MPC3024AC

4-axis Closed Loop Motion Control Card (Servo/Stepping Motor Control)

Features

- Same basic function as MPC3024A
- 4-axis servo fully closed loop PI control
- 4 stepper semi-closed loop control
- Mixed semi-closed / fully closed loop control
- Tracking control on X, Y and Z, A axis
- Encoder feedback broken detection
- 4 17-bit DA

Specifications (With Matched Wiring Board)

Motion

- Max Pulse Rate : 6,553,500 pps
- Pulse Output Mode : Single phase : CLOCK, DIR
  Dual phase : CW, CCW
- Acceleration / Deceleration mode : linear, S-curve
- Homing Mode : 14 types
- Encoder Up/Down Counter : 4 28-bit counter
- Pulse Handle Up/Down Counter : 4 28-bit counter
- Linear Interpolation : any 2 up to 4-axes
- Circular Interpolation : any 2-axes

Pulse referenced PI closed loop control

- Resolution : 17-bit
- D/A range : +10Vdc ~ -10Vdc
- Error counter : 32-bit
- Digital sample time : 0.25ms
- Proportional gain : 1~4095
- Integral time : 1ms ~ 4095ms
- Feedback multiple rate : x1, x2, x4

Digital I/O

- Motion Specific Input : SRDY, ALM, LS+, LS-, SD, ORG, PCS, LTC, INP per axis, EMG per card
- Motion Specific Output : CMP, SVON, ERC, FIN per axis
- General : 8 TTL, nibble configurable

Main Card General

- Card ID : 16 locations set by rotary switch
- Insulation Resistance : 100M Ohm (min) at 1000Vdc
- Isolation Voltage : 2500Vac 1Min
- I/O Connector : 2 68-pin female mini SCSI connector
  25P D type connector
- External Supply : 24Vdc ± 4Vdc
- Operation Temperature : 0 °C ~ +70 °C
- Storage Temperature : -20 °C ~ +80 °C
- Operation Humidity : 5~95% RH, non-condensing
- Dimensions : 175(W)*122(H)mm, 6.9(W)*4.8(H)in

Introduction

MPC3024AC is a new version of MPC3024A with closed loop PI control. All the motion functions succeed its ancestor MPC3024/A but now the PI closed loop is available. In addition, the tracking control and encoder feedback broken detection are both the highlights of the new card. The 17-bit DA enables the high accuracy motion control of analog input servo driver, it can also use as a general purpose DA, if any channel will not use in motion control.

Dll and Driver are provided for WinXP, Win7 and later or LINUX platform and its sample programs come with VB source code.

Various Homing Modes

Total of 14 homing modes are available to meet various mechanism requirements. Additional zero phase inputs from encoder for accurate positioning and absolute homing reference.

Motion Control

Linear and circular interpolations are standard functions. Backlash compensation for accurate position. Speed change on the fly, 4 28-bit counters for feedback and 4 28-bit counters for pulse handler input give the maximum extend of motion control.

Closed loop PI motion control

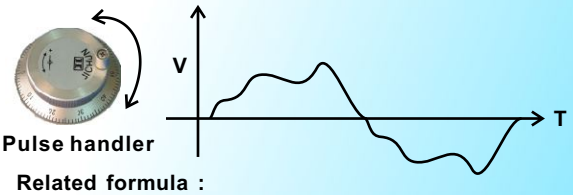
The control loop command comes from the motion pulses and compare the feedback to compute the PI compensation. The PI loop can also program as master-slave tracking control. If you do not use closed loop control the pulse command is also available for pulse type driver and you get extra general purpose D/A.

Digital I/O

Motion related I/O's such as LS+, LS-, Home and general I/O are all isolated by photo couplers. I/O signals polarity can be changed by DIP switch or software, 2 extra nibble configurable TTL IO for general purpose application.

