P104-WDG-CSMA
PC/104-Plus Watchdog Timer Board

ACCES I/O PRODUCTS, INC.

AVAILABLE FEATURES
- PC/104-Plus Watchdog Timer card with software selectable timeout from 4 μsec
- Watchdog open collector reset outputs
- Temperature sensor with calibration pot
- Temperature monitor / alarm
- Temperature measurement with 8-bit A/D
- Fan status and speed control
- PCI/104 power monitor / limit alarm interrupt
- Opto-isolated input to trigger reset
- General purpose opto-isolated input
- Two isolated outputs, current limited
- TTL reset pushbutton input
- Two general purpose 8-bit A/D inputs
- External fused 5V and 12V power
- Light sensor for enclosure security
- Supported in DOS, Windows, Linux
- PC/104 bus pass through connector

FACTORY OPTIONS
- PCI-104 only
- Extended Temperature

FUNCTIONAL DESCRIPTION

This multifunction card contains a watchdog timer used to monitor the operation of your application program and operating system to initiate a system reset in case of a lockup. It can also monitor and control a variety of system hardware parameters. Three models with increasing features are available.

P104-WDG-E
Economy version which includes the full programmable watchdog timer with open collector outputs that can reset the computer. This requires your application program to have embedded watchdog software code that communicates a prompt to the timer. If this prompt is missed, a hard computer reset is initiated after the user programmed watchdog timer period has been reached. This is valuable where the lock up of the application is due to being in a software loop where some hardware watchdogs cannot detect.
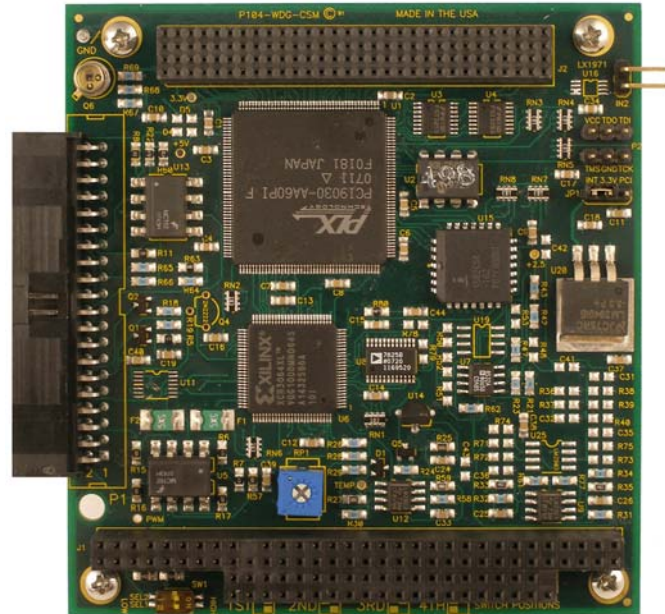
P104-WDG-CSM
The Computer Status Monitor (CSM) version includes features in the economy model and adds capability to monitor the health and control various computer functions. The PCI-Bus 5V and +/-12V are monitored and if any voltage varies by more than 6%, an interrupt can be generated. The temperature monitor compares an on-board temperature sensor output to a preset reference (approximately 50°C). A status register indicates normal or high temperature and can also generate an interrupt. The temperature measurement circuit uses an on-board 8-bit A/D as the digitizer. This model also provides one general-purpose opto-isolated input. Two digital isolated outputs are provided to control/switch external events in response to CSM conditions. In parallel to these two isolated outputs are two non-isolated digital outputs that can sink/source up to 15mA and can drive LEDs to indicate the switched event of the isolated outputs or simply output to another device the same digital state. A fused 5V external power pin is provided to bias external LEDs when used with non-isolated digital outputs. A push button reset input is also provided to directly initiate a system reset.
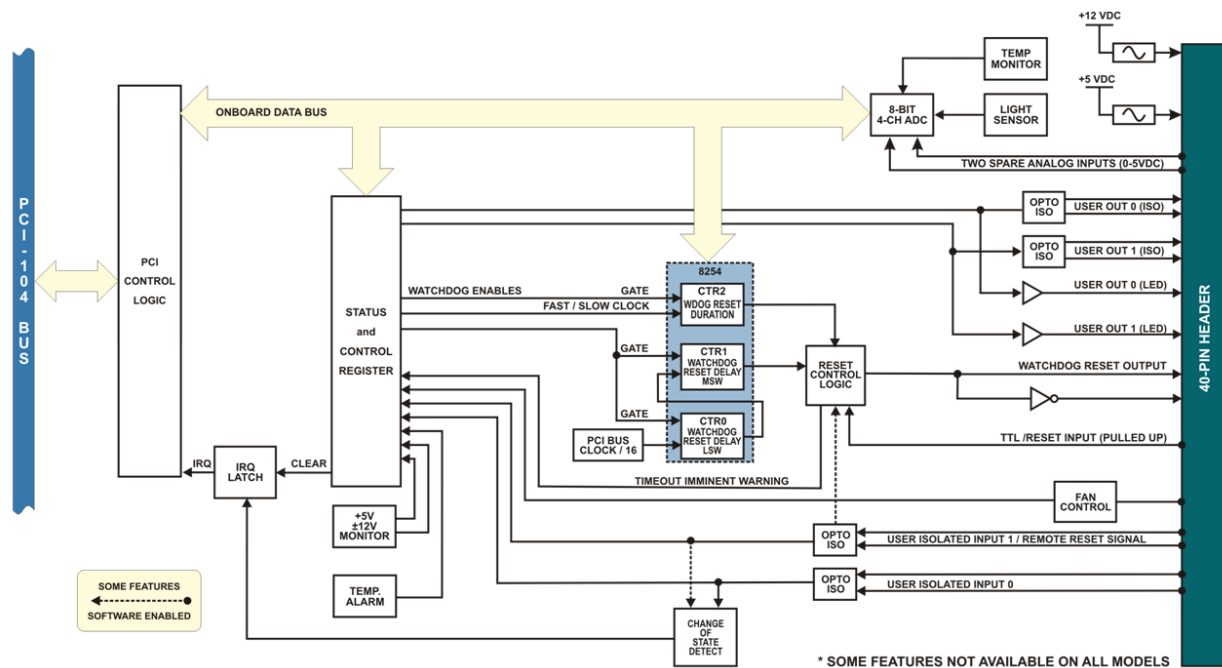
P104-WDG-CSMA
This advanced version builds on the P104-WDG-CSM but has all available features populated. Two undedicated 8-bit A/D (Analog Inputs) with a 0-5V range can be used to measure critical system parameters such as battery voltage or humidity. The fan speed control can be used in conjunction with the temperature monitor to maintain internal temperatures in the enclosure. The duty cycle of fan power (+12V) is pulse-width modulated to speed up the fan when temperature increases. If no current is detected or the duty cycle reaches 100%, an interrupt occurs. Another advanced feature is a Security Light Sensor used to detect if a darkened interior of the enclosure is opened letting in light. An external remote reset through a dedicated opto-isolated digital input is provided that can allow any transition between 3-18V to reset the computer. This reset could be triggered remotely from an RS-232 signal transition if available. Finally, additional fused 5V and 12V pins are provided on I/O connector for powering external circuitry or devices.

