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OVERVIEW

PACKAGE CONTENTS

Make sure you have the following items, supplied with your Gemini 4:4:4 upon purchase.

Hard Case

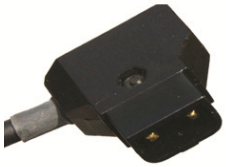
Gemini 4:4:4

Transfer Station

HDMI
Type C to Type A

HD-SDI (Qty 2)

eSATA
Data Cable



Power D-Tap
4-Pin

USB Mini Type A
(transfer station power)

XLR Power Cable
4-Pin

Universal AC Power
Supply

Stylus &
Microfiber Cloth

Hot Shoe Mount

NOTE: Only Convergent Design SSD's will work in the Gemini 4:4:4.
These SSD's, available in 256GB and 512GB, must be purchased separately.
Your Gemini 4:4:4 dealer is an ideal place to purchase these SSD's.

FEATURES

The Gemini 4:4:4 is a professional, high-definition video recorder that fits in the palm of your hand and is easily mountable on your camera. It is very light weight and small in size.

Gemini 4:4:4 functions as a high-quality monitor, with a wide viewing angle, high brightness with great contrast, and no compromise video playback device.

The footage from the Gemini 4:4:4 can be easily incorporated into virtually any workflow using your favorite codec or as native uncompressed DPX sequences.

With an extra cost option, Gemini 4:4:4 is also capable of recording, combining, and playing back 3D video.

The Gemini 4:4:4 records to specially certified and tested 1.8" solid-state hard drives that can be purchased from Convergent Design through your local dealer.

UNCOMPRESSED 4:4:4 RGB QUALITY

The Gemini 4:4:4 records in the highest quality possible; no other recorder exceeds the image quality of the Gemini 4:4:4!

The Gemini 4:4:4 records Full Uncompressed 4:4:4 RGB and also accepts 4:2:2 camera signals. This ensures that 100% of the quality of your video signal will be maintained. There are no signal losses, no artifacts, and no loss of quality whatsoever.

This is especially important when recording Log video, such as Sony S-Log or LogC. The precise values for each bit are recorded. No bit values are changed in any way, thus preserving the full integrity of your images. Recording full 4:4:4 is the proper way to record S-Log and Log-C. Recording 4:2:2 from a 4:4:4 capable camera is a compromise.

ARRIRAW SUPPORT (paid upgrade)

Gemini 4:4:4 is ARRI Certified, supporting ARRIRAW (.ari) 2048 x 1650, up to 60fps from any ALEXA model camera (16:9). Supports full raster live debayer monitoring and playback, including LUT support. No new hardware, no new SSD's required – simple firmware update with paid upgrade.

4:2:2 to 4:4:4 UP-CONVERSION

The Gemini 4:4:4 records in DPX file format, an industry standard for high end post processing. To conform with widely used software that accepts the DPX file format, the Gemini 4:4:4 automatically up-converts (up-reses) to 4:4:4.

This is accomplished by using a sophisticated routine that uses the weighted average of nearby pixels to ensure that the 4:4:4 is of high quality, even when the source video is 4:2:2.

NOTE: The Gemini 4:4:4 will record from either a 4:2:2 or 4:4:4 camera.
A 4:2:2 signal will be up-resed to 4:4:4.

HD TOUCH SCREEN FOR RECORD AND PLAYBACK

The Gemini 4:4:4 is easily controlled using the touch screen. A Stylus is provided to prevent the LCD Monitor from being smudged.

DUAL SSD

The Gemini 4:4:4 is unique in that it supports two SSD's for both recording and playback.

To extend recording time, a recording can automatically span from one SSD to another. This is fully automatic.

S-LOG and LOG-C SUPPORT

Many features are built into the Gemini 4:4:4 for supporting Log footage:
A menu option easily allows one to apply a built-in LUT (Lookup Table) to native S-Log footage. The LUT is applied to the LCD and HD-SDI outputs.

LOG RECORDING

The Gemini 4:4:4 is ideally suited for recording Sony S-Log, ARRI C-Log, and will support Canon Log-C in the future.

SINGLE LINK 3G & DUAL LINK 1.5G/3G

The Gemini supports both single link 3G and dual link 1.5Ghz HD-SDI Input for 4:4:4 and ARRIRAW recording, as well as Dual 3G for recording ARRIRAW 48p, 50p, and 60p.

HIGH PERFORMANCE SSD'S

The Gemini 4:4:4 SSD's are specially picked for their performance and reliability. These SSD's are capable of read speeds of 500 Mbytes/sec, making transfer of files very quick. You'll find these Convergent Design SSD's available through our Dealers at affordable rates.

FAST BOOT TIME

You can expect your Gemini 4:4:4 to power up and be ready for recording in approximately 12 seconds or less after applying power.

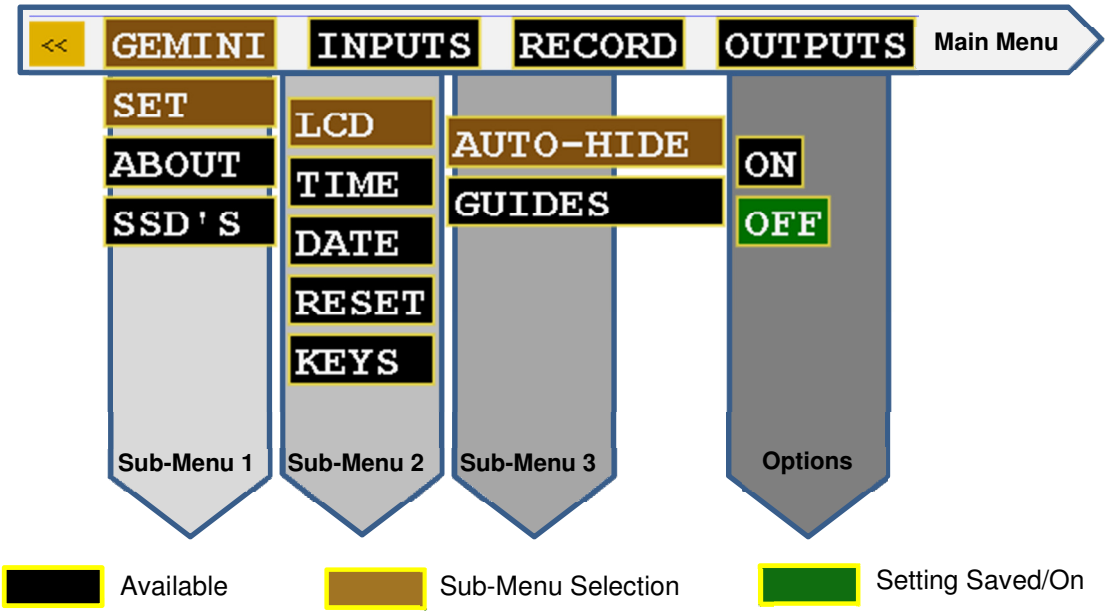
GEMINI 4:4:4 ANATOMY

WARNING: DO NOT ENCLOSE THE UNIT IN AN AIRTIGHT CONTAINER

Keep the area around the cooling fins (vertical lines on the back of the Gemini) open for air flow. Unit temperature must not exceed 65*C. Gemini 4:4:4 and SSD's will operate at full potential under these conditions. Keep the unit vertical for best cooling.

MENU STRUCTURE

The Gemini 4:4:4 menu can be accessed through the buttons along the top of the screen. By tapping on a Main Menu heading, a Sub-Menu 1 navigation will appear. Likewise, by tapping a Sub-Menu 1 heading, a Sub-Item 2, and so on, may appear and subsequently provide you with an Option related to that.



GEMINI

Sub-Menu 1	Sub-Menu 2	Sub-Menu 3	Option	Description	Additional Information
SET	LCD	Auto-Hide	On	The on screen menu will disappear after 15 seconds of idling. Touching the screen anywhere will bring the menu back.	
			Off	The on-screen menu will always be displayed unless the hide button is touched.	
		Guides	2.39:1		
			1.85:1		
			None	Removes any current Guides setting.	
		Flip	On	Flip the video and on-screen display by 180˚.	Great for certain mounting options. Note: THIS DOES NOT FLIP THE RECORDED IMAGE!
			Off	Flip the video and on-screen display to normal view.	
		Brightness	→	Adjustable in 10% increments. Click OK to save selection.	
	Time	→	→	Set the appropriate time.	
	Date	→	→	Set the appropriate date.	
	Reset	Menu	→	Restore all default settings.	
		Metadata		Resets metadata fields	
	Keys	Unit	OK	Indicates your product was successfully registered.	Requires nothing further after initial registration.
		Raw ARRI®		To activate Raw feature. Enter key code (available with purchase).	Raw is available in Demo Mode without purchase. Image will have permanent watermark.
ABOUT	→	→	→	Displays the firmware version, serial number of your Gemini unit, and warranty date.	
SSD's (cont. next page)	Format SSD 1	→	→	Permanently erases everything on SSD 1.	**WARNING: DATA WILL NOT BE RECOVERABLE!**
	Format	→	→	Permanently erases everything	

	SSD 2			on SSD 2.	
	Format Both	→	→	Permanently erases everything from both cards.	

INPUTS

Sub-Menu 1	Sub-Menu 2	Sub-Menu 3	Option	Description	Additional Information
TIMECODE ARRI	Source	→	SDI	Timecode is extracted from the SDI signal coming from your camera.	For non-zero timecode, set your camera's timecode output (if it has one).
			LTC	LTC to 6 pin via remote port and adaptor cable.	**ARRI: Not supported in ARRIRAW**
AUDIO ARRI	Channels	→	2	Embedded Audio (SDI)	2 Channels Supported. **ARRI: No audio provided at p48/50/59.94/60.**

RECORD

Dropdown	Sub-Item	Sub-Menu 3	Option	Description	Additional Information
TRIGGER	Rec Button	→	→	Recording is started by touching the record button on the Gemini screen.	
	Camera ARRI	→	→	The record trigger is provided by the camera. **ARRI NOTE: MEDIA MUST BE PRESENT (v5.0). ALEXA firmware v6.0 and newer, SYS can be disabled.**	Compatible cameras include Canon C300, XF305, Sony F3, ARRI ALEXA (via SDI Remote camera setting).
CLIP	**DPX** (Clip Name)(Clip #) **(AAAAAAAA)(000)**	→	→	Allows the user to set the name of the recorded files.	The last three digits will auto-increment from one recording to the next. If you are using more than one Gemini unit, it is recommended that at least the first two characters of this name be set different from one Gemini unit to the next.
	ARRIRAW REC BUTTON TRIGGER (Clip Name)(Clip #) **(AAAAAAAA)(000)**			The file name is set on the Gemini.	
	ARRIRAW CAMERA TRIGGER (Clip Name)(Clip #) **(AAAAAAAA)(000)**			The file name must be set on the camera.	Information is received via SDI from the camera.
ARRI REC	From Camera			This is recording from camera.	Camera trigger. Clip name will be based on camera's name.

