

Convergent Design's Gemini 4:4:4 versus Other Video Recorders

Our Gemini 4:4:4 is a new entry into the professional, full uncompressed, 4:4:4/4:2:2, camera mountable, video recorder market. While the Gemini 4:4:4 is certainly not the first 4:4:4 video recorder, it is certainly very innovative and provides some features not found in any other full uncompressed recorder.

1. The Gemini 4:4:4 is smallest, lightest, lowest power, professional, full uncompressed 4:4:4/4:2:2 video/audio recorder.
Size: 5.4" wide by 4.5" high by 1.1" thick, 138 x 114 x 27 mm
Weight: 1 Pound, 450 Grams, Power: 8 to 15 Watts
2. Advanced SSD Technology
 - a. Convergent Design has mastered SSD Technology.
The Gemini 4:4:4's SSD's will not slow down as they get full.
Thus one can record to their SSD's with confidence that dropped frames will not occur.
Typically SSD's slow down as they get over 75% full.
 - b. Convergent Design's SSD's will not slow down over time.
This is also technology that is currently unique to Convergent Design.
Other SSD's will slow down as they are used over time.
Convergent Design has special techniques in place to prevent this from occurring.
 - c. Convergent Design's SSD's are very low in cost when compared to other proprietary media packs.
3. The Gemini 4:4:4 includes an exceptionally high quality 5.0" LCD Monitor.
The monitor may be viewed from almost any angle, vertical or horizontal, without color shifting, dimming, or loss of contrast. The unit has a "1 to 1 Pixel" option, with the ability to select the portion of the image to be magnified for critical focus.
4. The small size, light weight, plus a great monitor, allows the Gemini 4:4:4 to be used as an on-camera monitor.
A Sun Shade will be available as an accessory.
5. The Gemini 4:4:4 is absolutely unique in its ability to accept two HD-SDI sources from a single camera:
 - a. One with the camera's viewfinder data that can be routed to the LCD, HD-SDI and HDMI Outputs.
 - b. A second one, a clean HD-SDI output from the same camera, for recording purposes.This allows the Gemini 4:4:4 to be a true camera viewfinder, showing all of the camera data that is normally shown on the camera's LCD/viewfinder. And this camera data, including timecode can be shown on an external HD-SDI or HDMI monitor.
6. The Gemini 4:4:4 supports both 4:2:2 and 4:4:4, and if desired, can record 4:2:2 from a 4:4:4 signal.
7. Dual Recording
For 4:4:4, 1080p23.976, 1080p24, 1080p25, the unit can create two masters by recording simultaneously to two SSD's.
For 4:2:2 720p23.976, 24, 25, 29.97, 30, 50, 59.94, and 60 are also supported.
Dual Recording certainly provides better safety over the far more typical single recording supported in other recorders, and may lower one's production insurance costs.
(Currently dual recording is not available at 4:4:4 1080p2997 or above, due to performance limitations of SSD's, subject to change.)
8. Client Monitor
A DP may have a native log monitor while a Viewing LUT may be applied to a separate client monitor.
This helps avoid the "Why does the footage look so bad" questions from the client.
9. Viewing LUT
Full Support for Viewing LUTS (Look Up tables for use with S-Log, Log-C and other Log footage).
A Viewing LUT may be applied to the internal LCD and each of the outputs as desired.
10. Grading LUT
A Viewing or Grading LUT may be applied to one or both of the SSD's while creating two simultaneous masters,
Thus one master could be with native log footage and one with the Grading LUT applied.
11. Deck Mode and File Mode
In "Deck Mode", the Gemini 4:4:4 records the camera's output, bit by bit, with 100% accuracy, including closed captioning.
In "File Mode", the Gemini 4:4:4 creates files for editing and the video is 100% accurate, but ancillary data is not typically recorded.
In "Deck Mode", the 100% accurate internal files may be played backed, on any Gemini 4:4:4, but these files are not for editing unless the files played back and ingested first.
12. 3D Option
With the extra cost 3D Option, the Gemini 4:4:4 becomes a self-contained 3D recorder, with 3D processing functions.
Only one Gemini 4:4:4 plus the 3D option is required for 3D. Two Gemini 4:4:4's are not necessary.
3D, from two Gen-Locked cameras, can be recorded at 4:2:2/4:4:4 at 1080p23.976, 24 and 25,
4:2:2 720p23.976, 24, 25, 29.97, 30, 50, 59.94, and 60 are also supported.
Side by Side, Line by Line, 50% + 50% Composite and Anaglyph are supported.
Each output may be configured independently, thus one output could be "Side by Side" while another is 50% + 50% Composite.
Two independent, Gen-locked cameras, not 3D, may also be recorded with one Gemini 4:4:4 with the 3D Option.

