Eon Instrumentation, Inc. Since 1961

KRONOS HD
MODEL 6041K

FEATURES

- ***Synchronizes time to external IRIG B reference or internal GPS receiver***
- ***Captures time within 2 µsec of each vertical sync event in an SDI video stream.***
- ***Inserts microsecond timestamps in accordance with MISB 605.3 in KLV packets in VANC line 9 on each frame.***
- ***Accepts HD and 3G SDI video sources per SMPTE 292M/424M***
- ***System auto-selects the time reference, IRIG if present or GPS when locked.***
- ***Overlay time in one of 4 colors in one of four corners or no overlay(default)***
- ***GPS Antenna input (SMA); Patch amplified mag-mount antenna supplied***
- ***Small (3 1/4"x2 1/2"x7") IPC 67 package***
- ***12-32 VDC 2 watts. AC-DC converter (wall mount) available***

Options: Camera Sync (tri-level) output

DESCRIPTION

The Kronos HD is a single purpose device which will embed a microsecond timestamp on each vertical sync event of a SMPTE, 292M or 424M SDI video stream. Microsecond time is accurate to 1±1 µsec when locked to the internal 12-channel GPS receiver. Accuracy is 3±2 µsec when locked to external IRIG B. Time stamps will be inserted on VANC line 9 (Microsecond Timestamp) and VANC line 21(SMPTE). If a timestamp is present in the incoming video, that timestamp will not be overwritten by the Kronos HD.

When a valid 4:2:2 encoded SDI video stream is connected to the encoder, it will decode and automatically detect 720p (SMPTE 296M) or 1080i or 1080p (SMPTE 274M) video formats at 23.97, 24, 25, 29.97, 50(3G), 59.94(3G) and 60(3G) Hz frame rates. The Kronos HD will begin forming and inserting KLV packets immediately after synchronizing with the SDI stream without any operator intervention. A sealed push-button may be used to cause the time to be optionally overlaid on the video frame in yellow, black, white or red in one of the four corners of the frame. The button also provides the ability to set the current year when IRIG B122 is the only input format available.

A Camera Sync (-CS) option is available that will phase lock to the time reference (GPS or IRIG), and after detecting the format of incoming HD-SDI will automatically generate a reference phase locked (GPS or IRIG) tri-level synchronization pulse train matching the camera image format and frame rate.

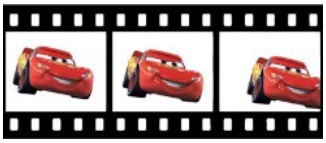
The Kronos HD is housed in a small IPC 67 qualified enclosure weighing less than 2 pounds.

The Kronos HD may be used with any ITS 6041G-H6980G-HD, 6055C-nGHD, 6520 Fusion VRI or other MISB compliant decoder at the destination end to decode and display in the output video the metadata time previously embedded in each VANC.

Model 6041K

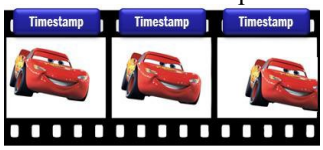
Your HD-SDI camera

SDI Video



Kronos HD

SDI w/timestamps



SPECIFICATIONS

Video In	Standard HD/3G SDI digital video. Formats supported and auto detected: 720p at 60, 59.94, 50, 30, 27.97 and 25Hz serialized IAW SMPTE 292M 1080i at 60, 59.94, 50 Hz field rates serialized IAW SMPTE 292M 1080p at 60(3G), 59.94(3G), 50 (3G), 30, 29.97, 25,24 and 23.97 Hz frame rates serialized IAW SMPTE 292M or SMPTE 424M (3G)	
Video Out	SDI video stream identical to video input; No overlay into the viewable video area whatsoever unless set (time) by the user.	
Camera Sync (Option)	Tri-level per SMPTE ST 240:1995; Phase locked to the time reference (GPS or IRIG) and formatted to match the incoming HD-SDI video signal from the camera. Order **6041K-CS**	
Microsecond Timestamp	1 µsec; 64 bit word in microseconds from the UNIX epoch of 1 January 1970 per MISB 605.3. Inserted as a type 02 KLV metadata packet in the VANC space on line 9. System year value must be correct.	
IRIG B Reference Input	IRIG B standard serial time code (IRIG Standard 200-98). Input level 1.5 peak-to-peak to 10 volts peak-to-peak with modulation ratio from 2:1 to 3:1. Code formats accepted are B122 through B127[1]	
GPS Performance	Channels:	12 Parallel channels, tracks all satellites in view
	Time-to-first-fix	<10 seconds typical (warm start),<180 seconds typical (cold start); Reacquisition: 2 sec typ.
	UTC Time Mark	Synchronized with Global Reference Standard
	Datum:	WGS 84
GPS Timing Accuracy	Locked; airborne	< ±30 nanosec
Ride Through Drift		drift <120 µs/hour after 1 hour of GPS/IRIG lock and ITS disciplining
GPS Antenna	SMA input and an external active antenna; 5 VDC power provided via antenna 5 meter cable. Gain: 26 db ± 2 db. Noise figure: 1.5 db max. Antenna interface is short circuit protected. General requirement: active antenna with no more than 48 db of gain. For use with existing antennas powered by other equipment, use a blocking splitter.	
GPS/IRIG Auto-switch	GPS is the preferred time reference due to the high accuracy synchronization. If an IRIG Bxxx signal is present and GPS lock was not achieved or is lost, Kronos will automatically switch to the IRIG B time reference and attempt to lock to it. If and when GPS lock is achieved, Kronos will switch from IRIG Bxxx to GPS regardless whether Kronos is locked to IRIG Bxxx or not. xxx is B12x, or B00x.	
KLV Metadata Encoding	Time is recorded in a KLV VANC ancillary packet of the input SDI stream IAW SMPTE 291M formatted ad defined in MISB 605.3.	
Push Button	Permits user to turn on timestamp overlay and set its position on the video frame, select a color), set the monitor overscan adjustment and adjust the system year (default is year of manufacture until changed). These settings may be saved to internal FLASH memory and become the new default settings.	
Indicators	SDI status LED is on solid with SDI valid and blinking when not present./valid. Lock status LED is on solid when GPS/IRIG locked, blinking when not locked. When either LED is illuminated (solid or blinking), it indicates that power is applied.	
Package	7"long (8.25" w flanges), 3.25" wide and 2.5" high. Weight <2 lbs.	
Temperature/Humidity	-30°C to 50°ambient / 95% non-condensing	
Power Input	12-36 VDC, 1 Watt Mating connector: ITS PN 5600964 (Switchcraft 761K). An AC power adapter is available, the 6256-2.	

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