OUTPUT

Sub-Menu	Sub-Menu 2	Sub-Menu 3	Option	Description	Additional Information
REC TALLY	On	→	→	When the Gemini is recording, the SDI and HDMI output will display a red bar on the bottom of the screen to indicate an active record.	This red bar is not recorded in the Gemini. If you are using a separate recorder to record the output of the Gemini, turn this setting off.
	Off	→	→	Nothing will be overlaid on the SDI or HDMI output of the Gemini.	
MODE	4:2:2	→	→	SDI output as 4:2:2; works in both Rec and Play Mode.	This setting only affects the output video. 4:2:2 Input will always be converted to 4:4:4 for recording.
	4:4:4	→	→	Incoming video will be output as 4:4:4.	Use this setting if you want to output 4:4:4 RGB, usually Dual Link HD-SDI. (Not valid with 4:2:2 input)
Legalized ARRI	On	→	→	ARRI ONLY LCD/Output display has legalized values.	
	Off	→	→	ARRI ONLY Full range values for LCD/outputs	

RAW

Sub-Menu 1	Sub-Menu 2	Sub-Menu 3	Option	Description	Additional Information
ARRI ARRI	→	→	ON	If selected, unit will reboot into selected mode.	Extra cost option; purchase required otherwise Demo Mode is showing. Supports only ARRIRAW files (.ari) for record and playback. SxS MEDIA MUST BE PRESENT
			OFF	If selected, unit will reboot into selected mode.	See 'Disable ARRIRAW' below.

Enable ARRIRAW

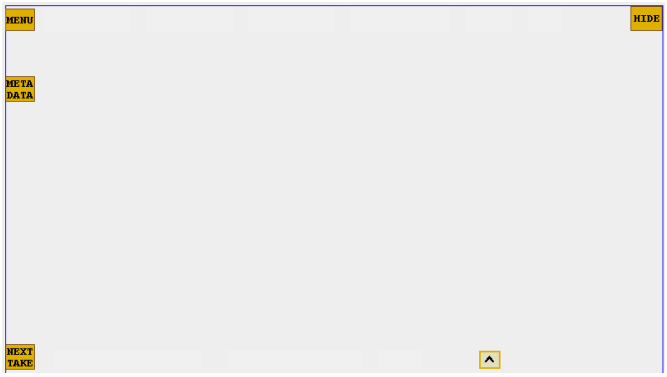
In order to enable the ARRIRAW feature (not in Demo Mode), you must purchase the ARRIRAW Upgrade to the Gemini 4:4:4 unit. The purchase is facilitated through your local dealer. Convergent Design will provide you a unique key to activate your unit. For more details about Upgrade Procedure, see page 44.

Disable ARRIRAW (Rental Houses)

Activated ARRIRAW feature can be disabled / enabled. To disable ARRIRAW (back in Demo Mode):

1. On the Gemini, go to Gemini > Keys > Raw
2. Tap the Key's field "OK", the text will change to "SET DEMO", then click "Confirm." The ARRIRAW feature is now in Demo Mode.
3. To re-enable ARRIRAW, simply go to the Raw Keys field in the Menu, and enter the correct Activation Key (provided upon purchase of the ARRIRAW feature).

MENU QUICK KEYS



Menu

Click to reveal main menu structure. Click << to collapse.

Hide

Click to remove all content/buttons from the screen. Tap the monitor anywhere to reveal

Metadata (Rec Mode) / Playlist (Play Mode) PLAY LIST

See Preparations: Setting Metadata page 18 for more information on Metatdata.
See Playback page 24 for more information on Playlist.

Set metadata prior to record.

ARRI (Rec Mode, Replaces Metadata Key) ARRI

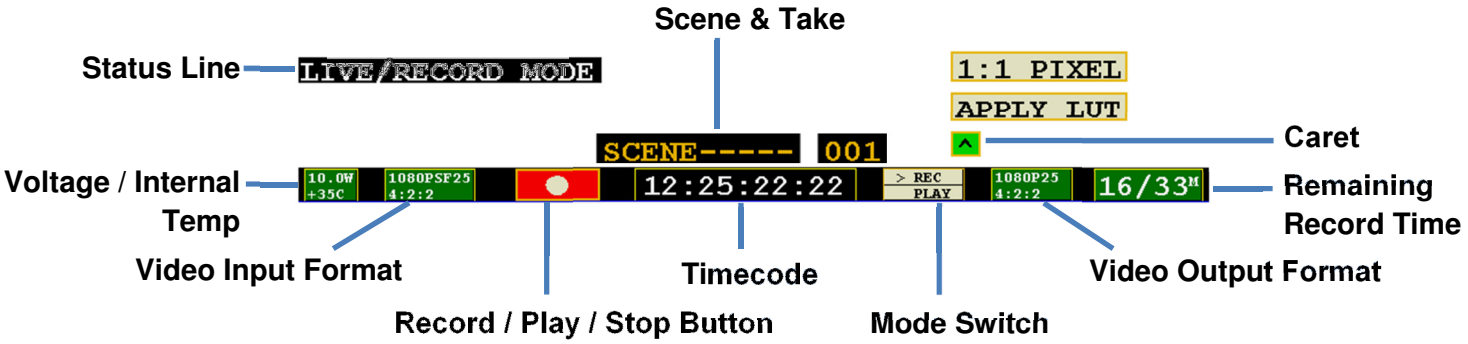
ONLY IN RAW MODE: Click to reveal metadata (sent from camera; not editable data).

Next Take

Click to reveal Clip, Scene and Take info. Click << to collapse.

MODE TOGGLE & STATUS

Across the bottom of your Gemini monitor you will find the Control Bar, including Mode Functions and related Indicators and Buttons.



		Description
Status Line		The status line will indicate when you have successfully changed or applied a setting.
Record / Play / Stop Button		Click to initiate the appropriate action. Record Stop Play Pause
Scene & Take		Scene name set in Metadata; Take auto-increments from one record to the next. SCENE----- 001
Timecode		12:25:22:22
Mode Switch		Tapping will move the arrow (“>”) to toggle between Rec and Play Mode. > REC PLAY
Remaining Record Time		Remaining record time per card, shown as SSD1 / SSD2.
Quick Key		Click the caret ^ to display options, then click to apply. Apply LUT: Viewing LUTs are not applied to recorded material for incoming LOG data (4:4:4 input only). 1:1 Pixel: For critical focus. **IN RAW MODE: ‘Apply LUT’ is a Rec709 Generic LUT. Without a LUT applied video is in Log-C format.**

PREPARATIONS

TIPS, TECHNIQUES & RECOMMENDATIONS

The Gemini 4:4:4 is a sophisticated, technologically advanced device. A few simple tips, techniques and recommendations can help ensure a successful shoot.

1. ***Register your unit now, as you need access to the Internet to do so. It must be registered. Otherwise the unit is disabled.***
2. Obtain the Gemini 4:4:4 and all the necessary batteries, chargers well in advance of your shoot. Please be certain to plug the power cable into the power input, which is on the left side, the remote control connector is on the right side. Forcing the power connector into the remote control connector will damage the Gemini 4:4:4.
3. Obtain genuine Convergent Design SSD's. No other SSD's will work in the Gemini 4:4:4. This is to ensure that the SSD's are fast enough and have been fully tested prior to your shoot.
4. Extra, high quality HD-SDI cables are very desirable and should be available on every shoot. These must be good quality 75 Ohm cables with true 75 Ohm connectors. SDI cables rated for 3G SMPTE 424M are always preferred.
5. Please read the manual, you will gain a lot of practical knowledge. The latest version is on our website: http://convergent-design.com/LinkClick.aspx?fileticket=CdmSeL04O18%3d&tabid=139
6. We generally recommend that you use the latest firmware. http://convergent-design.com/FirmwareUpdates/Gemini444.aspx
7. Test the unit and the SSD's, with your camera, in advance of the shoot. Setup your camera, exactly as you will for the shoot, setup the Gemini 4:4:4, create some test footage, and run this test footage through your Post workflow. Ensure that your Post department can handle the full uncompressed workflow. Full uncompressed video is great, it is just different. Many systems support DPX and ARRIRAW, but not all. Please see the Workflow page on our website.
8. For editing DPX Files using Final Cut Pro, please obtain GlueTools. http://gluetools.com/products.html Select "Cineon/DPX Pro for Final Cut Studio".
9. Obtain a way to back up your data in the field. A good backup procedure is to have two backups, stored on separate devices, and have all of your footage checked visually, prior to reformatting and reusing the SSD's.
10. Purchase enough SSD's, plus some extras. Be certain that you have enough so that you can shoot while the backups are being made and the footage is being checked.
11. While shooting, during breaks, playback you footage, from within the Gemini 4:4:4 to check that everything is working fine. But, more importantly, transfer you footage to a backup, then play the footage from the backup to ensure that all is good!
12. Feel free to call, Skype or email Support 24/7. We strive to provide world class support. If you don't reach us at one number, try another. **Support Contact Info**: See Page 40.
13. Ensure that camera viewfinder data is not being sent to the Gemini 4:4:4. Record a test, and then play it back. If you see viewfinder data while you are recording, or on playback, please turn off OSD (On Screen Display), otherwise this will be recorded in your files.
14. Do not use Beta firmware for production work!
15. Do not over-tighten the ¼" x 20 or 3/8" x 16 screws. You can damage the case.

16. Please do not open the Gemini 4:4:4 case, as this voids the warranty.
17. Here is a tip to help your shoot be a success:
    The most successful teams plan ahead, and check out all of their gear in advance.
18. Never format an SSD unless you are certain that the footage has been transferred, and checked.
    To be safe, wait until you have the footage in two places.
19. Never attempt to write files to the SSD, nor delete files off the SSD and then reuse the SSD in the Gemini 4:4:4.
20. It is acceptable to upload files from an SSD, using our Transfer Station, then reinsert the same SSD into the Gemini 4:4:4 so that you can continue shooting. But, as noted above, do not delete files off the SSD, then attempt to shoot more.
21. Always format the SSD's, in the Gemini 4:4:4.
    Formatting an SSD in another device is not acceptable.
22. Never put the Gemini 4:4:4 in a confined enclosure, it needs access to fresh air for cooling.
23. Never leave the Gemini 4:4:4 in hot sun without protection for an extended period of time. If it has been in a hot car, please allow time for it to cool.
24. Protect it from rain, splashes and other inclement weather.
25. Do not leave the Gemini 4:4:4 flat on a table with the power on.
    A vertical position is best as it allows air to flow naturally over the cooling fins.
26. Do not feed the Gemini 4:4:4 reverse-voltage DC, or voltages over 19 Volts.
    Do not plug in the Anton Bauer D-Tap or P-Tap connectors in backwards.
    Caution: Some non-Anton Bauer P-Tap power outlets allow the P-Tap or D-Tap connector to be plugged in backwards.
    If you do, then the Gemini 4:4:4 will stop working and it will have to be repaired.
27. Respect the Touch Sensitive LCD. Do not use hard objects to operate the touch screen. A ball point or other pen should not be used. Use our provided stylus or something similar. Caution: The Touch Screen and LCD are expensive to replace.

