

6-CH Quadrature Encoder and Multi-Function I/O Card





Features

- 32-bit PCI bus, plug & play
- 6-CH 32-bit industrial counter for 3 kinds of differential pulse trains:
 - A/B phase
 - •CW/CCW
 - Pulse/Direction
- 6-CH differential pulse generators up to 500 kHz
- 6-CH 32-bit position compare with interrupt function
- 6-CH 16-bit ±10 V analog output
- 6-CH 12-bit 133 kHz analog single-ended input
- 19-CH opto-isolated DI, 7-CH open collector DO
- Digital I/Os and counters are 2500 Vpc opto-isolated
- One 24-bit programmable timer with interrupt
- Auto-calibration for analog I/O
- More than 50 thread safe API functions

Software Support

■ Windows® Platform

- Available for Windows Vista (32-bit)/XP/2000
- Recommended programming environments: VB/VC++/BCB/Delphi

Linux Platform

- Redhat 9, kernel 2.4.x
- Fedora Core 3, kernel 2.6.9
- Fedora Core 4, kernel 2.6.11
- Fedora Core 5, kernel 2.6.15

Ordering Information

■ PCI-8136

6-CH quadrature encoder and multi-function I/O card

Accessories

See section 14 for more information on Accessories.

Terminal Board

■ DIN-100S-01

Terminal board with one 100-pin SCSI-II connector and DIN-rail mounting

Cable

ACL-102100-1

100-pin SCSI-II cable (mating with AMP-787082-9), 1 M

Specifications

Connectors	General Specifications	
DB9 male connector	Connectors	100-pin SCSI-type connector
Operating Temperature		DB25 female connector
Storage Temperature		DB9 male connector
Humidity	Operating Temperature	0°C to +50°C
Power Consumption Slot power supply (input): to ±5%, 900 mA (max.)	■ Storage Temperature	-20°C to +80°C
External power supply (input): +5 Vpc ±5%, 500 mA (max.) External power supply (output): +5 Vpc ±5%, 500 mA (max.) Dimension	Humidity	5% to 85%, non-condensing
External power supply (output): +5 Vpc ±5%, 500 mA (max.) Dimension 164 x 98.4 mm (L x H) Pulse Input (Industrial Counter) Number of Input Channel Pulse Command Type 32-bit counter for AB-phase, CW/CCW, Pulse/Direction 3 MHz, 2500 Vpc optical isolation Pulse Output (Industrial Generator) Number of Output Channel Analog Input Number of Channels of differential type Voltage: ±10 V Sink Current Capability Input Impedance Approximately 440 KΩ (Voltage), 120 Ω (Current) Sampling Rate 133 kHz multiplexing Analog Output Number of Channels ot output Range 10 Vy bipolar Number of Channels ot output Range 130 kHz multiplexing Analog Output Number of Channels output Range 16 output channels output Range 17 Ot 020 mA Resolution 18 Sink Current Capability Ot 020 mA Resolution 19 Sink Current Capability Ot 020 mA Resolution 10 Output Range 110 Vy bipolar Number of Channels output Range 110 Vy bipolar Number of Channels Output Range 110 Vy bipolar Sink Current Capability Ot 020 mA Resolution 16-bit DAC resolution, 14-bit accuracy guarantee 2 μs Digital Output Number of Channels Output Type Open collector Open collector Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total Isolated Voltage Throughput 10 kHz (0.1 ms) Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus	■ Power Consumption	Slot power supply (input): to ±5%, 900 mA (max.)
Dimension 164 x 98.4 mm (L x H)		External power supply (input): +5 VDC ±5%, 500 mA (max.)
Pulse Input (Industrial Counter) Number of Input Channel 6, differential type Pulse Command Type 32-bit counter for AB-phase, CW/CCW, Pulse/Direction Max. Counter Speed 3 MHz, 2500 VDC optical isolation Pulse Output (Industrial Generator) Number of Output Channel 6, differential type Pulse Command Type CW/CCW, Puls /Direction, A/B Phase Pulse Command Type CW/CCW, Puls /Direction, A/B Phase Max. Pulse Rate 500 kHz Analog Input Number of Channels 6 differential/single-end input channels Input Range Voltage: ±10 V Sink Current Capability 0 to 20 mA Resolution 12-bit ADC with 1-bit non-linearity Input Impedance Approximately 440 KΩ (Voltage), 120 Ω (Current) Sampling Rate 133 kHz multiplexing Analog Output Number of Channels 6 output channels Output Range ±10 V; bipolar Sink Current Capability 0 to 20 mA Resolution 16-bit DAC resolution, 14-bit accuracy guarantee Setting Time 2 μs Digital Output Number of Channels 7 output channels Output Type Open collector Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total Isolated Voltage 2500 VRMs Throughput 10 kHz (0.1 ms) Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus		External power supply (output): +5 VDC ±5%, 500 mA (max.)
