# PCI-7856 Master-Slave Distributed Motion & I/O Master Controller



## Introduction

The PCI-7856 is a PCI interface card which offers two ports for Motionnet and HSL systems for distributed motion and I/O in machine automation applications.

HSL technology allows thousands of I/O points to be scanned at the millisecond-level in real time by using mater-slave architecture. Commercial Ethernet cables with RJ45 connector are used for simplified setup of the HSL slaves modules as close as possible to sensor devices which results in a dramatic reduction of wiring. System integrators can benefit from HSL network because it integrates discrete I/O and analog I/O modules. This local network features rapid response, real-time scanning.

## Features

- Connect I/O points up to 2,016 points
- Connect motion axis up to 256 axes
- Programmable timer interrupt
- RJ-45 jack for easy installation
- Software selectable transmission speed: 3/6/12 Mbps for HSL
- Software selectable transmission speed: 2.5/5/10/20 Mbps for Motionnet
- Non-volatility RAM onboard

## Software Support

#### OS Information

- Windows® 8/7/XP
- RTX 5.x/6.x/8.1a
- Software Compatibility
  - VB/VC++/BCB/Delphi
  - Various sample programs with source codes
- Software Recommendations
- MotionCreatorPro2

## Ordering Information

#### PCI-7856

Master-slave distributed motion & I/O master controller

## Specifications

Bus         PCI local bus specification Rev. 2.1 compliant           Master Controller         • Dedicated Motion Controller: Motionnet ASIC master control (80 MHz external clock)           • Dedicated I/O Controller: HSL ASIC master control (48 MHz external Clock)           • Interface         Motionnet • RS-485 with transformer isolation           • Half duplex communication           • 2.5/5/10/20 Mbps transmission rate can be set by software (20 Mbps default)           • FSI           • RS-485 with transformer isolation           • Half duplex communication           • LED Indicator           • RJ45 connector x 4 (MRJ45 connector for Motionnet; HRJ45 connector for HSL ink status (Red for Motionnet Link status; Green for HSL Link status)           • Interrupt           • Storage Temperature           • 20°C to +80°C (-4°F to 176°F)           • Power Consumption           • 4.3.3 V@ 1.2 A (typical)           • Storage Temperature           • Dimensions		
Motionnet ASIC master control (80 MHz external clock)         • Dedicated I/O Controller:         HSL ASIC master control (48 MHz external clock)         • Interface         • Motionnet         • RS-485 with transformer isolation         • Half duplex communication         • 2.5/5/10/20 Mbps transmission rate can be set by software (20 Mbps default)         HSL         • RS-485 with transformer isolation         • Full duplex communication         • Full duplex communication         • J/6/12 Mbps transmission rate can be set by software (6 Mbps default)         Interrupt         Status read back         LED Indicator         Link status (Red for Motionnet Link status; Green for HSL Link status)         • Storage Temperature         • 20°C to +80°C (-4°F to 176°F)         • Power Consumption	Bus	PCI local bus specification Rev. 2.1 compliant
Dedicated I/O Controller: HSL ASIC master control (48 MHz external Clock)  Interface      R5-485 with transformer isolation     · RS-485 with transformer isolation     · Half duplex communication     · 2.5/5/10/20 Mbps transmission rate can be set by software (20 Mbps default)     HSL     · RS-485 with transformer isolation     · 2.5/5/10/20 Mbps transmission rate can be set by software (20 Mbps default)     HSL     · RS-485 with transformer isolation     · Jul duplex communication     · Sufficient RJ45 connector for Motionnet; HRJ45 connector for HSL) Interrupt Status read back LED Indicator Link status (Red for Motionnet Link status; Green for HSL Link status) Storage Temperature     ·20°C to +80°C (-4°F to 176°F) Power Consumption     +3.3 V@ 1.2 A (typical)     +5 V@ 1.5 A (typical)	Master Controller	Dedicated Motion Controller:
HSL ASIC master control (48 MHz external Clock)         Interface         • RS-485 with transformer isolation         • Half duplex communication         • 2.5/5/10/20 Mbps transmission rate can be set by software (20 Mbps default)         HSL         • RS-485 with transformer isolation         • Half duplex communication         • 2.5/5/10/20 Mbps transmission rate can be set by software (20 Mbps default)         HSL         • RS-485 with transformer isolation         • Full duplex communication         • J/6/12 Mbps transmission rate can be set by software (6 Mbps default)         Interrupt         Interrupt         Status read back         LED Indicator       Link status (Red for Motionnet Link status; Green for HSL Link status)         Storage Temperature       -20°C to +80°C (-4°F to 176°F)         Power Consumption       +3.3 V@ 1.2 A (typical)         +5 V@ 1.5 A (typical)       +5 V@ 1.5 A (typical)		Motionnet ASIC master control (80 MHz external clock)
