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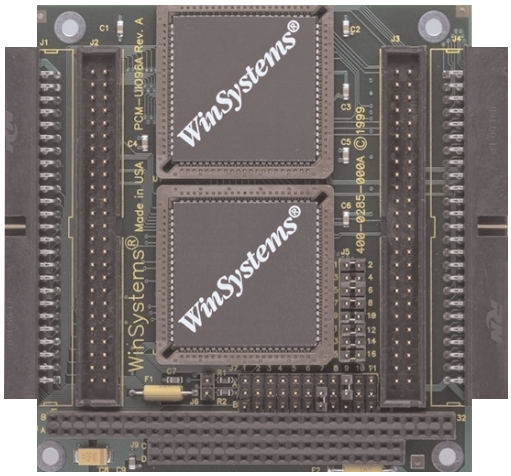
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WinSystems®
PC/104 MODULE

PCM-UIO96A
Universal 96-Point I/O with Interruptible Event Sense

FEATURES

- Supports 96 digital I/O lines
- Each line is capable of:
  - Bidirectional Operation
  - Input, Output or Output with Read back
  - 12mA Sink Current
- Generates an interrupt on signal change-of-state:
  - Supports 48 event sense lines
  - Software selectable edge polarity for each line
  - Software enabled interrupt for each line
  - Change-of-state latched for each line
- Write-protection mask register for each 8-bit port
- Compatible with industry standard I/O racks
- Fused +5V logic supply for I/O modules
- 16-bit PC/104 interface
- +5 volt only operation
- Extended temperature range: -40ºC to +85ºC
- Replaces two PCM-UIO48A modules



The PCM-UIO96A is a highly versatile PC/104 input/output module. One important feature of this card is its ability to monitor 48 of the 96 lines for both rising and falling digital edge transitions, latch them and then interrupt the host processor notifying that a change-of-input status has occurred. This is an efficient way of signaling the CPU of real-time events without the burden of polling the digital I/O points.

This PC/104 module is also compatible with industry standard isolated I/O signal conditioning modules from Opto-22, Gordos and others.

FUNCTIONAL CAPABILITY

PC/104 Interface - The PCM-UIO96A is a PC/104 compatible stackthrough card which is I/O port mapped on any even 32-byte boundary.

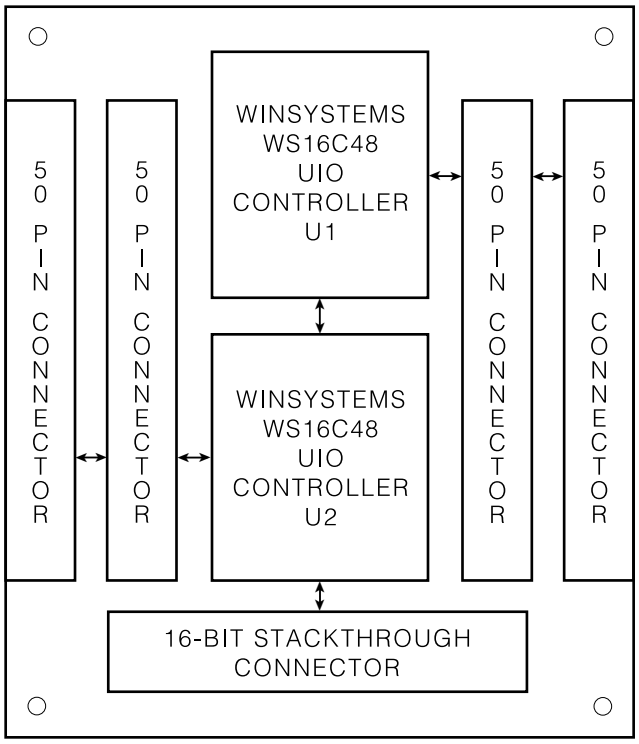
Parallel I/O Controller - WinSystems has designed the WS16C48 Universal I/O controller ASIC to support the various input/output and interrupt configurations. A WS16C48 supports 48 digital I/O lines addressed through 6 contiguous registers as ports P0-P5. A six bit Write Mask register allows the user to disable Writes on a byte basis to configure the group as a "Read Only" port. Two WS16C48 chips are on the PCM-UIO96A.