Number of Input Channel 6, differential type 32-bit counter for AB-phase, CW/CCW, Pulse/Direction 3 MHz, 2500 VDC optical isolation	Dimension	164 x 98.4 mm (L x H)
Pulse Command Type 32-bit counter for AB-phase, CW/CCW, Pulse/Direction Max. Counter Speed 3 MHz, 2500 VDC optical isolation Pulse Output (Industrial Generator) Number of Output Channel 6, differential type Pulse Command Type CW/CCW, Puls /Direction, A/B Phase Max. Pulse Rate 500 kHz Analog Input Number of Channels 6 differential/single-end input channels Input Range Voltage: ±10 V Sink Current Capability 0 to 20 mA Resolution 12-bit ADC with 1-bit non-linearity Input Impedance Approximately 440 KΩ (Voltage), 120 Ω (Current) Sampling Rate 133 kHz multiplexing Analog Output Number of Channels 6 output channels Output Range ±10 V; bipolar Sink Current Capability 0 to 20 mA Resolution 16-bit DAC resolution, 14-bit accuracy guarantee Setting Time 2 μs Digital Output Number of Channels 7 output channels Output Type Open collector Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total Isolated Voltage 2500 VRMS Throughput 10 kHz (0.1 ms) Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus	Pulse Input (Industrial Counter)	
Max. Counter Speed 3 MHz, 2500 VDC optical isolation	Number of Input Channel	6, differential type
Pulse Output (Industrial Generator) Number of Output Channel 6, differential type Pulse Command Type CW/CCW, Puls /Direction, A/B Phase Max. Pulse Rate 500 kHz Analog Input Number of Channels 6 differential/single-end input channels Input Range Voltage: ±10 V Sink Current Capability 0 to 20 mA Resolution 12-bit ADC with 1-bit non-linearity Input Impedance Approximately 440 KΩ (Voltage), 120 Ω (Current) Sampling Rate 133 kHz multiplexing Analog Output Number of Channels 6 output channels Output Range ±10 V; bipolar Sink Current Capability 0 to 20 mA Resolution 16-bit DAC resolution, 14-bit accuracy guarantee Setting Time 2 μs Digital Output Number of Channels 7 output channels Output Type Open collector Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total Isolated Voltage 2500 VRMS Throughput 10 kHz (0.1 ms) Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus	■ Pulse Command Type	32-bit counter for AB-phase, CW/CCW, Pulse/Direction
Number of Output Channel 6, differential type	■ Max. Counter Speed	3 MHz, 2500 VDC optical isolation
■ Pulse Command Type CW/CCW, Puls /Direction, A/B Phase ■ Max. Pulse Rate 500 kHz Analog Input Fig. 200 kHz ■ Number of Channels 6 differential/single-end input channels ■ Input Range Voltage: ±10 V ■ Sink Current Capability 0 to 20 mA ■ Resolution 12-bit ADC with 1-bit non-linearity ■ Input Impedance Approximately 440 KΩ (Voltage), 120 Ω (Current) ■ Sampling Rate 133 kHz multiplexing Analog Output Fig. 200 Ma ■ Number of Channels 6 output channels ■ Output Range ±10 V; bipolar ■ Sink Current Capability 0 to 20 mA ■ Resolution 16-bit DAC resolution, 14-bit accuracy guarantee ■ Setting Time 2 μs Digital Output 10 my ■ Number of Channels 7 output channels ■ Output Type Open collector ■ Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total ■ Isolated Voltage 2500 VRMs ■ Throughput 10 kHz (0.1 ms) Timer ■ One programmable timer interrupt Base Clock	Pulse Output (Industrial Generator)	
■ Max. Pulse Rate 500 kHz Analog Input • differential/single-end input channels ■ Number of Channels 6 differential/single-end input channels ■ Input Range Voltage: ±10 V ■ Sink Current Capability 0 to 20 mA ■ Resolution 12-bit ADC with 1-bit non-linearity ■ Input Impedance Approximately 440 KΩ (Voltage), 120 Ω (Current) ■ Sampling Rate 133 kHz multiplexing Analog Output • Output Channels ■ Output Range ±10 V; bipolar ■ Sink Current Capability 0 to 20 mA ■ Resolution 16-bit DAC resolution, 14-bit accuracy guarantee ■ Setting Time 2 μs Digital Output • Output Channels ■ Number of Channels 7 output channels ■ Output Type Open collector ■ Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total ■ Isolated Voltage 2500 VRMS ■ Throughput 10 kHz (0.1 ms) Timer ■ One programmable timer interrupt ■ Base Clock 33 MHz by PCI bus	Number of Output Channel	6, differential type
