Panasonic+Codex VariCam Pure

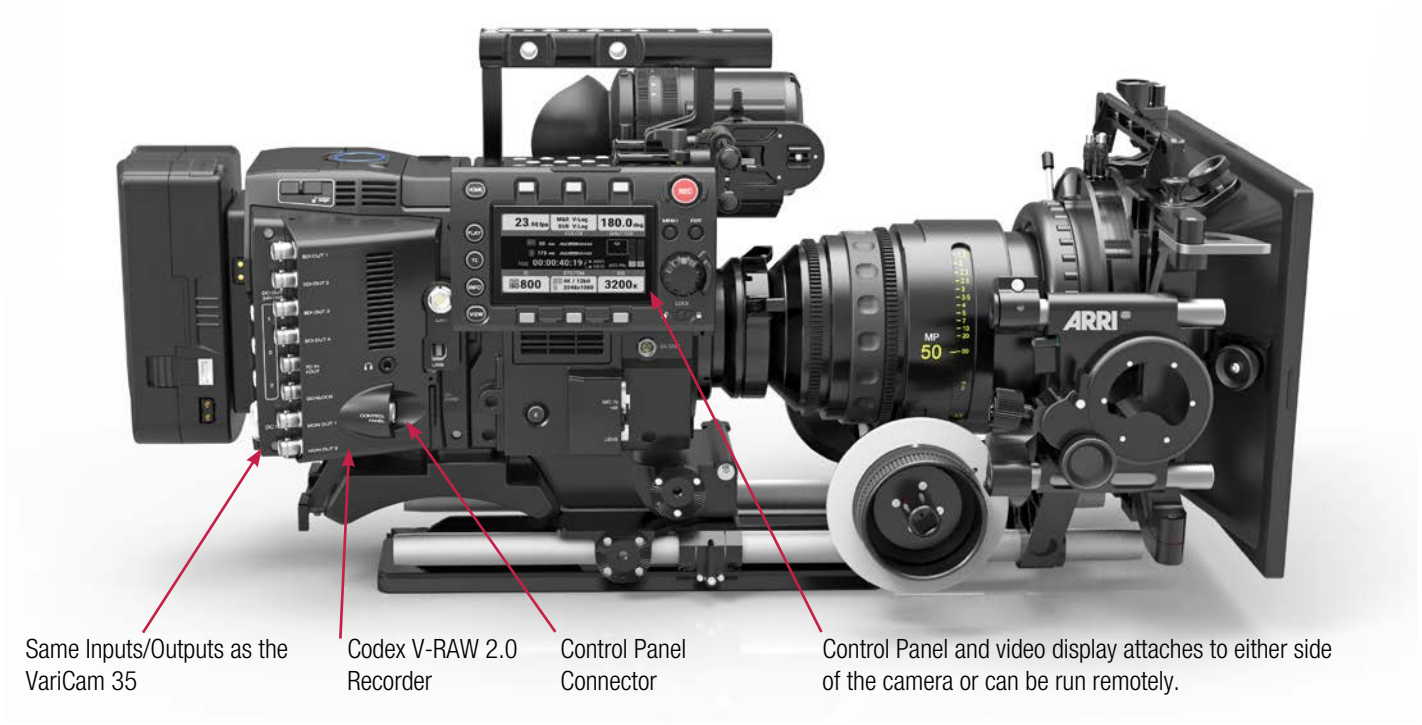
At IBC 2016, Panasonic introduces the VariCam Pure. It is a "co-production" between Panasonic and Codex.

