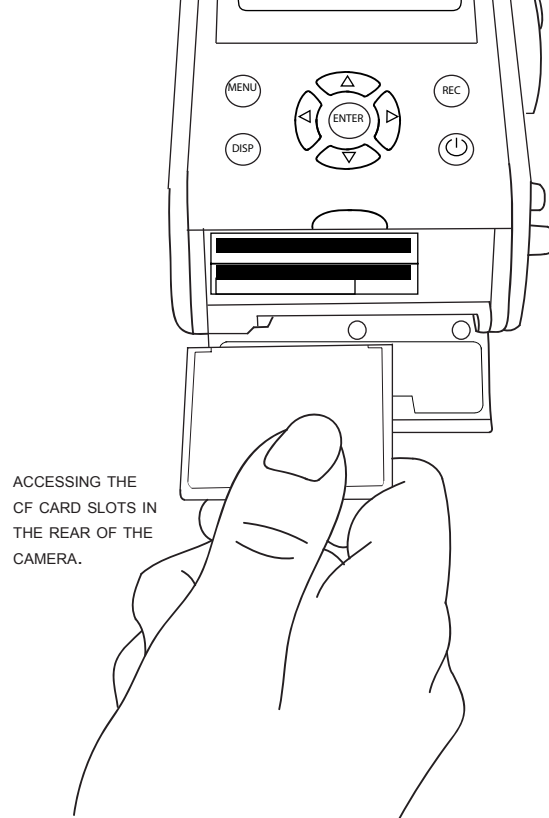
ACCESSING THE CF CARD SLOTS IN THE REAR OF THE CAMERA.

Close the door whenever you are not inserting or removing cards to avoid getting any dust or debris inside the camera.

When CF cards are inserted, the frame counter on your home screen will display YELLOW (CF frames remaining) instead of white (SSD frames remaining). When this yellow counter reaches zero, you will need to insert a new CF card. If this counter is RED, you will need to format your CF card.

About the Internal SSD

The SSD is capable of storing approximately 81 minutes of footage in 2K and 120 minutes in 1080p at 24 FPS. The SSD will record footage whether CF cards are in the camera or not.

Formatting the SSD

If you don't have CF cards in the camera, the frame counter on the top right of the Home Screen shows you how many frames there are remaining on your SSD. When that counter reaches zero, the SSD is full, and you cannot shoot any longer without formatting.

Only format the SSD once you have confirmed that your footage has been safely backed up to a hard drive. (*If you do not know how to back up your footage, see* "DATA TRANSFER" *on* **Page 22**.)

Shooting with just the SSD

Some users may find it preferable to use the D16 without any CF cards, using only the internal SSD to store your footage. Shoot as you would normally, and to access your footage, connect the camera to your computer via USB3 cable.

Be aware that footage from the internal SSD, when it's full, can take up to 2 hours to transfer via regular USB2. If you do not have a computer with a USB3 connection, we recommend using the SSD as a redundant backup for your CF cards rather than shooting to SSD because of this download time.

Offloading files to the computer

There are two way of getting your footage from the camera into the computer for backup and editing. If you use CF cards, you can remove the cards from the camera and use a CF card reader to access the files on your computer. When the cards are backed up, you can format the SSD and cards in the camera, and continue shooting.

If you are shooting with only the SSD, you will need to connect the camera directly to the computer via USB3 in order to access your footage. (*If you do not know how to back up your footage using the internal SSD, see* "DATA TRANSFER" *on* **Page 22**.)

Editing folder names

By default, the camera records footage to folders organized by shoot date and take number. If needed, it is possible to rename your existing file folder to suit the needs of your project.

(*To edit folder names, see* "DIR NAME" *on* **Page 23**.)

VIDEO MONITORING

The D16 has a number of video monitoring options available to help you understand your footage while shooting.

Color Modes

The D16 has three color modes through which you can view your footage on the onboard monitor or an external monitor: COLOR, BLACK AND WHITE, and NON-DEBAYERED (RAW).

BLACK AND WHITE mode shows you your images in black and white only.

COLOR mode shows you your footage in color with a calibrated color matrix. To set the white balance see the next section.