Analog Input Number of Channels 6 differential/single-end input channels Input Range Voltage: ±10 V Sink Current Capability 0 to 20 mA Resolution 12-bit ADC with 1-bit non-linearity Input Impedance Approximately 440 KΩ (Voltage), 120 Ω (Current) Sampling Rate 133 kHz multiplexing Analog Output Number of Channels 6 output channels Output Range ±10 V; bipolar Sink Current Capability 0 to 20 mA Resolution 16-bit DAC resolution, 14-bit accuracy guarantee Setting Time 2 μs Digital Output Number of Channels 7 output channels Output Type Open collector Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total Isolated Voltage 2500 VRMS Throughput 10 kHz (0.1 ms) Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus	■ Pulse Command Type	CW/CCW, Puls /Direction, A/B Phase
■ Number of Channels 6 differential/single-end input channels ■ Input Range Voltage: ±10 V ■ Sink Current Capability 0 to 20 mA ■ Resolution 12-bit ADC with 1-bit non-linearity ■ Input Impedance Approximately 440 KΩ (Voltage), 120 Ω (Current) ■ Sampling Rate 133 kHz multiplexing Analog Output Number of Channels ■ Output Range ±10 V; bipolar ■ Sink Current Capability 0 to 20 mA ■ Resolution 16-bit DAC resolution, 14-bit accuracy guarantee ■ Setting Time 2 μs Digital Output Number of Channels ■ Number of Channels 7 output channels ■ Output Type Open collector ■ Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total ■ Isolated Voltage 2500 VRMs ■ Throughput 10 kHz (0.1 ms) Timer ■ One programmable timer interrupt ■ Base Clock 33 MHz by PCI bus	Max. Pulse Rate	500 kHz
Input Range Sink Current Capability 12-bit ADC with 1-bit non-linearity Input Impedance Approximately 440 KΩ (Voltage), 120 Ω (Current) Sampling Rate 133 kHz multiplexing Analog Output Number of Channels Output Range 110 V; bipolar Sink Current Capability 16-bit DAC resolution, 14-bit accuracy guarantee Setting Time 2 μs Digital Output Number of Channels Output Type Open collector Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total Isolated Voltage Throughput 10 kHz (0.1 ms) Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus	Analog Input	
Sink Current Capability Resolution 12-bit ADC with 1-bit non-linearity Input Impedance Approximately 440 KΩ (Voltage), 120 Ω (Current) Sampling Rate 133 kHz multiplexing Analog Output Number of Channels Output Range ±10 V; bipolar Sink Current Capability 0 to 20 mA Resolution 16-bit DAC resolution, 14-bit accuracy guarantee Setting Time 2 μs Digital Output Number of Channels Output Type Open collector Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total Isolated Voltage 2500 VRMS Throughput 10 kHz (0.1 ms) Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus	Number of Channels	6 differential/single-end input channels
Resolution 12-bit ADC with 1-bit non-linearity Input Impedance Approximately 440 KΩ (Voltage), 120 Ω (Current) Sampling Rate 133 kHz multiplexing Analog Output Number of Channels Output Range ±10 V; bipolar Sink Current Capability 0 to 20 mA Resolution 16-bit DAC resolution, 14-bit accuracy guarantee Setting Time 2 μs Digital Output Number of Channels Output Type Open collector Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total Isolated Voltage Throughput 10 kHz (0.1 ms) Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus	■ Input Range	Voltage: ±10 V
Input Impedance Approximately 440 KΩ (Voltage), 120 Ω (Current)	■ Sink Current Capability	0 to 20 mA
Sampling Rate Analog Output Number of Channels Output Range ± 10 V; bipolar Sink Current Capability 16-bit DAC resolution, 14-bit accuracy guarantee Setting Time 2 μs Digital Output Number of Channels 7 output channels Output Type Open collector Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total Isolated Voltage Throughput 10 kHz (0.1 ms) Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus	Resolution	12-bit ADC with 1-bit non-linearity
Analog Output Number of Channels Output Range ± 10 V; bipolar Sink Current Capability 0 to 20 mA Resolution Id-bit DAC resolution, 14-bit accuracy guarantee Setting Time 2 μs Digital Output Number of Channels 7 output channels Output Type Open collector Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total Isolated Voltage 2500 V _{RMS} Throughput 10 kHz (0.1 ms) Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus	■ Input Impedance	Approximately 440 K Ω (Voltage), 120 Ω (Current)
