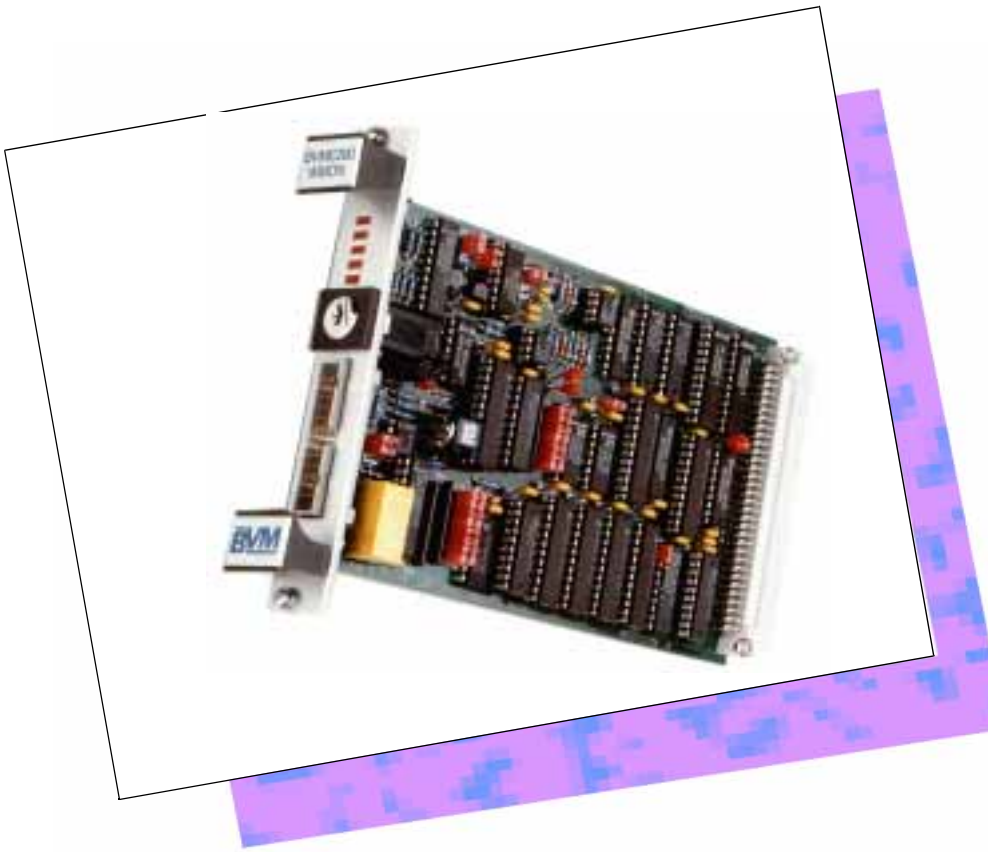
BVME290

Watchdog Timer/System Monitor

- Power line monitor for:
  +5Volt
  ±12V
  +5V STANDBY (Battery)
- Variable time user enabled Watchdog 100mS, 1S, 10S, 60S nominal
- SYSRESET driver for watchdog alarm
- SYSFAIL monitor/driver
- ACFAIL monitor
- 2 output alarm relay contacts
- Individual alarm interrupt enable for each alarm conditions
- 8 external alarm inputs from clean volt free contacts to open during alarm state.
- 16 bit register holding alarm status of each alarm condition
- Optional Interrupt level 7 vectored or autovectored request on all alarms
- Battery backup feeding +5VSTANDBY
- LED alarm indicators for:
  ACFAIL
  SYSFAIL
  Watchdog Timeout
  Power Lines
  External Alarm
- Enable/Disable Keyswitch
- +5V Current limited supply
- Single 3U form factor (6U Optional)

The BVME290 is a compact (3U) VMEbus watchdog and system monitor module, with a fully compliant slave interrupter interface. It observes the +5V, +12V and -12V power lines and the +5VSTANDBY line or the Battery Voltage (all are interrupt link selectable) and can generate an alarm if they fall below VMEbus specified levels.



An on board rechargeable Ni-cad provides the facility of battery backup, which feeds the VMEbus +5V standby line during power down. The watchdog is user enabled in software by writing to the watchdog register. Once initialised the watchdog must be written to within a link selectable timescale of 100mS, 1S, 10S or 60S. Failure to write to the watchdog register in the set time will cause an alarm.

