

40 MBPS PCI BIT SYNCHRONIZER

BSZ732-PCI



PCI mezzanine carrier board not pictured.

KEY FEATURES

- Achieves BER within 1.0 dB of theoretical over the entire operational range
- Selects any center frequency to within 0.1% at 100 bps to 40 Mbps for NRZ codes and to 30 Mbps for bi-phase codes
- Second-order phase-locked loop extracts a stable clock from noisy and distorted input signals
- Host-selectable loop bandwidth (LBW) from 0.1% to 1.6%
- Tracking range 3 x LBW
- Provides fast acquisition of new signals and retention during temporary signal dropouts
- Automatic gain and offset controls track amplitude and offset variations and rapidly adapt to signal changes
- Selects PCM source from the following inputs: two single-ended, one differential

The PCI Bit Synchronizer (BSZ732-PCI) extracts and decodes data and clock from a potentially degraded input PCM data stream at rates up to 40 Mbps, while keeping bit error rates to within 1 dB of theoretical. It adapts to a wide range of input signal conditions using a combination of analog and digital techniques with automatic and host-selectable features. One of the most capable bit synchronizers on the market today, the BSZ732-PCI runs at data rates of up to 40 Mbps for NRZ codes and 30 Mbps for bi-phase codes, with bit error rate performance to within 1.0 dB of theoretical across the entire operational range.

Over-sampled rates of at least four times the bit rate ensure an improved matched filter and therefore bit error rate (BER) performance - even in the high octave range. A new mixed-signal (analog and digital) phase-locked loop (including a direct digitally synthesized clock tracker) yields reliable and stable loop performance at all frequencies and up to 1.6% loop bandwidth. Digitally controlled automatic gain and offset circuits track amplitude and offset variations, ensuring minimal degradation of BER and optimal acquisition performance.

The BSZ732-PCI features L-3's industry leading PMC Bit Synchronizer (BSZ532) mounted on a PCI-compatible PMC mezzanine carrier board.



Excellence You Can Measure

40 MBPS PCI BIT SYNCHRONIZER

BSZ732-PCI SPECIFICATIONS

Inputs

PCM	.2 single-ended, 1 differential (RS-422)
IRIG Code Formats	.NRZ-L/M/S, RNRZ-L, Bi -L/M/S
Derandomizer	.Forward or reverse sequence = $2n-1$, ($n = 11, 15, 17$)
Bit Rate	.100 bps to 40 Mbps (NRZ Codes) .100 bps to 30 Mbps (Bi-Phase Codes)
AC Offset	.Up to 100% of signal amplitude at sinusoidal frequencies up to 0.05% of bit rate
Signal Range	.0.2 to 10V peak-to-peak
DC Common Mode Max.	. $\pm 6V$ (75 Ω impedance) . $\pm 10V$ (10 K Ω impedance)
Impedance	.10 K Ω (High) or 75 Ω (Low), programmable for single ended inputs (SRC1 or SRC2) 100 Ω for differential input

Performance

Bit Error Rate	.Within 1.0 dB of theoretical
Loop Bandwidth	.0.1%, 0.2%, 0.4%, 0.8%, 1.6%, programmable
Acquisition Range	. $\pm 2 \times$ LBW @ $E_b/N_0 > 12$ dB
Acquisition Time (avg.)	.NRZ: < 100 bits @ $E_b/N_0 > 12$ dB BiF: < 200 bits @ $E_b/N_0 > 12$ dB
Sync Retention (flywheel)	.Sync will be maintained for at least 128 bits at 0.1% LBW @ $E_b/N_0 > 12$ dB
Sync Threshold	. $E_b/N_0 > 0$ dB at 0.1% LBW
Tracking Range	. $\pm 3 \times$ LBW @ $E_b/N_0 > 12$ dB

Outputs

Clock & Data	.TTL level, 50 Ω min. load
Data Format	.NRZ-L
Data Polarity	.Normal & inverted
Clock Phase	.0°, 180°
Tape	.TTL level, 50 Ω min. load
Codes	.NRZ-L/M/S, RNRZ-L, Bi -L/M/S
Randomizer	.Forward or reverse sequence = $2n-1$, where $n = 11, 15, 17$
Data Polarity	.Normal & inverted

Functions

Bit Synchronizer Type	.Second-order phase-locked loop
Tuning Resolution	.0.1%
Programming Resolution	.0.1% of bit rate
Status to Host (or display)	.Bit Sync Lock, Signal Detect

Options (contact factory)

Input Codes	.RZ, DM-M/S, M2
Soft Bit Decisions	.3 bits
Alternate Symbol	
Inversion FEC Modes	.None, Standard, 171-Inverted
Randomizer/Derandomizer	. $n = 20$, CCITT Recommendation V.35

Program Setup and Control

Keyboard and Mouse	.Displays with list-pick selections
ASCII Text File	.User-created description
API	.Application Programming Interface for remote setup (option)

Other

BNC Connectors (5)	.Source 1 & 2, clock & data, tape out
MDR-26 Connector (1)	.All inputs and outputs
Triax Connector (1)	.RS-422 source input
Maximum per Chassis	.1 per PCI compatible slot
Size	.Half size PCI Card

General Requirements (PCI Carrier)

PCI Compatible Slot	.PCI 2.1 version or later
Power	.+5, +3.3, +12, -12V supplied by PCI compatible slot

Compatibility

Windows 2000, XP	
VTS Software (Version 6.4 or higher)	
Vista Software (Version 2.6 or higher for 30 Mbps operation; Version 4.3 or higher for 40 Mbps operation)	

Ordering Information

BSZ732-PCI	.Bit Synchronizer Module, PCI (40 Mbps)
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