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13. Inputs
Single Link HD-SDI, Dual-Link HD-SDI, HD-SDI 3G, (Dual HD-SDI 3G with 3D Option)
14. Outputs
Two HD-SDI outputs: Two Single Link, One Dual Link, Two HD-SDI 3G, each with or without a LUT applied
One HDMI output: For 2D (or 3D HDMI Monitor with 3D Option), with or without a LUT applied
15. Audio
16 Channels, Audio Embedded in HD-SDI, 24-Bit/ 48K, 32 Channels with 3D Option,
One channel of mic/line balanced (no phantom Power),
Two channels of unbalanced mic/line, matches "Tape Out" from most mixers.
16. Workflows
Both full uncompressed and compressed workflows are fully supported, but the Gemini 4:4:4 always records uncompressed.
For compressed workflows, one can use Apple Compressor, or Adobe Media Encode to obtain the compressed codec of your choice, allowing you to use a familiar workflow, if desired. Also, the footage may be ingested, if desired.
Compressed files are obtained by mounting the full uncompressed files using our supplied transfer station.
This "First Encode" takes approximately 15 minutes for 30 minutes of footage.
17. 1080p50, 1080p59.94, 1080p60 Support (4:2:2 only).
Uses two SSD's simultaneously due to the large amount of data.
18. File Format: DPX with WAV Audio File
Quicktime is planned for the future.
19. Ultimate Image Quality
 - a. Zero Compression – Zero Artifacts
 - b. Reasonable Transfer Time: 30 Minutes of footage will transfer in approximately 10 Minutes
20. Sony PMW-F3 and other Cameras
The Gemini 4:4:4 is a perfect match for use with the very popular Sony F3, with or without the S-Log Upgrade.
The Gemini 4:4:4 may also be used with a wide variety of other cameras, including the Sony F35, Arri Alexa and many others including all of the Sony EX line. Most any camera with a good HD-SDI signal may be used.
21. Indie Filmmakers
While the Gemini 4:4:4 is great for major Hollywood studios; it also provides a low-cost way for Indie Filmmakers to achieve the ultimate in image quality from their existing HD-SDI equipped cameras.
Full uncompressed is the highest quality available from any camera, no other recorder will record higher quality.
22. Additional Features
 - a. Proper "True Progressive" recording.
The Gemini 4:4:4 can accept and record 1080psf23.976 (23.98), and other PSF frame rates, and record it as true progressive. Almost all cameras output "PSF" (Progressive Segmented Frames) and not "True Progressive".
Recording True Progressive makes editing easier.
 - b. 3:2 Pulldown Removal.
The Gemini 4:4:4 properly handles 1080p24 over 60.
 - c. "True" Frame Rates, 1080p24, 1080p30, 1080i60, 720p24, 720p30, and 720p60.
 - d. On-Screen Tally Bar for confidence that one is actually recording. Confidence Beeps are provided via the headphone.
 - e. Time-Lapse, allowing any user specified time-lapse interval from 1 second up to over one frame per 24 hours (or more).
 - f. Over and Under-Cranking, for slow and quick motion.
23. Support for SSD Spanning, "Hot Swapping"
 - a. When one SSD fills up, the Gemini 4:4:4 will automatically and seamlessly advance to the next card without loss of a video frame or audio sample. Spanning is not available when using "Dual Recording" as both SSD's are in use for recording.
 - b. SSD "Hot Swapping" is fully supported, allowing for very long recording times if one has enough SSD's.
24. The Gemini 4:4:4 is 100% silent, has no fan, and is very rugged.
25. Boot-up Time and Backup Power Options.
 - a. The Gemini 4:4:4 is ready to record in a very short period of time, well under 10 seconds.
No extended boot-up time required. When a battery has to be replaced, the Gemini 4:4:4 will reboot quickly.
 - b. Dual Power is also available as an accessory for the Gemini 4:4:4.
For example, one can run on AC Power with battery back-up in case the AC power is interrupted.
The backup battery will automatically be recharged when AC power is available.
26. Convergent Design is widely known for its live, knowledgeable, 24/7 support.
27. The Gemini 4:4:4 includes a custom hard case, with anti-static lining, AC power Supply, Transfer Station, and cables.