The BVME290 can also monitor up to 8 external alarms in addition to ACFAIL and SYSFAIL. The SYSFAIL signal can also be driven during an alarm state if it is not being monitored. An alarm condition de-energises the output relay and can cause one of the following conditions to occur; SYSFAIL signal generated, Autovectored Interrupt level 7, Vectored Interrupt level 7 or SYSRESET generation (watchdog).

BVME290

VMEbus Operation

The five registers of the BVME290 are located in the 256 bytes of short I/O address space. Current Status, Interrupt status, Watchdog refresh, Interrupt Vector and Interrupt Enable are all 16 bit registers. Data in the Interrupt status register is held until that register is read, preventing a second interrupt from overwriting the initial interrupt register setting.

The BVME290 supports address pipelining operation. VMEbus read data is held independently of the VMEbus address strobe, VMEAS. Address pipelining allows the current master CPU to finish driving the address bus and remove address strobe, when given data acknowledge, before it has indicated data transfer is complete by removing its data strobes.

This allows subsequent bus masters to start driving the address bus before the previous master has retrieved its data. Thus the address and data are allowed to overlay speeding up read cycles in multiple master VMEbus systems.

The BVME290 connects all the bus grant IN signals to bus grant OUT signals. This maintains full compatibility with other VMEbus modules that require use of these daisy chained signals when inserted to the right of the BVME290 module.

Interrupts

The BVME290 can be configured to interrupt on an alarm condition. The interrupt ID vector register can be programmed to suit the application of the alarmed device. By reading the interrupt status register it is possible to poll the interrupting signal. The BVME290 is designed to interrupt on interrupt level 7 vectored or autovectored. Any alarm which occurs during an interrupt service routine is stored until it is possible to raise another interrupt request. The stored interrupt is prioritised and therefore the next interrupt call will come from the highest priority interrupt, not necessarily the first alarm to request. The Interrupt request from a certain alarm remains valid until the alarm is rectified. The interrupt operates on release on Register Access mode (RORA).

LED Indication

The BVME290 has five red LED indicators which enable the user to monitor the alarm status:

PWR
Illuminates if +5V, +12V, -12V and +5V STDBY or Battery power lines have caused an alarm.

WDOG
Illuminates if the processor watchdog times out.

AC
Illuminates if the monitored ACFAIL line causes an alarm.

SYS
Illuminates if the monitored SYSFAIL line causes an alarm.

EXT
Illuminates if any of the external Link selected interrupts cause an alarm

Enable Switch

The enable switch is a 2 position keyswitch:

DISABLE
In this position the relays are de-energised, alarm interrupts are disabled, SYSFAIL and SYSRESET will not be driven and the watchdog cannot produce an alarm if it should timeout. This position can also be used for software testing purposes.

ENABLE
In this position the relays are energised, alarm interrupts are enabled, SYSFAIL and SYSRESET can be driven and the watchdog can cause an alarm if a timeout occurs. Should the watchdog have timed out whilst in the disable mode, the watchdog will alarm when the key is switched to enable. This is the normal running position.

Specifications

VMEbus Slave
A16:D16,D8(OE)
AM6
RMW

Interrupter
RORA I(7)Single Level
SYSRESET Monitor/Driver
SYSFAIL Monitor/Driver
ACFAIL Monitor

Registers
Interrupt Vector register
Interrupt Enable register
Interrupt Status register
Alarm Status register
Watchdog Refresh register

Links
+5V standby enable
SYSFAIL monitor/driver
ACFAIL monitor
Interrupt on alarm
Watchdog Period
Output Relay contact select
Output alarm disable
+5V standby or Battery voltage monitor

LED Indicators
PWR: One of the power rails failed
WDOG: Watchdog timed out
AC: ACFAIL alarmed
SYS: SYSFAIL alarmed
EXT: External Alarm

Keyswitch
DISABLE/ENABLE

Relay contacts
2 contacts 2A @ 30V dc, or 1A @ 250Vac

Dimensions
160mm x 100mm 3U Single Slot

Voltage monitoring
+5V: +4.875V nom. trigger level
+12V: +11.64V nom. trigger level
-12V: -11.64V nom. trigger level
+5VSTDBY/Battery +3.3V nom. trigger

Power Requirements
+5V 1.6A typ. (+ 0.5A max. external)
±12V Negligible

Battery
3.6V 100mAh Nickel cadmium

Environmental
0 to 70°C
5 to 95% humidity non-condensing

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