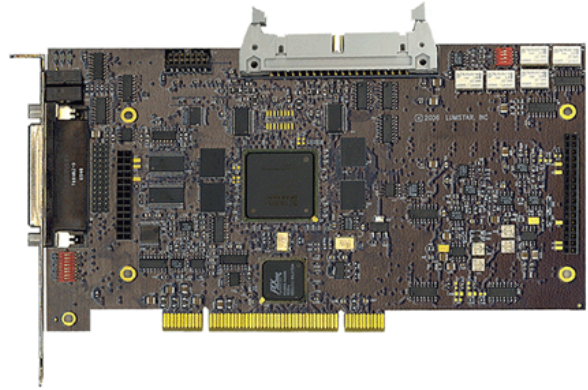


LUMISTAR

LS-77-SS PCI Dual Dynamic Data Simulator Data Sheet

Description:

The Lumistar LS-77-SS PCI Dual Dynamic Data Simulator with optional bit synchronizer allows two command simulators one bit synchronizer, and a time code reader/generator in a single short PCI board. The two Command Data Simulators and Time Code Reader/Generator are implemented in FPGA using a next generation design based on the LS-70-P. The optional bit synchronizer is achieved using the Lumistar LS-40-DB low-profile daughterboard.



The simulator design contains two complete dynamic data simulators that can be operated independently or slaved to allow embedded PCM formats. Each simulator has dual ported memory with one block of information being created while another block is being output.

Five-pole pre-modulation filtering is provided on the simulator outputs with 8 selectable data rates on each simulator from 100 Kbps to 30 Mbps. In command applications, external transmitters can be added to meet any of the IRIG Tier 0 (PCM/FM), Tier I (SOQPSK-TG), or Tier II (ARTM CPM) requirements.

Key Features:

- **Dual Command Data Simulator**
 - Each simulator has dual ported memory with 128K of 32-bit words
 - Can be operated independently or slaved together for embedded data streams
 - 64 Waveform words may be changed while operating
 - Each word may be slaved while operating
 - Selectable pre-modulation filters for data rates from 100 Kbps to 30 Mbps
 - Simulator or BERT generating modes
- **LS-40-DB Bit Synchronizer Daughterboard - Optional (10 Mbps or 25 Mbps)**
- **Single Band or Multi-Band External Transmitters are available**
 - IRIG Tier 0 (PCM/FM)
 - IRIG Tier I (SOQPSK-TG)
 - IRIG Tier II (ARTM CPM)
- **Short PCI Board only 7.55 inches long**

SPECIFICATIONS:

COMMAND PCM SIMULATORS:

Number of channels	2
Modes	Independent or Slaved
Outputs	NRZ-L PCM Data, Code Selectable PCM Data, 0 degree clock, Minor frame strobes
Output Levels	Single Ended - TTL, or RS-422 on PCM Data and Clock outputs
Base-band Output	400 mV to 8 V p-p adjustable
Base-band Pre-mod Filter	8 selectable; 5 pole Butterworth
Differential Outputs	Capable of driving RS-422 or TTL compatible inputs
Output Data Rates	64 bps to 30 Mbps (NRZ), 64 bps to 15 Mbps (others)
PCM Codes	NRZ-L/M/S; Bi-Phase-L/M/S, DM- M/S, M ² , RNRZ-L-11/15, k=7 Convolutional Encoding Rate 1/2, 1/3
Word Length	3 to 16 bits programmable on a word- by-word basis
CRC Generation	CRC16/CCITT
Major Frame Length	Up to 65,535 words per major frame
Major Frame Depth	Up to 1024 Minor Frames per Major Frame
Bit Order	MSB or LSB first, word by word
Frame Sync Pattern	Fully programmable
Major Frame Sync	Fully programmable
Common Words	Data may be changed (word-by-word) while operating
Waveform Words	64 (including SFID, FCC) May be programmed to appear in every frame at the same location. Data may be changed while operating.
Baseband Output Level	+/- 2 Volts p-p open circuit +/- 1 Volt p-p into 75 Ohms

IRIG A/B/G READER/GENERATOR:

Time Reader Input Format	IRIG A, B, or G
Time Reader Rate	½, 1, or 2 times normal rate
Input signal level	1V p-p nominal
Latency	2µsec (maximum)
Data Outputs	Automatic time tags for PCM data blocks (time accessible in register space)
Time Generator Output	IRIG A, B, or G
Time Generator Rate	½, 1, or 2 times normal rate

BIT SYNCHRONIZER:

Daughterboard	Optional
Number of channels	1
Performance	See LS-40-DB Specifications

PSEUDO-RANDOM GENERATOR

Pseudo-random patterns	11, 15, 17, 19, 21, 23, and 25 bit
Bit Error Rate	Indicated on Decom Software
Error Count	Indicated on Decom Software
Forced Error Modes	Continuous Forced Error Single Forced Error
History Log	Yes on Decom Software

MECHANICAL:

PCI	PCI Board 7.55" Long
Daughterboard Form Factor	LS-40-DB for Bit Synchronizer

POWER REQUIREMENTS:

5V	850 ma
-12 V	120 ma
+12V	30 ma

ENVIRONMENTAL:

Temperature (Operating)	10 to 50 °C
Temperature (Non-Op)	-25 to +70 °C
Humidity (Operating)	10% to 90% Non-Condensing
Humidity (Non-Op)	Packaging must prevent contact with moisture and contaminants
Special Handling	Standard ESD methods required

EXTERNAL TRANSMITTERS:

Single Band	Lower-L (1435-1535 MHz) Upper-L (1750-1855 MHz) S-Band (2200-2395 MHz)
Tri-Band	All of the above in 1 unit
Modulation Types	IRIG Tier 0 (PCM/FM) IRIG Tier I (SOQPSK) IRIG Tier II (ARTM CPM)