NON-DEBAYERED mode is the preferred way to check the exposure of your camera image, because the onboard monitor's Rec709 colorspace does not have enough depth to show the full color depth of the D16's raw images.

Areas that appear pure white in NON-DEBAYERED mode will be "blown"; any areas with texture are "safe", even if they appear blown in the COLOR or BLACK AND WHITE modes.

White Balance

The D16 comes with three white balances settings: DAYLIGHT, TUNGSTEN, and FLUORESCENT. While white balance can be altered in post due to the flexiblity of raw, you should choose the closest white balance to your scene as a starting point.

Articulating the onboard monitor

The onboard monitor can articulate up 15 degrees to provide a better viewing angle while shooting. Use a fingernail or soft tool to pop the tab on top of the monitor.
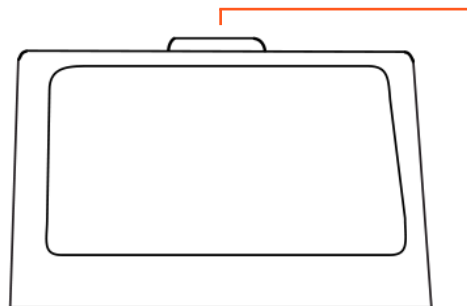
Use your fingernail or a soft tool to pop up the tab. Using a metal tool may scrape the top of your camera.

SD out to external monitor

If you want to connect your D16 to a Standard Definition monitor, the 1/8th video jack on the left side of the camera will provide 640x480 connection to any SD monitor.

HDMI out to external monitor

The D16 features a full-sized HDMI port that provides a 1080p signal compatible with any HD monitor, including wireless monitors.

Recording the HDMI signal

Some users may want to record the 1080p video signal through the HDMI port in order to save it as a compressed video file. Recording the HDMI signal is technically possible via a variety of third party recorders.

Other cameras with built-in image compression are capable of outputting a signal compatible with HDMI standards, however due to the raw recording format, recording a clean HDMI signal is not possible with the D16.

Because an HDMI signal is not capable of showing the full color-depth of 12-bit raw, this signal is not as accurate to color, brightness, and saturation as HD footage you would normally capture via HDMI on other cameras.

For this reason, we do not recommend recording the HDMI signal, and instead suggest you transcode your raw files to the desired video format so as to maintain the integrity of your footage.

Attaching an EVF

EVFs that take advantage of the D16's HDMI output are perfect companions to the camera when you need more critical focus or looks while shooting.

The top and side cold shoes of the D16 are perfect mounting points for an EVF.
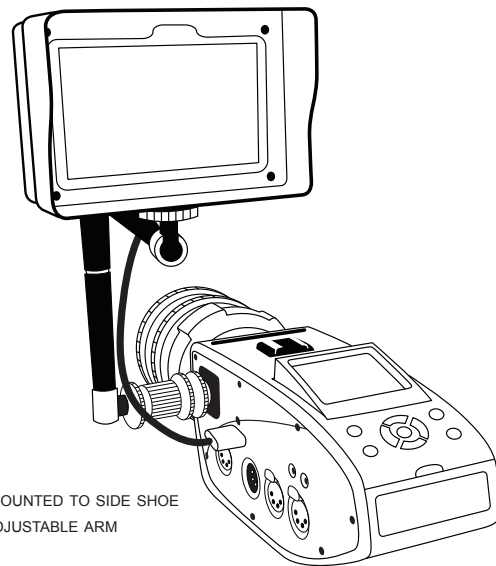
EVF MOUNTED TO SIDE SHOE
VIA ADJUSTABLE ARM

RECORDING AUDIO

The D16 has a built-in audio recorder that captures production-level sound from external microphones. The D16 records two channels of 24-bit, 96kHz (or 44kHz) audio in the AIFF format.

The D16 comes with two phantom-powered XLR ports (L) and (R) on the left-side of the camera for recording audio from two different mics, such as a boom, shotgun, or lavalier. There is also a Line-in port for smaller, self-powered microphones.

Powering on the mic ports

Plug in one or more mics to the XLR ports or the Line-in port. There are only 2 audio channels, so you may only have 2 microphones plugged in at any time.

