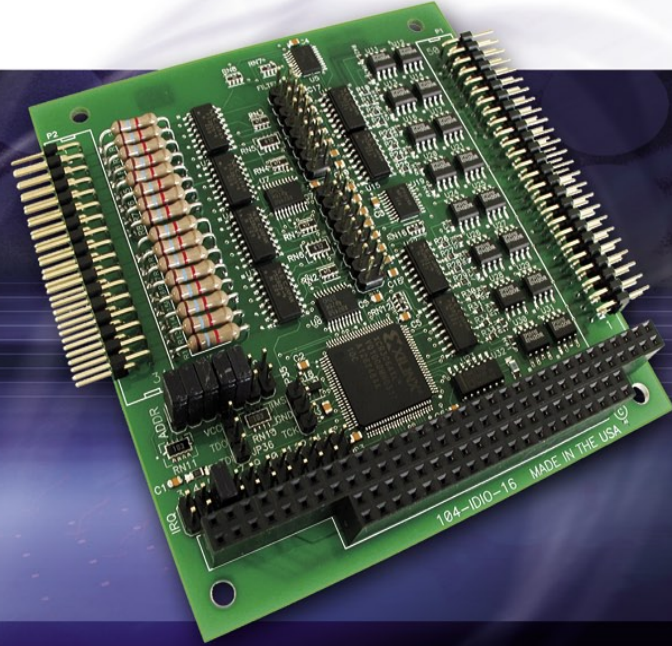


104-IDIO-16 &  
104-IDIO-8

32- or 16-Channel  
**PC/104 OPTICALLY ISOLATED  
DIGITAL I/O WITH COS**



**KEY FEATURES:**

- 16 or 8 optically-isolated, non-polarized CMOS compatible digital inputs accept  $\pm 31\text{VDC}$  or AC rms
- IRQ on input change of state (COS) eliminates the need for constant polling
- Slow/fast filter to accommodate AC voltages and noisy DC inputs
- 16 or 8 optically-isolated fully protected high-current solid state outputs

**FACTORY OPTIONS:**

- 0 to 70°C and -40 to +85°C versions available
- Economy versions without COS feature
- Outputs only versions
- Expanded input voltage levels

The 104-IDIO-16 is a low cost 32-channel PC/104 utility board featuring 16 optically isolated inputs and 16 optically isolated solid state outputs. The isolated, non-polarized inputs may be driven by either DC sources of 3-31V (or higher by special order) or AC sources at frequencies of 40Hz to 10KHz. Optically isolating the digital inputs from each other and from the computer assures smooth, error-free data transmission in noisy, real-world environments. The 16 input channels are available via a 34-pin IDC type header. The fully protected solid state outputs, capable of driving 1A each, are inherently more reliable than electromechanical relays and give system architects a more robust product to design with. The solid state outputs are available via a 50 pin IDC type header.

Each input circuit includes a jumper selectable slow/fast filter to accommodate AC inputs and is also useful for slow DC inputs in noisy environments. The filter may be manually disabled to increase the board's typical response time to 10 $\mu\text{s}$  when used with faster DC inputs. The input impedance is 1.8K Ohms to accommodate a wide input range.

The board is installed by jumper selecting base addresses and IRQ. System interrupts are software controlled, enabling the board to generate an interrupt whenever one or more of the isolated digital inputs changes state. This eliminates the need for constant polling and greatly frees up system resources. Models 104-IDIO-16E and -8E are economy versions available without the interrupt Change of State Detection feature. Models 104-IDIO-16 and -8 feature 16 or 8 isolated digital outputs only.

**SOFTWARE**

The 104-IDIO-16 Series are supported for use in most operating systems and include a free DOS, Linux and Windows 95/98/Me/NT/2000/XP/2003 compatible software package. This includes sample programs and source code in "C" and Pascal for DOS, and Visual Basic, Delphi, C++ Builder, and Visual C++ for Windows. Also included is a graphical setup program in Windows. Embedded OS support includes Windows XPe and CE. Linux support includes installation files and basic samples for programming from any user level via an open source kernel driver.

