Model 2950P

Multi Stream Bit Synchronizer

Up to 16 Independent Range Quality Bit Synchronizers

Tunable Data Rates of 8 Hz to 40 MHz, all codes

Excellent BER performance within 1db of theroetical, 0.50 to 0.25 db typical

Fast sync aquisition, as few as 32 bit transitions

Retains sync through strings of 1028+ bits lost/static data

Frame Sync with Auto Polarity, Data Source Select, and full-feature BERT

Processes all IRIG standard and randomized Codes

User Selectable Inputs and Outputs

Efficient 4u Chassis occupies just 7 inches in height

8” Diagonal LCD touch-screen control/display

Auto-sense recognizes number and type of installed bit syncs, enabling simple field upgrade & config mods

Network compatible, Windows remote software included

Dual Hot-swappable Power Supplies

The Model 2950P Multi-Stream Bit Synchronizer consists of up to sixteen 40 MHz capable PCM Bit Synchronizers in a single 4U chassis. The new Model 2950P chassis includes an 8” LCD Touchscreen operator display & control panel, supporting both individual and group bit synchronizer parameter set-up and unit status displays. In addition, directly coupled front panel LED status indicators provide precise lock status of each installed bit sync channel.

Each Model 2950P bit synchronizer is configured either individually or as a group from the user-friendly GUI touchscreen operator interface. System hot-swappable redundant power supplies assure rock solid system operation, while at the heart of the Model 2950P Acroamatics’ newest generation of industry leading bit synchronizer modules - our all new Model1611P and 474DM Advanced Digital Bit Synchronizers modules - assure rock solid lock and performance margins that allow continued valid data communications under the most trying circumstances. In addition, through the use of industry standard PCI card formats, ease of service, trouble-free upgrade, and future system expansion are guarenteed.

The Model 2950P and it’s constituent internal 1611P and 474DM bit sync module designs represent the first truly new “clean sheet”approach to modern bit sync design in a generation. Incorporation of the latest PGA based digital FIR filtering, digital phase locked-loop, NCO clock reconstruction, and digital amplitude and offset control design techniques are the underlying reasons for Acroamatics new Advanced Digital bit synchronizer astounding performance In all channel configurations (from one to sixteen) the Model 2950P offers users programmable rates from 8 Hz to 40 Mbps using ***any input*** or output code type, under the most challenging and hostile launch, weapons intercept, and range tracking reception environment.!

Standard options include PCM frame sync verify / full function BERT and Viterbi decoding along with available custom engineered interfaces and functional upgrades supported by Acroamatics industry leading telemetry and PCM communications engineering team.