Interface       Motionnet         • RS-485 with transformer isolation         • Half duplex communication         • 2.5/5/10/20 Mbps transmission rate can be set by software (20 Mbps default)         HSL         • RS-485 with transformer isolation         • 2.5/5/10/20 Mbps transmission rate can be set by software (20 Mbps default)         HSL         • RS-485 with transformer isolation         • Full duplex communication         • Full duplex communication         • J/6/12 Mbps transmission rate can be set by software (6 Mbps default)         Interrupt         Status read back         I LED Indicator         Link status (Red for Motionnet Link status; Green for HSL Link status)         Storage Temperature         • 20°C to +80°C (-4°F to 176°F)         Power Consumption         +3.3 V@ 1.2 A (typical)         +5 V@ 1.5 A (typical)		Dedicated I/O Controller:
<ul> <li>RS-485 with transformer isolation</li> <li>Half duplex communication</li> <li>2.5/5/10/20 Mbps transmission rate can be set by software (20 Mbps default)</li> <li>HSL         <ul> <li>RS-485 with transformer isolation</li> <li>2.5/5/10/20 Mbps transmission rate can be set by software (20 Mbps default)</li> </ul> </li> <li>HSL         <ul> <li>RS-485 with transformer isolation</li> <li>2.5/5/10/20 Mbps transmission rate can be set by software (20 Mbps default)</li> </ul> </li> <li>FSL         <ul> <li>RS-485 with transformer isolation</li> <li>5/6/12 Mbps transmission rate can be set by software (6 Mbps default)</li> </ul> </li> <li>Connector</li> <li>RJ45 connector x 4 (MRJ45 connector for Motionnet; HRJ45 connector for HSL)</li> <li>Interrupt</li> <li>Status read back</li> <li>LED Indicator</li> <li>Link status (Red for Motionnet Link status; Green for HSL Link status)</li> <li>Storage Temperature</li> <li>-20°C to +80°C (-4°F to 176°F)</li> <li>Power Consumption</li> <li>+3.3 V@ 1.2 A (typical)</li> <li>+5 V@ 1.5 A (typical)</li> </ul>		HSL ASIC master control (48 MHz external Clock)
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HSL         • RS-485 with transformer isolation         • Full duplex communication         • 3/6/12 Mbps transmission rate can be set by software (6 Mbps default)         ■ Connector       RJ45 connector x 4 (MRJ45 connector for Motionnet; HRJ45 connector for HSL)         ■ Interrupt       Status read back         ■ LED Indicator       Link status (Red for Motionnet Link status; Green for HSL Link status)         ■ Storage Temperature       -20°C to +80°C (-4°F to 176°F)         ■ Power Consumption       +3.3 V@ 1.2 A (typical)         +5 V@ 1.5 A (typical)		· · · · · · · · · · · · · · · · · · ·
		<ul> <li>2.5/5/10/20 Mbps transmission rate can be set by software (20 Mbps default)</li> </ul>
Full duplex communication         - Full duplex communication         - 3/6/12 Mbps transmission rate can be set by software (6 Mbps default)         RJ45 connector x 4 (MRJ45 connector for Motionnet; HRJ45 connector for HSL)         Interrupt Status read back         LED Indicator Link status (Red for Motionnet Link status; Green for HSL Link status)         Storage Temperature -20°C to +80°C (-4°F to 176°F)         Power Consumption +3.3 V@ 1.2 A (typical)         +5 V@ 1.5 A (typical)		HSL
• 3/6/12 Mbps transmission rate can be set by software (6 Mbps default)         Connector       RJ45 connector x 4 (MRJ45 connector for Motionnet; HRJ45 connector for HSL)         Interrupt       Status read back         LED Indicator       Link status (Red for Motionnet Link status; Green for HSL Link status)         Storage Temperature       -20°C to +80°C (-4°F to 176°F)         Power Consumption       +3.3 V @ 1.2 A (typical)         +5 V @ 1.5 A (typical)		RS-485 with transformer isolation
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Interrupt       Status read back         LED Indicator       Link status (Red for Motionnet Link status; Green for HSL Link status)         Storage Temperature       -20°C to +80°C (-4°F to 176°F)         Power Consumption       +3.3 V @ 1.2 A (typical)         +5 V @ 1.5 A (typical)		• 3/6/12 Mbps transmission rate can be set by software (6 Mbps default)
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Storage Temperature         -20°C to +80°C (-4°F to 176°F)           Power Consumption         +3.3 V @ 1.2 A (typical)           +5 V @ 1.5 A (typical)	Interrupt	Status read back
Power Consumption         +3.3 V @ 1.2 A (typical)           +5 V @ 1.5 A (typical)	LED Indicator	Link status (Red for Motionnet Link status; Green for HSL Link status)
+5 V @ 1.5 A (typical)	Storage Temperature	-20°C to +80°C (-4°F to 176°F)
- 000 /	Power Consumption	+3.3 V @ I.2 A (typical)
Dimensions 119.5 mm x 100.2 mm (L x W) (4.66" x 3.9")		+5 V @ 1.5 A (typical)
	Dimensions	119.5 mm x 100.2 mm (L x W) (4.66" x 3.9")

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