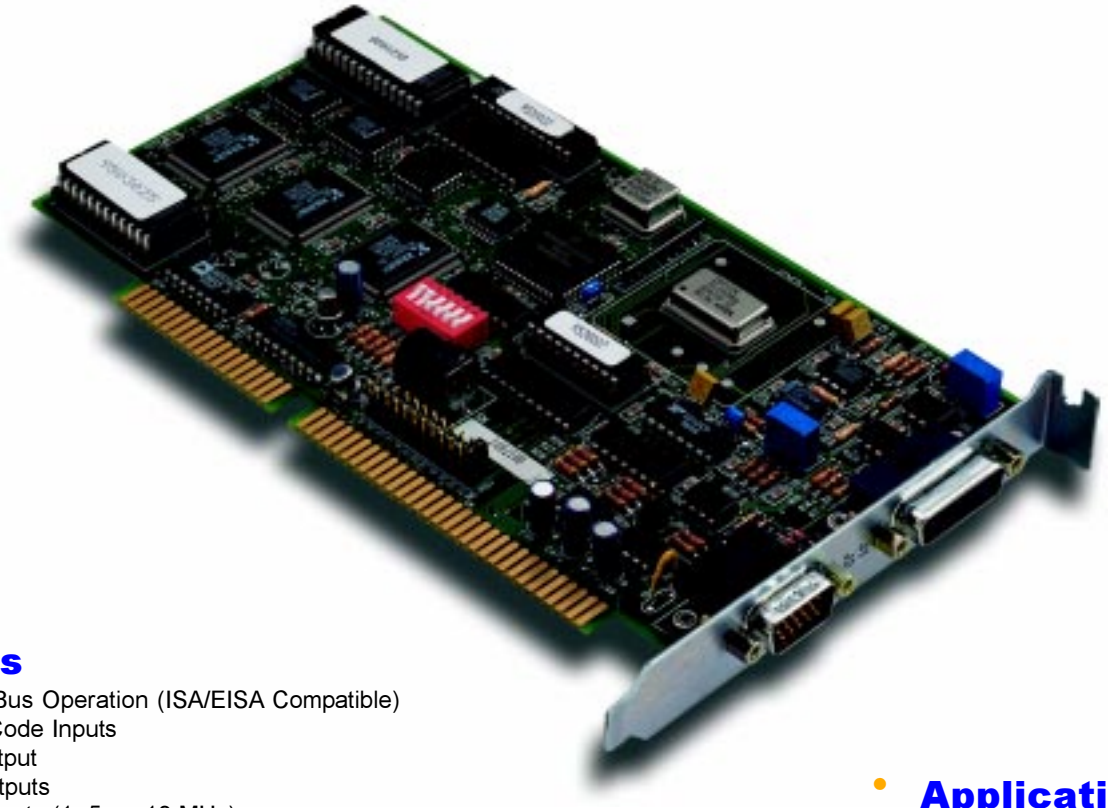
PC Time and Frequency Processors

Models bc620/627AT



Features

PC, XT or AT Bus Operation (ISA/EISA Compatible)
GPS or Time Code Inputs
Time Code Output
Pulse Rate Outputs
Frequency Outputs (1, 5, or 10 MHz)
External Event Capture/Interrupt
Programmable Periodic Output/Interrupt
Programmable Time Strobe Output/Interrupt
Suplied with FREE MS DOS Device Driver

Overview

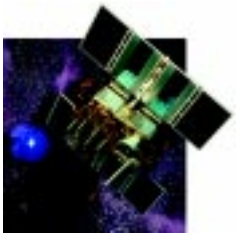
The Datum bc620/627AT Time and Frequency Processor modules provide precision time and frequency reference to the host computer and peripheral data acquisition systems. Time is acquired from either the GPS satellites using a supplied antenna/ receiver (bc627AT only) or from time code signals, typically IRIG B. Integration of the module is facilitated with a driver for MS DOS that is included at no cost. Optional Software Development Kits are available for Windows 95 and Windows NT.

Central to the operation of the module is a disciplined 10 MHz oscillator and 100 nanosecond clock. Current time (days to 100 nanoseconds) can be accessed across the bus with zero latency, which allows for very high speed time requests. The oscillator is rate-matched (disciplined) to the input time source and drives the precision 10 MHz frequency output and time code generator circuitry. If the time source is lost, the module will continue to maintain time (flywheel).

