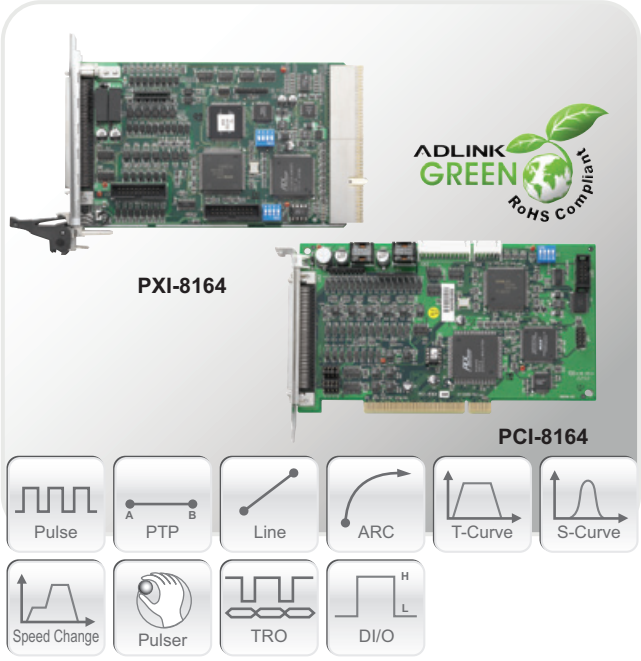
PXI-8164/PCI-8164

Advanced 4-axis Stepping & Servo Motion Control Card



Features

- 32-bit PCI bus, Rev. 2.2, 33MHz
- Pulse output rate up to 6.55MHz
- Pulse output options: OUT/DIR, CW/CCW
- 2~4 axes linear interpolation
- 2 axes circular interpolation
- Multi-axis continuous interpolation
- Position/speed change on-the-fly
- 13 home return modes and auto home search
- Hardware position compare and trigger with auto-loading FIFO
- High speed position latch function
- Programmable acceleration and deceleration time
- Trapezoidal and S-curve velocity profiles
- 28-bit up/down counter for incremental encoder
- Multi-axis, simultaneous start/stop
- Programmable interrupt sources
- Supports up to 12 cards in one system
- Hardware backlash compensator
- Softwares limit function
- Easy interface to any stepping motors, AC or DC servo motors
- All digital inputs and outputs are 2500V_{RMS} isolated
- Manual pulser input interface

Software Support

Windows Platform

Driver supports for Windows XP/2K/NT/98.

VB/VC++/BCB/Delphi are recommended programming tools.

LabVIEW® VIs

The motion VIs of the PCI-8164 for LabVIEW is available.

MotionCreator™

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

RedHat Linux

RedHat Linux, kernel 2.4.x.

Introduction

Advanced 4 axes Motion Controller

ADLINK PXI-8164/PCI-8164 is an advanced 4-axis motion control card. Compared with the PCI-8132/34 series, PCI-8164/PXI-8164 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 PXI-8164/PCI-8164 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 discretion.

Linear & Circular Interpolation

In multi-axis operation, the PXI-8164/PCI-8164 provides linear interpolation by any 2, any 3, or even all-4 axes. Besides any 2 axes can perform circular interpolation.

Continuous Contouring

The pre-register architecture of PXI-8164/PCI-8164 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.

Hardware Position Compare and Trigger Output

The PXI-8164/PCI-8164 provides position compare and trigger functions. The CMP channel will output a trigger pulse when encoder counter reached the compared value preset by user. Comparison is done by hardware, and an on- board FIFO is implemented to automatically reload the comparing data. Thus, the trigger rate can reach 15KHz, while almost no CPU resource is needed. The trigger pulse width is about 30μS.

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 PXI-8164/PCI-8164 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 PXI-8164/PCI-8164 provides 13 home moving modes for users to choose as their best convenience.

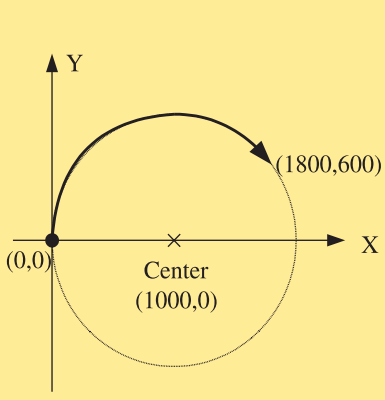
Simultaneously Start/Stop

By using software program or external input signal, the PXI-8164/PCI-8164 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.

