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Symmetricom

Model VME-SG 2

VME Plug-In Card Synchronized Generator

KEY FEATURES

- Synchronize to external IRIG or use as standalone generator
- BCD time, microseconds through years
- IRIG-B and 1 PPS outputs
- Time compare output
- External event input

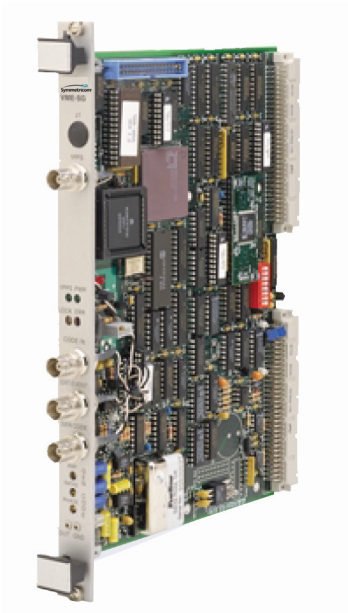
The VME-SG 2 is a 6U, VME-compatible circuit card that supplies precise time to a VME-based computer. Time and status information is available to the VME computer bus in five packed, 16-bit, BCD words. On-board DIP switches select the memory address space where the board resides.

Two independent time-freeze registers provide time on request from the VME bus, or in response to an externally generated pulse. The rate generator can be configured to output a pulse and produce interrupts at selected intervals. Four independently programmable interrupts are available and each has software-selectable priority. The dual time compare feature can generate output pulses and interrupts with microsecond resolution. In the stand-alone mode, generator time is preset and started and stopped under software control.

The IRIG-B code generator provides the capability to generate and output both 1 kHz amplitude modulated IRIG-B and IRIG-B using RS-422 levels. This feature enables the VME-SG 2 to supply timing to remote displays, tape recorders, and other code equipment in locations where IRIG-B is not otherwise available.

The front panel display option provides time, date, position, and operational status. The display consists of four lines of high-intensity LED alphanumeric characters and a push-button select switch. This option requires a 2-wide card.

If a long cable run is required between a VME master and slave, the RS-422 IRIG-B synchronized generator mode provides excellent time transfer accuracy.



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VME-SG 2 Specifications

SYNCHRONIZED GENERATOR MODE

- Analog Input Code: IRIG-B
  - Ratio: 2:1 to 5:1
  - Amplitude: 0.5 to 10 Vpp
  - Impedance: 10k ohms to GND
  - Timing Accuracy: 1 microsecond to input code
  - Connector: BNC and P2
- DC Shift Input Codes:
  - Levels: TTL or RS-422
  - Timing Accuracy: 1 microsecond to input code
  - Connector: BNC and P2
- Error Bypass: 3 frames

STAND-ALONE GENERATOR MODE

Generator time may be started, stopped, and preset to within 1 millisecond.

GENERAL SPECIFICATIONS

- IRIG-B Serial-Code Output (Analog):
  - Amplitude: Adjustable 0 V to 10 Vpp
  - Impedance: 10k ohms to ground
  - Ratio: Adjustable 2:1 to 5:1
  - Connector: Front panel BNC, P2
- IRIG-B Serial Code Outputs:
  - Levels: TTL or RS-422
  - Connector: Both signals on P2 connector
- Oscillator:
  - Accuracy: Disciplines to input code to 1x10-8
  - Stability: 1 PPM, 0°C to +50°C
- 1 PPS Pulse Rate:
  - Level: 0 V, 5 V @ ±6 mA
  - Timing: Positive going on time
  - Duty Cycle: 20%
- Leap Year: Calculated automatically using year information
- Programmable Pulse Rate Output:
  - Rates: Configured to produce interrupt and freeze time at selected rates (1 PPS, 10 PPS, 100 PPS, 1 kPPS, 10 kPPS)
  - Timing: Positive going
  - Level: 0 V, 5 V @ ±6 mA
  - Connector: P2
- External Event Input:
  - Edge: Selectable rising or falling
  - Input Voltage: 0 V low, 2.5 to 5 Vdc high
  - Input Impedance: 4.7k ohms to 5 Vdc
  - Connector: BNC or P2
  - Resolution: Days through microseconds
- External Generator Start Input:
  - Timing: Selectable positive or negative edge
  - Level: 0 V, 5 Vdc
  - Impedance: 4.7k ohms
  - Connector: P2
- Dual Time Compare Output:
  - Outputs a pulse at the programmed compare time #1
  - Outputs a pulse at the programmed compare time #2
  - Resolution: Hundreds of days through microseconds
  - Pulse Width: Two milliseconds
  - Compare Mask: Days through milliseconds
  - Outputs: On P2 connector
  - Level: Positive going at the respective compare time

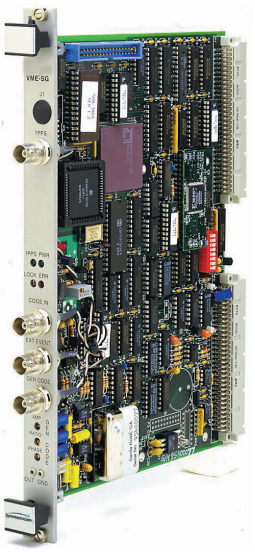
CONTROLS

The VME-SG 2 is configured as an A16/D16 slave board responding to the Address Modifier codes hex 29 (short nonprivileged) and hex 2D (short supervisory). The VME-SG 2 can be memory mapped on any 256-byte boundary of the VME bus short address space using the 8-position DIP switch located on the board.

- Data Format: Time of year and status are supplied to the VME bus in five packed, 16-bit, BCD words as follows:
  - Word 1 - Umsec Hμsec Tμsec Uμsec
  - Word 2 - Tsec Usec Hmsec Tmsec
  - Word 3 - Thours Uhours Tmin Umin
  - Word 4 - Status Hdays Tdays Udays
  - Word 5 - THyear Hyear Tyear Uyear
- Access Time: Falling edge of /DSA to falling edge of /DTAK is 400 ns
- Interrupts: Each of the four independent interrupts can be configured to any of the seven priority levels. Available interrupt sources are:
  - INT0 - External event
  - INT1 - Programmed rate generator
  - INT2 - Programmed compare time #1
  - INT3 - Programmed compare time #2
- Indicator LEDs: Phase lock and error status 1 PPS and power.

MECHANICAL/ENVIRONMENTAL

- Power: 5 V @ 1A (1.2 A with optional display)
  - 12 V @ 50 mA
  - -12 V @ 50 mA
- Size: Standard VME single-wide board (6U)
- Operating Temperature: 0°C to +50°C
- Storage Temperature: -17°C to +85°C
- Humidity: To 95%, noncondensing
- Certification: CE



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