ARRI®

28. For ARRI recordings using Camera Trigger, recorded .ari files base name will match ARRI ALEXA internal recording clip name, provided that the ALEXA and the Gemini are set to the same date.

ARRI®

29. If set for 'Camera Trigger', make sure camera is not already recording (DPX or ARRIRAW).

POWER

There are multiple ways to power your Gemini 4:4:4;
1. Using the provided AC Power Supply which includes international power plugs
2. Using 4-Pin XLR Power, using the supplied 4-Pin XLR to 4-Pin Hirose Power Cable.
3. Using an Anton Bauer or IDX Battery with a D-Tap connection. A D-Tap to 4-Pin Hirose Power Cable is included.
4. Using any 4-Pin Hirose Power cable as provided by Convergent Design for Gemini 4:4:4 or nanoFlash.
5. Using any suitable DC power source, 6 to 19 Volts DC, with a 4-Pin Hirose connector.
   Pin 1 & 2 Must be Positive DC Voltage
   Pin 3 & 4 Must be Negative or Ground
   Power Supply must supply at least 20W.

WARNING! Power input is limited to 6-19 Volt DC.
Please check the voltage & polarity before using.

AC Power Supply

Simply connect the 4-pin Hirose to 4-Pin Male XLR cable to the Female 4-Pin XLR connector on the AC Power Supply and plug into a suitable AC power source.

Gently turn to fit and click the Hirose connector into the Power 6-19V connector on the left of the Gemini 4:4:4.

Do not force the power connector into the Remote Tally connector on the right side of the Gemini 4:4:4.

Camera

Using the supplied HD-SDI cables, or other high quality True 75 Ohm HD-SDI cables with True 75 Ohm connectors, connect your camera to SDI A, or to both SDI A and SDI B (for Dual Link).

Use of 50 Ohm and/or low quality cables will cause the video signal to be intermittent.

REGISTRATION

If you haven't already, you will need to register your Gemini 4:4:4 at www.Gemini444.com to activate your unit.

Your information is private and used internally to send you firmware updates via email. We highly encourage you to enter the optional information that we request. This extra information is designed to help us provide product improvements as well as better products for you.

When you power up the Gemini for the first time, it will automatically provide you with a serial number that you will need for your on-line registration, via the website.

(1) Tap the OK button when you are ready to proceed.

(2) Enter Unit Activation Key using the + and – buttons; Press OK.

(3) Activation is complete if you have received the 'Unit Activation Successful' in the Status Line.

ARRIRAW (Paid Upgrade)

The ARRIRAW Upgrade can be purchased through your local dealer. Convergent Design will then provide you an ARRIRAW Activation Key. To input key and activate unit, go to Gemini > Set > Keys > Raw.

Upgrade Instructions

1. Purchase the ARRIRAW Upgrade from your local Dealer.
2. On the Gemini, go to Gemini > Set > Keys > Raw
3. With an SSD inserted into Slot 1, enter value "10000000" (eight-digit) for the Raw Key; press "OK".
4. A Unit ID File is written to the SSD. Using the provided transfer station, save this file to your computer.
5. Upon receipt of the ARRIRAW Upgrade order, Convergent Design will contact you to obtain necessary contact information and the Unit ID File. This information is used to process your unique Activation Key.

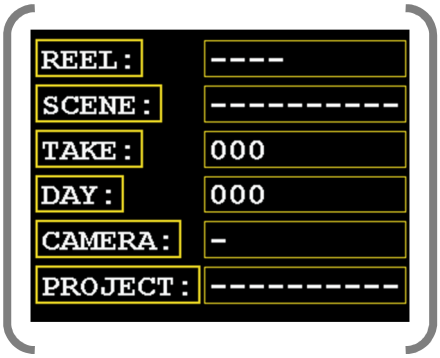
Convergent Design will provide the ARRIRAW Activation Key to be entered into the Raw Key field and activate the ARRIRAW feature on the Gemini 4:4:4.

SETTING DATE & TIME

The Gemini > Set > Time and Gemini > Set > Date menu items are used to set the internal clock of the Gemini 4:4:4, which keeps time even when there is no external power connected to the unit.

SETTING METADATA

When Gemini 4:4:4 is in Rec Mode, you can edit Metadata.



Tap the 'Metadata' Menu Quick Key to reveal the following editable data: Reel, Scene, Take, Day, Camera, and Project.

This information is stored until changed or power is removed.

Some of the metadata is displayed for each clip in Play Mode, including: Scene, Take, Timecode, Date, Time and Shooting Day.

To edit, simply tap the field you would like to edit, then tap the character field to reveal a character toggle. You may edit multiple fields before choosing OK to save your changes, or X to revert to previous.

DPX HEADER METADATA

During record, metadata is saved in various locations within the header of every DPX file. This data is viewable in some software on a computer. Additionally, the metadata is stored in a separate XML file alongside the DPX files for a given record.

File Field	Values for Data Input Included
DPX Slate Info	Reel, Scene, Take, Day
Input Device Name	Reel
Input Device Serial Number	Camera
Project	Project
IN ARRIRAW MODE: Metadata comes from camera; fields not editable.	

ARRI METADATA

All metadata when recording ARRIRAW comes from the camera, and must be set in the ALEXA camera.

XML FILE

All metadata fields and additional clip information are stored for each recording. See more under Post Workflow, page 37.

HANDLING SSD CARDS - READ THE FULL SAFE HANDLING DOCUMENT

Avoid touching the connector end of the SSD's.

Avoid shocking the connector end of the SSD's via static electricity.

When inserting into the Gemini 4:4:4, make sure the label is facing the front of the unit (see the proper placement in the image below).

Please be gentle when inserting the card. Clasping the door over the card and gently pushing in the drawer will adequately connect the drive.

FORMATTING SSD CARDS

WARNING: BEFORE USING THE SSD'S IT IS IMPERATIVE TO FORMAT THE SSD'S IN THE GEMINI 4:4:4

ALL EXISTING DATA WILL BE LOST DURING THE FORMAT!

Formatting is a destructive process. Any data on your SSD's that has not already been transferred to another medium will be lost forever. Once this process is started, there is no way to recover the data. "Un-format Utilities" will not be able to recover the data.

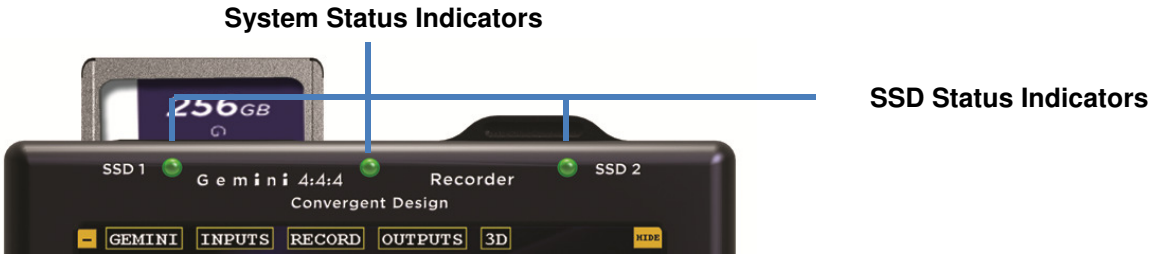
Go to **GEMINI > SSD's > FORMAT SSD1** or **GEMINI > SSD's > FORMAT SSD2 or FORMAT BOTH** from the Menu to format the SSD's.

This process will take approximately 30 seconds for a 256GB and 60 seconds for 512GB cards.

Initializing SSD Drives

If a SSD is removed from Gemini, Mac, or PC while still being accessed you may have to wait until the drive gets reinitialized in either the Gemini, Mac, or PC. This may take up to 5 minutes.

After the SSD's have been used to record any video, the video must be transferred to another device, before reformatting the SSD's, otherwise the video will be lost forever.



SSD Status Indicators

The LED lights associated with each SSD drive will display the following status color indicators:

- Drive needs to be formatted within the Gemini.
- Drive is completely full and can be played back or formatted for a new record.
- Drive is ready to record.
- SSD card is initializing.
- Drive is currently playing back.
- Drive is currently recording. **NEVER REMOVE SSD DURING RECORD OR PLAYBACK!**
- Powering Up; System Test
- Drive has old clips which can be played back but to record new SSD's must be formatted.

System Status Indicators

The LED lights located in between each SSD drive, in the middle of the unit, will display the following status color indicators:

- Ready for record.
- Recording. **IF FLASHING RED, SEE TROUBLESHOOTING BELOW.**
- Play Mode. **CURRENTLY PLAYING.**

RECORDING

Recording Time / Media

Media	DPX					
	1080p 23.97/24	1080p25	1080p 29.97/30	1080p48	1080p50	1080p 59.94/60
256GB SSD (x1)	21	20	na	na	na	na
256GB SSD (x2)	41	40	33	21	20	na
512GB SSD (x2)	82	80	66	42	40	33

1080p48 not supported in Firmware 1.1.2

Frame rates of 29.97/30p and above require two SSD's (256 GB or 512 GB).

Frame rates of 59.94/60p require two 512GB SSD's.

ARRI

Media	ARRIRAW					
	1080p 23.97/24	1080p25	1080p 29.97/30	1080p48	1080p50	1080p 59.94/60
256GB SSD (x1)	25	24	20	na	na	na
256GB SSD (x2)	50	48	40	25	24	na
512GB SSD (x2)	100	96	80	50	48	40

Frame rates of 48p and above require two SSD's (256 GB or 512 GB).

Frame rates of 59.94/60p require two 512GB SSD's.

It is recommended that you do not exceed 250 recorded clips per SSD.

Recording Instructions

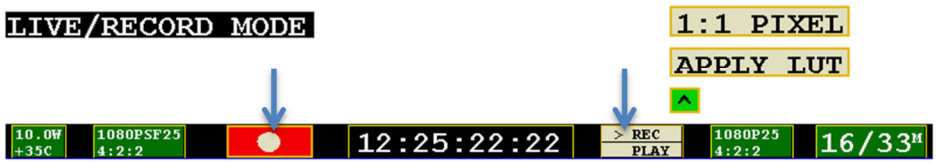
Are you ready to capture the ultimate quality? The following will walk you through a successful recording.

