

FEATURES

- **RECORDS TO VOLATILE & NON-VOLATILE MEMORIES**
 - Continuously to removable SSD (1TB, non-volatile) up to 172K Frames 1080p/60 Uncompressed
 - DDR3 (volatile) event/Loop up to 5.8K Frames 1080p/60 Uncompressed
 - Save more than 30 event clips to SSD
 - Live monitor video while recording
- **INSERTS**
 - **Metadata**
 - MISB 0605.3 compliant timestamp
 - 2 KLV metadata blocks of user formatted data in VANC space
 - Text & crosshairs, bore site graphics
- **PLAYBACK**
 - Delivers uncompressed SDI video at 1/32x to 32x or 1-frame stepping from DDR3 or SSD
 - Decodes, Overlays, Extracts Metadata
 - Overlays none, some or all user defined fields in each metadata key
 - Extracts data in KLV to data file frame x frame with/without timestamps
- **CLEAR DDR3 (VOLATILE) OR SSD (NON-VOLATILE) COMPLIANT WITH DOD 5220.22-M**
- **ACCEPTS SD, HD SDI SMPTE 259M/292M/424M SDI VIDEO SOURCES**
- **CAMERA SYNC (OPTIONAL); GPS/IRIG PHASE LOCKED; ADJUSTABLE OFFSET**
 - TTL Data source strobe; GPS/IRIG Phase Locked; Adjustable Offset
- **DISCIPLINED STRATUM 3 FREE RUN CLOCK (OPTIONAL); < 5μSEC/HR UNLOCKED DRIFT**
- **CONTROL VIA WEB SERVER OVER ETHERNET, REMOTE PANEL OR WITH ROBUST COMMAND SET**
- **DISCRETE EVENT TRIGGER INPUTS**



DESCRIPTION

The Model 6520 is a ruggedized SDI video inserter-recorder (I-R) that records and plays uncompressed SDI video. Source video may be, 20p or 1080p at 25, 30, 50 and 60 frames/sec and 480i/60 1080i/60 and at NTSC rates. The 6520 will detect the input video format and synchronize to it automatically. The SDI video source may be monitored live while recording with less than 8μsec of in-out latency.


The unit records all HANC (AES audio and other metadata) and VANC metadata. The I-R can overlay text and crosshairs (fixed and movable) while recording or during playback. It can insert VANC KLV metadata including the MISB Microsecond Timestamp (0605.3). All timestamps are accurate to within 4μsec. The user may design a custom metadata KLV key using ITS KLV SOFTWARE TOOLKIT currently delivered with our HD-SDI products. When metadata is recorded, the 6520 decode and overlay metadata during playback as well as extract and send it out as a data record per frame.

There are three modes of recording; Event Record (ER), ER DDR3/SSD for long post event or Continuous Record (CR) to the removable SSD¹. All modes record UNCOMPRESSED SDI video at the native resolution and frame rate. When in ER mode, the recorder will continuously record to DDR3 the number of frames set by the user (up to 60,000) in a loop. When an event is triggered, the 6520 will stop recording after the number of frames set by the user has been received after the event marker. The clip data may be played back from the DDR3 as SDI to the output video port, saved to SSD as a clip. The 6520 I-R can also continuously record to the removable SSD to the full 1TB capacity (e.g. 47 minutes of 1080p/60). During any playback, the video may be stopped, played back 1 frame at a time or from slow motion 1/32xFR to 1xFR in 32 steps or at 2xFR to 32xFR either forward or reverse. Playback may be one clip at a time, or continuous (all clips concatenated). Clips saved to SSD may be any mix of the input formats.

When the camera sync option is purchased, the 6520 tri-level sync (TLS) may be programmed or auto synchronized to match the camera format (must be one of the supported formats). TLS is phase locked to GPS or external IRIG B and may also be delayed in 1μsec steps enabling synchronization of picture taking across a variety of imaging technologies (e.g. CMOS, CCD or IR). Supporting data collection time coherent to imagery, the camera sync option also provides a TTL strobe output that may be adjusted relative to the TLS ±16ms in 1μ steps to help align data acquired with the image of each frame. A built in DOD 5220.22-M clean function implements method C for the volatile DDR3 record memory and when there is an SSD (non-volatile) the function implements method C; then method H.

¹ SSD modes require the optional SSD function and port.

