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

Windows® Platform

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

MotionCreatorPro 2

MotionCreatorPro 2™ is a Windows-based application development software package included with ADLINK Motion control products. An on-screen display lists all installed axes information and I/O signal status. This utility thus enables the most of ADLINK motion control products to provide precise positioning control with less effort.

(See page 1-23 for more information on MotionCreatorPro 2.)

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)
	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
Power Consumption	+3.3 V @ 1.2 A (typical)
	+5 V @ 1.5 A (typical)
Dimensions	119.50 mm (L) x 100.20 mm (W)

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MNET-J3/S23/MIA

Distributed Single-axis Motion Control Modules

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Introduction

ADLINK's Motionnet products provide system integrators with a simple configuration and reduced wiring method for a cost-effective solution for motion applications utilizing multiple single axes. With this new concept of direct plug-in modules, the amount of space used and the amount of wiring required is greatly reduced from traditional terminal board connections.

After the module is plugged into the servo driver, all that is needed is a LAN cable to make the serial connection between the modules. Different servo drivers can be lined up on the Motionnet bus, making motion control configuration much simpler than PCI board solutions. The Motionnet bus can support up to 64 single-axis modules.

Features

- No command frequency limitation
- Available for Mitsubishi J3S, Panasonic MINAS A4, and Yaskawa Sigma II, III, V
- Up to 64 axes, serially connected
- No need for terminal boards – reduces space
- The scanning cycle time up to 0.97 ms at 20 Mbps when 64 axes are connected
- Point-to-point application can be easily completed with multiple single-axis modules
- Supports linear/s-curve acceleration and deceleration

Ordering Information

MNET-J3
Motionnet distributed single-axis motion control module for Mitsubishi J3S-A

MNET-S23
Motionnet distributed single-axis motion control module for Yaskawa Sigma II, III, and V

MNET-MIA
Motionnet distributed single-axis motion control module for Panasonic MINAS A4

Specifications

Power Indicator	Displays the status of the 3.3 V_{DC} internal control power (red LED)
Operating Temperature	0°C to +50°C
Operating Ambient Humidity	80% RH or less (non-condensing within the 10°C to 50°C range)
Environmental	RoHS compliant
Vibration	JIS C0040 compliant
Weight	Approximately 50 g
Dimensions	52.4 x 16.3 x 69.5 mm (W x H x D)

Pin Assignment
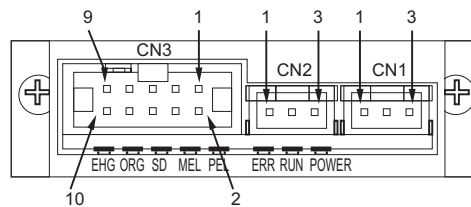
CN1/CN2 Pin Assignment			
No	Name	Function	Signal Direction
1	RS485+	Serial communicationdata+	I/O
2	RS485-	Communication data+	I/O
3	FG	Frame ground	-

CN3 Pin Assignment			
No	Name	Function	Signal Direction
1	PEL	Positive end limit	I
2	MEL	Negative end limit	I
3	SD/CPP	Slowdown input / comparator output (+)	I/O
4	ORG	Zero position input	I
5	EMGI	Emergency stop input	I
6	CPN	Comparator output (-)	O
7	24V	24 V_{DC} Power source	I
8	GND	Ground	I
9	GND	Ground	I
10	FG	Frame ground	-

MNET-4XMO / MNET-4XMO-C

Motionnet Distributed 4-axis Motion Control Modules (with High-Speed Trigger Function)

ADLINK
GREEN
RoHS Compliant

Introduction

The MNET-4XMO is a 4-axis motion controller module for Motionnet distributed motion systems. It can generate fast frequency pulses (9.9 MHz) to drive stepper or servomotors in the machine automation field. As a motion controller, it can provide comprehensive motion functions which include 2 axis circular interpolation, 2-4 axis linear interpolation, or continuous interpolation for continual velocity and so on. Also, changing position/speed on the fly is available with a single axis operation.