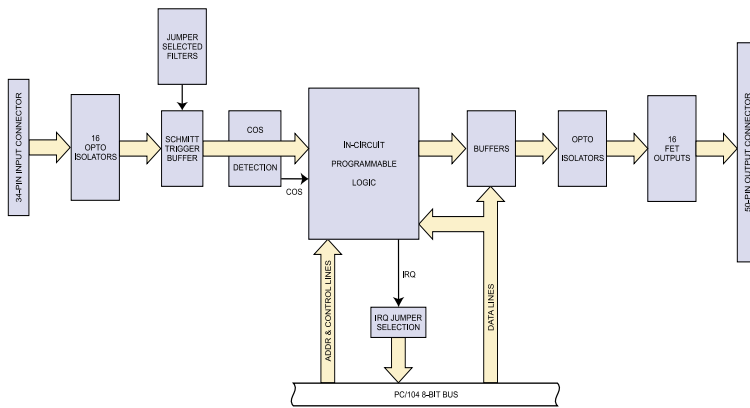


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104-IDIO-16 &  
104-IDIO-8

32- or 16-Channel  
**PC/104 OPTICALLY ISOLATED  
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**Block Diagram & Pin Configuration**



**ISOLATED OUTPUTS**

VBB15	01	02	OUT15-
OUT15+	03	04	VBB14
OUT14-	05	06	OUT14+
VBB13	07	08	OUT13-
OUT13+	09	10	VBB12
OUT12-	11	12	OUT12+
VBB11	13	14	OUT11-
OUT11+	15	16	VBB10
OUT10-	17	18	OUT10+
VBB9	19	20	OUT9-
OUT9+	21	22	VBB8
OUT8-	23	24	OUT8+
NC	25	26	NC
VBB7	27	28	OUT7-
OUT7+	29	30	VBB6
OUT6-	31	32	OUT6+
VBB5	33	34	OUT5-
OUT5+	35	36	VBB4
OUT4-	37	38	OUT4+
VBB3	39	40	OUT3-
OUT3+	41	42	VBB2
OUT2-	43	44	OUT2+
VBB1	45	46	OUT1-
OUT1+	47	48	VBB0
OUT0-	49	50	OUT0+

**ISOLATED INPUTS**

IIN0 A	01	02	IIN0 B
IIN1 A	03	04	IIN1 B
IIN2 A	05	06	IIN2 B
IIN3 A	07	08	IIN3 B
IIN4 A	09	10	IIN4 B
IIN5 A	11	12	IIN5 B
IIN6 A	13	14	IIN6 B
IIN7 A	15	16	IIN7 B
NC	17	18	NC
IIN8 A	19	20	IIN8 B
IIN9 A	21	22	IIN9 B
IIN10 A	23	24	IIN10 B
IIN11 A	25	26	IIN11 B
IIN12 A	27	28	IIN12 B
IIN13 A	29	30	IIN13 B
IIN14 A	31	32	IIN14 B
IIN15 A	33	34	IIN15 B

**Specifications**

**Opto-Isolated Inputs**

Inputs	16 or 8 non-polarized opto-isolated with change of state (COS) detection
Input voltage	3V to 31V DC or AC rms (40 to 10KHz)
Input impedance	1.8K Ohm
AC input filter	Independently selectable on a per-channel basis
Response time	10µs without filter, 4.7ms with filter
Isolation	Opto-Isolators specified to 500V

**General**

I/O connections	50-pin header for outputs & 34-pin header for inputs
Power required	+5VDC at 150mA (all FETs ON)
Operating temperature	0 to +70°C, optional -40 to +85°C
Storage temperature	-50 to +120°C
Humidity	5% to 95% RH, non-condensing

**Opto-Isolated Solid State Outputs**

Outputs	16 or 8, fully protected
Type	Solid state FETs
Protection features	Short-circuit, over-temperature, ESD and inductive load capability
Output voltage	5-35 VDC continuous, 50VDC max (user supplied)
Output current	1A
Current limit	5A
Rise time	7µs typ
Fall time	10µs typ

**Ordering Guide**

104-IDIO-16	32 channel opto-isolated digital I/O with change of state detection
104-IDIO-16E	As above except economy version without change of state feature
104-IDIO-8	16 channel opto-isolated digital I/O with change of state detection
104-IDIO-8E	As above except economy version without change of state feature
104-IDO-16	16 isolated digital outputs only version
104-IDO-8	8 isolated digital outputs only version



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## Assured Systems

Assured Systems is a leading technology company with over 1,500 regular clients in 80 countries, deploying over 85,000 systems to a diverse customer base in 12 years of business. We offer high-quality and innovative rugged computing, display, networking and data collection solutions to the embedded, industrial, and digital-out-of-home market sectors.

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