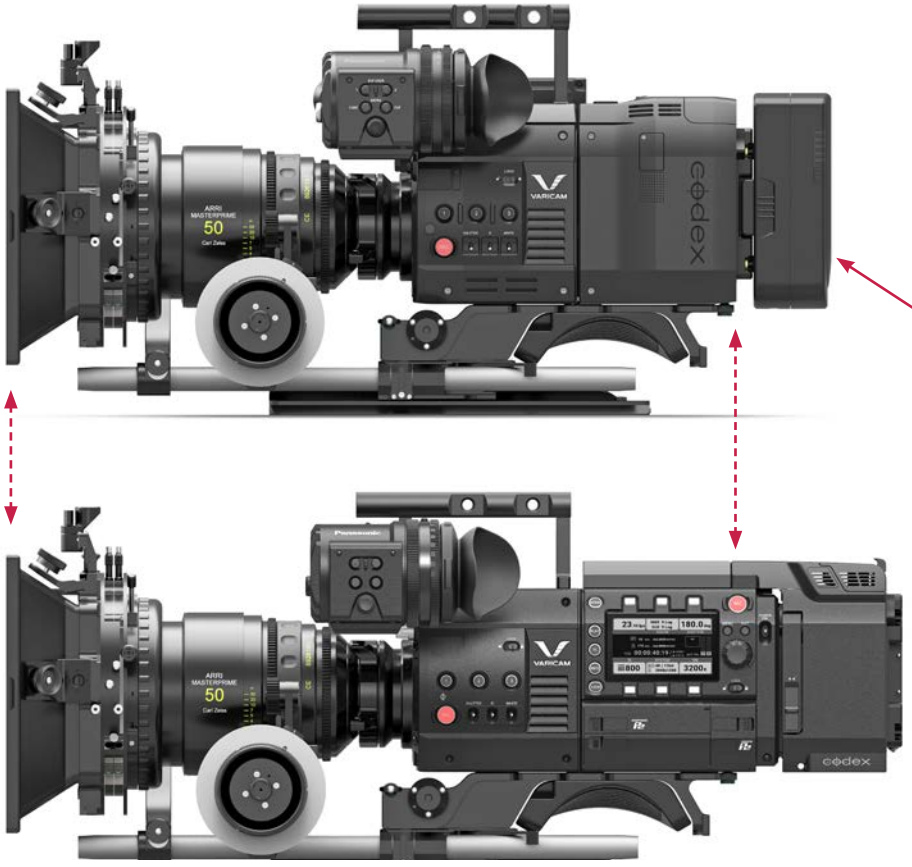
VariCam Pure is a new S35 4K/2K camera system with high-quality imaging, 14+ stops of dynamic range, dual ISO 800/5000, and built-in, uncompressed RAW to 120 fps.

The new VariCam Pure camera records pure, uncompressed RAW up to 120 fps onto familiar, industry-standard Codex Capture Drive 2.0 media already widely used by many camera systems, post facilities and studios.

VariCam Pure is rugged, compact, lightweight (5 kg total) and ergonomic. The Codex RAW Recorder is integrated with the camera.

Menus and controls of both the camera and the Codex are managed by the camera's flexible control panel and video display. It attaches to either side of the camera or can be run remotely.





VariCam Pure

Same Camera Head as VariCam 35. The Recording Body is replaced by the Codex V-RAW 2.0 Recorder. The combined size and weight is significantly reduced.

VariCam 35

Camera Head and Recording Body and optional Codex V-RAW Recorder

Kunihiko Miyagi and Marc Dando on VariCam Pure

This discussion of VariCam Pure has a structure reminiscent of Rashomon. The difference is that both protagonists are in full agreement with each other. Kunihiko Miyagi is Director of Panasonic's Professional Video Business Unit. Marc Dando is President of Codex.

Kunihiko Miyagi

Jon Fauer: Please provide an overview of the VariCam Pure. How is it different from the original VariCam 35 and LT?

Kunihiko Miyagi: We are pleased that the performance of the VariCam 35 and LT were well accepted by the market. Panasonic and Codex worked together on the RAW recorder that attaches directly to the back of the VariCam 35 camera head and the Varicam 35 AVC-Intra Recording body. However it had some limitations of mobility. Quite a few customers asked if the RAW recording capability could be made in a smaller package.

Now Codex and Panasonic propose a new RAW recording system that directly connects the existing VariCam 35 camera head module with a completely new, integrated Codex V-RAW 2.0 Recorder. It is an uncompressed RAW-only recording system, up to 120 fps. This new camera system provides better mobility because of its smaller size and lighter weight.

It is called VariCam Pure. The name suggests the purity of uncompressed RAW recording that enables the best picture quality.

When did the project begin?

Marc Dando and I got this idea at NAB2016. We started the co-development project in June of this year. The engineers of both companies worked very hard to achieve this in only 6 months.

My understanding is that RAW recording amounts to about 10% of the high-end market. Will this camera make RAW more affordable and popular?

Yes, we believe so. The AVC-Intra 4K recording of the current VariCam 35 offers high quality video, capturing 14+ stops of dynamic range, all with a reasonable file size and fast workflow. It has been widely used in episodic dramas by major content providers such as Netflix. On the other hand, the demand for uncompressed RAW recording is very high in the high-end market. We believe this new, pure, RAW camera-recorder system will expand the VariCam world.

Describe RAW for someone who doesn't know much about it.

RAW recording captures the maximum possible image quality from the sensor. It allows for flexibility in post production and color grading to achieve the best possible color reproduction.

