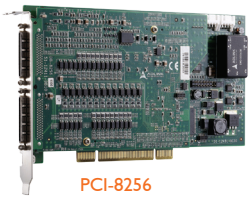
PCI-8253 / PCI-8256

DSP-based 3/6-axis Analog Motion Controllers

PCI-8253



PCI-8256

Features

- On-board 250 MHz DSP
- 3/6 axes of ±10 volts analog command for controlling servo motors by differential command signal
- Maximum servo update rate is less than 300 μs for 6 axes
- Encoder feedback frequency up to 20 MHz
- Digital filter for encoder input to reduce noise disturbance
- Manual pulse generator inteface
- One dedicated emergency input pin
- High speed position latch function via ORG and Index signals
- On-board 512 kb flash ROM for motion kernel and non-volatile data – PID parameters
- Programmable interrupt source control to host PC
- Watch dog timer for safety control
- Support for up to 16 cards in one system

Motion Features

- Jogging mode
- Any 2-4 axes linear interpolation
- Any 2 axes circular interpolation
- Position override & speed override in anytime
- Variety of homing modes via signals
- Linear and FIFO position comparison method for high speed trigger output
- Contouring function by point table description
- Gantry mode
- Ring counter (32-bit) for rotatory encoder input
- Motion trajectory & PID parameters can be changed on-the-fly

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

Specifications

Analog Input / Output Channels	
Number of Channels	3 for PCI-8253; 6 for PCI-8256
Analog Output	±10 Volt with 16-bit D/A Converter
Analog Input	±10 Volt with 14-bit A/D Converter
Encoder Input Channels	
Number of Channels	3 for PCI-8253; 6 for PCI-8256
Max. Encoder Input Frequency	20 MHz under 4 x AB mode
Encoder Counter	6-CH, 32-bit
Pulse Command Type	AB phase and CW/CCW modes
Trigger Channels	
Number of High speed Channels	1 for PCI-8253; 2 for PCI-8256
Number of Low Speed Channels	1 for PCI-8253; 2 for PCI-8256
Maximum Trigger Pulse Frequency	1 MHz for high speed trigger; 25 KHz for low speed trigger
Trigger Pulse Width	0.3 μs to 300 ms
Motion I/O Interface Signals	
I/O Pins	Differential and 2500 VRMS, optically isolated
Incremental Encoder Signals Input Pin	EA and EB
Encoder Index Signal Input	EZ
Mechanical Limit Switch Signal Input Pins	±EL and ORG
Servomotor Interface I/O Pin	INP, ALM, ERC, SVON, RDY
Position Compare Output Pin	CMP
General Purpose I/O	
Digital Input	4-CH (PCI-8253) / 8-CH (PCI-8256) isolated digital input
Input Voltage	0 to 24 V
Input Resistance	2.4 KΩ @ 0.5 W
Digital Output	4-CH (PCI-8253) / 8-CH (PCI-8256) isolated digital output
Output Voltage	5 V (min.); 35 V (max.)
Output Type	NPN open collector Darlington transistors
Current Sink	90 mA
Analog Input (A/D)	
Resolution	14-bit
Input Channel	4 single-ended
Input Range	±10 V, bipolar
Conversion Time	8 μs
Sampling Rate	110 K samples/sec (Max.)
Accuracy	0.01% of FSR, ±1 LSB

Ordering Information

- **PCI-8253**
  DSP-based 3-axis analog motion controller
- **PCI-8256**
  DSP-based 6-axis analog motion controller

Accessories

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

Terminal Board

- DIN-825-J3A0
  Terminal board for Mitsubishi MR-J3A/J4A servo amplifier
- DIN-68S-01
  Terminal board with one 68-pin SCSI-II connector and DIN-rail mounting
- DIN-825-GP3
  Terminal board with 68-pin SCSI-II connector for general purpose servo & stepper

Cabling

- ACL-10568-1
  68-pin SCSI-VHDCI cable (mating with AMP-787082-7), 1 M

Pin Assignment

PCI-8253 & PCI-8256

AOUT1+	1	35	AOUT1-
AOUT2+	2	36	AOUT2-
AOUT3+	3	37	AOUT3-
AGND	4	38	AGND
AIN1	5	39	AGND
AIN2	6	40	Rsv.
AIN3	7	41	Rsv.
EA1+	8	42	EA1-
EB1+	9	43	EB1-
EZ1+	10	44	EZ1-
ALM1	11	45	ORG1
SVON1	12	46	PEL1
ZSP1	13	47	MEL1
TRG1+	14	48	TRG1-
TRG2+	15	49	TRG2-
EA2+	16	50	EA2-
EB2+	17	51	EB2-
EZ2+	18	52	EZ2-
DOCOM	19	53	DICOM
ALM2	20	54	ORG2
SVON2	21	55	PEL2
ZSP2	22	56	MEL2
EA3+	23	57	EA3-
EB3+	24	58	EB3-
EZ3+	25	59	EZ3-
ALM3	26	60	ORG3
SVON3	27	61	PEL3
ZSP3	28	62	MEL3
DOCOM	29	63	IEMG
DOCOM	30	64	DICOM
EDO1	31	65	EDI1
EDO2	32	66	EDI2
EDO3	33	67	EDI3
EDO4	34	68	EDI4