TROUBLESHOOTING. If the SSD Indicator(s) are NOT green, try the following:

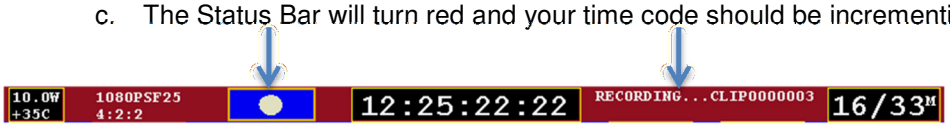
Orange	SSD drive is initializing. If it does not change after 30 seconds (for 256GB)/ 60 seconds (for 512GB), power cycle the unit.
Yellow	Go to GEMINI > SSD'S > FORMAT SSD (1 or 2).
White	Card is full; remove the card and transfer the data.

(1) Assure you have an appropriate power supply.
(2) Make sure any and all necessary settings have been programmed and saved. See Preparations: Setting Metadata, page 18.
(3) Insert at least one Convergent Design SSD card into either Slot 1 or Slot 2, or insert one in each slot. For more information on 'Handling SSD Cards', visit page 19. The LED SSD Drive Indicator light should be green. If so, proceed to step 4.
(4) If the arrow ">" is next to 'REC' on the Mode Toggle, you are ready to record. If not, tap the Mode once to toggle to 'REC' mode.

(5) Make sure the System Status Indicator is green.
(6) Tap the Record Button to begin your Clip.



(7) Your clip is now recording. Please note:
   a. The System Status Indicator is red.
   b. One of the SSD Status Indicators is Red. If you have two cards in, the other light should be green.
   c. The Status Bar will turn red and your time code should be incrementing.



(8) To stop recording, click the blue Stop Button. The Status Line will indicate that the "Record is Complete".
(9) Record again, or, to watch your clip(s), you are ready for Playback Mode.
(10) Never remove a SSD while recording or playback. See SSD Status page 20.

DPX

Gemini records video into DPX (.dpx) files. DPX is a file format that is specifically designed for uncompressed video. Each DPX file actually only stores one single frame of video. Therefore, each record will have a single folder that contains all of the DPX files. For NLE workflow options, see **TRANSFER**, page 27.

TIP: Clip Number at the end of the Clip Name (AAAAAAA) (OOO) will increment automatically. This can be adjusted by the User under the RECORD | CLIP.

WAV

If audio is present on the SDI Input, Gemini records 2 channels of 24 bit audio as a WAV (.wav) file.

ARRI

If recording in ARRIRAW Mode, Gemini produces ARRIRAW (.ari) files. For higher frame rate recordings that require two SSD's: the data files are recorded in alternating fashion onto between SSD's. Before editing, combine the two sets of files into a single folder to obtain the entire clip. ARRIRAW Mode includes .wav audio as well.

NOTE: When recording ARRIRAW or LOG, we suggest you check the monitor out for image quality (proper lighting). When shooting in LOG, the image will look very flat with high contrast. During record, the LCD screen will partially dim to conserve power.

When recording ARRIRAW in Log-C, you must “Apply LUT” on the Gemini LCD to make image Rec709. Also when in ARRIRAW the white balance and shutter speed can be adjusted and the live image will update accordingly.

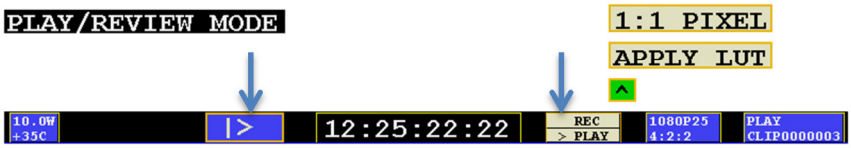
PLAYBACK

Now that you have successfully recorded to your Gemini 4:4:4, it's time to harness its playback capabilities on its high-definition 800 x 480 monitor.

(1) If the "**>**" is next to '**PLAY**' on the Mode Toggle, you are ready to play back. If not, tap the Mode once to toggle to **PLAY Mode**. The Status Line will indicate that you are now in Play/Review Mode.

WARNING: DO NOT REMOVE EITHER SSD CARD DURING PLAYBACK. THIS MAY RESULT IN DATA THAT IS UNRECOVERABLE.

(2) Tap the blue **Play Button**.
The most recent clip taken will immediately begin playing.



(3) When **Play** has been initiated, the button will change to a **Pause Button**.
(4) When you have completed your review, tap the Mode again to toggle back to **REC Mode.**
(5) For proper playback, all recorded video should be the same video format. Also, assure that any video input present during play is the same format as the recorded material (however, a video input is not required during playback).

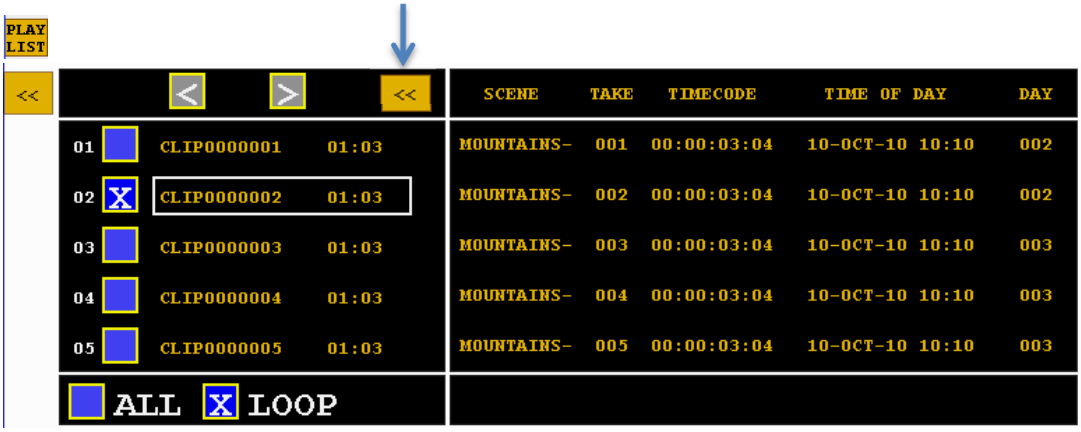
WARNING: COPYING FILES TO A FORMATTED SSD FOR PLAYBACK FROM A MAC/PC IS NOT SUPPORTED.

Note: In ARRIRAW Mode, live preview and playback for p48, 50 and 60 will be at 24, 25, and 30 respectively.

PLAYLIST

For additional options in playback, you may choose the 'Playlist' Menu Quick Key to display a list of clips, including metadata and other clip information.

To reveal/hide clip info, simply tab the << button.



Check the RAID Box to playback 48/50/59.94/60p in real time. If it is not checked, it will playback at half speed.

NOTE: Any Clips recorded in RAW Mode will ONLY play with the unit in RAW Mode.

Higher frame rate clips recorded across two SSD's will play:

*** at normal speed from a single SSD**

OR

***at half-speed from both SSD's simultaneously (if "RAID" box is checked).**

(1) Make sure your Toggle is in 'PLAY' Mode.

(2) Click the Playlist Quick Key in the left, upper-third of the monitor. PLAY LIST

(3) Select/deselect by tapping the box next to a clip. [X]

- a. You may choose multiple clips.
- b. Use the page arrows, < >, to reveal additional and previous clips (5 clips displayed per page). Selections from previous page will not be lost when using this function.
- c. Choose '**ALL**' to select all available clips.
- d. Choose '**LOOP**' to loop or continuously play selected clips.

(4) Tap the Play Button.

- a. Tap Pause Button to pause.
- b. Toggle to REC Mode when completed to stop.

TRANSFER

Transfer Station

Second Generation Universal Transfer Station

Use only the Convergent Design Universal Transfer Station, in combination with a Seagate GoFlex Adapter (available in Thunderbolt, Firewire, or USB) for transferring data to a computer from a SSD.

Form factor designed to contour the Seagate GoFlex Adapter Series, however, could be used with other 2.5" SATA hard drive docks. Power's provided by AC.

For Thunderbolt adapters, disconnect and reinsert the external cable to the GoFlex each time an SSD is inserted so that the computer will recognize the SSD.

First Generation Transfer Station (eSATA)

Data from your SSD is copied over eSATA; USB is used for **ONLY** powering the Transfer Station. Data cannot be copied via USB.

If your computer is not equipped with an eSATA port then you will need to purchase an Adaptor, or expansion card. Additional options include USB 3.0 to eSATA Adaptor, or PCI eSATA Adaptor.

Best User Practices

The best way to transfer is to connect the eSATA adapter, the Transfer Station and the SSD, ***then*** boot the computer.

Use 6 GB eSATA adapters for maximum performance.

Do not force cables or the SSD into Transfer Station. *(See image for proper connectivity)*

Never delete any files off an SSD from a computer, except when going through the firmware update procedure.

Performance

The Gemini 4:4:4 SSD's support read rates of 500 Mbytes/sec. Keep in mind you will be limited by the slowest median in the transfer process. For example: eSATA 3Gbps cards have a max performance of ~270MBps, and eSATA 1.5Gbps have a max performance of ~130MBps.

Typical Hard Drives (Non-RAID) generally perform anywhere in the range of 80-130MBps. For maximum performance, make sure you are using eSATA 6 Gbps, USB 3.0 or Thunderbolt to a Raid configuration.

Suggested Minimum RAID Configuration

Video Format		Video Data Rate Mbytes/Sec	Suggested for Real Time Playback/Edit
1080p24 4:4:4 10-Bit DPX		186.6	
1080p25 4:4:4 10-Bit		194.4	
1080p30 4:4:4 10-Bit		233.3	
P50 10-Bit		400	
P60 10-Bit		500	

**It's recommended to not exceed 250 clips per card.

FOR BEST PERFORMANCE FOR PLAYBACK OF DPX OR ARRIRAW, WE RECOMMEND A RAID CONFIGURATION OF 300 Mbsp FOR 1080p30 AND 400-500 Mbps FOR 1080p50/60.

File Support

The Gemini 4:4:4 recorder accepts inputs from both HD-SDI 4:2:2 and 4:4:4 cameras. To record 4:4:4, you can use HD-SDI Dual Link 1.5G or Single Link 3G (up to 1080p30). 1080p50/60 requires Dual 3G.

All DPX and ARRIRAW files are recorded so that each frame of video is a single file, with all frames from a single recording being contained within a single file folder, including a .xml metadata and .wav audio file for each take.

All Files Recorded by the Gemini 4:4:4 are recorded as 4:4:4 10 Bit RGB DPX Files, as this is the industry standard.

