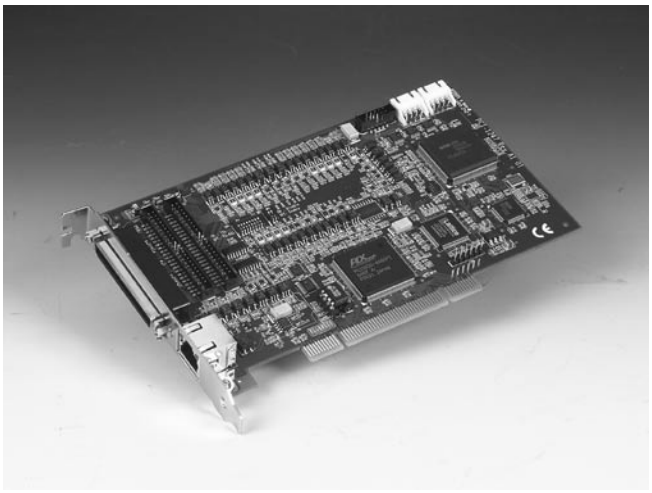
PCI-1247 Series

4-axis Motion Control Cards with AMONet™ RS-485 Master



Features

- Max. 6.5 MHz, 4-axis pulse output
- Linear, circular and continuous interpolation
- High speed position latch function
- Manual pulse generator input interface
- Simultaneously start/stop on multiple axes
- Programmable acceleration and deceleration time
- Programmable pulse output and interrupt
- Position compare and trigger output
- 1 Ring of AMONet™ RS-485 master
- Programmable baud-rate up to 20 Mbps transfer rate
- Max. 64 AMONet digital slave modules support
- Easy installation with RJ45 phone jack and LED diagnostic

CE

Introduction

PCI-1247 is an advanced motion controller with two major functions: 4-axis motion control (ASIC), and high-speed distributed motion control with AMONet™ RS-485.

With its 4-axis motion control functions, PCI-1247 provides 4 axes of liner interpolation, 2 axes of circular interpolation and also continuous interpolation with velocity continuity. There are 13 homing modes for different machine designs, and position compare and trigger output functions are supported to interface with applications such as on-the-fly image acquisition. For applications like tool length measurement, it provides position latch and interrupt functions. PCI-1247 provides digital I/O interfaces that are dedicated to servo drivers/motors, (e.g. ALM, INP, ERC) and also digital I/O interfaces that are dedicated to machines (e.g. ORG, PEL, EMG). These dedicated I/O signals guarantees functionality via hardware and therefore reduces software loading.

AMONet™ RS-485 is a new series of products designed for versatile and distributed automation applications with special motion control requirements. PCI-1247 is equipped with 1 master, that can connect with up to 64 slave modules .There are 2 categories of slave modules, one for motion control, and one for digital I/O. For motion control slave modules, there are 4 types of 1-axis motion modules in the ADAM-3210 Series. For digital I/O slave modules, there are 4 types, 32-IN, 32-OUT, 16-IN & 16-0UT and 24-IN & 8-OUT.

Specifications

Pulse Type Motion Control

- **Motor Driver Support** Pulse-type servo
- **Number of Axes** 4
- **Interpolation** Linear, circular, and continuous
- **Max. Output Speed** 6.5 Mpps
- **Step Count Range** ± 134,217,728
- **Pulse Output Type** ±OUT/DIR, ±CW/CCW
- **Position Counter** ± 134,217,728
- **Home Modes** 13
- **Velocity Profiles** T-curve, S-curve
- **Local I/O**
  - Machine Interfaces: PEL x 4, MEL x 4, ORG x 4, SLD x 4
  - Servo Driver Interfaces: ALM x 4, RDY x 4, SVON x 4, INP x 4, ERC x 4
  - Position Compare I/O: CMP x 4, LTC x 4
  - General Inputs: 3
  - General Outputs: 4

AMONet RS-485 Motion Control

- **AMONet RS-485 Rings** 1
- **Interface** Isolated half-duplex RS-485
- **Cable Type** CAT5 UTP/STP Ethernet cable
- **Surge Protection** 10 kV
- **Transmission Speeds** 2.5, 5, 10, and 20 Mbps
- **Data Flow Control** Automatic
- **Communication Distance** 100 m @ 20 Mbps w/32 slave modules
- **Slave Module Support** Digital I/O, motion control. analog I/O

Isolated Digital Input

- **Input Voltage** Low: 3 V max.
High: 12 V_{DC} min. (30 V_{DC} max.)
- **Isolation Protection** 2,500 V_{DC}