Application Tips

- Manual speed and positioning using pulse handler



Pulse handler

Related formula :

1. Distance =$\int$ v dt=pulse no input * multiple rate
2. Speed = pulse handler speed * multiple rate

Pin Assignments

JF2 / JF1

	+24Vin	68	34	+24Vin	
	+5Vin	67	33	+5Vin	
	EXTG	66	32	EXTG	
(Y/A)	DA	65	31	DA	(X/Z)
	EXTG	64	30	EMG	
	NC	63	29	NC	
	NC	62	28	NC	
	NC	61	27	NC	
	NC	60	26	NC	
	NC	59	25	NC	
	NC	58	24	NC	
(Y/A)	ERC	57	23	SVON	(Y/A)
(Y/A)	ALM	56	22	SRDY	(Y/A)
(Y/A)	INP	55	21	CCW-	(Y/A)
(Y/A)	CCW+	54	20	CW-	(Y/A)
(Y/A)	CW+	53	19	EZ-	(Y/A)
(Y/A)	EZ+	52	18	EB-	(Y/A)
(Y/A)	EB+	51	17	EA-	(Y/A)
(Y/A)	EA+	50	16	CMP	(Y/A)
(Y/A)	FIN	49	15	LTC	(Y/A)
(Y/A)	PCS	48	14	HOME	(Y/A)
(Y/A)	SD	47	13	LS-	(Y/A)
(Y/A)	LS+	46	12	ERC	(X/Z)
(X/Z)	SVON	45	11	ALM	(X/Z)
(X/Z)	SRDY	44	10	INP	(X/Z)
(X/Z)	CCW-	43	9	CCW+	(X/Z)
(X/Z)	CW-	42	8	CW+	(X/Z)
(X/Z)	EZ-	41	7	EZ+	(X/Z)
(X/Z)	EB-	40	6	EB+	(X/Z)
(X/Z)	EA-	39	5	EA+	(X/Z)
(X/Z)	CMP	38	4	FIN	(X/Z)
(X/Z)	LTC	37	3	PCS	(X/Z)
(X/Z)	HOME	36	2	SD	(X/Z)
(X/Z)	LS-	35	1	LS+	(X/Z)

JM3

+5Vout_PC	1	14	+5Vout_PC	
PA1	2	15	PB1	
PA2	3	16	PB2	
GND	4	17	GND	
PA3	5	18	PB3	
PA4	6	19	PB4	
GND	7	20	GND	
+5Vout_PC	8	21	+5Vout_PC	
IO0	9	22	IO1	
IO2	10	23	IO3	
IO4	11	24	IO5	
IO6	12	25	IO7	
GND	13			

Applications

- ➤Precision positioning control
- ➤Contouring control, speed control
- ➤X-Y table, rotary machine, robotics control
- ➤Biotech sampling and handling
- ➤Any combined control servo and stepping Motor
- ➤Tracking control
- ➤Mixed servo closed loop and stepper Open loop control

Software Support

➤PC OS Support

WinXP, Win7 and later or Linux O.S.
Embedded XP, Win CE (at request)

➤Library

DLLs, VI library

➤Develop Software

Visual C++, Visual Basic ,
Borland C/C++ Builder, LabVIEW etc

➤Example Source Code

Visual Basic

Ordering Information

- ➤**MPC3024AC :** 4-axis Motion Control Card for Servo/Stepping Motor Control (include SM23404)
- ➤**ADP3024ACDIN(N) :** DIN rail mounted wiring board matched MPC3024AC, General output : 8 NMOS P.21
- ➤**ADP3024ACDIN(P) :** DIN rail mounted wiring board matched MPC3024AC, General output : 8 PMOS P.21
- ➤**ADP3024ACDIN(R) :** DIN rail mounted wiring board matched MPC3024AC, General output : 8 Relays P.21
- ➤**M266868151 :** 68-pin mini-SCSI cable 1.5 M for JF1/JF2 I.18
- ➤**M2668683011 :** 68-pin mini-SCSI cable 3.0 M for JF1/JF2 I.18

Note : Two axes control signals granted in one cable.

- ➤**JS51050 :** DIN rail mounted dummy wiring board (D type 25P male to terminals) for JM3 I.12
- ➤**M270325X4 :** D type 25P male-female cable 1.5M for JM3 I.17
- ➤**M270325X4S :** D type 25P male-female cable 1.5M, shielding for JM3 I.17
- ➤**M270325X0 :** D type 25P male-female cable 3.0M for JM3 I.17
- ➤**M270325X0S :** D type 25P male-female cable 3.0M, shielding for JM3 I.17
- ➤**FVC01 :** Frequency to voltage module P.23
- ➤**SM23404 :** Extension kit for JM3 (bracket and flat cable for 25P female D type connector)