The VariCam Pure system utilizes the Camera module and the new V-RAW recorder to achieve this quality of 14+ stops latitude up to 120 fps. The Codex RAW workflow is well established in this industry and so this is a natural step for both companies.

Do you want to tell us about delivery dates and prices?

Delivery will be end of 2016. Prices will be announced at IBC.

In summary?

The original modular concept of the VariCam 35 enabled this project to be realized. We believe that the combination of Panasonic's camera technology and Codex's RAW recording and workflow expertise will create an excellent synergy for future developments.

Marc Dando

Marc, what is the concept of this new camera?

Marc Dando: Meeting with customers around the world, we often heard that they loved the image quality of the VariCam 35, wanted RAW recording, but needed a smaller camera system that could be used in all situations—from an A camera on a dolly to a Steadicam or on a remote head. We knew that we could work together with Panasonic and improve the ergonomics and usability of the system.

Will this camera increase the use of RAW recording?

RAW has become the standard for many feature films and Codex is fortunate to have been at the forefront of the transition. Now that more and more consumers are expecting higher quality in the home, studios like Netflix would like 4K RAW acquisition so that they can meet the expectations of their current customers and also future-proof their content— for example, for HDR distribution.

What are the advantages of shooting RAW?

RAW is uncompressed and unprocessed. It's the pure image data collected by the sensor. For today, it means you have maximum flexibility in processing and color grading the images. And for tomorrow, it means that as image processing algorithms improve, you can meet the needs of future distribution formats and get the maximum value out of your archive.

But isn't it harder to deal with in post?

No. Facilities are now very used to dealing with RAW files. They understand the huge advantages for grading, VFX and archiving. Many people are surprised to find out that RAW files often are not that much larger than, for example, high quality ProRes files. The Codex system, from recording through completion, allows users to make mezzanine files (digital intermediates used to make copies) before finishing from RAW, providing all the quality with the simplicity of a ProRes workflow.

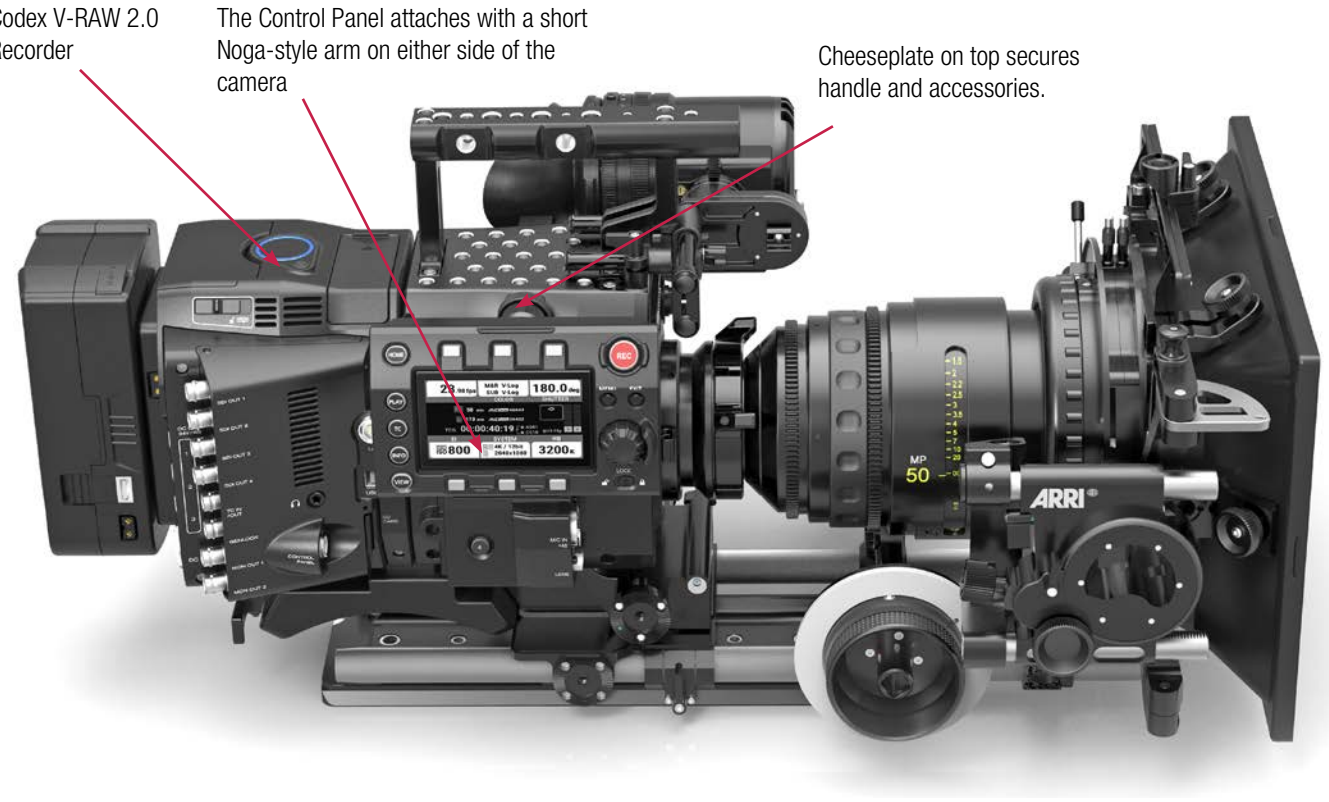
Why doesn't the VariCam Pure record ProRes then?

