8010TM-IRIG

SD-SDI Time Code Master with IRIG Reader

The 8010TM-IRIG SDI Time Code Master is a full function time code reader/generator system for serial digital video. It is a combination generator for SMPTE Linear Time Code (LTC) and Digital Vertical Interval Time Code (D-VITC), reader for IRIG-B code and D-VITC (standard SMPTE time code and special IRIG encoded VITC), and contains a high resolution character inserter which can burn the generator or reader numbers directly into the digital program output as well as an optional analog monitoring output.

It reads IRIG-B code commonly in use within the United States government agencies and supporting private industries and provides a display of days, hours, minutes, seconds and milliseconds in the character inserter. This IRIG information is inserted into a special line of vertical interval time code which is protected by a unique cyclic redundancy checkword (CRC) so that tape recorders and other devices do not confuse it with standard SMPTE 266M, 12M-1 D-VITC. This special D-VITC can be decoded by the 8010TM-IRIG's D-VITC reader to allow you to encode the IRIG information onto a 'clean' video tape and then display the IRIG information later on playback.

The 8010TM-IRIG SMPTE Time code generator can also be slaved to incoming IRIG code. The millisecond count will be converted to the closest frame number and can also be stored in the generator user bits along with the IRIG day of the year. In the continuous jam sync mode, the generator is slaved to the reader, and will follow code any discontinuities of the reader. The generator may also be momentarily synchronized to the reader, and then it continues to increment normally regardless of the reader code. Momentary jam is the recommended mode when synchronizing to IRIG-B sources so that the resulting SMPTE time code does not contain discontinuities due to the different time bases of 29.97 frame per second video and real time of the IRIG code. In NTSC related video systems, the SMPTE generator should be operated in the Drop Frame counting mode when trying to synchronize the SMPTE generator to IRIG.
The 8010TM-IRIG will accept 525 or 625 line component digital video. It's SMPTE time code generator can be preset to lock to the digital program video either by simple frame locking or, where necessary, it will color lock to an analog Color Reference in accordance with the 4 field NTSC or 8 field PAL color sequence. In NTSC related color systems operation, with a frame rate of 29.97002618Hz where the time of day is used for indexing, the generator may be operated in the drop frame mode. Special indicators in the front panel display and in the character inserter indicate that the unit is operating in the drop frame format.

Both the generator and reader are capable of working with the unassigned user bits. Several modes of operation are possible. The generator may be preset to insert hexadecimal values for each group in the generated code, and the reader will read hexadecimal values for each binary group. In addition, the user may select the transfer of either reader time or reader user bits into the generator user bits, thus allowing pre-edit frame addresses to be preserved when new continuous time code is laid down.

The high-resolution character inserter provides six independently positionable windows to show time and user bits for the generator and readers simultaneously. When the IRIG or VITC readers are operating in the IRIG DAY mode, there are two independently positionable windows for each reader to show the IRIG time to millisecond precision and the IRIG day respectively. Three character sizes and the choice of white or black characters with or without contrasting background mask are selected from the front panel.

Features & Benefits

- Accepts 4:2:2 (525 and 625 line) digital video
- Serial digital video input provides automatic cable equalization on cable lengths up to 200 meters of low loss coax such as Belden 8281
- Optional Bypass relay for Serial digital video program output activates on power loss or from the front panel menu
- Auxiliary serial digital video output (not bypass protected)
- Passes embedded audio and other ancillary data signals
- LTC and D-VITC SMPTE Time Code generator
- IRIG data encoded to second line of VITC generator with special CRC
- SMPTE D-VITC Time Code or IRIG encoded D-VITC reader
- IRIG reader reads 1kHz IRIG-B format sine wave amplitude modulated and pulse width modulated codes (formats B002 and B122)
- IRIG CS-6 compatible serial data output to drive external IRIG displays
- SMPTE Time Code LTC and D-VITC generators can be slaved momentarily or continuously to IRIG reader - converts milliseconds to closest video frame number
- Milliseconds and days can be transferred to VITC user bits
- Character Inserter displays IRIG day and time to millisecond resolution in the picture in IRIG modes
- Character Inserter displays time and user bits in the picture in SMPTE modes
- Separate positioning of each character window
- 16 digit Alpha-numeric display, with 16 pushbuttons
- Momentary and Continuous jam sync modes
- User bit transfer from reader time or user bits
- Optional composite monitor output converts digital video to analog
- GPI Remote Control mode allows user to pass remote control contact closure information in VITC user bits
- Recalculates and inserts EDH on the SDI output
- Serial Remote Control of most functions - Broadcasts reader data or sends it on request
- Rack mountable
- Optional dual redundant power supply configuration

