DELTA TELEMETRY SYSTEMS

DATA ACQUISITION

Single/Dual PCM Bit Synchronizer

MODEL 2430D

KEY FEATURES

- Compact and rugged 2u single/dual stream design
- 8 bps to 44 Mbps Data Rate RangeNRZ and Bi-Phase Codes
- Best in Class Performance within 0.50 db of theory in all modes
- Best in Class Sync Retention
  To 1024 bits without transition
  Bit Sync Status Monitors
  Front Panel lED Lock/Search/Loss
  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

GENERAL DESCRIPTION

The new Model 2430D is a “drop-in” replacement for all previous 2430 family 2U rackmount single and dual stream PCM bit synchronizers. It features a redesigned signal I/O interface supporting a wide variety of standard configurations, with assignable rear panel connector types and terminations. Built on a best-in-class 3rd generation digital bit sync design, the 2430D delivers up to 40 Mbps performance with major improvements in BER, acquisition, and signal retention. It is available in single or dual-channel configurations and provides a seamless upgrade for legacy 2U systems. For higher density needs, the Model 2950P supports up to 16 channels with matching performance.

Standard options include Viterbi encode/decode, Frame Sync Pattern Lock, BERT, and dual/quad stream best source select with ambiguity resolution. The unit includes a 4.9” high-brightness color LCD for intuitive front panel setup and signal quality feedback. Remote control is provided via Ethernet and RS-232, with local or network-based setup storage and recall.

Each unit comes with Windows-based Remote GUI software to operate up to 64 bit sync channels over a network. The software also supports all Acroamatics bit syncs, including standalone PCI cards and those integrated within TDP systems.

RELATED PRODUCTS

Gateway	Recorder	Telemetry Data Processor	ADAT
			

125 Cremona Drive – Suite 130, Goleta, CA 93117 | 215.657.5270
delta-telemetry.com | sales@acroamatics.com

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TECHNICAL SPECIFICATIONS

Signal Inputs (Per Bit Sync)

Sources:	Four (4) Program selectable inputs provided. Choice of input configuration (i.e. three BNC single-ended/one Triax RS-422) at time of order.
Isolation:	Greater than 60 dB at 40MHz
Impedance :	Program selectable: Hi-Z/Lo-Z, Single Ended: 4 kΩ / 75Ω , Differential: 10 kΩ /150 Ω
Signal Level:	Single Ended: 0.2 to 20V p-p, Differential: 0.2 to 10V 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 bps to 40 Mbps (all IRIG Codes - includes bi-phase). 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 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, in all modes of operation and data rates.

Data/Clock Outputs, NRZ-L (Per Bit Synchronizer)

NRZ-L Data:	One each 8 bps to 40 Mbps NRZ-L, TTL - BNC/75Ω. Optional RS-422 available on request
Data Clock:	One each: 0°, 90°, 180°, 270°, operator program selectable (per Data Output line)
Data Polarity:	Program selectable: normal / inverted
Signal Type:	BNC Single-ended TTL or Triax RS-422 Differential, specified at time of order per NRZ-L bit sync clk/data output pair
RS-422:	Differential driven Bit Sync NRZ-L and CODED Outputs are also each provided via rear panel DB-35 connector, standard

Data/Clock Outputs, Code (Per Bit Synchronizer, via Bit Sync Internal dual PCM Encoder)

Data Source:	Program selectable: Recovered Data (Bit Sync NRZ-L Data/Clk - DEFAULT) or External data/clock (Program Selectable)
Output:	Three each: One each TTL data/clk (0° & 180°, selectable) Code (selectable) PCM and Clk, One each TTL data RNRZL, One each TAPE (code selectable) TTL or ±2Volts balanced output, 50mA drive current
Randomizer:	Program selectable: RNRZ 9/11/15/17/23, forward, reverse
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 PCM Encoder Input (Per Bit Synchronizer)

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, Per Bit Synchronizer)

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, Per Bit Synchronizer)

Format Generator:	Programmable frame length, sync pattern and mask, and rate
Synchronizer Source:	Recovered data, external data, or test generator (to 64 Mbps in rate)
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, Per Bit Synchronizer)

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/Remote Interface

Remote:	RS-232 & 10/100/1000BT Ethernet. Windows 11 64-bit Remote Bit Sync Software provided at no additional charge.
Power:	115/230 VAC 60-50 Hz 3A max
Dimensions:	3.48” (8.84cm) H x 19.0” (48.26cm) W x 20.19” (51.28cm) 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

Recognizing that no standard product fits every mission, Delta Telemetry Systems is ready to deliver tailored solutions for your unique application requirements.

Specifications subject to change without notice.

125 Cremona Drive – Suite 130, Goleta, CA 93117 | 215.657.5270
delta-telemetry.com | sales@acroamatics.com

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