

# SIM20

## PCM DATA STREAM SIMULATOR



### DESCRIPTION

The **SIM20** board 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 adequate dll.

The **SIM20** board is only 7 inches long and contains the dynamic simulator, IRIG Time Code Generator, and FM modulator (optional).

The design contains dual ported memory to allow one block of information to be created while another block is being output. Four pole Butterworth pre-modulation filtering are provided with selectable (1 of 4) filters (*to be specified at the time of order*).



### KEY FEATURES

- Evaluate **bit synchronizers and PCM decommutator** performance
- Uplink command **generation of PCM data stream** with FM modulation
- Archived data playback allows generation of any format with adequate dll
- Unlimited number of embedded data streams (through software)
- **Error generation** on a bit by bit basis including frame sync loss
- Embedded time (IRIG A, B, or G)
- Major Frame Lengths to 65,535 words per minor frame
- Data Rates **up to 20 Mbps** (NRZ codes), 10 Mbps for other codes

### SPECIFICATIONS

#### Simulator

Outputs	NRZ-L PCM Data, Code Selectable PCM Data, 0 degree clock, Minor frame strobes
Output Levels	Single Ended - TTL, Differential - RS-422
Differential Outputs	Capable of driving RS-422 or TTL compatible inputs
Output Data Rates	64 bps to 20 Mbps (NRZ) , 64 bps to 10 Mbps (others)
PCM Codes	NRZ-L/M/S; Bi-Phase-L/M/S, DM-M/S, M <sub>2</sub> , 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	Unlimited
Major Frame Sync	FCC (FAC), SFID
Common Words	Data may be changed (word-byword) while operating
Waveform Words	Unlimited. Data may be changed while operating.
Baseband Output Level	+/- 2 Volts p-p open circuit +/- 1 Volt p-p into 75 Ohms

**Time Code Generator Output**

Time Codes	IRIG A, B, or G
Modulated Output levels	
· Carrier Output Low	1 Volt p-p
· Carrier Output High	3.3 Volts p-p
DC Level Output	Demodulated representation of IRIG Time carrier output

**Pre-modulation Filters**

Pre-mod Filters	5 Pole Butterworth
Selectable	1 of 8 values
Standard values	250k, 500k, 1M, 3M, 6M, 9M, 12M, 15M Hz; unless otherwise specified at the time of order

**RF Modulator**

Modulation Type	FM
Frequency Range	S-Band (2200-2400 MHz) , L-Band (1435-1540 MHz), for other bands consult us
Transmitter Deviation	Programmable by software
Deviation (Max)	7 MHz (peak)
RF Output Level	Programmable from -60 dBm to 0 dBm by software

**Physical:**

Form Factor	Short "Desktop" PCI board - 7 inches long
Inputs/Outputs	RF on SMA Female; D-Series Connector with 44 female contacts
Breakout cable	Cable assembly to BNC is included
Current Required	The current required depends on the configuration

**Environmental Characteristics**

Operating Temperature	0° to +50° C
Non-Operating Temp	-25° to +70° C
Operating Humidity	0 to 90% (Non-condensing)
Non-Operating Humidity	Protect from moisture

**ORDERING INFORMATION**

SIM20	PCM generator, all PCM codes
SIM20/FMS	PCM generator, all PCM codes with S-band FM
SIM20/FML	PCM generator, all PCM codes with L-band FM

*Specifications are subject to change.  
Please, verify the latest specifications  
prior order.*

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