Specifications

Serial Digital Video Input:

Standards:	SMPTE 259M (270Mb/s)
Connector:	1 BNC per IEC 61169-8 Annex A
Equalization:	Automatic 200m @ 270Mb/s with Belden 8281 or equivalent cable 150m @ 270Mb/s when bypass relay is active
Return Loss:	> 15dB up to 540Mb/s
D-VITC Reader:	SMPTE 266M

Serial Digital Video Outputs:

Number of Outputs:	1 with relay bypass (+BP option), 1 additional output
Connector:	BNC per IEC 61169-8 Annex A
Signal Level:	800mV nominal
DC Offset:	0V ±0.5V
Rise and Fall Time:	900 ps nominal
Overshoot:	< 10% of amplitude
Return Loss:	> 15dB up to 540Mb/s
Wide Band Jitter:	< 0.2 UI

Analog Monitor Video Outputs (optional):

Standards:	Analog composite NTSC if input is 525i/59.94 video Analog composite PAL if input is 625i/50 video
Connectors:	2 BNC per IEC 61169-8 Annex A
Signal Level:	1V p-p nominal, internally adjustable
DC Offset:	0V ±0.1V
Return Loss:	> 35dB up to 5MHz
Frequency Response:	0.8dB to 4MHz
Differential Phase:	< 0.9° (< 0.6° typical)
Differential Gain:	< 0.9% (< 0.5 % typical)
SNR:	> 56dB to 5MHz (shallow ramp)
Impedance:	75Ω

LTC Generator:

Standard:	SMPTE 12M-1
Frame Rate:	25 and 30Fps nominal
Connector:	3-pin male XLR
Level:	Adjustable, 0.5V to 4V p-p

IRIG Reader:

Standard:	IRIG 200-95 Formats B002 and B122
Connector:	3-pin female XLR
Level:	0.2 to 4V p-p, balanced or unbalanced

General Purpose Inputs and Outputs:

Inputs:	6, programmable control functions
Outputs:	2, programmable tally functions
Connector:	9-pin female "D"
Type:	Opto-isolated, active low
Signal Level:	Pulled up to +5v. 3.3V DC provided.

Serial Remote Control:

Standard:	RS-232 or RS-422, programmable baud rate
Connector:	9-pin female "D"
Control:	Firmware upgrade, serial remote control of all functions

Electrical:

Voltage:	Autoranging 100-240V AC, 50/60Hz
Power:	30W
Fuse Rating:	250V, 1 amp, time delay
Safety:	TüV Listed, complies with EU safety directives
EMI/RFI:	Complies with FCC Part 15 Class A EU EMC Directive

Physical:

Single Power Supply version:

Dimensions:	19" W x 1.75" H x 7.75" D. (483mm W x 45mm H x 196mm D)
Weight:	7lbs (3.2kg)

Dual Power Supply version:

Dimensions:	19" W x 1.75" H x 18.75" D. (483mm W x 45mm H x 477mm D)
Weight:	8lbs (3.5kg)

Ordering Information

8010TM-IRIG	SDI Time Code Generator with IRIG Reader

Ordering Options

+2PS	Redundant Power Supply
+MON	Analog Monitoring Option
+BP	Bypass Relay Option