

i2MAP Video Recorder Options													
Maximum Framerate		1080 60P +					1080 60P	720P 60			1080P 25	Maximum Framerate	
Recorder Name		Codex Onboard S Recorder	Codex Digital CDX-3602 Onboard S Recorder Option	Sony AXSR5 (for PMW-F5)	Sony PMW-F5 Internal Storage	Convergent Designs Odyssey 7Q Recorder	AJA Ki Pro Quad recorder	Black Magic HyperDeck Shuttle Recorder	Atomos Sumari Blade Recorder	Sound Devices PIX 240i	Panasonic D-5 63 minute tape	Recorder Name	
Dimensions		Width 5.47"/139 mm, Length 7.39"/187.6mm, Height 3.26"/82.8mm	Width 5.47"/139 mm, Length 7.39"/187.6mm, Height 3.26"/82.8mm	4 1/4 in. x 5 in. x 2 5/8 in. (106 mm x 124 mm x 65.5 mm)	In Camera	7.9" x 6.1" x 1.0" (200 x 155 x 25 mm)	Width: 4.55 in. (11.557 cm), Depth: 2.85 in. (7.239 cm), Height: 5.89 in. (14.9606 cm)		140mm (W) x 87mm (H) x 41mm (D)	5.5" x 4.0" x 2.4" (14 cm x 10.2 cm x 6.1 cm)		Dimensions	
Weight		2.4lbs/1.1Kgs	2.4lbs/1.1Kgs	0.7 kg (1 lb. 8.7 oz.)		560 grams / 1.3 lbs.	2.22 lb (1.00698 kg)		12oz (without batteries & HDD)	2.0 lbs		Weight	
Video Input Connectors		2x 4:4:4 Inputs, 2x 4:2:2 Inputs, 2x 3G-SDI	2x 4:4:4 Inputs, 2x 4:2:2 Inputs, 2x 3G-SDI, "dual channel" support	Docks with F5 and NEX F5700/IFR5.		2-In, 2-Out, SD/HD/3G 2-BiDirectional, SD/HD/3G	4x 3G/HD SDI, SMPTE-292/296/424, 10-bit (12 bit input supported), Single Link 4:2:2, 4:4:4 or Canon Raw (1 x BNC), Dual Link 4:2:2, 4:4:4 or Canon Raw (2 x BNC) 4K or Quad HD 4:2:2 or 4:4:4 (4 x BNC), 1D LUT Support	1 x 10-bit SD/HD switchable via DIN 1.0/2.3 connector, 1 x HDMI type A connector	HD/SD-SDI x 1, Uncompressed 10/8-bit 4:2:2	3G-SDI (levels A and B), HD-SDI, or SDI		Video Input Connectors	
Camera Control Interface									LANC/HD-SDI			Camera Control Interface	
Control/Sync interfaces		Genlock, LTC timecode, GPI record trigger, RS422 control	Genlock, LTC timecode, GPI record trigger, RS422 control			RS-232 I/O*, programmable GPIO. Timecode: LTC I/O (BNC) or embedded SDI/HDMI (Future update!)	Timecode: SDI RP188/SMPTE 12M via SDI BNC, LTC input (1 x BNC), Reference Input: Analog Color Black (1V) or Composite Sync (2 or 4V)	1 x Mini-B type USB 2.0 connector for initial setup, software updates and HyperDeck Utility software control	SDI trigger / Via SDI timecode / Via LANC controllerSamurai	Freerun, Record run, External Frame rates: 23.976, 24, 25, 29.97DF, 29.97ND, 30DF, 30ND Accuracy +/- 0.2ppm, holds accurate time code for 2 hours after power is removed Timecode: Inputs / Outputs: BNC (LTC input and output), SDI or HDMI (Sony protocol), LEMO 5-pin		Control/Sync interfaces	
Data Interface							1x Thunderbolt					Data Interface	
Network Interface		1 x Gigabit Ethernet	1 x Gigabit Ethernet				10/100/1000 Ethernet (RJ-45), Embedded web server for remote control			Record triggering via SMPTE timecode, LANC or GPIO on 2.5 mm jack		Network Interface	