Isolated Digital Output

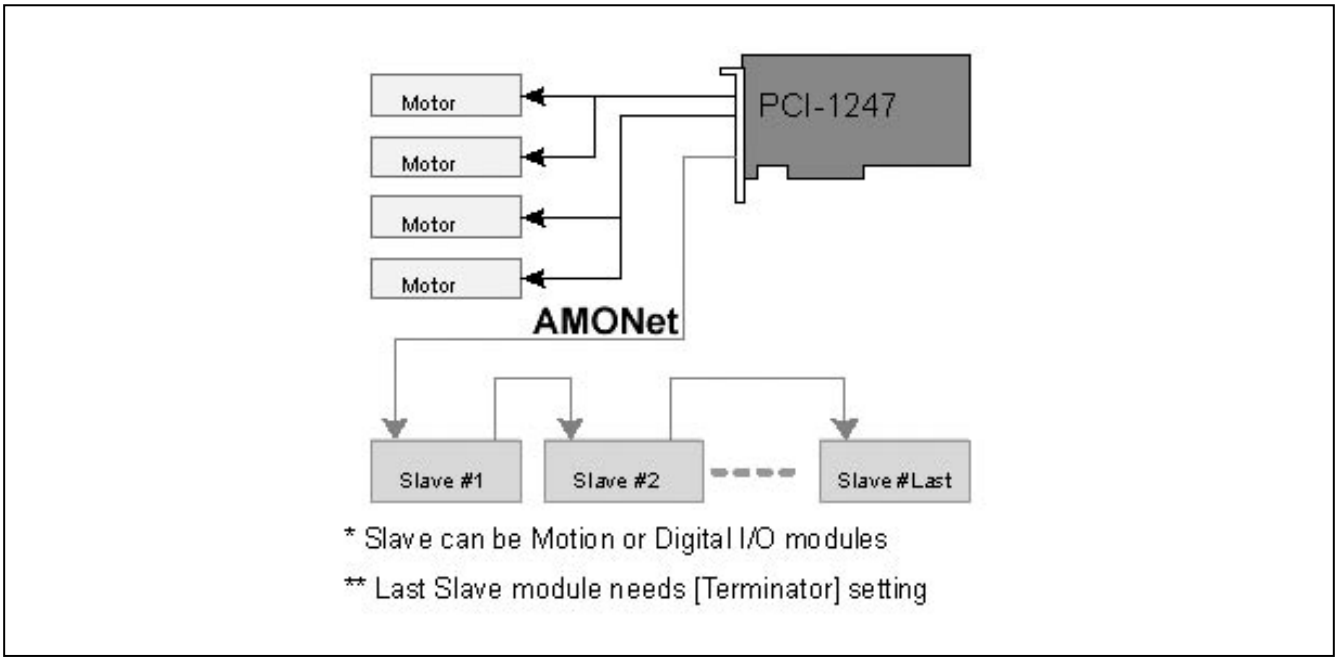
- **Output Type** Open collector
- **Isolation Protection** 2,500 V_{DC}
- **Output Voltage** 5~30 V_{DC}
- **Sink Current** 10 mA/ch, 50 mA max.

Encoder Interface

- **Input Type** Quadrature(AB phase), Up/Down
- **Counts per Enc. Cycle** x0, x1, x2, x4 (AB phase only)
- **Input Range** Compatible with TIA/EIA-422 Differential Line Driver I= ±20 mA, VOD= ±2 V/min
- **Isolation Protection** 2,500 Vrms
- **Max. Input Frequency** 2 MHz

Last updated : 20-Jan-2006

System Architecture



General

- **Bus Type** PCI V2.2
- **Certifications** CE
- **Connectors** SCSI-68P x 2, RJ45 x 1, SCSI-20P x 1
- **Dimensions** 175 x 100 mm (6.9" x 3.9")
- **Power Consumption** +5 V_{DC} @ 0.5 A typical
- **Humidity** 5 ~ 95% RH, non-condensing (IEC 68-2-3)
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F)
- **Storing Temperature** -20 ~ 85° C (-4 ~ 185° F)

Ordering Information

- **PCI-1247** 4-axis Motion Control Card with AMONet Master
- **PCI-1247L** 4-axis Motion Control Card
- **ADAM-3210** 1-Axis Motion Slave Module
- **ADAM-3211/PMA** 1-Axis Motion Slave for Panasonic® Minas A
- **ADAM-3212/J2S** 1-Axis Motion Slave for Mitsubishi® MR-J2S
- **ADAM-3213/YS2** 1-Axis Motion Slave for Yaskawa® Sigma-II
- **ADAM-3968M** 68-pin Motor Wiring Board
- **ADAM-3968M/PMA** Terminal Board for Panasonic® Minas A
- **ADAM-3968M/J2S** Terminal Board for Mitsubishi® MR-J2S
- **ADAM-3968M/YS2** Terminal Board for Yaskawa® Sigma-II
- **ADAM-3752FN** 32-ch Digital Input Module
- **ADAM-3754FN** 32-ch Digital Output Module
- **ADAM-3756FN** 16-ch/16-ch Digital Input/Output Module
- **PCL-10168M-2** 68-pin SCSI cable, 2m (One PCI-1247 works with two optional PCL-10168M-2)
- **PCL-10120M-2** SCSI 20-pin cable, 2m (Optional for ADAM-3212/J2S)
- **PCL-10150M-2** SCSI 50-pin cable, 2m (Optional for ADAM-3211/PMA and ADAM-3213/YS2)
- **ADAM-3934D** Wiring Board for ADAM-3750F Series
- **PCL-10134** 34 pin Flat cable, 1 M

Software

- **Windows® 2000/XP WDM Driver**
  Supports BCB/VB/VC++ programming on Windows® 2000/XP platforms with DLL
- **MotionNAVI**
  MotionNAVI is a Windows® utility for testing motion control functions
- **AMONet EzLink**
  AMONet EzLink is a Windows® utility for testing AMONet RS-485 configurations