Each I/O line is individually programmable for input, output, or output with Read back operation. The input lines are connected so the current status of its output port can be read from the corresponding input port (Read back). If the port is used as input only, then the corresponding output port bit must be cleared. Each output channel is latched and has an open collector driver (with a pull-up resistor) capable of sinking 12mA of current. This allows direct control of up to 96 opto-isolated signal conditioning modules to a single card for high-density I/O support.

Event Sense Operation - Each WS16C48 ASIC supports event sense lines which can generate an interrupt when an event occurs. These lines are the first three I/O ports on the chip, P0-P2. Since two WS16C48s are onboard, the PCM-UIO96A can sense a positive or negative transition on up to 48 lines. Transition polarity is programmable and enabled on a bit-by-bit basis. Each lines' transition is latched by the event so that even short duration pulses will be recognized. An interrupt ID register is maintained for each line for writing more efficient Interrupt Service Routines.

Interrupts - The PCM-UIO96A can generate a system interrupt request which can be routed via a jumper block to IRQ channels 2 - 7, 10 - 12, 14, and 15. Both WS16C48s can generate an individual interrupt; however, the interrupt requests from both chips can also be OR'ed together.

I/O Connectors - The signals from each WS16C48 are wired to two 50-pin connectors. The 24 lines capable of event sense operation from ports P0-P2 are wired to J1 from the first WS16C48 and J4 from the second WS16C48 chip. The other bi-directional I/O ports P3-P5 are wired to J2 and J3 respectively.



PCM-UIO96A BLOCK DIAGRAM

J1 and J4		J2 and J3	
Pin	Description	Pin	Description
1	P2-7	1	P5-7
3	P2-6	3	P5-6
5	P2-5	5	P5-5
7	P2-4	7	P5-4
9	P2-3	9	P5-3
11	P2-2	11	P5-2
13	P2-1	13	P5-1
15	P2-0	15	P5-0
17	P1-7	17	P4-7
19	P1-6	19	P4-6
21	P1-5	21	P4-5
23	P1-4	23	P4-4
25	P1-3	25	P4-3
27	P1-2	27	P4-2
29	P1-1	29	P4-1
31	P1-0	31	P4-0
33	P0-7	33	P3-7
35	P0-6	35	P3-6
37	P0-5	37	P3-5
39	P0-4	39	P3-4
41	P0-3	41	P3-3
43	P0-2	43	P3-2
45	P0-1	45	P3-1
47	P0-0	47	P3-0
49	+5V	49	+5V
Even	Ground	Even	Ground

Rack I/O Connector Pin-Out

Each connector supports 48 data lines which are alternated with 48 ground lines for reduced noise and crosstalk. Also, each connector has a 1A fuse on the +5 volt source to supply logic power for I/O module rack.

The PCM-UIO96A's pinout is compatible with the industry standard 4 to 24 position I/O module mounting racks (Opto-22, Crydom, Gordos, etc.). The racks accept AC and DC modules which optically isolate the computer from electrical transients and excessive voltages from the field devices. Four foot, 50-pin conductor ribbon cables such as the WinSystems' CBL-115-4 and CBL-129-4 connects the PCM-UIO96A to one I/O rack. The cable will interface directly to a 4, 8, 16 or 24 module rack.

Software - Sample I/O routines written in C are provided free of charge as a basic library of I/O functions or as a basis to write application specific code. The source code is provided as well.

SPECIFICATIONS

Electrical
PC/104 Bus: 16-bit stackthrough
Parallel Interface: 96 I/O lines, TTL compatible

Power Requirements
Vcc = +5V ±5% at 24mA (excluding rack power with no loads on the outputs)

Mechanical
Dimensions: 3.6" x 3.8" (90mm x 96mm)

Connectors
Digital I/O: J1 and J4, 50-pin right angle on 0.100"grid
J2 and J3, 50-pin dual 0.100" grid
Jumpers: 0.025" square posts

Environmental
Operating Temperature: -40°C to +85°C
Non-condensing relative humidity: 5% to 95%

ORDERING INFORMATION

PCM-UIO96A-16	96 Channel universal I/O module
CBL-115-4	4 ft. ribbon to Opto module rack, 50-pin socket on one end and card edge termination on the other.
CBL-129-4	4 ft. ribbon cable, 50-pin. Both end with 50-pin socket termination.

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