■ Number of Channels 6 output channels ■ Output Range ± 10 V; bipolar ■ Sink Current Capability 0 to 20 mA ■ Resolution 16-bit DAC resolution, 14-bit accuracy guarantee ■ Setting Time 2 μs Digital Output Number of Channels ■ Number of Channels 7 output channels ■ Output Type Open collector ■ Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total ■ Isolated Voltage 2500 V _{RMS} ■ Throughput 10 kHz (0.1 ms) Timer ■ One programmable timer interrupt ■ Base Clock 33 MHz by PCI bus	■ Sampling Rate	133 kHz multiplexing
■ Output Range ± 10 V; bipolar ■ Sink Current Capability 0 to 20 mA ■ Resolution 16-bit DAC resolution, 14-bit accuracy guarantee ■ Setting Time 2 μs Digital Output ■ Number of Channels 7 output channels ■ Output Type Open collector ■ Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total ■ Isolated Voltage 2500 V _{RMS} ■ Throughput 10 kHz (0.1 ms) Timer ■ One programmable timer interrupt ■ Base Clock 33 MHz by PCI bus	Analog Output	
Sink Current Capability 0 to 20 mA 16-bit DAC resolution, 14-bit accuracy guarantee 2 μs Digital Output Number of Channels Output Type Open collector Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total Isolated Voltage 2500 V _{RMS} Throughput 10 kHz (0.1 ms) Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus	Number of Channels	6 output channels
■ Resolution 16-bit DAC resolution, 14-bit accuracy guarantee ■ Setting Time 2 μs Digital Output • Number of Channels ■ Number of Channels 7 output channels ■ Output Type Open collector ■ Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total ■ Isolated Voltage 2500 VRMS ■ Throughput 10 kHz (0.1 ms) Timer ■ One programmable timer interrupt ■ Base Clock ■ Base Clock 33 MHz by PCI bus	Output Range	±10 V; bipolar
■ Setting Time 2 μs Digital Output ■ Number of Channels 7 output channels ■ Output Type Open collector ■ Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total ■ Isolated Voltage 2500 VRMs ■ Throughput 10 kHz (0.1 ms) Timer ■ One programmable timer interrupt ■ Base Clock 33 MHz by PCI bus	■ Sink Current Capability	0 to 20 mA
Digital Output Number of Channels Output Type Open collector Sink Current I00 mA/CH (typical); 268 mA/CH (max.); 500 mA/total Isolated Voltage Throughput I0 kHz (0.1 ms) Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus	Resolution	16-bit DAC resolution, 14-bit accuracy guarantee
Number of Channels Output Type Open collector Sink Current I00 mA/CH (typical); 268 mA/CH (max.); 500 mA/total Isolated Voltage Throughput I0 kHz (0.1 ms) Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus	■ Setting Time	2 µs
Open collector Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total Isolated Voltage 2500 VRMS Throughput 10 kHz (0.1 ms) Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus	Digital Output	
Sink Current 100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total 1 solated Voltage 2500 V _{RMS} 10 kHz (0.1 ms) Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus	Number of Channels	7 output channels
■ Isolated Voltage 2500 V _{RMS} ■ Throughput 10 kHz (0.1 ms) Timer ■ One programmable timer interrupt ■ Base Clock 33 MHz by PCI bus	Output Type	Open collector
Timer One programmable timer interrupt Base Clock 33 MHz by PCI bus	■ Sink Current	100 mA/CH (typical); 268 mA/CH (max.); 500 mA/total
Timer ■ One programmable timer interrupt ■ Base Clock 33 MHz by PCI bus	■ Isolated Voltage	2500 V _{RMS}
■ One programmable timer interrupt ■ Base Clock 33 MHz by PCI bus	■ Throughput	10 kHz (0.1 ms)
■ Base Clock 33 MHz by PCI bus	Timer	
,	One programmable timer interrupt	
■ Timer Range 24-bit	■ Base Clock	33 MHz by PCI bus
-	■ Timer Range	24-bit

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Software 8

2

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3

Modular Instruments

5

GPIB & Bus Expansion

5

7

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Remote I/O

10

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12

Fanless I/O Platforms

19

cPCI & Industrial Computers

14

Accessories