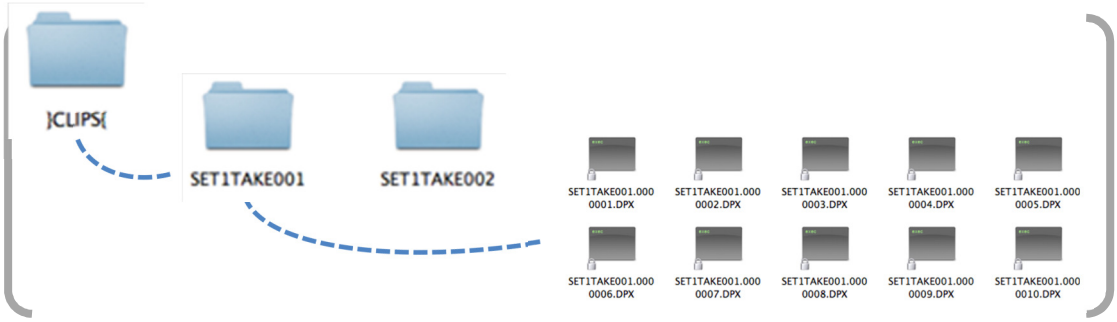
Thus, each time you start and stop a recording it will create a new file folder, which takes the name of the Clip, as setup via a menu item in the Gemini 4:4:4: All clips reside in a **}CLIPS{** folder on the Solid State Drive (SSD).

1080p59.94/60 DPX

Due to high data rate, DPX file data is stored in a packed format. To un-pack the DPX files (required by most computer software), use our free data transfer/un-packing tool, **Gemini Transfer** from the Downloads page of our website www.convergent-design.com.

Gemini Transfer: **Download for Mac** **Download for PC (requires 32-bit Java Runtime)**

File Structure



}CLIPS{

CLIP001001 *(Assuming that the **RECORD|CLIP** is set to (CLIP001) (001))*

CLIP0001001.0000000.DPX

CLIP0001001.0000001.DPX

Etc.

CLIP0001002 *(Assuming that the **RECORD|CLIP** is set to (CLIP001) (002))*

CLIP0001002.0000000.DPX

CLIP0001002.0000001.DPX

Etc.

DPX Frames May contain up to 60,000 Frames per Clip (Based on 512GB Drive)

Transfer Configurations

This is one of many possible transfer configuration. For applying LUTS/LOOKS, and for playback at top performance, a MyBook Studio RAID should be used in a RAID 5 fashion for making a simultaneous backup. You can do the same setup with USB 3.0, Firewire, or Fiber/SCS RAIDS.

Example: Data can be transferred using a Mac Mini or Laptop via Thunderbolt, Firewire 800 or USB 3.0 to an external RAID (Pegasus Promise RAID shown) configured as a RAID 0. This can be used for live playback creating LOOK files or applying LUTs, as well as confidence monitoring of footage. We suggest having a secondary drive (Western Digital MyBook Studio shown, configured as a RAID 5 redundant), which can then make two simultaneous copies of the footage, for deliverables and archive.

Accessing & Using the SSD on A Computer

SSD's used with the Gemini will report as entirely full (0 MB free) on a computer, as the Gemini reserves the entire SSD for video only, and prevents the computer from writing to this area. Thus the Gemini video area on the SSD is essentially read-only on a computer).

Firmware 1.1.2 and newer: To be able to write to an SSD, you must remove the "Sandbox" file only on new code. Version 1.0.594 does not require this.

The SSD's can be used on a computer for playing video directly from the card, for copying video onto the computer's file system, or to copy firmware update files from computer to SSD for updating the Gemini (see the User Manual for more details on updating the Gemini).

Note: Macs require a PCI->Sata Expansion Card to be able to attach a SSD to the Mac via the Transfer Station.

Mac

Insert the SSD (label up) into the provided Transfer Station, and attach the Transfer Station to the Mac via PCI->SATA port and the USB port (which only provides power).

The SSD will appear as a Volume within Finder on the Mac, and can be treated as part of the File System. Like other Volumes on the Mac, the Volume must be dismounted within Finder before being physically removed from the Transfer Station.

PC

For Windows 7 PC's: **Important*: First disable caching of the SSD within Windows, to allow for consistent and correct display of files from 1 SSD insertion/removal to the next.

To disable caching to the SSD:

1. Insert the SSD (label up) into the provided Transfer Station, and attach the Transfer Station to the Pc via the SATA port and the USB port (which provides power).
2. Within Windows Explorer, find the Drive Letter associated with the just inserted SSD (256 or 512 GB SSD with ~250 MB available).
3. Right-click the Drive Letter, in the Drop-down Menu choose "Properties".
4. Choose the "Hardware" tab.
5. In the available list, choose the option which begins "C400" - be sure to choose the "C400" option and not a different drive.
6. Click the "Properties" button.
7. Choose the "Change Settings" button.
8. Click the "Policies" tab.
9. **Turn "off" (un-check) the "Enable write-cache option"**, or in some versions of Windows 7, select (check) "Quick Removal" option.
10. Press "Ok" and you're done.

This procedure may need to be repeated if a future insertion of an SSD creates a different Drive Letter within Windows Explorer. If the Drive Letter does not change from one insertion to the next, the procedure does not need to be repeated.

If you are unable to perform the above, For Windows 7, then you may power your computer off, then attach the Transfer Station, SSD, and both cables, then power on your computer. In this case, the computer should recognize your drive.
After copying files to the SSD, you may need to shut down your computer, for the Windows Cache to be cleared (so that the files are actually written to the SSD).

Allow 10-20 seconds for Windows to recognize the SSD, after insertion.

Windows XP:
Avoid having the SSD attached at time of booting a Windows XP machine. Otherwise, if an SSD is attached at time of Windows boot-up, Windows may try to boot from the SSD.

When removing an SSD from the Transfer Station, allow at least 15 seconds before inserting another SSD.

Allow 10-20 seconds for Windows to recognize the SSD, after insertion.

POST WORKFLOW

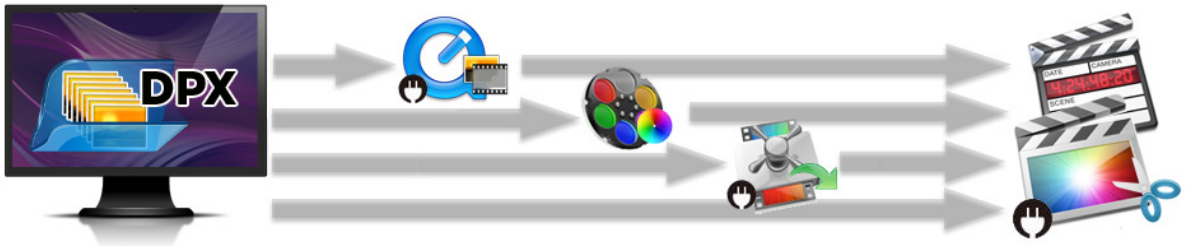
DPX Files

All DPX files are 10bit RGB 4:4:4. See page 13 for more information related to 1080p59.94/60 in Rec709 and LOG.

Adobe

Software	Imp/Exp	File Type	Function and General Notes
After Effects CS4 CS5 CS5.5 CS6	Import	Native Support for DPX	• Check Playback • Apply Color Correction • Apply LUT • Can be sent directly to Adobe Premier / Media Encoder **For help importing /exporting and general workflow questions, please visit the AE forum, DVinfo forum, and DVXuser forum.**
	Export	• After Effects Project • Premier Pro Sequence • Uncompressed Quicktime Movie	
Media Encoder CS5 CS5.5 CS6	Import	• After Effects Project • Premier Pro Sequence	• Encode *This will be dependent of any Codec installed on your machine
	Export	• Uncompressed Quicktime Movie • *Codec of Choice DNxHD, XDCAM, ProRes	
Photoshop CS4 CS5 CS5.5 CS6	Import	Native Support for DPX	• Viewer (individual frames) • Used to check a Single Frame
	Export	• DPX • JPG, etc.	
Premier Pro CS4 CS5 CS5.5 CS6	Import	Native Support for DPX Wav Audio Support • After Effects Project • Premier Pro Sequence • Uncompressed Quicktime Movie	• Be sure to select “Numbered Stills” Option…. • For optimal playback, import as After Effects Project or import as Premier Pro Project directly from After Effects.
	Export	Final Production	(Deliverable File)
Bridge	Imp/Exp	Native Support for DPX Wav Audio Support	• Check Metadata & Preview Files
Sound Booth	Imp/Exp	Wav Audio Support	• Edit Audio

Apple



Color 1.5.3 (FCP7)	Import	Native Support for DPX		• Check Playback • Apply Color Correction • Apply LUT
	Export	Final Cut Pro Project / Sequence		Export to Final Cut Pro
Compressor 3.5(FCP 7) 4 (FCP X)	Import	DPX Plug In	• Glue Tools (Mac) • Cineform Remaster	• Encode
	Export	*Codec of Choice: DNxHD, XDCAM, ProRes		*With Glue Tools you can import DPX files, then Encode to Codec of choice
Final Cut Pro 6 7 X	Import	DPX Plug In	• Glue Tools (Mac) • Cineform Remaster	• Check Playback • Edit *Plug In allows you to import DPX files directly.
		Audio	• Wav Audio Support	
	Export	Final Production (deliverable file)		
Soundtrack Pro	Imp/Exp	Wav Audio Support		• Edit Audio
Quicktime Pro				•

AutoDesk

Smoke	Import	• Native Support for DPX	• Check Playback • Apply Color Correction • Apply LUT • Edit
Flame	Export	• NLE • Uncompressed Quicktime Movie • Final Production	
		•	

Avid

Avid DS 10.5	Import	•Native Support for DPX •Wav Audio Supported	• Check Playback
	Export	Final Production	Export to Final Cut Pro
Metafuse	Import	Native Support for DPX	• Ecode
	Export	*Codec of Choice: DNxHD, XDCAM, ProRes	
Media Composer 5.5 6	Import	DPX Plug In: • Metafuse • Cineform Studio • Cineform Professional	•Check Playback •Edit *Plug In allows you to import DPX files directly
		Audio: • Wav Audio Support	
	Export	Final Production (deliverable file)	
Pro Tools	Imp/Exp	Wav Audio Support	

CineForm

Neo Scene Studio Premium Studio Professional Remaster	Import	Native Support for DPX	• Encode *Once files are converted to CineForm 444, you can import them
	Export	• CineForm 444 • ProRes 444 • (other installed Codecs)	

Eyeon

Fusion 6	Import	Native Support for DPX	• Edit
	Export	Final Production	

Maxon

Cinema 4D	Import	Native Support for DPX	• Edit
	Export	Final Production	

NewTek

LightWave 3D 10.1	Import	Native Support for DPX	• Check Playback • Apply Color Correction • Apply LUT • Edit
	Export	NLE / Final Production	

The Foundry

Nuke 6.3 Furnace 4.2 FurnaceCore 4.3	Import	Native Support for DPX	• Check Playback • Apply Color Correction • Apply LUT • Edit
	Export	NLE / Final Production	

Sony

Vegas	Import	• Planned Support of Gemini DPX files (near future) • Wav Audio Supported	• Edit
	Export	Final Production	

Grass Valley

Edius 5 6	Import	• Native Support for DPX • Wav Audio Support	• Create a new bin • Import File • Select 'File As Sequence'
	Export	Final Production	

Black Magic

DaVinci Resolve Resolve Lite	Import	Native Support	• Check Playback • Apply Color Correction • Apply LUT • Edit
	Export	NLE / Final Production	
Media Express	Import	Native Support	• Check Playback • Encode *If you have DeckLink 3D, or 4:4:4 card, it will playback and exp
	Export	Uncompressed Quicktime Movie	

AJA

DPX Translator	Import	Native Support	• Check Playback • Encode
	Export	Uncompressed Quicktime Movie	

DPX Viewers

DJViwer	Import	Native Support	• Check Playback
	Export	Jpeg, DPX, etc.	
XNView			
POM DPX Head Editor			
Photoshop			

Convergent Design Gemini Transfer

To use 59.94/60p DPX files you will need this software to unpack the DPX frames. You can download it from our website under the Downloads page.

