Symmetricom

bc635VME & bc637VME

VME Time & Frequency Processors

KEY FEATURES

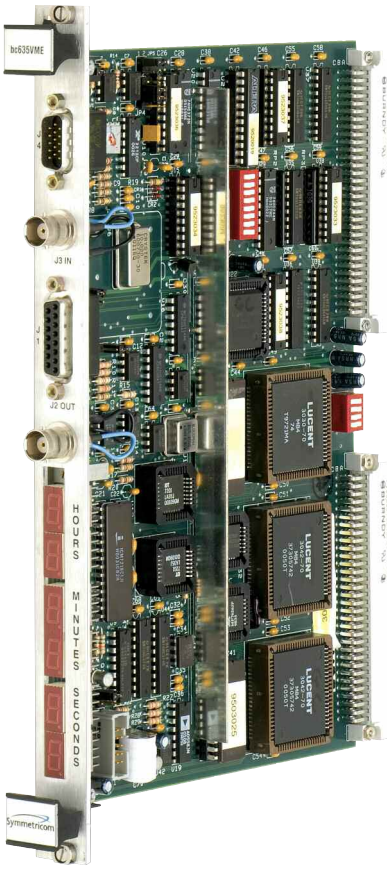
- 6U, Single Width VME
- GPS or Time Code Inputs
- Time Code Output
- 1 PPS Pulse Rate Output/Interrupt
- Frequency Outputs (1, 5, 10 MHz)
- External Event Capture/Interrupt
- Programmable Periodic Output/Interrupt
- Programmable Time Strobe Output/Interrupt
- Battery Backed Clock
- Extensive Driver Support

Symmetricom's bc635/637VME 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 (bc637VME only) or from time code signals, typically IRIG B. Integration of the module is facilitated with drivers for several operating systems (see software). Time is displayed on the front panel (hours, minutes, seconds) via LED digits.

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). If power is lost, a +/-10 PPM battery backed clock is available to maintain time.

Both time code generation and translation are supported. The generator supplies IRIG B or IRIG H time code output that is synchronized to the input time source. The translator decodes IRIG B, 2137 or XR3 time code inputs.

An event time capture feature provides a means of latching the time of an event input and/or generating a bus interrupt that is coincident with an external TTL pulse. The module can also be programmed to generate a periodic pulse rate/interrupt as well as to generate a strobe/interrupt at a single predetermined time.



bc635VME Time & Frequency Processor

bc635/637VME SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

- Real time clock

Bus request resolution:	100 nanoseconds
Bus request latency:	Zero
Major time format:	Binary or BCD
Minor time format:	Binary

- Time code translator

Time code formats:	IRIG B (modulated or DCLS) IRIG A (DCLS only) XR3, 2137 (modulated only)
Modulation ratio:	3:1 to 6:1
Input amplitude:	500 mV to 5 V P-P
Input impedance:	>10KΩ (AC coupled)

- Time code generator

Time code format:	IRIG B (modulated or DCLS) IRIG H (DCLS only)
Modulation ratio:	3:1
Output amplitude:	0 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
Time strobe (TTL, 50Ω):	Programmable, 1mS through hrs
Event capture (TTL, 50Ω):	100 nS resolution, zero latency
1PPS pulse rate (TTL, 50Ω):	Positive edge on-time

- Disciplined oscillator

Frequency:	10 MHz
Outputs (50):	1, 5, or 10 MHz (selectable)
Rate accuracy	
Standard VCXO:	5.0E-8 short term (tracking) 5.0E-7/day long term (flywheeling)
Optional oven oscillator:	2.0E-9 short term (tracking) 5.0E-8/day long term (flywheeling)
Sync sources:	GPS, time code, 1 PPS, 10 MHz

- VME Bus

Size:	6Ux160 mm; B size, single width
Address space:	A16, AM codes $29 and $2D, 64 bytes
Data transfer:	D16
Interrupter:	D08(O), I(1-7), ROAK
Power:	+5 VDC @ 1.5 A +12 VDC @ 50 mA +12 VDC @ 250 mA (GPS) -12 VDC @ 30 mA

- GPS Subsystem (bc637VME only)

Time accuracy:	<±1 microsecond
Position accuracy:	10 to 20 meters SEP
Maximum velocity:	300 meters/second (1,080 KPH)
Number of channels:	8
Receiver frequency:	1.757 GHz (L1, C/A code)
Time to first fix:	Brief power off: 1.5 min. (1, 3 and 4 satellites)
Solution modes:	1, 3 and 4 satellites

- Environment

Temperature	Module	Ant/Rec
Operating:	0°C to 70°C	-30°C to +70°C
Storage:	-50°C to 125°C	-55°C to +100°C
Humidity		
Operating:	5% to 95%* *non-condensing	95%

SOFTWARE

Customer Source Software drivers available for download at www.symmetricom.com, various operating systems available.

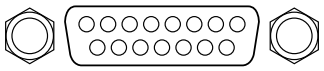
OPTIONS

- Antenna cables, bc637 only[1]
- Isolation transformer time code input
- Ovenized crystal oscillator
- 'D' connector (J1) to BNC adapter

[1] includes GPS antenna/receiver and 50' (15 m) cable; contact factory regarding longer cabling requirements

- Connectors

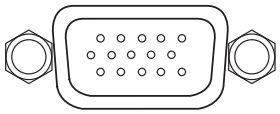
J1 Timing I/O: 15-pin 'DS'



Pin	Direction	Signal
1	Input/Output	External 10MHz Input or Ovenized Oscillator Output*
2		Ground
3	Output	Strobe
4	Output	1 PPS
5	Output	Time Code (AM)
6	Input	External Event
7	Input	Time Code
8		Time Code Return/Ground
9	Output	Oscillator Control Output
10		Not Used
11	Output	Time Code (DCLS)
12		Ground
13	Output	1,5,10 MHz
14	Input	External 1 PPS
15	Output	Periodics

* Pin 1 is an output when the optional ovenized oscillator is installed.

J2 Out Time Code: BNC
J3 In Time Code: BNC
J4 Timing I/O: 15-pin 'DP'



Pin	Direction	Signal
1	Input	RS-422 Rx(+)
2	Input	RS-422 Rx(-)
3	Output	RS-422 Tx(+)
4	Output	RS-422 Tx(-)
5		Ground
6		Not Used
7	Output	GPS 1PPS**
8	Input	GPS RS-422 1PPS+**
9	Input	GPS RS-422 1PPS-**
10		Ground
11	Output	GPS RS-422 Tx(-)**
12	Output	GPS RS-422 Tx(+)**
13		Not Used
14		Ground
15	Output	1GPS +12 VDC**

** GPS timing functions found in the bc637VME model. See manual for full details.

Complete specifications can be found in the manual located at http://www.symmetricom.com

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