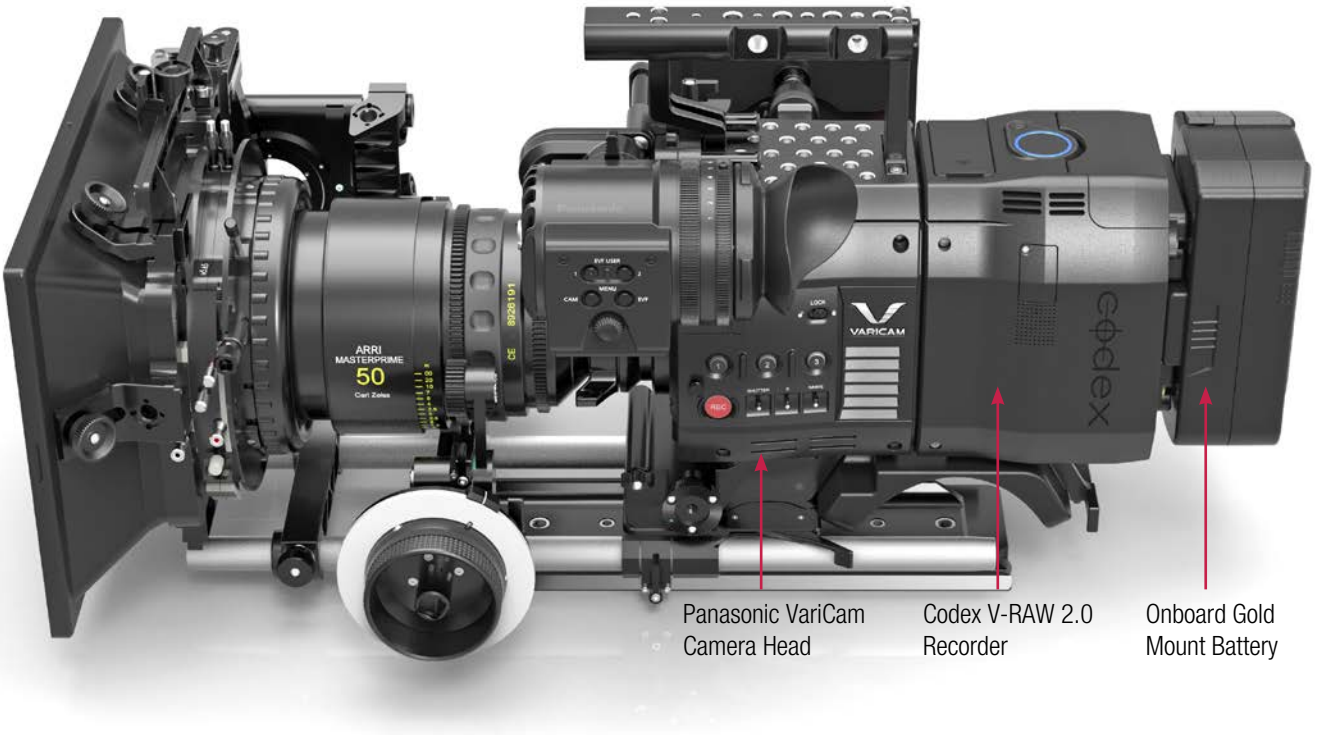
Actually, it does that very elegantly, but not in the camera. And not only ProRes, but also DNxHR. Insert a Codex Capture Drive into a Codex Production Suite's Capture Drive 2.0 Dock to clone the RAW files, create dailies and offload to popular formats.

Conclusion?

We are very excited to work with Panasonic as we roll out this camera system together. We believe that both companies have done a great job of listening to customers and incorporating their needs. We can't wait to see the creative results that will emerge.