XML Files / Metadata

ARRIRAW Files

APPENDIX

Firmware Updates

We strongly recommend you always keep your Gemini 4:4:4 updated with the latest firmware.
We frequently add new features and bug fixes at no cost.

Firmware Update Instructions

We recommend that you print out these instructions, if possible (pages 37-40).

1. Your computer must have an internet connection so you may access our website.

2. Navigate to our website: Firmware Updates > Gemini 4:4:4

3. On the Right Side of the page, you will find “Current Firmware”.
   Make a note of the firmware version that you will be downloading.

4. Format a SSD in the Gemini 4:4:4 (ensuring that no important clips are on the SSD first).

5. Insert the formatted SSD card in the transfer station.

6. Connect the transfer station to your computer.
   For eSATA Transfer Station: Connect both the USB and eSATA cables to your computer and the transfer station.If your computer does not recognize the SSD, you may need to reboot your computer.

   For Universal Transfer Station: Connect with Seagate GoFlex Adapter appropriate cabling.

   a. We recommend creating a folder named something like the following:
      Gemini 444 Firmware 2012-05-24 (1.1.2). This example uses today’s date and firmware number as listed in our webpage, but you may create a folder using a folder name of your choice.

7. Click on the firmware version that you wish to download.
   Note: You may reinstall an earlier version of the firmware, if desired.

For Windows 7: (Other Windows Computers will be similar)
See below for Mac instructions

8. Click on Save As.

9. Navigate to the folder you just created.

10. Click on Save. The file you saved will be Gemini 1.1.2.zip
(or the current firmware version number)

11. Navigate to this folder and file. (You may just click on “Open Folder”)

12. Double Click on this file. It will be something like “Gemini 1.0.105.zip” but with the current firmware number.

13. Click on Extract All Files.

14. Click on Extract.

15. Double Click on Gemini 1.0.105 (or current firmware version number).

16. Drag and Drop the }GEM_UPDATE{ folder to your SSD Drive
(Listed under Computer) on the left hand side of your screen.

    Note: The SSD may be “No Name”, and it can be any Drive Letter”, but it will have a }CLIPS{ folder on the drive.

    Do not copy the firmware update into the }CLIPS{ folder.

    Answer Yes to: “Do you want to copy this folder without Encryption?”

    And Answer Yes to: “Do you want to copy this file without Encryption?”

    Skip over “For Mac” instructions to finish the update.

For Mac

8. Start with Steps 1 through 7 above.

9. Double click on the }GEM_UPDATE{.zip

10. Copy or Drag }GEM_UPDATE{ folder to SSD.

For Both Mac and Windows (PC continued)

1. If done successfully, you will have:

   }CLIPS{ (An Empty Folder)
   }GEM_UPDATE{ (The Update Folder)
   }GEMINI{.UPD (The Actual Firmware Update File)

2. Use the “Safely Remove Hardware” option or shutdown/restart your computer gracefully, to ensure that the firmware has been completely transferred to the SSD.

3. Otherwise, the firmware update may not be successfully copied to the SSD, and then the Gemini 4:4:4 will not find the firmware update.

11. Ensure that you have adequate power to power the Gemini 4:4:4, either battery or AC Power. The firmware update takes approximately 5 minutes, but please ensure that you have at least 30 minutes of battery time remaining to ensure safety.

12. Power up the Gemini 4:4:4.

13. Removing any video input cables.

14. Remove all SSD’s.

15. Insert the SSD with the firmware update.

16. Then power on the unit.

17. You will see a Firmware Update screen if the file is on the SSD properly.

18. Follow the On-Screen Prompts to complete the firmware update.

19. When complete it will say: “DONE – PLEASE REMOVE UPDATE DRIVE”
    (Please remove the SSD; The unit will then power off and back on automatically).

20. If you wish to then reuse this SSD (normally the case, unless you have additional Gemini 4:4:4's to update):
    a. Insert the SSD back into the Gemini 4:4:4
    b. Click on Cancel (to avoid performing the Firmware Update again)
    c. Reformat the SSD (Click on Menu, then Gemini, then SSD's, then Format SSD1 or Format SSD2)

    This step is very important:

    Then power off the Gemini 4:4:4, then Power it back on.
    If you fail to perform this step to power cycle the unit, then all features of the Gemini 4:4:4 may not work properly.

TROUBLE SHOOTING: ! UPDATE FAILED ! or ! EMERGENCY UPDATE !

Check your power source, pull the power, and then run the update again. MAKE SURE THERE IS NO VIDEO SOURCE plugged into the unit, and that there is only ONE SSD PRESENT.

If this process fails twice, contact Support.

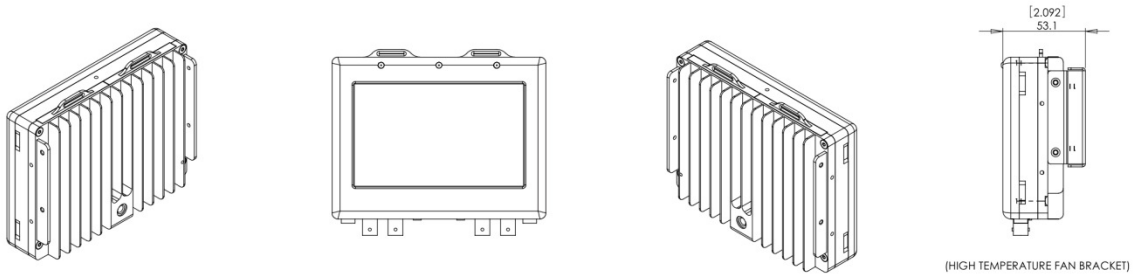
Specifications

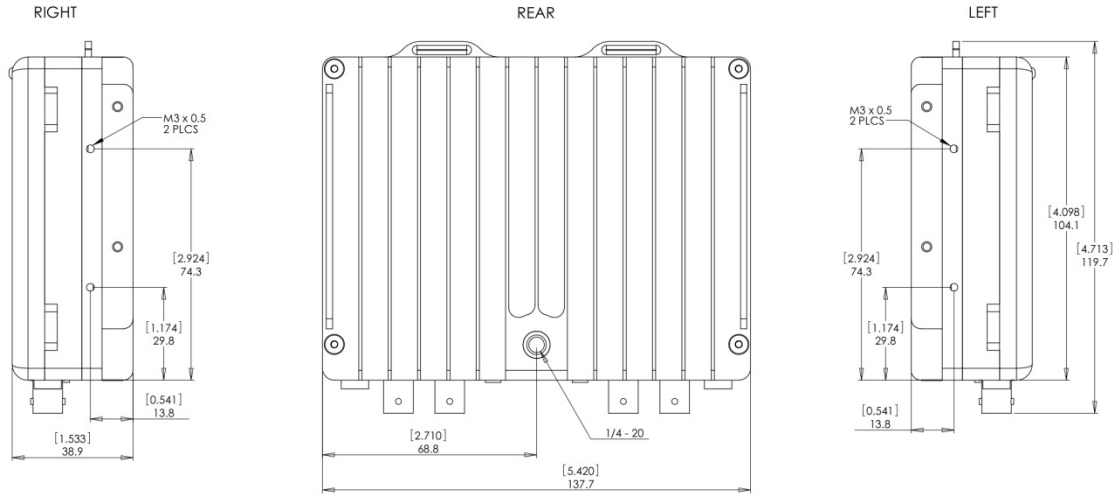
Feature	Specification
Video I/O Ports	Four SDI ports: 2-In (HD-SDI Single Link/Dual Link/3G), 2-Out (HD-SDI Single Link/Dual Link), HDMI-Out
Video Standards	HD-SDI, SMPTE 292M; HD-SDI 3G, SMPTE 424M; HD-SDI Dual-Link, SMPTE 372M
Video Formats	
REC 709	RGB 444 / YCC 422 1080p up to 60fps
ARRIRAW**	ARRI Alexa: 16:9 (2880x1620) up to 60fps
Record Options	
Compressed	Avid DNxHD support (QT) for 1080p YCC 422 up to 30fps (3rd Qtr 2012 Release)
Uncompressed	1080p 10-Bit RGB 444 up to 60fps (DPX) with TC and metadata, audio recorded as wav file
RAW Formats	ARRIRAW
Multi-Stream (x2)	Parallel recording of two RGB 444 Streams up to 1080p30 (with 3D Option)
Live Preview / Playback	
Single Stream	Real time decompressed / debayered output with / without LUT applied
Stereo 3D*	Individual output of each stream or combined streams: Side by Side, Line by Line, Anaglyph, 50/50 Composite
Log Viewing LUTs	Support for S-Log, Log-C with user programmable 1D LUTs
Playback Control	Play, Rewind, Fast-Forward, Pause, and Step Control
Metadata	Reel Number, Scene Number, Take Number and Project Name
Media	Two Slots for 1.8" Solid State Drives (SSD), 256GB / 512GB sizes
Transfer Station	1.8" SSD Transfer Station compatible with Seagate GoFlex Adapters (USB 3, FW-800, Thunderbolt)
Built-In LCD Monitor	5" high brightness LCD, sunlight viewable, 800 cd/m², 800 x (RGB) x 480 Pixels, 24-Bit, 900:1 True Contrast, Wide +/-85º Viewing Angle (IPS Technology)
	1:1 Pixel Option, with user positioning of desired window via touch control
Menu System	Touch Sensitive menu system with user-defined presets and customizable level of on-screen data
Timecode	HD-SDI Embedded (SMPTE RP-188) or LTC via the remote control option
Digital Audio I/O	HD-SDI Embedded 4-Channels, uncompressed, 24-Bit, 48K
Analog Audio I/O	3.5 mm output jack, headphone or consumer line level
Power Requirements	6 to 19 Volts DC, 6 to 15 watts
Size, Weight	138 x 120 x 37 mm (5.4 x 4.7 x 1.45"); 612 grams (1.35 lb); Milled Aluminum Case
Environmental	Ambient Temp: -10 to +40 ºC (Operating) / -20 to +70 ^{0}C (Storage)
Gemini Production Kit	Gemini 444 Recorder + SSD Transfer Station + HD-SDI cables + HDMI Cable + Hotshoe with 1/4"x20 Ball Mount + Universal AC Power Supply + 4-Pin XLR Power Cable + D-Tap Power Cable; all packaged in a Custom Fitted Hard Plastic Case
Optional Accessories	256GB / 512GB SSD Media, Sun-Screen, Remote Control (with pushbutton start/stop, tally light and LTC I/O)
Notes	**ARRIRAW and Stereo 3D are extra cost options
	All Specifications subject to change without notice.