Both time code generation and translation are supported. The generator supplies IRIG B time code output synchronized to the input time source. The translator decodes either IRIG A, IRIG B, 2137, XR3 or NASA 36 time code inputs.

An Event Time Capture feature provides a means of latching time for an event input. The module can also be programmed to generate a periodic pulse rate interrupt as well as to generate a single time strobe at a predetermined time.

Applications



Data Acquisition

Test Ranges

Computer Synchronization

datum

Specifications

Real Time Clock

Bus Request Resolution	100 nanoseconds
Latency	Zero
Major Time Format	Binary or BCD
Minor Time Format	Binary

Time Code Translator

Time Code Formats	IRIG B, NASA 36, XR3, 2137 (modulated or DCLS)
Modulation Ratio	3:1 to 6:1
Input Amplitude	500 mV to 5 V P-P
Input Impedance	>10KΩ (AC coupled)
Carrier Frequency	±50 PPM (max)

Time Code Generator

Time Code Format	IRIG B
Modulation Ratio	3:1
Output Amplitude	1 V to 10 V P-P (adjustable)
DC Level Shift	TTL/CMOS

Timing Functions

Heartbeat (TTL, 50Ω)	Programmable periodic 2.3 mHz to 2.5 MHz (adjustable pulse width)
Time Strobe (TTL, 50Ω)	Programmable, 1 mS through hours (1 mS pulse width)
1 PPS Output (TTL, 50Ω)	200 mS pulse width
Event Capture Input	100 nS resolution, zero latency (20 nS min pulse width; 250 nS min period)

Disciplined Oscillator

Frequency	10 MHz
Outputs	1, 5, or 10 MHz (selectable)
Rate Accuracy:	
Standard VCXO	$5X10^{-8}$ short term (tracking) $5X10^{-7}$ long term (flywheeling)
Optional Oven Oscillator	$2X10^{-9}$ short term (tracking) $5X10^{-8}$ long term (flywheeling)
Sync Sources	GPS, Time Code, 1 PPS

External Time Base Frequency Input

10 MHz Square Wave	TTL (45-55% duty cycle)
10 MHz Sine Wave	0.5 to 4.0 V P-P

AT Bus

Address Space	1 Block of 16 Bytes in the PC I/O Map Range 100H - 3FFH
Data Transfer	8-bit
Interrupt Levels	IRQ 3-7, 9-12, 14-15 (jumper selected)
Power	+5 VDC @ 450 mA +12 VDC @ 55 mA (bc620AT) +12 VDC @ 250 mA (bc627AT) -12 VDC @ 20 mA

GPS Subsystem (bc627AT only)

Time Accuracy	<±2 microseconds
Position Accuracy	100 meters SEP (SA on)
Maximum Velocity	300 meters/sec (1,080 KPH)
Number of Channels	6
Receiver Frequency	1.575 GHz (L1, C/A code)
Time to First Fix	Brief power off: 1.5 min (1-4 SV) Worst case: 5 to 15 min
Solution Modes	1,3, and 4 satellites

Environment

	Module	Antenna/Receiver
Operating Temperature	0C to 55C	-30C to 70C
Storage Temperature	-50C to 100C	-55C to 100C
Operating Humidity	10% to 80%	100%
Storage Humidity	5% to 95%	100%

Connector Types

J1 - Module I/O Signals	15-pin 'DS'
J2 - GPS Interface	15-pin high-density 'DP' (bc627AT)

Software Support

"C" Demo Program	Free, supplied on diskette
MS DOS Device Driver	Free, supplied on diskette

Options

IRIG A Decoding
ACUTIME GPS Firmware**
ACUTIME Antenna/Receiver**
Airborne GPS Receiver
Magnetic GPS Antenna
External GPS Receiver (SV6)
Extended Length GPS Antenna Cable
Isolation Transformer Time Code Input
Ovenized Crystal Oscillator
'D' Connector (J1) to BNC Adapter
WINSDK for Windows 95 and Windows NT
**part of upgrade from bc620AT to bc627AT

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