Use the menu to navigate to the SOUND submenu. Then select the CH 1 MIC or CH 2 MIC setting, depending on which port you are using. Turn the channel ON to utilize that XLR port, or select Line-in to use the Line-in port for that channel instead.

FILE FORMAT	OFF
CH 1 MIC	MIC 1 ON
CH 2 MIC	Line 1 In ON
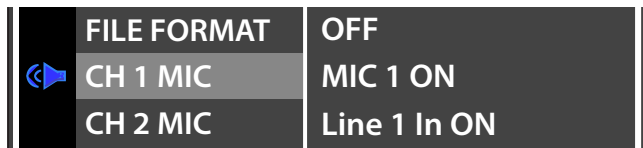
Phantom power

To activate phantom power, use the menu to navigate to the SOUND submenu, then select the L or R PHTM PWR setting. Use the up/down buttons to select PHANTOM POWER ON, then left/right or ENTER to save your choice.

FILE FORMAT	Phantom Power OFF
CH 1 MIC	Phantom Power ON
CH 2 MIC	
L PHTM PWR	
R PHTM PWR	

It is possible to use microphones that do not rely on phantom power with the D16. To use these microphones, navigate to the SOUND menu and turn off phantom power for that XLR port.

Warning: Never plug a non-phantom powered mic into a D16 XLR port unless you are sure that phantom power is turned off. This may damage the sound board of the camera.

## Adjusting the recording volume

Like any pro audio-recorder, The D16 allows you to adjust the volume of both individual audio channels for optimal recording from each connected microphone.

Audio Metering

When microphones are plugged in and turned on, the audio meters on the display will become active. It's important to monitor your audio levels while you record to avoid audio that's too loud or too quiet.

Make sure your audio is recorded as loudly as possible without crossing into the red. Crossing into the red means your audio is too loud or "peaking," and the volume should be adjusted lower to avoid any recording problems or distortion.
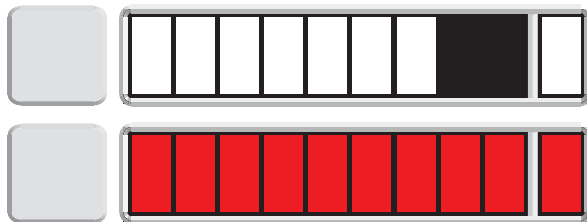

DISPLAY AUDIO METERS. CORRECT METER ON THE TOP, PEAKED ON THE BOTTOM.

Note: If the audio meter is displayed but no level bars appear when a mic is plugged in, no sound is being captured. The audio levels may be too low, or the microphone may not be powered properly. Check to make sure your phantom power settings are correct, if battery-powered mics are charged, and that your line/mic levels are correctly dialed for the volume of the audio you are recording.

Line/Mic Levels

To adjust Line/Mic levels, use the knobs on the right side of the camera. You will see your changes in the audio meters on the camera display, and hear the changes in your headphones.
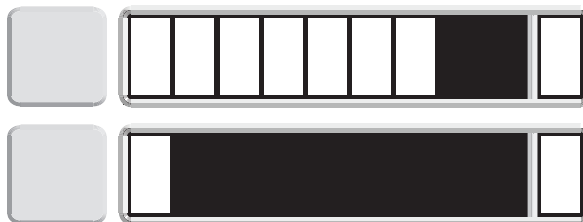
Adjusting the headphone volume

Headphone volume is distinct from the line/mic volume of your audio channels, and must be adjusted separately. To adjust the headphone volume, use the menu to navigate to the SOUND submenu, then select the HP VOL setting. Use the up/down arrows to change the headphone volume.

Alternatively, you may navigate to the CRANK submenu and activate the HP VOL setting on the rear crank. This way you can adjust the headphone volume without returning to the menu.

Warning: Line/mic knobs do not adjust headphone volume. Adjusting these knobs will change the recording levels of the audio, which may result in clipping.

USING THE CRANKS

There are two cranks on the left side of the D16 camera which can be programmed to perform a number of different functions that you may want to adjust on-the-fly while recording.

