



72 Mbps PCM Bit Synchronizer PCI Card Card Model 1611AP

Features:

- Compact and full featured
 - * Single PCI slot range quality bit sync
 - * Add plug-in 474DM mezzanine for single-slot dual channel operation
- NEW 72 Mbps NRZ Code Rate Range, to 40 Mbps, *bi-phase codes*
- Best in Class Performance - within 0.50 db of theory in all modes
- Fast Sync Acquisition - within 50 bit transitions, typical
- Best in Class Sync Retention to 1024 bits without transition
- Bit Sync Status Monitors
 - * Lock/Search/Loss Discrettes
 - * On screen Performance Monitor
 - Input Amplitude, Offset, Rate Deviation and Lock Status
- Data Quality and Signal Test:
 - * BERT/PRN BER Link Test Mode
 - * Frame Sync PCM BER Monitor
 - * Frame Lock/Loss Monitor
 - * Eb/No Signal Quality Analog Out
 - * Viterbi Error Monitor/Stats
- Data Simulator/Generator
 - * Programmable rate/PRN Code, PCM Format and Code - to 40 Mbps
- Processes all IRIG Codes
 - * NRZ-L/M/S, DBiø-M/S, DM-M/S, MDM-M/S, RZ
 - * Randomizer/Derandomizer
- Descrambler
 - * CCITT V.35, INTELSAT, G2 Invert

Includes Windows 7 & 10 local and remote software.

General Description

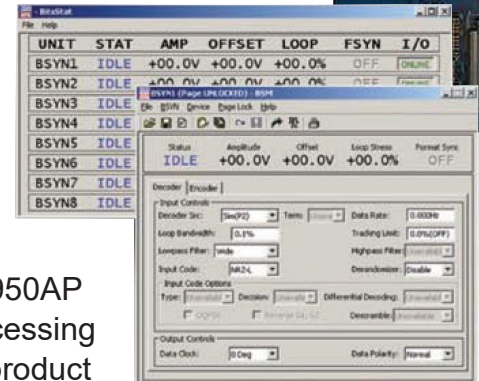
The Model 1611AP is a state-of-the-art Digital Bit Synchronizer featuring an advanced design that supports data rates from 8 Hz to 72 MHz. The design of the bit synchronizer uses the latest techniques in FIR filtering, digital phase-locked loops, NCO clock reconstruction, and digital amplitude and offset control. Use of leading-edge FPGAs results in reduced part count, increased reliability, and design flexibility to accommodate custom or future requirements.

The Model 1611AP is a “drop-in” replacement for any PCI Bit Synchronizer application and is fully compatible with

Acroamatics 2430AD & 2950AP Bit Sync, 2900AP TM processing system, and 2602P BSS product lines. The Model 1611AP is compatible with all previous versions of Acroamatics Bit Synchronizer Software, so it can also be installed in most Acroamatics telemetry data processor (TDP) systems with no special preparations. Like its predecessor, optional features include a full-featured BERT, Frame Synchronizer with data source selector and Viterbi Decoder/Convolutional Encoder.

Related Products

- MD474DM
- MD2430AD
- MD2950AP
- MD2900AP
- MD2500AP
- MD3022AP
- MD1612AP
- MD1622AP



Truly Superior: The advanced digital design of the Model 1611AP out performs other bit synchronizers, including analog box-level units or card-level products. This new design produces a bit-error-rate less than 0.5dB from theoretical over the entire operational range of the bit synchronizer (8 Hz to 40 MHz)



Signal Inputs

Source 5 inputs, 3 single-ended/1 differential/1 TTL/RS-422, Operator Program Selectable
 Isolation Greater than 60dB at 20MHz
 Impedance Program selectable: Hi-Z/Lo-Z, Single Ended: 4kΩ/75Ω, Differential: 10kΩ/150Ω
 Signal Level Single Ended: 0.2-20V P-P, Differential: 0.2-10V P-P
 DC Offset 20V max., Single-ended Hi-Z or 15V Max @ 75Ω
 Baseline Variation Tracks sinusoidal offsets to 100% P-P signal amplitude at 0.1% bit rate
 PCM Codes Program selectable: NRZ-L/M/S, Bi0-L/M/S, DBi0-M/S, DM-M/S, MDM-M/S, RZ
 Derandomizer Program selectable: RNRZ 9/11/15/17/23, forward/reverse

Synchronization

Bit Rate Range 8bps to 72MHz, all PCM Codes
 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 Bi0-L codes
 Sync Acquisition (LW=1.6%, SNR > 12dB) Typically less than 50 bit pixels
 Sync Retention (LW=0.1%, SNR > 3dB) Retains sync through > 1024 consecutive dropouts
 Bit Error Rate (LW=0.1%) within 0.50 of ideal bit error rate performance curves

Data/Clock Outputs, NRZ-L

NRZ-L Data One each, NRZ-L data/clock pair, RS-422/TTL (jumper selectable) - operator program output selectable to INTERNAL (direct to host decom card via internal bus) or EXTERNAL (output pair directed to card external output BNC or Triax cables)
 Data Clock 0°, 90°, 180°, 270°, operator program selectable
 Data Polarity Program selectable: normal/inverted

Data/Clock Outputs, Code (Dual PCM Encoders)

Data Source Program selectable: Recovered Data (Bit Sync NRZ-L Data/Clock Out) or External data/clock. Defaults to Recovered Data.
Three each: *One each* TTL data/clock (0° & 180° selectable) **Code** (selectable) PCM and Clock, *One each* TTL data RNRZL, *One each* TAPE (code selectable) TTL or ±2 Volts balanced output, 50mA drive current.
 Randomizer Program selectable: RNRZ 9/11/15/17/23, forward/reverse
 PCM Codes Program selectable: NRZ-L/M/S, Bi0-L/M/S, DBi0-M/S, DM-M/S, MDM-M/S, RZ

External Data/Clock Output

Signal Type Jumper selectable: RS-422 or TTL
 Impedance 120Ω RS-422, 75Ω TTL
 Data Code Program selectable: NRZ-L/M/S, Bi0-L/M/S, DBi0-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 (others available)
 Symbol Formats Serial, parallel, and staggered parallel (others available)
 Convolutional Encoder Rate 1/2, k=7: Includes differential encoder, V.35 scrambler, and G2 inverter (others available)
 Symbol Formats Serial, parallel, and staggered parallel (others available)

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: PN7, PN9, PN11, PN15 (forward/reverse)
 Pattern Clock Source Program selectable: Bit Rate Clock or External Clock
 Blanking Program selectable: 64, 128, 256 bits
 BER Sample Period Program selectable: 1E3 to 1E9 bit periods, or continuous accumulate
 Variable Output 50mV to 5V P-P
 Other Features Automatic pattern synchronization, forced error ON/OFF

Physical

Format Standard PCI: full length single slot
 Connector 25-pin micro-D connector (BNC type adapter cable available)
 Cooling 30 Linear FPM
 Power +3.3VDC @ 1.0A, +5VDC @ 2.0A
 Dimensions 4.40" (11.17cm) H x 12.40" (31.50cm) W x .50" (1.27cm) 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 25G

