The Datum bc635/637PMC receiver module provides precision time and frequency reference to the host computer system and peripheral data acquisition systems. Time is acquired from either the GPS satellites using a supplied antenna/receiver (bc637PMC only) or from time code signals, typically IRIG B. Integration of the module is facilitated with optional drivers for Windows 95/98/2000/XP, Linux Solaris or VxWorks.

Central to the operation of the module is a disciplined 10 MHz oscillator and 100 nanosecond clock. Current time (days to 100 nS) can be accessed across the PCI 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 time 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 that is synchronized to the input time source. The translator decodes IRIG A, IRIG B or NASA 36.

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 as well as to generate a single time strobe at a predetermined time.
Model bc635/637PMC

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 A, IRIG B*, NASA 36
- Time Accuracy: <5 µS (modulated)
- <1 µS (DCLS)
- Modulation Ratio: 3:1 to 6:1
- Input Amplitude: 500 mV to 5V P-P
- Input Impedance: >10KΩ

Time Code Generator
- Time Code Format: IRIG B*
- Modulation Ratio: 3:1
- Output Amplitude: 4 V P-P (fixed) into 50Ω
- DC Level Shift: TTL/CMOS

IEEE 1344 Compliance
- The translator processes the 27 control function bits of IRIG B time code as set forth in IEEE 1344 (see page 52 of this catalog). The 27 control function bits provided by the input IRIG B time code are output in the generated IRIG B time code one time frame after received. If the input IEEE 1344 bits are not present in the input IRIG B time code, the last two digits of year are placed in bits 1-9 of the control function field of the generated IRIG B time code.

Timing Functions
- Heartbeat Clock (TTL, 50Ω): Programmable Periodic, <1 Hz to 250 kHz
- Time Strobe (TTL, 50Ω): Programmable
- Event Capture (TTL, 50Ω): 100 nSec resolution, zero latency
- 1 PPS Pulse Rate (TTL, 50Ω): Positive edge on-time

Disciplined Oscillator
- Frequency: 10 MHz
- Outputs: 1, 5, or 10 MHz (selectable)
- Rate Stability: 5E-8 short term ‘tracking’
- 5E-7 /day long term ‘flywheeling’
- Sync Sources: GPS, Time Code, 1 PPS, 10 MHz

PCI Local Bus™
- Size: Standard (2.913” x 5.866”)
- Stacking Height: 10 mm
- Device Type: PCI Target, 32 bit, 5V signalling
- Data Transfer: Byte, Half Word, Word
- Interrupt Levels: Automatically Assigned (PnP)
- Power: +5 VDC @ 350 mA

GPS Subsystem (bc637PMC only)
- Time Accuracy: <1 µSecond
- Position Accuracy: 10 to 20 meters SEP (SA off)
- 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 minutes
- Solution Modes: 1, 3, and 4 satellites

Connector Types
- J1 - GPS Interface: 9-pin micro ‘DP’
- J2 - Time Code In: SMB socket
- J3 - Time Code Out: SMB socket
- J4 - Module I/O: 15-pin micro ‘DP’

Environment
- Temperature: Module: 0º C to 70º C, Ant/Rcvr: -40º C to 70º C
- Humidity: Operating: 5% to 95%* 95%
- *non-condensing

Options
- ACUTIME GPS Firmware**
- ACUTIME Antenna/Receiver**
- Extended Length GPS Antenna Cable
- Isolated Transformer Time Code Input
- ‘D’ Connector (J1) to BNC Adapter
- 15 pin high-density ‘DP’ to 15 pin ‘DP’ Adapter Cable
- Drivers: Windows 95/98/2000/XP, and Linux LabVIEW, Solaris, VxWorks
- Contact factory for additional driver support
- **part of upgrade from bc635PMC to bc637PMC