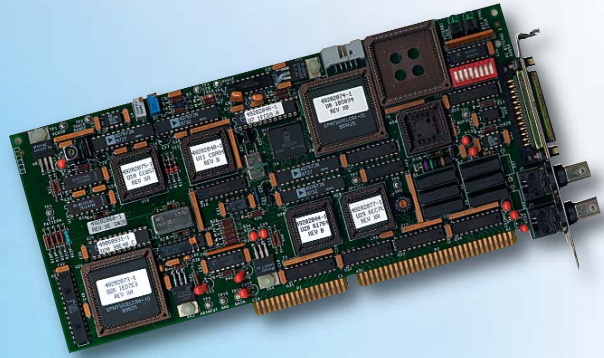


BIT SYNCHRONIZER BOARD

BSM720-PC



L-3's Bit Synchronizer creates a clock synchronized to a PCM data input stream and conditions the input stream, outputting a clean NRZ-L signal. The board supports data rates of up to 20 Mbps and can be supplied with an optional Viterbi decoder (BSM720-PC-V).

KEY FEATURES

- 20 Mbps
- Locks onto a signal within 10 data transitions
- BER performance within 1.0 dB of theoretical
- Digital design requires no calibration
- Optional Viterbi Forward Error Correction (FEC) decoder and convolutional encoder
- TTL or RS-422 inputs
- Code converter to convert any input code to any output code



Excellence You Can Measure

Telemetry - West

BIT SYNCHRONIZER BOARD

BSM720-PC SPECIFICATIONS

Inputs

IRIG code formats	NRZ-L, M, S; BiF-L,M,S; DBiF-M,S; DM-M,S; RZ; RNRZ-L; M2-M,S
Bit rate	NRZ codes 10 bps–20 Mbps Other codes 10 bps–10 Mbps

PCM Data:

Single-ended	Two separate BNCs
RS-422	DB-25 to triax
AC offset	Up to 100% of signal amplitude at frequencies up to 0.1% of bit rate
DC offset	±20V @ high impedance; ±8V @ low impedance
Impedance	Single-ended: 10 kΩ or 75 Ω, < 50 pf nominal
Usable input range	0.25 to 20V peak-to-peak

Outputs

DB-25 Connector (TTL or RS-422):

NRZ-L	Data in NRZ-L format
Clock	NRZ-L data and clock: 0°, 90°, 180°, or 270°
Tape	User selects analog tape output in any of the above IRIG formats
Convolutional encoder	Rate 1/2 or 1/3, K=7

Functions

Bit decisions and synchronization	Output clock and data to PCM decommutator
IRIG code conversion	Output to analog tape or other external equipment through rear panel connector
Detector type	Integrate/Dump or Filter/Sample
Tuning resolution	0.1%
Track range	0.1 to 15.0% adjustable in 0.1% increments
Capture range	±(½ track range + ¼ loop bandwidth)
Loop bandwidth	Selectable to 0.1, 0.3, 1, 2 or 3%
Bit Error Rate:	
NRZ codes	Within 1.0 dB of theoretical up to 5 Mbps; within 1.5 dB up to 10 Mbps; within 2.0 dB up to 20 Mbps
All other codes	Within 1.0 dB of theoretical up to 2.5 Mbps; within 1.5 dB up to 5 Mbps; within 2.0 dB up to 10 Mbps
Acquisition time	Within 10 data transitions, NRZ-L, SNR ≥ 15 dB, LBW = 3%, TR = 10%
Minimum transition density	3.12% with input 8 dB SNR
Sync threshold	Minimum SNR for sync acquisition is 0 dB for transition density ≥ 50%
Viterbi BER improvement	5.2 dB @ 10-5 BER, rate ½; 5.5 dB, rate 1/3

Flywheeling with Continuous 1s or 0s

NRZ codes	Sync is maintained through strings as long as 512 bits once every 2,047 bits
Other codes	Indefinite after sync is achieved
Conditions	SNR ≥ 12 dB; LBW = 0.1%, track range = 0.5%; no jitter, AM, or baseline perturbations; ± 0.1% difference between the programmed bit rate and input frequency

Flywheeling with Data Dropouts

NRZ codes	Sync is maintained through dropouts as long as 512 bits once every 2,047 bits
Other codes	Sync is maintained through dropouts as long as 128 bits once every 2,047 bits
Conditions	SNR ≥ 12 dB; LBW = 0.1%, track range = 0.5%; no jitter, AM, or baseline perturbations; ± 0.1% difference between the programmed bit rate and input frequency

Power

+5V supply	2.0 A typical ±5% with Viterbi; 1.7 A typical ±5% without Viterbi
+12V supply	110 mA typical ±5%
-12V supply	250 mA typical ±5%

Physical Characteristics

Mechanical	ISA-compatible card; requires one ISA slot
Size	¾ length
Operating temperature	0° to 55° C
Relative humidity	< 90% (non-condensing)

Compatibility

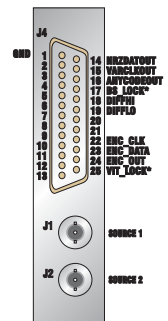
VTS Software	
Windows	2000, XP

Ordering Information

BSM720-PC	ISA Bit Synchronizer (20 Mbps)
BSM720-PC-V	ISA Bit Synchronizer (20 Mbps) with Viterbi Decoding

Connector Pin Assignments

Single-ended input is through two standard BNC connectors at the computer's rear panel. RS-422 input and other I/O is through the DB-25 connector. A matching DB-25 cable makes RS-422 available on triax and other signals on BNC connectors. Outputs are switchable between TTL or RS-422.



Telemetry-West

9020 Balboa Avenue
San Diego, CA 92123-3507
858.694.7500 800.351.8483
Fax: 858.279.0693
www.L-3Com.com/TW



Telemetry & RF Products