In addition to the motion functions offered, ADLINK offers other model (MNET-4XMO-C) that comes equipped with the real-time position comparison and trigger pulse output function to easy integrate into Automated Optical Inspection application system. Up to 100 KHz trigger output frequency and easy trigger the most frame grabber or CCD to realize the line scan application. The path move function features the continuous moving with constant velocity. By using the path moving function, you can save the host PC resource with path auto-reload function and is able to guarantee the time-deterministic, continuous and smooth in whole motion progression.

Specifications

Hardware
Number of Controllable Axes	4
Pulse Output Rate	0.01 pps to 9.9 Mpps
Positioning Range	-2,147,483,648 to +2,147,483,647
Acceleration / Deceleration	1 to 65,535 (16-bit)
Speed Resolution	16-bit

Trajectories
Acceleration / Deceleration Type	Pure S, T, bell curve programmable
Interpolation Mode	Any 2 - 4 axes linear interpolation Any 2 axes circular interpolation

I/O
EMG Input	1
CMP Output	4 (differential type)

General Specifications
Dimension	163.5 mm (W) × 74.9 mm (D) × 52.7 mm (H)
Module Power Supply Input (I24 V, IGND)	24 VDC ±10% (Consumption current, 0.3 A max.)
I/O Power Supply Input (E24 V, EGND)	24 VDC input (can be common to module power input by jumper)
Operating Temperature	0°C to 70°C

The following specifications are only applicable to the MNET-4XMO-C.

Trigger Function (channel to channel ONLY)
Trigger Spec.	Max. 100 KHz (4-axis)
Table Size	32,768 points/4-axes (8,192 points/axis)

High-Speed Trigger Function (Linear function ONLY)
Trigger Pulse Frequency	Max. 1 MHz/1-axis
Trigger Pulse Width	0.1 us to 1 s (programmable)

Path Move
Path Number	2,048 points total (min.)
Auto Reload	Point index check
Continuous move	1 group (includes single axis move or linear / circular interpolation move)

Features

- Up to 256 axes on a single Motionnet network
- Transmission speed selectable: 2.5/5/10/20 Mbps
- Maximum wiring distance up to 100 meters
- 4-axis pulse train output channels; frequency up to 9.9 MHz
- Encoder frequency up to 20 MHz under 4xAB feedback mode
- 26 homing modes which includes 13 auto-homing modes
- Pulse output mode: OUT/DIR, CW/CCW, AB phase
- Linear interpolation: any 2 to 4 axes
- Circular interpolation: any 2 of 4 axes
- Position/Speed override
- Triangle Driver Elimination
- Programmable acceleration and deceleration
- 4 channels high-speed trigger pulse output frequency up to 100 kHz (MNET-4XMO-C only)
- One ultra-high speed linear trigger pulse output up to 1 MHz (MNET-4XMO-C only)
- Point table for continuous contouring up to 2,048 points (MNET-4XMO-C only)
- Dedicated motion I/O: EL, ORG, INP, RDY, SVON, ERC, and ARM
- Hardware emergency stop interface
- All digital inputs and outputs are 2500 VRMS isolated
- Hardware backlash compensation

Speed Override | Position Override | Line | ARC | T-Curve | S-Curve
TRO | DI/O | Contouring | Card ID | Emergency Input

Software Support

Windows® Platform
- Available for Windows® Vista (32-bit)/XP

Ordering Information

MNET-4XMO
Motionnet distributed 4-axis motion control module

MNET-4XMO-C
Motionnet distributed 4-axis motion control module with high-speed trigger function

Accessories

See section 14 for more information on Accessories.

Cabling

HSL-4XMO-DM Cable
For Mitsubishi MR-J2S-A servo amplifier, available for 1 M, 2 M, and 3 M

HSL-4XMO-DP Cable
For Panasonic MINAS A4 servo amplifier, available for 1 M, 1.5 M, and 2 M

HSL-4XMO-DY Cable
For Yaskawa SIgma II/III/V servo amplifier, available for 1 M, 2 M, and 3 M

4XMO-DA Cable
For Delta ASDA A2 servo, available for 3 M

4XMO-Open Cable
Controller to amplifier bus (26-pin SCSI to open wire), available for 1 M and 2 M