PCI-8254 / PCI-8258

DSP-based 4/8-axis Advanced Motion Controllers

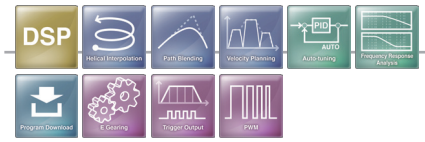


PCI-8254

NEW



PCI-8258



Introduction

The PCI-8254 & PCI-8258 are ADLINK's new top-of-the-line advanced motion controllers, providing excellent control performance, time-deterministic trajectory and velocity planning, comprehensive application functions, and powerful easy-to-use diagnostic and control utilities.

Key Features

- Servo update rate up to 20 KHz through hardware-based PID-FF control loop and second-order filters
- Trajectory cycle time up to 1 KHz
- 4/8 axes hybrid motion command output signals of both ±10 volts analog command and pulse-train command
- Encoder feedback frequency up to 20 MHz with digital filter design
- Program download can execute up to 8 individual tasks simultaneously
- High speed position latch function via ORG and Index signals
- High-speed position comparison and trigger output up to 1MHz for auto-optical-inspection applications
- 32 additional onboard digital I/O channels (16 DI & 16 DO) can save the cost of a full DI/O card
- Programmable interrupt source control to host PC
- Watchdog timer for safety control
- Manual pulsar interface
- MotionCreatorPro 2 suite of card installation, axis control, auto-tuning, frequency response analysis, and system diagnostic usage
- Support for up to 16 cards in one system

Motion Features

- Jogging mode
- Pre-defined engineering unit
- Any 2-6 axes linear interpolation
- Any 3 axes circular interpolation
- 3 axis spiral interpolation (incl. helical interpolation)
- Motion trajectory & PID parameters can be changed on the fly
- Multi-axis synchronous motion (Master-Slave)
  - Gantry mode
  - Electronic Gear
- Safety level setting to prevent damage to mechanism and operator
- Trapezoidal, S-curve velocity, user-defined profile
- Position & speed override anytime
- Variety of homing modes via ORG and index signals
- Linear and FIFO position comparison for high speed trigger output
- Backlash compensation

Specifications

Motion Control	
Positioning Range	4 x 10^{15} counts
Speed Progamming Range	32,767,000 count / sec
Max. Acceleration Rate	4 x 10^{15} counts / sec^2
Analog Input / Output Channels	
Number of Channels	4-CH for PCI-8254; 8-CH for PCI-8258
Analog Output	±10 volt with 16-bit DAC, Differential/Single-ended types
Analog Input	±10 volt with 12-bit ADC
Pulse Output Channels	
Number of Channels	4-CH for PCI-8254; 8-CH for PCI-8258
Pulse Output Rate	6.55 Mpps (max.)
Pulse Output Mode	CW/CCW, OUT/DIR
Encoder Input Channels	
Number of Channels	4-CH for PCI-8254; 8-CH for PCI-8258
Max. Encoder Input Frequency	20 MHz under 4xAB mode
Encoder Input Modes	OUT/DIR, CW/CCW and 1x/2x/4x AB phase
Trigger Channels	
Number of Trigger Output Channels	2-CH for PCI-8254; 4-CH for PCI-8258
Position Compared Method	Linear / FIFO
FIFO Size	16 per channel (hardware-based) ; 5,000 per channel (software-based)
Trigger Pulse Output Frequency	1 MHz for linear comparison 1 MHz for FIFO comparison (hardware-based) 500 Hz for FIFO comparison (software-based)
Trigger Pulse Width	0.2 μs to 167 ms
Motion I/O Interface Signals	
I/O Pin	2500 V_{RMS} optically isolated on DIN-825-GP4
Incremental Encoder Signals Input Pin	EA and EB
Encoder Index Signal Input	EZ
Mechanical Limit Switch Signal Input Pin	±EL and ORG
Servomotor Interface I/O Pin	INP/ZSP, ALM, SVON
Miscellanenous Pin	IEMG, TRG (PWM)
General Purpose I/O	
Digital Input	20-CH (for PCI-8254) and 24-CH (for PCI-8258) digital input, isolated on DIN-825-GP4
Input Voltage	0 to 24 V
Input Resistance	4.7 KΩ @ 0.5 W
Digital Output	20-CH (for PCI-8254) and 24-CH (for PCI-8258) digital output, isolated on DIN-825-GP4
Output Voltage	5 V (Min.); 35 V (Max.)
Output Type	NPN open collector
Sink Current	90 mA
Genaral Specifications	
Connectors	100-pin SCSI-VHDCI type connector
Operating Temperature	0°C to +55°C (32°F to 131°F)
Storage Temperature	+20°C to +80°C (68°F to 176°F)
Humidity	5% to 95%, non-condensing

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Easy-to-use Graphic User Interface – "MotionCreatorPro 2"

Easy-to-use Graphic User Interface – "MotionCreatorPro 2" is a Windows-based application development software package included with the PCI-8254/PCI-8258. Applicable time-domain and frequency-domain diagnostic tools are integrated for auto-tuning, frequency response analysis, and motion & I/O data sampling. A Setup Wizard shortens system installation & evaluation time and allows monitoring of onboard DSP & I/O consumption via a system diagnostic page. Powerful sampling pages and graphic tools deliver real-time motion and I/O status and conduct further motion flow analysis.