Supported Video Formats		2048/1920 x 1080P 10-bit rgb 4:4:4 up to 60FPS, 2048/1920 x 1080P 10-bit YCbYCr 4:2:2 up to 120 FPS	3G-SDI x2, 2048/1920 x 1080P 10-bit YCbYCr 4:2:2, Up to 120 FPS, Canon CinemaRAW 4096/3840 x 2048P 10-BIT BAYER up to 59.94 FPS, Canon CinemaRAW 4096/3840 x 1080P 10-BIT BAYER up to 119.88 FPS	Docks with F5 and NEX F5700/IFR5.	1920 X 1080 @ 60P as XVAC codec which is 10bit and 422 sampling	In Sony F5700 Mode, Odyssey7Q supports: HD YCC 422 10-Bit Compressed up to 60fps (super sample from 4K raw) HD RGB 444 12-Bit Compressed up to 60fps (super sample from 4K raw) 2K Raw 12-Bit up to 240fps (CinemaDNG) 4K YCC 10-Bit Compressed up to 60fps	720P to 60 FPS, 1080i 30, 1080PxF, 1080p to 59.94 FPS, 2K (2048x1080) PsF 29.97*, 2K (2048x1080) p to 59.94 FPS. 50 and 59.94 fps are supported in 2K, 1080P and 720P resolutions. The AJA Ki Pro Quad can accept a 12-bit source, but encoding is performed at 10 bit.	720p50, 720p59.94, 720p60, 1080i50, 1080i59.94, 1080i60, 1080PsF23.98, 1080PsF24, 1080PsF25, 1080PsF29.97, 1080PsF30, 1080p23.98, 1080p24, 1080p25, 1080p29.97, 1080p30.	HD 1080i60, 1080i59.94, 1080i50, 1080p30, 1080p25, 1080p24, 1080p23.98, 1080PsF23.98, 1080pSF24, 1080pSF25, 1080pSF29.97, 720p60, 720p59.94, 720p50, SD 486i59.94, 576i50	4:4:4 or 4:2:2; 12, 10, or 8-bit, 1080p23.976/24/25/29.97/30, 720p50/59.94/60		Supported Video Formats	
Video CODEC Support		Uncompressed HD, Wavelet Encoded HD with 3:1 - 8:1 compression	Uncompressed HD, Wavelet Encoded HD with 3:1 - 8:1 compression	Records: 2K or 4K 16-bit linear RAW @ 23.98, 24, 25, 29.97, 50 and 59.94 base frame rates. (F5700 RAW is 12-bit). 2K S&Q 1~240 fps RAW to F5, 4K S&Q 1~60 fps.	1920 X 1080 @ 60P as XVAC codec which is 10bit and 422 sampling	10-Bit Apple ProRes 422 HQ for F5700 files, RAW for Canon and Sony, 4:2:2 and 4:4:4 HD video encosed in .DPX stacks.	Apple ProRes 422, Apple ProRes 422 (HQ), Apple ProRes 422 (LT), Apple ProRes 422 (Proxy), Apple ProRes 4444	Uncompressed QuickTime, Apple ProRes 422 (HQ) QuickTime, Avid DnxHD MXF	Apple ProRes* HQ - 220Mbps, 422 - 150Mbps, LT - 100Mbps, Avid DnxHD* Avid DnxHD-220/220x - 220Mbps (8/10-bit)Avid DnxHD-185/185x - 185Mbps (8/10-bit)Avid DnxHD-145 145 Mbps (8-bit)Avid DnxHD-36 - 36 Mbps (proxy)	Apple ProRes 4444, 330 Mb/s, 12-bit, Apple ProRes 36, 100, 145, 220 Mb/s, 8 and 10-bit, Avid DnxHD 36, 100, 145, 220 Mb/s, 8 and 10-bit		Video CODEC Support	
Power Requirements		12 - 34 Volts	12 - 34 Volts	11 V to 17 V DC, 23W		6.5 to 34 VDC, 9-15 Watts	12-18VDC, 31.2-35.5W typical-41.5W Max	12 - 18VDC	7.2-14.4V 6.8 Watts	10-18 VDC, 12W		Power Requirements	
Storage Media		1 X Codex Digital CDX-3720 Capture Drive 512GB (480GB usable)	1 X Codex Digital CDX-3720 Capture Drive 512GB (480GB usable)	AXS512S24, 512GB cards	2 X Sony 128GB SxS PRO+ Memory Card	2 X Convergent CD-SSD-512-01 512GB SSD	2 X AJA's PaS12 512GB SSD	1 X Crucial M4 solid state drive or Extreme II (SDSSDXP-480G)	1 X Solid State Drives (SSD) Sandisk Extreme (SDSSDX-480G) or Extreme II (SDSSDXP-480G)	PIX-SSD6 240GB SSD or Sandisk Extreme II (SDSSDXP-480G)		Storage Media	
Usable Size GB		480	480	512	256	1024	960	480	480	480	141.75	Size GB	
Cost Each		\$3,500.00	\$3,500.00	\$1,800.00	\$2,750.00	\$1,590.00	\$2,590.00	\$445.00	\$298.00	\$298.00	\$89.78	Cost Each	
Cost/GB		\$7.29	\$7.29	\$3.52	\$10.74	\$1.55	\$2.70	\$0.93	\$0.62	\$0.62	\$0.63	Cost/GB	
Native Formats and Frame Rates Supported by Recorder	Dual Link SDI (SMPTE 372M)							Y	Y	Y	Y	Native Formats and Frame Rates Supported by Recorder	
	3G SDI (SMPTE 424M)							?	Y	Y	Y		
	720P 60	Y	Y					Y	Y	Y	N		
	1080P 60	Y	Y					Y	N	N	N		
Video Format (may not all be supported)	Data Rate in mega bits per second (Mbps)	Ratio N:1										Video Format (may not all be supported)	Data Rate in mega bits per second (Mbps)
