

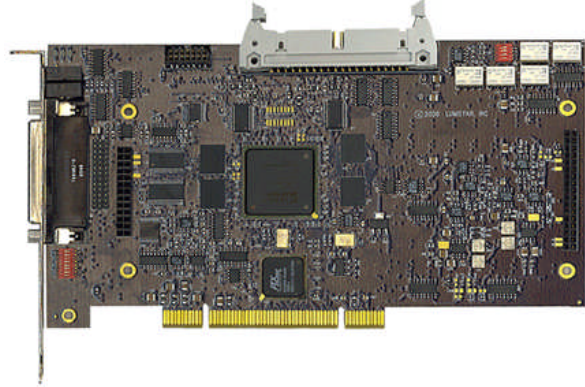
# LUMISTAR

## LS-70-S PCI Dynamic Data Simulator Data Sheet

### Description:

The Lumistar LS-70-S PCI Dynamic Data Simulator allows complex data streams to be generated for evaluation of bit synchronizers and PCM decommutator performance. It can also be used for uplink command generation to vehicles in flight, checkout of complete telemetry links, and playback of archived hard drive data in any format with the appropriate dll. The PCI board is only 7 inches long and contains the dynamic simulator and IRIG Time Code Generator.

The design contains dual ported memory to allow one block of information to be created while another block is being output. Five-pole Butterworth pre-modulation filtering is provided with selectable (1 of 8) filters to be specified at the time of order. The optional FM modulator allows software selection of the transmitting frequency, deviation, and output RF level. The transmitter allows retransmission of archived information. In command applications, an external power amplifier can be added to obtain the appropriate link margin on the up-link.



### Key Features:

- **Three modes of operation - Live PCM, Archive Playback, and PRB Generation**
  - Live can evaluate bit synchronizers and PCM decommutator performance
  - Live can Uplink command generation of PCM data stream with FM modulation
  - Archival data playback allows generation of any format with appropriate dll
  - PRB Generation allows data link BERT measurement with LS-50 or LS-24-RTR
  - Error generation capability in all three modes
- **Complex data stream generation**
  - Unlimited number of embedded data streams (through software)
  - IRIG Chapter 8 data streams
  - Error generation on a bit by bit basis including frame sync loss
  - Embedded time (IRIG A, B, or G)
  - Any or all words can have canned simulation values (wave words) or user defined values on a word-by-word basis
  - Archive playback can be any format with appropriate dll
  - Burst data
  - Fill data (any value at any time)
  - Insertion of embedded video and audio with error generation
  - Format switching/mode code handling
  - Number encoding (2's comp, 1's comp, 1760, IEEE, TI, DEC, etc) for any or all values on the fly
- **Hardware design**
  - Dual Ported memory with 128K of 32-bit words
  - Major Frame Lengths to 65,535 words per minor frame
  - Data Rates to 20 Mbps (NRZ codes); 10 Mbps (other codes)
  - Selectable (1 of 8) pre-modulation filters
  - Programmable transmitter deviation through software
  - Programmable output level through software

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## LS-70-S PCI Dynamic Data Simulator

### Data Sheet

#### SPECIFICATIONS:

##### COMMAND PCM SIMULATOR:

Number of channels	1
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 400 mV to 8 V p-p adjustable
Base-band Output	8 selectable; 5 pole Butterworth
Base-band Pre-mod Filter	Capable of driving RS-422 or TTL compatible inputs
Differential Outputs	
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 <sup>2</sup> , 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

##### 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
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##### 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)

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Specifications are subject to change. Please verify the latest specifications at time of order.

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