SPECIFICATIONS

Video In	SMPTE standard SD/HD/HD-3G SDI digital video. Formats supported and auto-detected: SD 480i at 29.97 Hz, 576i at 25 Hz; <i>Metadata is not supported w/SD</i> (SMPTE 259M video) HD 720p and 1080p at 60, 59.94, 50, 30, 29.97, 25 Hz, 1080i at 30, 29.97 and 25 Hz; 1080p/60 SMPTE 424M (3G)		
Video Out	SDI identical to video input or recorded except with graphics, annotation, and metadata as added.		
Event Record	Video Format	Frames/time (DDR3 Volatile Memory)	
		16 GB Event Record	32 GB Event Record
	480i	13,000F/ >7 min	26,000F/ >14 min
	720p/60	5,500F/>95 sec	11,500F/>3 min
	1080p/30	2,900F/>96 sec	5,800F/>3 min
	1080/60	2,900F/>48 sec	5,800F/>1.5 min
	Loop length is programmable from 10 frames to capacity. Multiple loops may be configured to support a rapid sequence of events. History before trigger (frames), 1 to loop length -1; Post trigger recording from trigger to loop length		
SSD (option)	Record Clips to removable SSD (Event clips); Event clip capacity depends on loop length and frame capacity of SSD. Recorded format compliant with SMPTE 2022-6. Continuous Record to removable SSD; capacity depends on media. Currently 1,000 GB capacities are available.		
	Record Times w/ 1TB SSD	480i/60, >813,000 frames; >451 minutes 720p/60, >344,000 frames; >95 minutes 1080p/30, >172,000 frames; >95 minutes 1080p/60, >172,000 frames; >47 minutes	
Memory Cleaning	per DOD 5220.22-M: SSD (NV) method C; then method H; DDR3 (Volatile) method C (requires manual power down)		
Playback	Speeds 1/32 to 1x in 32 steps, 1x to 32x in 32 steps; forward or reverse, Rewind = start of clip.		
Time Overlay	Resolution selectable from 1 sec to 1 µsec in 7 steps, 1.0, 0.1, 0.01, 0.001 seconds, 100, 10, 1 µsec		
GPS Timing Accuracy	When Locked After Fix	Drift from last synchronized time when NOT locked	
		After 24 hours of GPS lock	After >20 min of GPS lock w/S3 Option
	±300 ns RMS @ 1 sec	<540 µsec/hr	< 4 µsec/hr
	±30 ns RMS @ 100 sec	<1300 µsec/day	< 100 µsec/day
Position	Inserts Latitude, Longitude and Altitude. Position accuracy : five meters circular error probability (CEP)		
GPS Performance	12 channels, track all satellites in view; Time-to-first-fix <25 sec (warm start), <180 sec (cold start) Reacquisition < 3 sec		
GPS Antenna	Active Patch Magnetic Mount Antenna, 5 VDC via antenna cable. Antenna with 5-meter cable is included.		
IRIG B Input	IRIG B (IRIG Standard 200-04). Input level 500mv p-p to 5 v p-p w/ mod ratio of 2:1 to 3:1, Formats B120 - B127.		
Metadata	Metadata Timestamp is recorded in the vertical ancillary packets (VANC) of the SDI stream IAW MISB STD 0605.3 Up to 2 SMPTE 291M type 02 KLV packs w/user defined keys & content. Includes ITS KLV Software Toolkit (HD-SDI only)		
Ethernet Port	Standard TCP/IP protocol, 10/100/1000 Mbit/sec, user settable IP, Subnet Mask, Gateway and port		
Remote Interface	For optional remote control used to PLAY< or >, RECORD, REWIND, EVENT, Record to SSD, SAVE to SSD.		
Alphanumeric Characters	From 24 to 54 lines of characters depending on video input format and size selection. Number of characters per line is 20, 40, 60, 80 or 120 depending on the input format and size selection. Individual characters are 7X9 pixel matrix.		
Camera Sync	Option; Tri-level sync IAW SMPTE 296M (720p/1080i) and SMPTE 274M (1080p); TTL strobe on each vertical sync.		
Package and Environment	Size	3.5" H x 10" W (including mounting flanges) x 8" D ruggedized aluminum enclosure. 19" Rack Mount version also available.	
	Weight	8/12 lbs. SM/RM (est.)	Temp Op -20°C to +50°/ Non-Op -40°C to +80° Humidity 85% non-condensing
Power Input	AC or DC power input may be specified; 12-36 VDC, or 115/240VAC 50/60 Hz <30 watts A universal power adapter for 115/240 VAC 50/60 Hz is available to support the DC power input.		