Software
Sample programs and source code in "C" and Pascal for DOS, and Visual Basic, Delphi and Visual C++ for Windows on CD ships with the hardware you order. Also incorporated for the P104-WDG-CSM is support for use in most operating systems and includes a DOS, Linux, and Windows 2000/XP/VISTA compatible software package. Third party support for watchdog timer consists of a standard dll interface usable from most popular application programs. Linux support consists of installation files and basic samples for programming from user level via an open source kernel driver.

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BLOCK DIAGRAM

SPECIFICATIONS

Watchdog Timer
Time-out: Software selectable 4 usec to 2060 sec
Clock: 2.08333 MHz., derived from computer clock (33 MHz ÷ 16)
Address: 8-Bit I/O Mapped

Status Register
Voltages: If +5V, +12V or -12V varies more than +/- 6%
Temp Alarm: IRQ and status register indication if temperature is above 122°F (50°C)
Digitizer: 8- bit ADC, LSB = 0.7°F (0.39° C)
Fan Speed: IRQ and Status register indication if speed is too high or two low

Digital Outputs
Isolated: Two, 5V through a 330 Ω resistor
Non-Isolated: Two, controlled with isolated outputs to drive LED (up to 15mA sink/source)
Reset: One active low open collector
One active high with 1k pull-up
Fan Pulse: 120 nsec. min., 31 msec. max.

Digital Inputs
Isolated: Two, limited through a 330 Ω resistor, One dedicated RESET input, One general purpose available

ORDERING GUIDE / P1 Connector Configurations
P104-WDG-E   4-pin right-angle 2x2 header (9-12)
P104-WDG-CSM   4-pin as above plus;
6-pin right-angle 2x3 header (1-6)
2-pin rt-angle 1x2 header (15-16)
10-pin rt-angle 2x5 header (25-34)
P104-WDG-CSMA   40-pin rt-angle shrouded 2x20 hdr JP2, Reset Isolated Input, 2-pin right-angle header with 0.1" spacing

Environmental
Operating Temp: 0° to +70°C (optional -40 to +85°C)
Storage Temp: -50°C to +120°C

Humidity: 10% to 90% RH, non-condensing
Power: +5VDC @ 125mA typical

ACCESSORIES
Ribbon Cables, Screw Terminal Panels and Splice Connectors are standard available accessories. Depending on your application you may need something special so give us a call and one of our application specialists will work with you to find the best possible solution.

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