Assigning functions

To assign a function to the cranks, hit the MENU button and select the CRANK menu. There are currently 6 functions that may be assigned to each crank:

- Shutter Angle
- ISO
- LCD GAIN (onboard monitor brightness)
- Headphone Volume
- Color Mode
- LCD Zoom

Select the crank you would like to use (CRANK 1 is the forward crank and CRANK 2 the rear) and choose the option you want to be able to adjust. When not in use, it is recommended to switch both cranks to OFF to avoid unintentionally changing your settings while recording.

You cannot have both cranks set to the same option at the same time.

Home Screen Icons

To check which setting your cranks are assigned to without accessing the crank menu, look at the crank icons on the bottom right of the Home Screen.
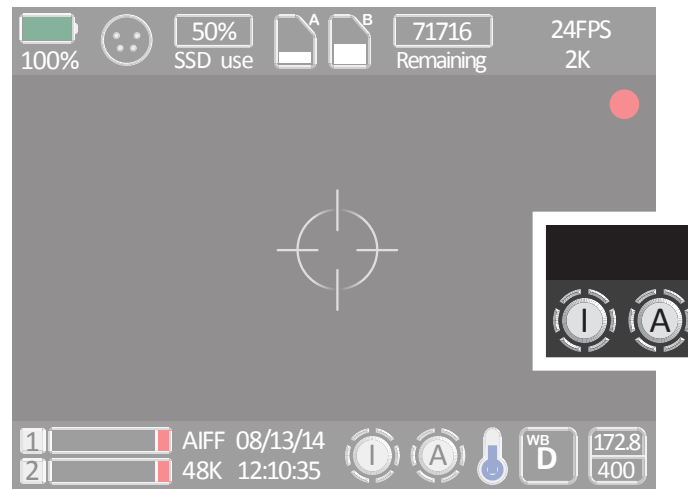
Using both crank options at once

We encourage users to set both cranks if you need to access some functions on the go. However, if you are using both the RAW color mode for checking exposure and have turned LCD Gain to LOW, you may have issues checking exposure. We recommend always staying on MED when using RAW mode.

SHOT MODES & TIMELAPSE

The D16 has three SHOT MODES that allow for distinct functions: CONTINUOUS, SINGLE FRAME, and TIME LAPSE. You can access the SHOT MODE submenu from the MAIN MENU.
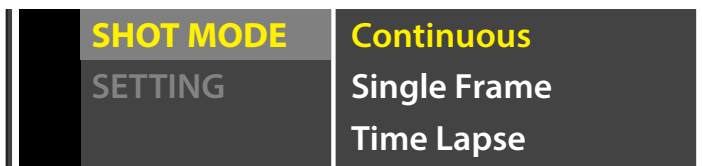
SHOT MODE	Continuous
SETTING	Single Frame
	Time Lapse

CONTINUOUS

Is the standard shooting mode for motion picture capture, shooting at the frame rates you've chosen in the IMAGE menu.

SINGLE FRAME

Is intended for animation, and records one frame every time the record button or trigger is pressed.

Time Lapse Mode

Create timelapses easily in camera without an intervalometer or external trigger.

Under the SHOT MODE menu, select TIME LAPSE to active this mode and its SETTINGS.

INTERVAL	SECOND
TIME BASE	MINUTE
EXPOSURE	
	Interval time base unit.
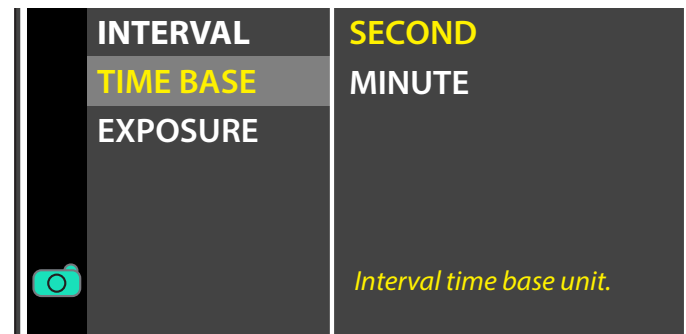
INTERVAL

Set the number of time intervals you would like the camera to wait between shots, from 1 - 60.

TIMEBASE

Set your INTERVAL to record based on SECONDS or MINUTES.

