

PCI measurement

Overview of the digital I/O and relay output boards

The ADDI-DATA digital boards are perfectly suited for the use in industrial automation and process control engineering. They are used for industrial I/O control, signal switching, as interface of automatic test equipment, for on/off monitoring of electric consumers or as interface to machines. In this way e.g. fans, valves, pumps and electromechanical relays can be switched on. As all inputs of the digital boards comply with the industrial standard +24V for "logic" 1, a direct connection to PLC control is possible.

A broad range of products

The offer of digital input and output boards for the PCI bus is as diverse as their possible applications.

We offer:

- Digital input boards, 5 V, 24 V
- Digital I/O boards, 5 V, 24 V, TTL
- Digital output boards, 24 V
- Relay boards, 8 to 16 relays

All PCI boards can be used in 5 V systems. Some have been designed for the use in both 5 V and 3.3 V systems.

For a smooth process

Machine down-times and trouble shooting are responsible for rapidly growing project costs and time. In order to ensure the reliable use in an industrial environment, the ADDI-DATA digital I/O boards are equipped with numerous protective circuits.

Effective optical isolation

Fast transients, overvoltage and ground loops often lead to inexact measurements or to the failure of measurement equipment. Thus, all digital input and output boards are isolated via opto-couplers. There is no direct connection via copper wire or semiconductor between the input and output side of the opto-coupler. For the signal transmission there is only an optical signal path with transmitter LED and light-sensitive receiver component. The used opto-couplers protect the system against voltages up to 1000 V. The opto-couplers and the design of the printed circuit board are adjusted carefully to each other.

The creeping distance complies with IEC 61010-1, i.e. the shortest physical distance between the two potentials is at least 3.2 mm.

Numerous protective circuits

The digital input and output boards are equipped with additional different protective circuits:

- EMC filters for the protection against fast transients (burst), electrostatic discharge and high-frequency emissions.
- Protection against short-circuit, temperature and voltage reversal
- Self-resetting fuse are available in order to take the outputs automatically into operation after the cause of trouble is removed
- Free-wheeling diodes in order to derive the discharge current of inductive loads specifically.

Recognizing the states „0“ and „1“ correctly

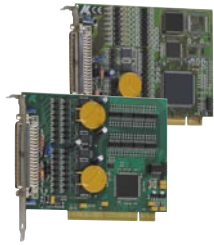
The input and output boards work with the industrial 24 V standard. Compared to the TTL level of only 5 V, the higher voltage level offers a more stable operation, even under bad conditions. Interferences that are induced into the signal lines are smaller than the wanted signal and can cause less damage, i.e. the signal-to-noise voltage ratio is bigger. In practice, this means that for example longer signal lines can be used and that the transmission near interference sources, like transformers, robots etc., is safe. The digital PCI boards interpret voltages from 0...14 V as „Low“ and voltages from 19...30 V as „High“, i.e. there is no important range that is not defined.

Switching off the danger when starting systems

In the turn-on phase, the logic components on electronic devices have different undefined intermediate states until the current supplies provide their nominal voltage.

Without special measures, it cannot be determined surely which state the output channels will take. Thus, the I/O and output board set all outputs after Power-On or Reset to „0“. This allows clear solutions when starting systems or measurements.

Overview of the digital I/O and relay output boards



	Digital I/O, 24 V				Digital input, 24 V		Digital output, 24 V		Relay board	Digital I/O, TTL
	APCI-1500 CPCI-1500	APCI-1516	APCI-1564 APCI-1564-5V	APCI-1564_3.3V	APCI-1032 APCI-1032-5	APCI-1016	APCI-2032 APCI-2032-5	APCI-2016	APCI-2200_3.3V APCI-2200	APCI-1648 APCI-1696
32-bit PCI bus	PCI 5 V / CPCI	5 V	5 V	3.3 V	5 V	5 V	5 V	5 V	3.3 V / 5 V	3.3 V / 5 V
Filters and protective circuits	✓	✓	✓		✓	✓	✓	✓	✓	✓
Input channels	16	8	32		32	16				
Optical isolation 1000 V	✓	✓	✓		✓	✓				
Interruptible input channels	14		16		16					
Nominal voltage (V) DC (V)	24 (19-30)	24 (19-30)	24 (19-26) 5 V (APCI-1564-5V)		24 (19-30) 5 V (APCI-1032-5)	24 (19-30)				
Input current at 24 VDC	6 mA	6 mA	5 mA		5 mA	6 mA				
Output channels (24 V high-side drivers)	16	8	32				32	16		48 TTL (APCI-1648) 96 TTL (APCI-1696)
Relays									8/16 relays	
Optical isolation 1000 V	✓	✓	✓		✓	✓	✓	✓	✓	
Nominal voltage (V)	24 DC (10-36)	24 DC (10-36)	24 DC (10-36) 5 V (APCI-1564-5V)				24 DC (10-36) 5 V (APCI-2032-5)	24 DC (10-36)	60 DC 48 AC	TTL
Output current (A) for one channel	0.5 ⁽¹⁾	0.5 ⁽¹⁾	0.5 ⁽¹⁾				0.5 ⁽²⁾	0.5 ⁽²⁾	1	12 LS TTL Loads
Watchdog (depth)	✓ (16-bit)	✓ (8-bit)	✓ (8-bit)				✓ (8-bit)	✓ (8-bit)	✓ (8-bit)	
Timer / Counter (depth)	3/ (16-bit)		1/3 (32-bit)							
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Software	Drivers for Windows Vista (32-bit)/XP/2000, Linux; LabVIEW™, LabWindows CVI™ + Samples. Current driver list on the web: www.addi-data.com									

(1) Limited to 3 A for all outputs, self-resetting fuse against short-circuits

(2) Limited to 2x3 A for all outputs, self-resetting fuse against short-circuits