Record Times - See Page 21.

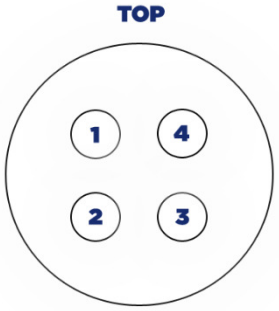
Gemini Mechanical Drawings

Useful for your mounting needs and designs, please find below mechanical drawings of the Gemini 4:4:4.



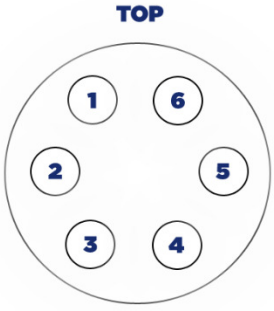


Remote Connector Pinout



POWER PINOUT

(1) Power: +6.5 ~ +19V,
(2) Power: +6.5 ~ +19V
(3) Ground
(4) Ground



REMOTE PINOUT

(1) 232 - RX
(2) Remote
(3) LTC-I/O
(4) GPI
(5) GND
(6) 232 - TX

Firmware Version 1.1.2

Version 1.1.2 Features, 25-May-12

NOTE: Due to changes in formatting in the firmware release, any SSD to be used for recording with the new firmware will first require a fresh formatting within the Gemini Recorder (with the new firmware installed). Additionally, clips recorded with previous firmware may not play out of Gemini with newer firmware.

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- Added “Camera” Record Trigger (Record > Trigger > Camera). This enables compatible cameras to send Record Start and Record Stop signals to the Gemini via the camera’s menu (see page xx).
- Added support for 1080p29.97 and 1080p30 4:4:4 10-bit DPX recording. Recording is split (RAIDED) across two SSD’s (due to the high data rate), recorded at the full frame rate. The “Odd” numbered files are placed on SSD1 and the “even” numbered files are placed on SSD2. Any audio is placed on SSD2. Playback is from the two SSD’s at the full frame rate. Before editing, combine the two sets of files into a single folder when copying onto a computer to obtain the entire clip in a single, descending file format folder.
- Added support for 1080p50/59.94/60 4:4:4 10-bit DPX recording. Recording is split (RAIDED) across two SSD’s (due to the high data rate), recorded at the full frame rate. The “odd” numbered files are placed on SSSD1 and the “eve” numbered files are placed on SSD2. Any audio is placed on SSD2. Playback is either combined from both SSD’s at half speed (by choosing the “RAID” checkbox in the Playlist, see page 25) with no audio, or played as just the “even” frames (SSD2, with audio) or “odd” frames (SSD1, no audio) at regular speed. Before editing, combine the two sets of files into a single folder when copying onto a computer, to obtain the entire clip in a single folder. (For 1080p59.94/60 two 512 GB SSD’s required.)
- Due to the high data rate of 1080p59.94/60 DPX files, the DPX data is stored as “packed”. To un=pack the data (required for compatibility with most computer software), use our free un-packing tool, Gemini Transfer, available on our website on the Downloads page. All other DPX formats are recorded as un-packed on the Gemini, and are directly accepted by all DPX compatible software. Both packed and un-packed DPX data retain full quality.
- Convergent Design has received formal ARRI Certification, and added support for ARRIRAW recording and playback for ALEXA Series cameras (16:9). Support includes:

  - Recording ARRIRAW progressive video formats at p23.98/24/25/29.97/30 (.ari) to single SSD (frame counter for files is based on the timecode), 2-channel audio recorded as .wav (if audio is present on the incoming SDI stream).
  - Recording ARRIRAW progressive video formats at p48/50/59.94/60 (.ari). Two SSD's are required.as data files alternate between two SSD's (frame counter for files is based on the timecode). No audio is available for p59.94/60.
  - Playback of ARRIRAW.
  - Support for Gemini "Camera" Record Trigger setting with ALEXA (on ALEXA: Menu > Recording > Rec Out > SDI Remote > set to On).
  - In the Gemini's "Camera" Trigger and "Timecode" Trigger modes: Gemini clips follow the same naming convention as the ALEXA internal recording, provided that the Date (year/month/day) on the ALEXA and the Gemini match exactly (Date is set separately on the ALEXA and the Gemini).
  - A limited amount of ALEXA settings are available for viewing on the LCD Screen of the Gemini during Live Preview, including Shutter Speed, Exposure Index, White Balance, and Color Correction.
  - A limited amount of ALEXA Metadata is available for viewing in the Gemini Playlist including Location and Take.
  - ARRIRAW is in LOC C format. A generic LUT may be applied to the incoming video (for viewing only, not applied to the recorded video) by selecting the "Apply LUT" option in the Pop-up menu of the Gemini.
  - If recording at high frame rates (p48 and above) across two SSD's: combine the two sets of files into a single folder before editing, to obtain the entire clip of a given recording.
  - Activated ARRIRAW feature can be disabled / enabled (see Disable ARRIRAW, page 10).
- ARRIRAW is available to all Gemini Users in Demo Mode. A gray bar appears across any recording. To activate ARRIRAW for Production Use:
  - Purchase the ARRIRAW Upgrade from your local Dealer.
  - On the Gemini, go to Gemini > Set > Keys > Raw
  - With an SSD inserted into Slot 1, enter value "10000000" (eight-digit) for the Raw Key; press "OK".
  - A Unit ID File is written to the SSD. Save this file to your computer.
  - Upon receipt of the ARRIRAW Upgrade order, Convergent Design will contact you to obtain necessary contact information and the Unit ID File. This information is used to process your unique Activation Key.
  - The ARRIRAW Activation Key will be sent to be entered into the Raw Key field and activate the ARRIRAW feature on the Gemini 4:4:4.

- Convergent Design is phasing out the original Transfer Station (eSATA), and replacing it with a Universal Transfer Station Adapter (available June 2012). While this adapter is provided with the unit, it is intended for use with the Seagate FreeAgent GoFlex Adapter, which is available as Thunderbolt, Firewire, or USB).
    - If using the Thunderbolt adapter you must un-plug and re-plug the Thunderbolt cable from the adapter each time an SSD is inserted, in order for the computer to recognize the SSD.

  Only use Convergent Design provided transfer stations, do not use any other such adapter, when offloading video through the GoFlex Adapters.
- A Pre-Activation File is written to the SSD, email this file along with Proof of Purchase to cd support @ convergent-design .com. An Activation Key will be emailed back, enter this key into the Raw Key field to activate the ARRIRAW feature on the Gemini (see page xx).
- Fixed bug in which the number of audio samples recorded did not correspond precisely with the number of video frames recorded (audio was off by 1 to 3 seconds). The audio file recorded now has the correct number of samples with respect to video frames recorded.
- Fixed bug in the Unit Activation Key calculation (Activation Key is acquired and entered as part of the unit registration process).
- Added option to clear Metadata fields back to default values (Gemini > Set > Reset > Metadata).
- Added a partial (50%) dimming of LCD Screen during Record to help conserve power usage and reduce temperature.
- All SSD space is now pre-allocated when formatted on the Gemini, meaning no free space is available on a computer. This changes the update procedure for the Gemini, for future updates:

NEW FIRMWARE UPDATE PROCEDURE (for future updates, post-v1.1.2)

1. Format an SSD on the Gemini
2. Take to computer, delete the “SANDBOX” file from the SSD
3. Copy the new firmware onto the SSD
4. Insert the SSD back to the Gemini and follow the prompt to update the firmware
5. After updating, return the SSD to the computer and delete the firmware update
6. Format the SSD again on the Gemini for recording
7. NOTE: We recommend never to delete the “SANDBOX” file or any files from an SSD on a computer, unless you are loading a firmware update or other essential file from the computer to the SSD.

- Added a “Format Both” option to format (erase) both SSD’s (Gemini > SSD’s > Format Both).

  We also recommend never to use the Convergent Design SSD’s for general purpose usage on a computer – only use the SSD’s for offloading video recorded on the Gemini (or for transferring firmware updates or other essential files to the Gemini from a computer).

Known Issues / Limitations

- During playback of clips from the Gemini Recorder: the only functions available are “play” and “Stop” (both functions are available via the Play/Stop bottom on the bottom of the screen). At this time no other Play functions (such as Pause or Trick Play functions) are available.
- HDMI Output and Analog Audio Input are not functioning at this time.
- Single-link video inputs must be attached to the “SDI A In” port on the Gemini.
- When using Timecode Trigger as the Record Trigger, repeated timescodes may be experienced on the final 2 or 3 frames of a given recording.
- The “Apply LUT” option only applies to 4:4:4 or RAW inputs. “Apply LUT” does not work in 1080p50/60 DPX or any 4:2:2 single source.
- 1080p48 DPX is not supported at this time
- Video may shift when formatting SSD’s.
- 3D is not enabled at this time.
- Files recorded with previous firmware on the Gemini may not play out of Gemini that has newer firmware.
- Playback may not work properly from SSD’s with mixed video formats. Additionally, playback may not work properly if a video input is present at the time of Play, which is different from the recorded material’s video format.

Previous Firmware Releases

Version 1.0.594 Features, 10-Feb-12

- Added support for 1080p 24.00 frame rate (in addition to the already supported 1080p23.98 and 1080p25). Additionally, 1080p23.98 is reported more precisely as 23.98 in the Input Status window of the LCD screen.
- The DPX file naming convention was changed:
  - For the character preceding the frame counter digits, we replaced the “.” with a “_”
  - Files now begin at “0000000” instead of “0000001”, and count forward as before. ***Example:*** For a clip named CLIP0000001, the DPX files will be named:

    CLIP0000001_0000000.DPX
    CLIP0000001_0000001.DPX
    CLIP0000001_0000002.DPX …etc.