EXPOSURE

Set the speed of your exposure between 1/25th of a second to 1/500th of a second. (This will override any shutter angle you have already set for your continuous shooting.)

CAMERA ACCESSORIES

You can use a variety of accessories with the D16. There are 2 cold shoe mounts for mounting accessories like EVFs, portable lights, or shotgun microphones, allowing you to customize your D16 with different accessory configurations.

Using the cold shoe-mounts

Many consumer and professional accessories use a shoe-mount to attach the accessory to a camera. A shoe-mount is "hot" if it can supply power to the accesory, and "cold" if it does not supply power, like those on the D16.

To use the shoe-mount, slide the accessory into the shoe. Make sure to lock the accessory in place with the provided fastener. If the accessory cannot lock into place, it is not advisable to use that accessory, as it may slide off the mount and break.

1/4-20 (standard tripod) mounts are commonly used with a shoe-mount to secure other accessories that cannot slide right into the shoe-mount, such as external audio recorders.

WARNING: Do not place heavy accessories in either the top or side cold shoe-mount or you may risk damaging the accessory or the mount itself.

The pistol grip

The D16 pistol grip attaches to the D16 via the front-facing of two standard tripod mounts on the base of the camera body.

Secure the tripod screw at the top of the pistol grip into the tripod mount on the camera by rotating the wheel on the top of the pistol grip, turning right until fully tightened.

Recording with the pistol grip

When the pistol grip is attached, you may press and hold down the trigger to record footage. Press and release quickly to shoot single frames or short bursts of frames.

Using the pistol grip with different lens mounts

In some cases, the pistol grip may still be used even when a lens mount other than the default C-mount is installed. See the instruction manual of your preferred lens mount for further information.

Rails, Follow Focus, and Matte Box

Like any cinema camera, the D16 is capable of being fitted with pro accessories for use on large productions. Standard rails, follow focus systems, and matte boxes can be used on the D16 in multiple configurations.
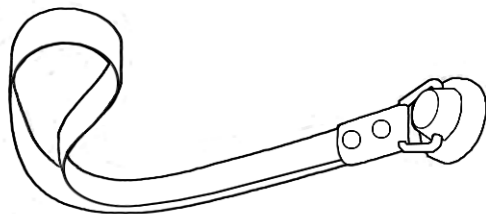
Follow Focus

A follow focus for the D16 can be used on either side of the camera.

Other accessories

Other accessories may help make the most of your camera.

Cheeseplate

The D16 cheeseplate is designed to attach to the top cold shoe mount and provides more than thirty additional mounting points for accessories like lights, microphones, or EVFs.

Wrist Strap

A wrist strap provides an additional safety precaution when you choose to hand-hold your camera. A wrist strap with a tripod screw can attach to the mount at the bottom of the pistol grip.

Monitor Hood

A monitor hood can be useful for reducing glare on the onboard monitor when shooting in bright daylight. The D16 monitor hood attaches via the two large screw threads above the onboard monitor and provides shade and an angled view of what's on the screen. Best used with MIRROR LCD mode. (*See* **Page 25**)

Weather-sealed Skin

The D16 has a rugged outer body with few points of entry for moisture and small particles, but for shoots on the beach or in raining, humid, or snowy weather, your camera will be better protected with a rubber, weather-sealed skin that fits snugly over the ports on the left side of the camera.

INSTALLING OUR SOFTWARE

Both PC and Mac users will need to install our Bolex Utility to update your camera with the latest firmware. PC users will also need to download an HFS reader to copy footage directly from the camera using Windows Explorer, if not using CF cards. (*See* "Displays And Menus: Data Transfer" *on* **Page 22**.)

To update your firmware, download either the PC or MAC version of our Bolex Utilities program and the latest firmware update on our site at **www.digitalbolex.com/downloads**.

Then follow the instructions on the Bolex Utilities Firmware Updater (For details, see "Updating The Firmware" on **Page 26**.)

LightPost Powered by Pomfort

Your Digital Bolex comes with an installation code for LightPost, a data backup, one-light color correction, and transcode tool for Mac OS X that can take your CinemaDNG files and export them to various compressed file formats popular for editing.