1080p 30 native (4:2:2)	1485		43									1080p 30 native (4:2:2)	1485
1080p 60 native (4:2:2)	2970		22									1080p 60 native (4:2:2)	2970
D-5 4:1 compression 25P	269										70	D-5 4:1 compression	269
Apple ProRes 422 10 bit 30P	147	10				929	871	435	435	435		Apple ProRes 422	145
Apple ProRes 422 (HQ) 10 bit 30P	220	7	291			621	582	291	291	291		Apple ProRes 422 (HQ) 10 bit	220
XAVC HD codec 10 bit 4:2:2 60P	223	13										XAVC HD codec 10 bit 4:2:2	223
Apple ProRes 422 10 bit 60P	293	10			306	120						Apple ProRes 422	145
Apple ProRes 4444 30P	330						466	437	218	218		Apple ProRes 422	145
Apple ProRes 422 (HQ) 10 bit 60P	440	7	145				414	388	194	194		Apple ProRes 4444	330
HDCAM SR 10 bit 4:2:2 30P	440	3					310	291	145	145		Apple ProRes 422 (HQ) 10 bit	220
DPX image sequences, SMPTE 268M-2003 60P	440											HDCAM SR 10 bit 4:2:2	440
Apple ProRes 4444 60P	660					310		145	145	145		DPX image sequences, SMPTE 268M-2003	
Download from sealed housing?			No!	No!	No!	Yes, USB 2.0	No!	Yes, 10/100/1000 Ethernet	No!	No!	NA	Download from sealed housing?	
Sustained transfer rate, Mbits/second						240	400					Sustained transfer rate, Mbits/second	
Hours to download 1 hour 1080 60P 4:2:2 from sealed housing?						0.93	1.10					Hours to download 1 hour 1080 60P 4:2:2 from	
				Docks to PMW-F55, PMW-F5 and NEX-F5700/IFR5 camera systems. Record time: 4K approx. 60 minutes (23.98P) or 24 minutes (59.94P), 2K approx. 240 minutes (23.98P) or 96 minutes (59.94P)	F5 can record 1920 X 1080 @ 60P as XVAC codec which is 10bit and 422 sampling. This codec is level 5.2 and is very efficient as far as bit allocation. I have viewed these images on 25 foot screen and images does not fall apart at all. This is recorded on SXS PRO PLUS cards. There are TWO slots in F5 cameras. Each can use 128GB card. Each card can record 60 min at 60p. The card switches automatically as the first card gets full.	Records in Sony F5700 RAW or files compressed using cinemaDNG format. Note that, .DPX is a high end codec format. I calculate 1080p YCC 422 10-bit Compressed 60P would be 300 minutes, 1080p RGB 444 12-bit Compressed 60P would be 200 minutes of recording time. F5700 2K RAW 10-bit(only) 60fps 102 minutes. (not available yet) (also use 2 recorders!?) Note that, .DPX files can be conformed using "Glue Tools" .DPX toolkit and imported into FCP.		Does not records at higher frame rates. HyperDeck Studio does, but is in rackmount format. Alana and video lab had very bad experiences w/ this unit.			Notes		
Recorder Cost		\$10,500	\$16,500	\$5,350	\$0	\$2,295	\$3,995	\$345	\$1,295	\$3,295		Recorder Cost	

Cross-converters
<http://www.decimator.com/Products/MD-DUCC/MD-DUCC.html>

<http://www.blackmagicdesign.com/products/teranex/techspecs/>
Canon EOS compatible recorders see: http://learn.usa.canon.com/resources/articles/2013/eos_c500_4k_recorder_comparison_misc.shtml
Actually want to do a "conform" and have the 60 frame footage play back at a 25 frame rate. This only requires changing the meta data on the file header. Apple cinema tools can do a "batch conform" for possible workflow:
1. Record in ProRes as 1080p/60
2. Perform batch conform using cinema tools or compressor to 1080p/25
3. Transfer to D5 tape for annotation and archival