VariCam Pure





VariCam Pure — Overview

- Exposure Latitude 14+ stops
- Maximum Frame Rate 120 fps
- Recording Format 4K Uncompressed RAW
- Weight 5 kg / 11.02 lb
- Dimensions 165.0 x 144.0 x 261.2 mm 6.5 x 5.7 x 10.3 in

VariCam Pure Specs

Power	24 VDC, 91 W
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity	10% to 85% (relative humidity)
Weight / Dimensions (W x H x D)	5 kg / 144 x 165 x 262mm
Pickup Device	Super 35 mm, MOS sensor
Number of Pixels	Total pixels: Approx.10.3 million pixels
Effective pixels	Approx. 8.9 million pixels
Lens Mount	PL mount
Optical Filter	ND filter: 1: CLEAR, 2: 0.6 ND, 3: 1.2 ND, 4: 1.8 ND
ISO setting	Native ISO: 800, 5000. 800 Base: 200 to 4000. 5000 Base: 1250 to 12800
Shutter Angles	1.0 deg to 358 degrees (in 0.1 degree increments)
Shutter Speed	1/24 sec. to 1/250 sec. (for 24p)
Recording Media	CODEX Capture Drive
Recording Resolution	4096 x 2160 (4K), 3840 x 2160 (UHD),
Recording Frame Rate (Max)	120 fps or 100 fps
System Frequency	59.94p, 50p, 29.97p, 25p, 24p, 23.98p
Recording Format	VRAW 4K 12bit / 4K 10bit / UHD 12bit / UHD 10bit
Recording Video Signal	4096×2160/59.94p, 50p, 29.97p, 25p, 24p, 23.98p 3840×2160/59.94p, 50p, 29.97p, 25p, 23.98p
Recording Time with 2TB Capture Drive	4K 12bit / 23.98fps 100 min. 4K 10bit / 23.98fps 112 min. 4K 10bit / 120fps 22 min. UHD 12bit / 23.98fps 106 min. UHD 10bit / 23.98fps 119 min. UHD 10bit / 120fps 23 min.
Video Data Process	Uncompressed RAW 12-bit / 10-bit
Recording Audio Signal	48kHz / 24bit, 2Ch
SDI OUT 1-4	HD (1.5G) / 3G-SDI : 0.8 V [p-p], 75 ohm
MON OUT 1/2	HD (1.5G) / 3G-SDI : 0.8 V [p-p], 75 ohm
VF OUT	HD (1.5G) / 3G-SDI : 0.8 V [p-p], 75 ohm
Audio	48kHz / 24bit, 2Ch In/Out 1/2 XLR x 1 5-pin
Headphones / Speaker	Stereo mini jack / 20 mm diameter built-in speaker
GENLOCK IN	HD (1.5 G) / 3G-SDI, 0.8 V[p-p], 75 ohm
TC IN/OUT	BNC x 1, Input / Output switching
DC IN	24V (10.5V to 34V) 2-Pin Fisher
DC OUT/RS x2	24V DC 3-pin Fischer Power/Remote Start-Stop Accessory Connector
DC OUT x2	12V DC 2-pin Accessory Connector
LENS	12-pin Hirose
LAN	100BASE-TX/10BASE-T LEMO (uses standard RJ45 Ethernet to Lemo adapter)
USB	USB 2.0 Type A connector, 4-pin
CONTROL PANEL	20-pin, control panel contact terminals
SD Card Slot	for Version Updates, 3D LUT/ CDL File Upload and Save, Set Up File Upload and Save
Control Panel LCD	3.5-type QHD color monitor, approx. 1.56 million dots
Additional Features	HDR Ready, In-Camera Grading, Metadata Recording
Offload Formats	from Codex Production Suite:
ProRes 422 HQ	To 120 fps: 1920x1080 10-bit, 2048x1080 10-bit, 4096x2160 10-bit, 3840x2160 10-bit
ProRes 4444	To 120 fps: 1920x1080 12-bit, 2048x1080 12-bit, 4096x2160, 3840x2160 12-bit
ProRes 4444 XQ	To 120 fps: 1920x1080 12-bit, 2048x1080 12-bit, 4096x2160 12-bit, 3840x2160 12-bit
DNxHR 444	2048x1080 10-bit, 3840x2160 10-bit, 4096x2160 10-bit
DNxHR HQX	2048x1080 10-bit, 3840x2160 10-bit, 4096x2160 10-bit
DNxHR HQ	2048x1080 10-bit, 3840x2160 10-bit, 4096x2160 10-bit