OS Requirements

LightPost runs on on Mac OS X versions 10.7 and above, and is optimized for use with Retina display laptops for work on set.

Brief Instructions

Unlike more complicated programs that can have a steep learning curve to achieve the results you want, LightPost's four-step workflow makes working with raw simple and intuitive.

The Copy Room

When your camera is connected to the computer, or you have inserted CF cards into a card reader, the Copy Room allows you to transfer all (or select) footage to chosen destination drives. LightPost uses a sum check to verify data as it's copied, ensuring no corruption in your transfer, and will alert you if there is not enough space to store the footage you are trying to copy.

LightPost is the recommended way for copying footage from your D16. Copying directly from the camera to a drive could cause corruption due to the big number of files being transferred.

Adding Clips to Library

If you already have CinemaDNG footage on a hard drive and you do not need to import footage through the Copy Room, you can select Library > Add Clips to Library, and access the footage in subsequent rooms as you would with copied footage.

LightPost for Playback

If you want to see playback of footage on set, turn the camera off (or use the DATA TSFR menu), connect it to a Mac computer,

and open LightPost. You can use the Add Clips to Library option to view footage directly from the camera without copying it first.

The Organize Room

In the Organize Room, you can view your imported clips, make notes in clip metatdata for the editor, rate your takes on a 1-5 star system, set in/out points, and arrange your clips into smart folders and custom folders.

The Color Room

Fast color controls allow you to create and save one-light looks for your clips which can be shared with other users of LightPost.

Change attributes like tint, saturation, exposure, sharpness, color temperature, highlight and shadow color balance, and others to achieve great looks in seconds.

Export Room

Like the Copy Room, here you can quickly output your footage to multiple destinations one at a time or at once. Choose from editing formats like ProRes422 or ProRes4444, or exhibition formats standard for iPad, iPhone, and more.

Detailed Instructions

Detailed instructions for LightPost are available by accessing the HELP > QUICK START GUIDE in the LightPost Software.

Other Post Workflow Options

While some NLE (Non-Linear Editing) platforms require you to use compressed video formats such as ProRes422 for editing, it is not always necessary to transcode your footage before you work with it in post.

Newer NLEs like the Adobe Creative Cloud Suite allow you to import raw CinemaDNG image sequences directly into your timeline for editing, making your post workflow a breeze.

Users of Adobe Premiere Pro CC, After Effects CS6 or CC, or SpeedGrade CC do not need to transcode CinemaDNG footage before using it in a timeline.

If you have recorded audio on the D16, you will need to import the .AIFF audio track separately from your CinemaDNG image sequence. They will both have the same length on the timeline and can be easily linked together for editing.

Transcoding for Windows and Linux Users

Windows and Linux users will have to use an alternative method to transcode their footage, since LightPost is only available for Mac OS X. We suggest using an Adobe Creative Cloud program like Premiere or LightRoom, or the latest version of DaVinci Resolve to transcode from CinemaDNG files to compressed video on a Windows or Linux system.

TROUBLESHOOTING

If you're having a problem with your D16, here are a list of common questions and solutions. If you have a question not mentioned in this section, please contact us at www.digitalbolex.com/contact, or visit our online forums at http://www.digitalbolex.com/forum/

Answers to other frequently asked questions are available online: http://www.digitalbolex.com/faq/

BEFORE SHOOTING

I want to remove the pistol grip. Does it come off?

Removing the pistol grip is easy. Use the tighening wheel at the top of the pistol grip, right under the camera body, to loosen the screw mount of the pistol grip. The grip will slide off, allowing you to mount the camera to a tripod or other rigging system..

Why won't my lens auto focus?

The D16's default C-mount does not support auto focus for lenses. All lenses must be focused by hand, whether they have auto-focusing mechanisms or not. Please keep an eye out for annoucements of when a focusing C-mount will be available.

My external battery is plugged in, but the external battery symbol is red or doesn't appear.

Your external battery is either drained or not working. Try charging the battery and then connecting to the camera again. If you have another battery or your AC acapter handy, test those to make sure the problem is not with your 4-pin XLR port.

How do I remove the battery?

The D16 battery is not removable. We suggest using a single long-length external 12V battery while shooting as a companion to the D16's internal 3-4 hour battery to ensure continual use.