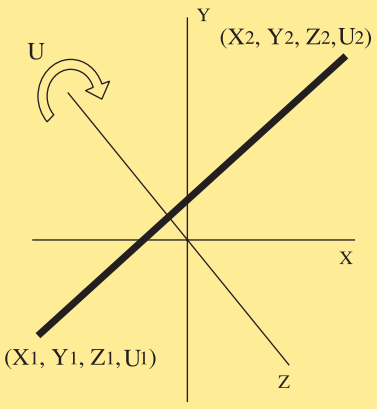
Applications

- Electric assembly
- Semiconductor, LCD manufacturing and measurement
- Laboratory automation
- Vision & photocomposition automation
- Biotech sampling and handing
- Robotic
- CNC machine

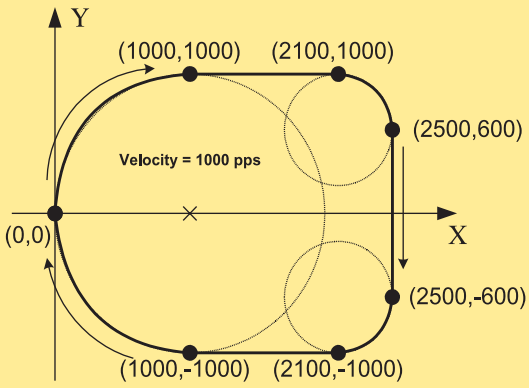
Various Interpolation Modes of PXI-8164/PCI-8164



Circular Interpolation



4 axes Linear Interpolation



Continuous Interpolation

Specifications

Motion

- Number of controllable axes: 4
- Max. number of cards in one system: 12
- Up to 6.55MHz pulse output
- Pulse output is programmable to be: OUT/DIR or CW/CCW
- 28-bit Up/Down counter for encoder feed-back signals
- Position range: (28-bit), -134217728 ~ +134217728 pulses
- Encoder Input Frequency: 4MHz @ 1M cable

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
- General DO pin: SVON
- General DI pin: RDY
- Pulser signal input: PA and PB
- Simultaneous Start/Stop Signal I/O Pins: STA and STP

General-Purposed I/O

- 6 TTL level Digital Output (PCI-8164 only)
- 4DI/4DO (PXI-8164 only)

Ordering Information

PXI-8164	Advanced 4 axes motion control card
PCI-8164	Advanced 4 axes motion control card
DIN-100M15	Termination board for general purpose with 1.5M cable
DIN-100M30	Termination board for general purpose with 3M cable
DIN-814M	Termination board for Mitsubishi MR-J2S-A servo amplifier with 1M cable
DIN-814M -J3A	Termination board for Mitsubishi MR-J3-A amplifier with 1M cable
DIN-814PA	Termination board for for Panasonic MINAS A servo amplifier with 1M cable
DIN-814Y	Termination board for Yaskawa Sigma II amplifier with 1M cable

Termination Board

- *DIN-100M15: General Purpose*

DIN-100M15

- *DIN-814M: For Mitsubishi MR-J2S-A servo amplifier with 1M cable*

DIN-814M

- *DIN-814M-J3A: For Mitsubishi MR-J3-A amplifier with 1M cable*

DIN-814M-J3A

- *DIN-814PA: For for Panasonic MINAS A servo amplifier with 1M cable*

DIN-814PA

- *DIN-814Y: For Yaskawa Sigma II amplifier with 1M cable*

DIN-814Y

PXI-8164/PCI-8164 Pin Assignment of the 100-pin SCSI-type Connector

VPP	1	51	VPP
GND	2	52	GND
OUT1+	3	53	OUT3+
OUT1-	4	54	OUT3-
DIR1+	5	55	DIR3+
DIR1-	6	56	DIR3-
SVON1	7	57	SVON3
ERC1	8	58	ERC3
ALM1	9	59	ALM3
INP1	10	60	INP3
RDY1	11	61	RDY3
GND	12	62	GND
EA1+	13	63	EA3+
EA1-	14	64	EA3-
EB1+	15	65	EB3+
EB1-	16	66	EB3-
EZ1+	17	67	EZ3+
EZ1-	18	68	EZ3-
VPP	19	69	VPP
GND	20	70	GND
OUT2+	21	71	OUT4+
OUT2-	22	72	OUT4-
DIR2+	23	73	DIR4+
DIR2-	24	74	DIR4-
SVON2	25	75	SVON4
ERC2	26	76	ERC4
ALM2	27	77	ALM4
INP2	28	78	INP4
RDY2	29	79	RDY4
GND	30	80	GND
EA2+	31	81	EA4+
EA2-	32	82	EA4-
EB2+	33	83	EB4+
EB2-	34	84	EB4-
EZ2+	35	85	EZ4+
EZ2-	36	86	EZ4-
PEL1	37	87	PEL3
MEL1	38	88	MEL3
CMP1	39	89	LTC3
SD1	40	90	SD3
ORG1	41	91	ORG3
GND	42	92	GND
PEL2	43	93	PEL4
MEL2	44	94	MEL4
CMP2	45	95	LTC4
SD2	46	96	SD4
ORG2	47	97	ORG4
GND	48	98	GND
GND	49	99	E_24V
GND	50	100	E_24V