- Fixed Outputs: Mode setting to be correctly saved when the setting is changed.
- Added a “Next Take” info button on the left side of screen, which when chosen displays the Clip, Scene, and Take which will be used for the next recording. (Please refer to the Metadata discussion below).
- Fixed bug in which timecode would inappropriately repeat or skip from one DPX file to the next within a recording.
- Fixed rare (0.000001%) pixel repetition within video frames.
- Lessened the sensitivity of scroll buttons when scrolling and adjusting values on the LCD screen.
- Added Support for CineFlex cameras with earlier firmware versions that do not comply with SMPTE Specs. Dual-link HD-SDI signals will now be recognized appropriately from these cameras.
- Added Metadata functionality:
    - Metadata may be entered and edited through the “Metadata” tab along the left side of LCD screen (in Live/Rec Mode).
    - The “Scene” and “Take” fields (along with the Clip Name) for the next recording are displayed just above the timecode display, which is located along the bottom row of the LCD screen, when the “Next Take” info button is selected (on the left bottom of LCD).
    - During Record, Metadata is saved in various locations within the header of every DPX file (the Metadata within the DPX header is viewable within some software programs on a computer), and additionally the Metadata is stored in a separate XML file (alongside the DPX files for a given recording).
    - Also, the Metadata is stored, within the DPX header:
- the “Reel”, “Scene”, “Take”, and “Day” values are placed in the “Slate Info” defined field in the DPX header
- the “Reel” value is additionally placed in the “Input Device Name” field of the DPX header
- the “Camera” value is placed in the “Input Device Serial Number” field of the DPX header
- the “Project” value is placed in the “Project” field of the DPX header
- Most Metadata is displayed for each clip in the Play List (in “Play/Review” mode on the Gemini Recorder). This includes Scene, Take, Timecode, Date, Time, and Shooting Day.
- Added 2-channel audio support over SDI, recorded as WAV files (and placed alongside the DPX files for a given recording). WAV file will only be produced if audio is present over the incoming SDI stream during record.
- Added Play List / Play Selection functionality:
    - Clips may be selected for Playback out of the Gemini via the “Play List” tab along the left side of the LCD screen (in Play/Review mode).
    - All selected clips will be played in sequence, and optionally the playback will loop continuously (if the “Loop” option is selected), until manually stopped.
    - The default behavior of the Play List is to play and loop the last recorded clip.
- Added Screen Flip function (Gemini->Set->LCD->Flip) to flip the Video and On-Screen Display by 180 degrees. This is to allow more flexibility of mounting the Gemini 4:4:4, as it can now be mounted upside down, while still viewing the image and menus in the upright position. This does not flip the recorded image. Flipping of the recorded image will come with the 3D Option.
- Added LCD Screen / LED Brightness setting (Gemini->Set->LCD->Brightness) : 20% to 100% Brightness, adjustable in 10% increments.
- Added LTC timecode input source (via remote port and adaptor cable)

(Inputs->Timecode->Source).
    - LTC Timecode may be used in conjunction with the Record->Trigger->Timecode setting to start and stop recordings on the Gemini (via incrementing Timecode for starting record, and stopped Timecode for stopping record), in the same manner as with Embedded SDI Timecode.
- Added current time/date display via the System Status button (lower left corner of LCD touch-screen, press button to bring up a larger System Status Info box).
- Beta support for 3G video inputs is included in this release.

NOTE: Due to the addition of audio files, XML files, and Play List in this firmware release, any SSD to be used for recording with the new firmware will first require a fresh formatting within the Gemini Recorder (with the new firmware installed). Additionally, for any SSD's containing clips recorded on previous firmware, the Gemini Recorder will not provide a Play List for these clips – the only Play function will be "Play All". In order to play clips recorded with earlier firmware, you must select the "All" function in the Play List, and insert SSD's with the older clips only after powering the unit.

Known Issues – 1.0.594

- During playback of clips from the Gemini Recorder: if the "Loop" option is selected, the video/audio can get out of sync with respect to each other over time. Additionally during "Loop" play, the audio may disappear altogether. These are only limitations of the "Loop" play; the actual recorded video/ audio files are intact and in sync.
- During playback of clips from the Gemini Recorder: the only functions available are "Play" and "Stop" (both functions are available via the Play/Stop button on the bottom of screen). At this time no other Play functions (such as Pause or Trick Play functions) are available.
- During playback: on rare occasions, the video can shift vertically. Restarting the Play will correct the video shift. This is only present while playing from the Gemini; the actual recorded video files are intact.
- HDMI Output and Analog Audio Input are not supported at this time. (Future firmware release).
- Single-Link video inputs must be attached to the "SDI A In" port on the Gemini.
- When using Timecode Trigger as the Record Trigger, repeated timecodes may be experienced on the final 2 or 3 frames of a given recording.
- For the Metadata fields, no method exists to clear these fields back to default values.
- Firmware Version 1.0.105 drives cannot be recorded to with firmware version 1.0.594.
- Copying files to SSD's from a computer source for playback is not supported.

Trouble Shooting & Support

Please read the User Manual before contacting support. We highly recommend that you follow these steps:

(1) **UPDATE YOUR GEMINI**: Visit the Gemini 4:4:4 Firmware Updates page on the website and confirm that you are running the latest version. Please refer to 'Firmware Updates' on page 22 for more about checking the system for current version and updating.
http://www.convergent-design.com/ProductUpdates/Gemini444.aspx

(2) **VISIT OUR FORUM**: We have a very active forum and you may find the answer you are looking for, as well as support from the Convergent Design community.
http://www.dvinfo.net/forum/convergent-design-nanoflash/

(3) **REFER TO DOCUMENTATION**: Please read all of this User Manual, as well as our Gemini 4:4:4 FAQs which document basic usage and help answer common questions.

(4) **CONTACT US:** If you still haven't found a solution to your support needs we are always happy to help you 24/7!

Support E-Mail: cdsupport (at) convergent-design .com
Sales E-Mail: cdsales (at) convergent-design .com
Main Telephone: ++(720) 221-3861
Sales and After Hours Support Telephone: ++ (719) 930-1376, ++803-278-0941
Web Site: http://www.convergent-design.com & www.Gemini444.com

We appreciate your questions, comments, feedback! We ARE listening! To reach out to us, look for this link on our website, or visit http://www.convergent-design.com/ProductUpdates/WereListening.aspx

Limited Warranty

Convergent Design warrants Gemini 4:4:4, and all included accessories, against defects in material and workmanship for a period of 2 years (for registered units), 1 year (for non-registered units), and 3 months (for units used as rentals) from the original date of purchase.

Convergent Design disclaims all other warranties.

Convergent Design will not be liable for damages of any kind, including, but not limited to, compensation or reimbursement on account of failure of the unit, or any of its accessories, or its recording media, external storage systems, or any other media or storage systems to record or playback content of any type. Also Convergent Design will not be liable for a failure of the unit to properly record or play back for any reason. Convergent Design's total liability, in all cases, is limited to the actual purchase price.

If you discover a defect, please refer to our Return Merchandise Policy below.

During the warranty period, Convergent Design, at its option, will repair or replace product or product components, which in its opinion prove defective, provided the unit is returned, freight charges prepaid, to Convergent Design. Parts and components used in the repair process may be recycled or repaired, at Convergent Design's sole discretion. This warranty service will be performed at no charge to the registered owner, provided the product is shipped prepaid to Convergent Design.

Convergent Design reserves the right to determine whether a needed repair is subject to the warranty as per its provisions stated herein. Transit damage caused by inadequate packing violates the warranty. The warranty will be void if, in the opinion of Convergent Design, the product has been damaged through accident, misuse, misapplication, or as a result of service or modification not authorized in writing by Convergent Design.

Opening the unit and breaking the warranty seals, voids the warranty, unless specifically authorized in advance by Convergent Design.

WARNING: THE FOLLOWING ARE NOT COVERED UNDER WARRANTY, AND ARE ITEMS FOR WHICH CONVERGENT DESIGN DOES NOT ACCEPT ANY RESPONSIBILITY:

- Damage due to the use of an AC power supply, other than the one supplied, or use of any inappropriate power source.
- Damage due to overheating conditions. The unit will attempt to shut down, if powered on, in the event of overheating, before damage can occur.
- Damage due to exposure to water, or other liquids, or excessive dust or sand.
- Damage caused by dropping or other rough handling.
- Damage caused by any overvoltage conditions or reverse voltage conditions.

- Any physical damage to the LCD and/or Touch Screen including scratches.
- Damage to any connector by using excessive force or rough handling.
- Any loss or corruption of video or audio data recorded on the unit, or any loss or corruption of data which is in any way associated with the Gemini 4:4:4.

Obtaining an RMA

It is our policy that all material and repair returns, whether in warranty or not, are only accepted if an RMA (Return Merchandise Authorization) Number has been issued for the products being returned.

E-mail Convergent Design at cdsupport (at) convergent-design .com to obtain an RMA number for a faulty unit, or call ++720-221-3861 (7:30 am to 5 pm Colorado, USA time).

Items must be returned within 15 days of receiving your RMA number.

Returned product must be securely packaged and must have the RMA number clearly marked on the outside of the package.

RMA numbers and return address may be obtained from Technical Support.

Convergent Design RMA # _____

4465 Northpark Drive, #400

Colorado Springs, CO 80907

EMAIL: cdsupport@convergent-design.com

WEBSITE: www.convergent-design.com or www.gemini444.com

Phone ++(720) 221-3861 (Preferred, Mountain Time) or
++(866) 654-0080 or
++(803) 278-0941 (For After Hours Support 24/7)
++(719) 930-1376 (For After Hours Support 24/7)

Transit damage caused by inadequate packaging also invalidates the warranty agreement.

Please ship the unit in its original packaging, if possible.

Within the United States, the unit may be shipped directly to Convergent Design once an RMA is obtained.

Outside the United States, please coordinate with your dealer, which will then coordinate with our distributor for your part of the world. Our goal is to ensure that the units are shipped properly and that the units will clear customs without incurring extra charges. In some cases your local dealer or distributor may be able to provide you with a loaner unit.

All products must be shipped prepaid to Convergent Design, or preferably through the dealer from which the unit was purchased (if outside the US). If you purchased the unit

from a dealer outside of your normal trading zone, then you may be charged for return shipping to your location.

For insurance reasons, Convergent Design cannot accept any product that is returned via U.S. Postal Service. Returns will be accepted from Federal Express, UPS, DHL, or other comparable freight carrier.

Products repaired out-of-warranty are shipped at customer's expense.