WHILE RECORDING

My Home Screen Icons disappeared.

You may have accidentally clicked the DISP button. Click the button again to cycle through your monitor views. You can also turn the home icons on and off in the MENU. Navigate to the DISPLAY MENU and select the ICONS LCD option.

My monitor is only showing me black and white images.

You may have changed the color mode. In the MENU, navigate to the DISPLAY MENU, and change the COLOR MODE option. If you have COLOR MODE assigned to a crank, rotate until color is restored.

My CF cards icons are marked with an X

If your CF cards are marked with an X, they may not be formatted properly. Navigate to the DATA MENU and select the card you want to format.

My CF cards are empty but my frame counter is at zero

If your CF cards are empty and formatted properly, you may need to format your internal SSD. Navigate to DATA MENU and select the SSD Drive.

Note: Only format the SSD when you are sure all of the data stored on the drive has been properly backed up!

I have microphones plugged in, but when I check the footage, my audio files are empty!

There are a number of issues that could cause your audio not to record properly. If you are using phantom-powered microphones, make sure to navigate to the AUDIO MENU, and make sure that phantom power is turned on for each channel you wish to use. Some mics can't accept phantom power and need to be powered by their own batteries. If your microphones do not have phantom power, make sure that they have fresh batteries, and that phantom power is turned OFF.

If both of these have been checked, make sure your audio levels are turned up to an appropriate volume. Use the audio knobs on the righthand side of the camera to adjust the volume.

This change should be reflected in the audio meters on the bottom left corner of your home screen.

Always make sure that your audio meters are turned on when recording audio. If the audio meters are not moving, audio may not be recording properly. To turn the volume display on and off, navigate to the SOUND MENU and select VOL DISPLAY.

IN POST

My CF card is corrupt

If your CF card is corrupted before you are able to dump the footage on it to the computer, try copying footage directly from the D16's internal SSD drive. We advise you to back up footage frequently when using cards, to ensure that all data is intact.

If your CF card is corrupted before you being shooting, use the DATA MENU to format the card. That should solve the issue.

How do I edit my DNG files?

There are a number of ways to edit your DNG files. We suggest using our LightPost software to do a grade that can be exported to Quicktime for fast editing in any professional editing software.

If you want to edit directly from your raw CinemaDNG files, you can do so in Adobe Premiere's latest Creative Cloud edition.

SPECS

Resolution	2048 x 1152 (Super 16mm mode)
	1920 x 1080 (16mm mode)
	1280 x 720 (720p - *coming soon*)
	720 x 480 (480p - *coming soon*)
Format	Adobe CinemaDNG
Color depth	12 bit 4:4:4
File size	2 to 3 MB per frame in RAW
Sensor	Kodak 1" CCD: 12.85 mm (H) x 9.64 mm (V)
Pixel Size	5.5 micron
Framerate	23.98, 24, 25. In the future, up to 32 fps at 2K, 60fps at 720p, 90 fps at 480p
Sound	Balanced, 2 channel 24-bit, 96kHz via XLR
Viewfinder	320x240, 2.4" diagonal

Video out	1920 x 1080 HDMI via HDMI port 640 x 480 via 1/8" video jack (HD-SDI not currently available)
Ports	HDMI, Audio XLR (2), 1/8" video, headphone, USB 3.0, 4-PIN XLR (INPUT) 4-PIN XLR (OUTPUT)
Data Storage	Dual CF card slots, Internal 256GB or 500GB Enterprise SSD
Power	Internal battery, 12V External via 4 pin XLR port
Material	Carbonized aluminum
Size (body)	Approximately 3.6"H (91mm) x 3.3"W (84mm) x 7.8"D (199mm)
Size (grip)	4.5"H (115mm) x 1.6"W (40mm) x 2.6"D (65mm)
Lens mount	C-mount comes standard, EF, PL, and M43 mounts available
Weight	5lbs
ISO Options	100, 200, 400
Also in the box	Pistol grip, USB 3.0 cable, USB 2.0 cable, 4 pin XLR Battery cable, video cable, LightPost Powered by Pomfort transcoder/raw conversion software.