ACROAMATICS

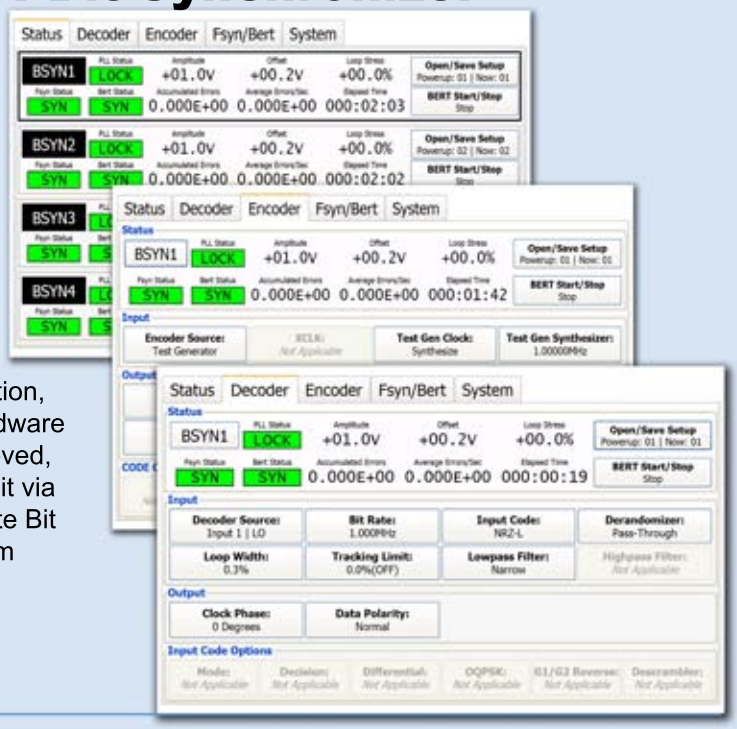
TELEMETRY SYSTEMS

805-967-9909 sales@acroamatics.com www.acroamatics.com

Model 2950P Multi-Stream PCI Bit Synchronizer

System Software

The Model 2950P includes a distinctive and easily mastered operator interface accessed via it's large high output front-panel LCD touchscreen display. Each of the high performance Bit Synchronizers installed within the system are controlled via it's easy to follow GUI oriented, menu driven display panel. Clear and well labeled menu choices are provided, with distinctive status indicators and system setting choices. The 2950P automatically recognizes it's bit synchronizer hardware configuration, allowing upgrade and hardware changes without concern for hardware setting changes. Setup configurations are easily stored and retrieved, either as a group or individually. Remote users can control the unit via Ethernet port or serial interface with provided Acroamatics Remote Bit Sync Windows utility software. If two users are viewing the system simultaneously, both see the changes made in real time by either user, in order to avoid errors.



SYSTEM FUNCTIONS

Acroamatics Software Suite	Included
GUI Interface	Standard, local Touchscreen
Operating System	Windows 7/XP Pro
Configuration Storage	Yes, multiple set-ups store in local memory
Special Features	Lock out per bit synch, Auto-sensing configuration, Setups stored per system or mission. Remote GUI Display via Ethernet or RS-232

CHASSIS

Form Factor	Standard PCI
Available Slots	12
Processor	Latest Intel (call factory)
DRAM	2GB
Storage	HDD, CD-RW, FDD (additional options and capacities available, call factory)
Display	8" LCD high res touchscreen, front panel mounted
Keyboard	via LCD touchscreen, or optional rackmount 1u retractable keyboard
I/O Ports	4 USB Ports, 1 RS-232
Network	10/100 Ethernet
Power	Dual Hot-swappable Redundant 110/220v
Standard Inputs/Outputs	Pre-configured 88 BNC's, user definable

SIGNAL INPUTS

Source	Program selectable: one of five inputs - only limited by BNC count in systems > 8 channels
Isolation	Greater than 60dB at 40MHz
Impedance	Program selectable: Hi-Z/Lo-Z. Single Ended: 4kΩ/75Ω, Differential: 10kΩ/150Ω
Signal Level	Single Ended: 0.2 to 20V p-p, Differential: 0.2 to 25V p-p
DC Offset	20V max Single-Ended, Hi-Z
Baseline Variation	Tracks sinusoidal offsets to 100% p-p signal amplitude at 0.1% bit rate
PCM Codes	Program selectable: NRZ-L/M/S, Biø-L/M/S, DBiø-M/S, DM-M/S, MDM-M/S, RZ
Derandomizer	Program selectable: RNRZ 9/11/15/17/23, forward/reverse

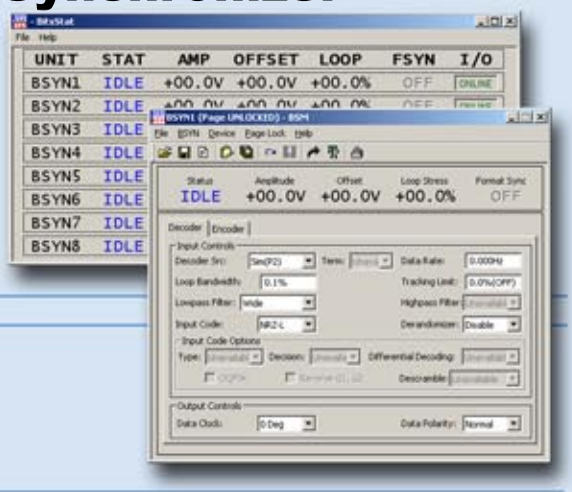
SYNCHRONIZATION

Bit Rate Range	8 Hz to 40 MHz, in all codes. Each channel individually assignable
Tuning Resolution	0.1% of bit rate
Capture Range	3 times the programmed loopwidth, typical
Tracking Range	±12% typical, with programmable limiter
Loop Bandwidth	0.1% to 3.2%, program selectable in 0.1% increments
Sync Threshold	0dB for NRZ-L and Biø-L codes
Sync Maintenance	(LW=0.1%) –2dB NRZ-L and Biø-L codes
Sync Acquisition	(LW=1.6%, SNR > 12dB) Typically less than 32 bit periods
Sync Retention	(LW=0.1%, SNR > 3dB) Retains sync through > 128 consecutive dropouts
Bit Error Rate	(LW=0.1%) to within 0.5 to 0.25 db of ideal bit error rate performance curves

