PCI-8102

Advanced 2-axis Stepper & Servo Motion Control Card

Pulse	PTP	Line	ARC	T-Curve	S-Curve	Speed Change
Pulser	DI/O	Card ID	Emergency Input	Security	Contouring	

Features

- 32-bit PCI bus, Rev. 2.2, 33MHz
- Pulse output rate up to 6.55MHz
- Pulse output options: OUT/DIR, CW/CCW
- 2-axis linear/circular interpolation
- Continuous interpolation
- Position/speed change on-the-fly
- 13 home return modes and auto home search
- Hardware position compare
- High speed position latch function
- Programmable acceleration and deceleration time
- Trapezoidal and S-curve velocity profiles
- Multi-axis, simultaneous start/stop
- Programmable interrupt sources
- Supports up to 12 cards in one system
- Hardware backlash compensator
- Softwares limit function
- On-board GPIO 16IN/16OUT (P2 Connector)
- Card index switch setting
- Hardware emergency input
- Security protection for user's program
- Easy interface to any stepping motors, AC or DC servo, linear or rotary motors which have pulse train input mode
- All digital inputs and outputs are 2500V$_{RMS}$ isolated
- Manual pulser input interface
- More than 100 thread safe API functions

Ordering Information

PCI-8102	Advanced 2-axis stepper & servo motion control card
DIN-68M-J3A0	Termination board for Mitsubishi MR-J3-A servo amplifier with 68-pin SCSI-II connector
DIN-68M-J2A0	Termination board for Mitsubishi MR-J2S servo amplifier with 68-pin SCSI-II connector
DIN-68Y-SGII0	Termination board for Yaskawa Sigma II servo amplifier with 68-pin SCSI-II connector
DIN-68P-A40	Termination board for Panasonic MINAS A4 servo amplifier with 68-pin SCSI-II connector

Introduction

Advanced 2-axis Motion Controller

ADLINK PCI-8102 is an advanced 2-axis motion control card. Compared with the PCI-8132/PCI-8134 series, PCI-8102 offers better linear and circular interpolated move and continuous contouring performance-ideal for advanced pulse train motion control solutions and complicated motion and pick-and-place applications.

Velocity or Position Override

The PCI-8102 provides powerful position or speed changing function while axis is moving. After motion begins, target of speed or position can be changed on the fly at the user's program.

Linear & Circular Interpolation

The PCI-8102 provides 2-axis linear/circular interpolation.

Continuous Contouring

The pre-register architecture of PCI-8102 offers the feature to build the continuous interpolation function, ie, the 2nd motion may follow previous motion instantly without latency. Thus perfect velocity continuity can be established.

Position Latch

The latch function is to capture the instant counter value of one certain axis when the latch signal activates. The LTC channel is used to receive the latch pulse. The latch function is implemented with hardware.

Automatic Backlash Compensation

Whenever direction change is occurred, the PCI-8102 outputs backlash corrective pulses before sending commands. During interpolation mode, this function will be ineffective.

13 Home Return Modes

To fit into various mechanical design and operating restrictions, the PCI-8102 provides 13 home moving modes for users to choose as their best convenience.

Simultaneously Start/Stop

By using software program or external input signal, the PCI-8102 can perform simultaneously start/stop function on multi-axis in one card or multi-axis in multi-card. Also, the simultaneously stop function is selectable to be active when some axes are abnormally stopped.

Hardware Emergency Input

The PCI-8102 provides hardware emergency control with the cable wiring. When the emergency button is pressed, it triggers this function and the motion controller will cease sending pulses. This function is ideal protection for system designers.

Security Protection

PCI-8102 offers hardware security protection for system designers' software.

▣ Specifications

Motion

Number of controllable axes: 2

Pulse output rate: 0.01pps to 6.5Mpps

Max. Acceleration rate 245Mpps^2

Speed resolution: 16-bit

Encoder input rate: 6.55MHz under 4 x AB phase @ 1M cable

Encoder counter resolution: 28-bit

Positioning Range:
-134, 217, 728 ~ +134, 217, 727 pulses (28-bit)

Counters x 4 for each axis

Comparators x 5 for each axis

Motion Interface I/O Signals

Position latch input pin: LTC

Position compare output pin: CMP

All I/O pins are differential and 2500V$_{RMS}$ optically isolated

Incremental encoder signals input pins: EA and EB

Encoder index signal input: EZ

Mechanical limit switch signal input pins: ±EL, SD and ORG

Servomotor interface I/O pins: INP, ALM, ERC, SVON, RDY

General DO pin: DO x 16 (P2 Connector)

General DI pin: DI x 16 (P2 Connector)

Pulser signal input: PA and PB

Simultaneous Start/Stop Signal I/O Pins: STA and STP

▣ Software Support

Windows® Platform

Available for Windows Vista32/XP/2000

VB/VC++/BCB/Delphi/VB.NET are recommended programming environment.

Various sample programs with source codes

Customized API functions are possible

MotionCreatorPro ™

MotionCreatorPro™ assists the motion system developer to debug any cabling problem, and solve the difficulty of system configuration before programming.

Linux Platform

Redhat 9, kernel 2.4.x

SUSE 10, kernel 2.6.13

Fedora Core 5, kernel 2.6.15

Fedora Core 3, kernel 2.6.9

Fedora Core 4, kernel 2.6.11

Pin Assignment of 68-pin SCSI type Connector			
VPP	1	35	VPP
EXGND	2	36	EXGND
OUT0+	3	37	OUT1+
OUT0-	4	38	OUT1-
DIR0+	5	39	DIR1+
DIR0-	6	40	DIR1-
SVON0 41	7	41	SVON1
ERC0	8	42	ERC1
ALM0	9	43	ALM1
INP0	10	44	INP1
RDY0	11	45	RDY1
EA0+	12	46	EA1+
EA0-	13	47	EA1-
EB0+	14	48	EB1+
EB0-	15	49	EB1-
EZ0+	16	50	EZ1+
EZ0-	17	51	EZ1-
VPP	18	52	VPP
N/C	19	53	EXGND
PEL0	20	54	PEL1
MEL0	21	55	MEL1
EXGND	22	56	EXGND
LTC/SD/PCS0/CLR0	23	57	LTC/SD/PCS1/CLR1
ORG0	24	58	ORG1
N/C	25	59	EXGND
PA+_ISO	26	60	EMG
PA-_ISO	27	61	DIN0
PB+_ISO	28	62	DIN1
PB-_ISO	29	63	DIN2
CMP0	30	64	DIN3
CMP1	31	65	DOUT0
EXGND	32	66	DOUT1
EXGND	33	67	EXGND
EX+24V	34	68	EX+24V

Pin Assignment of BOX HEAD Connector			
EXGND	1	23	DO0
EXGND	2	24	DO1
DIN0	3	25	DO2
DIN1	4	26	DO3
DIN2	5	27	EXGND
DIN3	6	28	EXGND
DIN4	7	29	DO4
DIN5	8	30	DO5
VDD	9	31	DO6
EXGND	10	32	DO7
DIN6	11	33	DO8
DIN7	12	34	DO9
DIN8	13	35	EXGND
DIN9	14	36	VDD
DIN10	15	37	DO10
DIN11	16	38	DO11
EXGND	17	39	DO12
EXGND	18	40	DO13
DIN12	19	41	DO14
DIN13	20	42	DO15
DIN14	21	43	EXGND
DIN15	22	44	EXGND