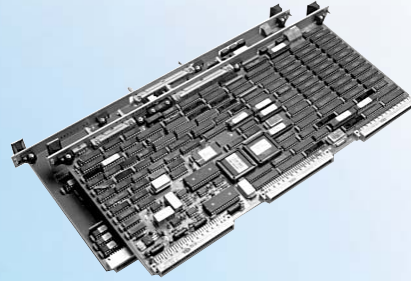


Telemetry - West

MULTIFORMAT DYNAMIC SIMULATOR SET

MDS540 & 541D/XDS541 & 541D



The Multiformat Dynamic Simulators are used to test the Multiformat Decommutator and the database defining the data stream. They are also used to provide both static and dynamic simulation capabilities for virtually all telemetry formats in both open- and closed-loop applications. Both models exceed the requirements of Chapter 4 of IRIG 106-86 Class II Telemetry Standards. The MDS540 model generates a serial data stream in any selected code at rates up to 20 Mbits/sec and can "instantaneously" switch formats at major frame boundaries for up to 16 different formats. The XDS541 model extends the simulation capabilities by providing direct access to the MUXbus II and memory for up to 256K dynamically changeable source data parameters. Multiple modules can be included in the same system for simulating multiple independent data streams.

KEY FEATURES

- Produces PCM data from 10 bits/ sec to 20 Mbits/sec
- Generates all standard IRIG data codes plus RZ, DM-M, DM-S, and M2
- Simulates up to 64K unique independent source data parameters from a 64K x 16 current value table (CVT)
- Sets length (2 to 32 bits) and alignment (MSB or LSB) separately for each word in the format
- Simulates complex combinations of computer, sensor, and discrete data
- Implements simulation models on internal processing modules or external computers
- Encodes minor frames, subframes, sub-subframes, and embedded synchronous streams
- Adds parity and CRC
- Checks out error correction and BER monitor circuits
- Programs 1 to 16 different formats for frame boundary switching
- Simulates multistage events and checks out multiformat decoms
- Provides 512 internal function generators and a common word value
- Selects static and/or dynamic data source for system checkout and calibration requirements
- Changes data word values without interrupting the bit stream
- Uses MUXbus II data to trigger dynamic or static changes



Excellence You Can Measure

MULTIFORMAT DYNAMIC SIMULATOR SET

MDS540 & 541D/XDS541 & 541D SPECIFICATIONS

Capabilities

Data Rates:	
PCM NRZ (other) Codes	.10 bps to 20 (10) Mbps-externally clocked or internal fixed clock;10 bps to 10 (5) Mbps-internal programmable clock (3.125 Mwps max.)
PAM NRZ (RZ) Codes	.30 (15) wps to 500 (250) kwps
Data Rate Resolution/	
Accuracy	.1 bps; 0.5 bps
PCM Data Codes	.NRZ-L, NRZ-M, NRZ-S, BiΦ-L, BiΦ-M, BiΦ-S, DM-S, DM-M, RZ, DBiΦ-M, DBiΦ-S, DM2-M, DM2-S
PAM Data Codes	.NRZ, RZ
Randomizer	.Enabled or disabled for all PCM data codes
Randomizer Sequence	
Length	.215-1
Data Length	.4 to 32 bits/word (plus parity per 16-bit syllable, if enabled)
Consecutive Words <2 bits	.16 max.
Data Alignment/Polarity	.LSB or MSB first per word; normal or inverted per format
Polarity Switching	.Dynamically on operator command, MUXbus II data*, ext. input, or time interval
Static Data Sources	.Common word, frame sync, subframe sync, 262,144 unique 16-bit word values
Dynamic Data Sources	.Up to 512 16-bit x n function generators (n = 2 to 2,048 samples)
Dynamic Data Updates	.MUXbus II* or VMEbus data in
Current Value Table Size	.65,536 16-bit words*
MUXbus II to CVT Transfer	
Rate	.2.4 Mwps max.
CVT to Output Data Rate	.Function data: 925 kwps max.; non-function data: 1.5 Mwps max.
Function Memory Size	.196,608 16-bit words
Operating Modes	.Burst PCM or continuous data
Error Checking Generation	.Parity bit, CRC: any 8, 12, or 16-bit polynomial for EADS*; any <32-bit polynomial for major frames

Format Switching

Number of Formats	.1 to 16
Format Switching Events	.After an operator command, external trigger, MUXbus trigger*, or time interval after one complete major frame
Format Switching Modes	.One time or continuous until the next switch occurs
Format Switch Boundary	.Major frame
Format Variables	.Frame length, frame structure, data polarity, data sources

Frames

Bits per Major Frame	.16 to 4,194,304
Words per Major Frame	.1 to 262,144 16-bit words/n (n = 1 for 1 format, up to 16 for 9-16 formats)
Words per Minor Frame	.1 to 262,144 16-bit words ¥
Frames per Major Frame	.1 to 65,535 minor frames ¥
Frame and Subframe	
Sync Bits	.4 to 64
Subframe Sync Methods	.None, SFID, Sync Code, URC, FCC, FCC/SFID
Supercommutation	.Any combination of locations

Sub-Subcommutated Frames

Sub-Subcommutated	
Frames	.0 to 16*
Data Rates	.925 kwps max.
Frame Size	.1 to 65,535 16-bit words (limited only by memory)

Embedded Asynchronous Data Streams (EADS)

Number	.0 to 16*
Data Rates	.925 kwps max.
Major Frame Size	.1 to 4,096 16-bit words for asynchronous embedded streams (limited memory)
Minor Frame Size	.1 to 65,535 16-bit words ¥
Frames per Major Frame	.1 to 65,535 frames ¥
Subframe Sync Methods	.None, SFID, Sync Code, URC, FCC, FCC/SFID

Inputs

Clock Source	.Internal programmable, internal fixed, or external
External Clock Rate	.2x rate; 40 MHz max.
External Clock Duty Cycle	.50% ±5%
External Clock Input Level	.TTL
External Clock Input Load	.75 W ±5%
Internal Fixed Clock Rate	.20 MHz

Outputs

PCM, PAM Data	.User-selectable codes, NRZ-L data, 0, 90, 180 or 270° clock
Output Levels:	
BNC	.TTL into 50 W (PCM data, NRZ-L data, 0° clock and one user-selected clock phase)
DB-25	.TTL into 1 FCT load (90, 180 and 270° clocks)
Triax	.RS-422 (PCM data and one user-selected clock phase); 0 to 5 V into 1 KW (PAM data)
Internal Clock Jitter	.1% max.
Internal Clock Duty Cycle	.50% ±5%
PAM Output Amplitude	
Resolution	.12 bits
PAM Output Amplitude Error	.±½ bit
PAM Output Impedance	.10 Ω max.

Module Setup

Keyboard and Mouse	.Fill-in-the-blank OSF/Motif TM page display aided by list-pick selection
ASCII Text File	.User-created description
API	.For remote setup (option)

General Requirements

System Chassis	.1 9U slot each for FOL and CML*
Rear Panel	.3 slots: differential option 2 slots
Sets per System / Chassis	.32 / 12 (6*)
Power	.FOL & CML boards: +5 V @ 2.0 A max. each; FOL board: ±15 VC @ 0.5A max. each

Notes:* Requires XDS541 model
 ¥ Subject to the words per major frame limits

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