Model 2950P Multi-Stream PCI Bit Synchronizer

Remote Control Software

Remote GUI Setup and Operation Status Windows software is provided with the Model 2950P allowing remote network or serial remote unit operations. Multiple 2950P units and other Acroamatics bit synchronizer products may be remotely operated using the provided software, such that up to 64 bit sync channels can be controlled by a single host computer.



DATA/CLOCK OUTPUTS

NRZ-L Data	Three TTL, one RS-422/TTL
Data Clock	Two program selectable TTL: 0º, 90º, 180º, 270º
Quadrature Clocks	One each: 0º, 90º, 180º, 270º; RS-422/TTL
2x Clock	One TTL, One RS-422/TTL
Data Polarity	Program selectable: normal/inverted

SOFT BIT DECISION OUTPUT

Data/clock	Four bits Offset Binary plus 0º clock; TTL (open collector)
Sample Rate	Programmable to beyond 20 mega samples per second

PCM ENCODER

Data Source	Program selectable: Recovered Data or External data/clock
Outputs	One bipolar, 4V p-p; Two TTL; One RS-422/TTL
Randomizer	Program selectable: RNRZ 9/11/15/17/23
PCM Codes	Program selectable: NRZ-L/M/S, Biø-L/M/S, DBiø-M/S, DM-M/S, MDM-M/S, RZ

EXTERNAL DATA/CLOCK INPUT

Signal Type	Jumper selectable: RS-422 or TTL
Impedance	120Ω RS-422, 75Ω TTL
Data Code	Program selectable: NRZ-L/M/S, Biø-L/M/S, DBiø-M/S, DM-M/S, MDM-M/S, RZ
Data Clock	Program selectable: Normal/Inverted, 1x or 2x

CONVOLUTION ENCODER/DECODER (Optional)

Viterbi Decoder	Rate 1/2, k=7: includes differential decoding, V.35 descrambling, and G2 invert
Symbol Formats	Serial, parallel, and staggered parallel
Convolutional Encoder	Rate 1/2, k=7: includes differential encoder, V.35 scrambler, and G2 inverter
Symbol Formats	Serial, parallel, and staggered parallel

FORMAT GENERATORS/SYNCHRONIZER (Optional)

Format Generator	Programmable frame length, sync pattern and mask
Synchronizer Source	Recovered data, external data, or test generator
Synchronizer Strategy	Pattern match in "search", programmable error limits for "check" and "lock" states
Other Features	Bit slip enable, auto polarity enable, data source/ambiguity resolution

BIT ERROR RATE TESTER (Optional)

Transmitter Pattern	PRN sequence: 211-1, 27-1, 29-1, 215-1 (forward/reverse)
Pattern Clock Source	Program selectable: Bit Rate Clock or External Clock
Blanking	Program selectable: 32, 64, 128 bits
BER Sample Period	Program selectable: 103 to 109 bit periods, or continuous accumulate
Other Features	Automatic pattern synchronization, forced error ON/OFF

PHYSICAL

Power	90-132V or 180-264V auto select, 50-60Hz, 4A max
Dimensions	4u 7" (31.12cm) H x 19.0" (48.26cm) W x 22.5" (57.15cm) D
Temperature	Operating: 0 to +40° C, Non-Operating: -40 to +86° C
Relative Humidity	Up to 90% non-condensing
Shock	Operating 6G, Non-operating 50G
Vibration	Operating 0.5G, 5 to 2000 Hz, Non-operating 1.2G, 5 to 500 Hz
Signal I/O	88 BNC Connectors, with all I/O connections supported for up to eight channels. In 9-16 channel configurations, customer defined I/O assignment (to a max of 88 BNCs) is required.

Specifications subject to change without notice