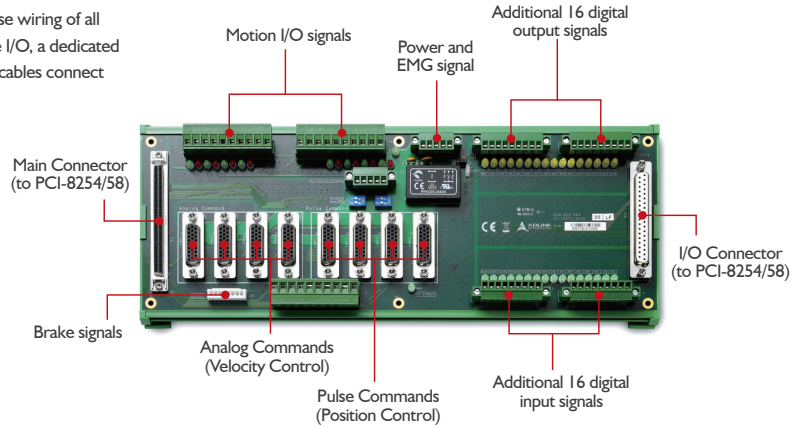
MotionCreatorPro 2 provides:

- Axis configuration
- Parameter table
- Axis control
- Setup wizard (New)
- Frequency analysis (New)
- Auto-tuning (New)
- Point table
- Data sampling (New)



DIN-825-GP4 for PCI-8254/8258

To speed system integration and ease wiring of all servo, motion, and general purpose I/O, a dedicated terminal board and several specific cables connect the servos and steppers.



DIN-825-GP4

Pin Assignment

PCI-8254 & PCI-8258

DICOM	1	51	IEMG
DICOM	2	52	Rsv.
AGND	3	53	AGND
AGND	4	54	AGND
AOUT1+	5	55	AOUT3+
AOUT1-	6	56	AOUT3-
AOUT2+	7	57	AOUT4+
AOUT2-	8	58	AOUT4-
AIN1	9	59	AIN3
AIN2	10	60	AIN4
EA5V	11	61	DGND
EA5V	12	62	DGND
OUT1+	13	63	OUT3+
OUT1-	14	64	OUT3-
DIR1+	15	65	DIR3+
DIR1-	16	66	DIR3-
OUT2+	17	67	OUT4+
OUT2-	18	68	OUT4-
DIR2+	19	69	DIR4+
DIR2-	20	70	DIR4-
TRG1+	21	71	TRG2+
TRG1-	22	72	TRG2-
EA1+	23	73	EA3+
EA1-	24	74	EA3-
EB1+	25	75	EB3+
EB1-	26	76	EB3-
EZ1+	27	77	EZ3+
EZ1-	28	78	EZ3-
EA2+	29	79	EA4+
EA2-	30	80	EA4-
EB2+	31	81	EB4+
EB2-	32	82	EB4-
EZ2+	33	83	EZ4+
EZ2-	34	84	EZ4-
ALM1	35	85	ALM3
ORG1	36	86	ORG3
SVON1	37	87	SVON3
PEL1	38	88	PEL3
ZSP1	39	89	ZSP3
MEL1	40	90	MEL3
ALM2	41	91	ALM4
ORG2	42	92	ORG4
SVON2	43	93	SVON4
PEL2	44	94	PEL4
ZSP2	45	95	ZSP4
MEL2	46	96	MEL4
EDO1	47	97	EDO3
EDI1	48	98	EDI3
EDO2	49	99	EDO4
EDI2	50	100	EDI4

Software Support

OS Information

- Windows® 8/7/XP

Software Compatibility

- VB/VC++/BCB/Delphi/VB.NET
- Various sample programs with source codes

Software Recommendations

- MotionCreatorPro2

Ordering Information

PCI-8254
DSP-based 4-axis advanced motion controller

PCI-8258
DSP-based 8-axis advanced motion controller

Accessories

For more information on terminal boards & cables, please refer to page 6-31.

Terminal Board

DIN-825-GP4
Terminal board with 100-pin SCSI-II connector for general purpose servo & stepper

Cabling

ACL-102100-1
100-pin SCSI-II cable (mating with AMP-787082-9), 1 M

SCSI-VHDCI 100P
100-pin SCSI-VHDCI cable, available for 2 M, 3 M

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