

AC Power Input 2-Phase Closed-loop Stepper Motor Drivers



AiCA-D Series CATALOG

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Features

- Closed-loop system with real-time position control
- High speed & high torque drive without missing steps
- Supports 200 - 240 VAC~ AC power
- Motor driver+Controller integrated type
- Control up to 31 axes with RS-485 communication
- Windows-based software (atMotion) for easy parameter setting and monitoring
- 4 operation mode : Jog mode, Continuous mode, Index mode, Program Mode
- 7 segment display for alarm / status reading
- Supports torque mode
- Supports Auto Current Down mode
- Built-in brake type motors available (AiCA-D-B Series)

Ordering Information

This is only for reference, the actual product does not support all combinations..
For selecting the specified model, follow the Autonics website.
Select a model that matches the ordering information of the motor and the driver.

AiCA - D - ① ② A - ③

① Frame size

Number: Frame size (Unit: mm)

③ Motor type

No mark: Standard type

B: Built-in brake type

② Axial length

M: Medium

L: Long

Product Components

- Product
- Instruction manual
- RS485 comm. protective connector
- Power connector
- I/O connector
- Brake connector (AiCA-D-B Series)

Software

Download the installation file and the manuals from the Autonics website.

■ atMotion

The program allows to manage the motor driver's parameter setting and monitoring data.

Specifications

Model		AiCA-D-60MA-□	AiCA-D-60LA-□	AiCA-D-86MA-□	AiCA-D-86LA-□
Main	Power supply	200 - 240 VAC ~ 50 / 60 Hz			
	Max. RUN power ⁰¹⁾	≤ 800 VA			
	Stop power ⁰²⁾	≤ 60 VA		≤ 65 VA	
AUX ⁰³⁾	Power supply	24 VDC≡			
	Input current	0.3 A		0.5 A	
Max. RUN current ⁰⁴⁾		2.0 A / Phase			
Stop current		20 to 100% of max. RUN current			
Resolution		500 (factory default), 1000, 1600, 2000, 3200, 3600, 5000, 6400, 7200, 10000 PPR			

01) When changing the load rapidly, instantaneous peak current may increase. The capacity of power supply should be over 1.5 to 2 times of max. RUN power.

02) Based on ambient temp. 25°C, ambient humi. 55%RH, stop current 50%

03) Auxiliary power is only available in built-in brake type and not available in standard type.

04) RUN current varies depending on the input RUN frequency and max. RUN current at the moment varies also.

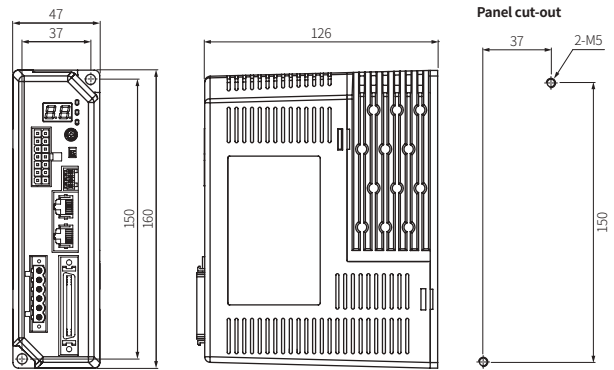
Run method	2-phase bipolar closed-loop control method
Speed filter	Disable, 2, 4, 6, 8, 10, 20, 40, 60 (factory default), 80, 100, 120, 140, 160, 180, 200 ms
Control Gain	0 (factory default) to 30, Fine Gain
Max. rotation speed	3000 rpm
Position setting range	-2,147,483,648 to +2,147,483,647
In-Position	Fast Response: 0 (factory default) to 7, Accurate Response: 0 to 7
Rotation direction	CW (factory default), CCW
Operation mode	Jog mode, Continuous mode, Index mode, Program mode
Home search mode	General mode, Limit mode, Zero point mode, Torque mode
Index step	64 step
Program step	256 step
Program function	Power On Program Start, Power On Home Search
Control command	ABS, INC, HOM, ICJ, IRD, OPC, OPT, JMP, REP, RPE, END, POS, TIM, CMP, TOQ

I/O voltage level	[H]: 5 - 30 VDC≡, [L]: 0 - 2 VDC≡
Input ⁰¹⁾	Exclusive input: 20, General input: 9
Output	Exclusive output: 4, General output: 10
External power supply	VEX (24 VDC≡ fixed): 2, GEX (GND): 2
Input resistance	4.7 kΩ (Anode Pull-up)
Insulation resistance	≥ 200 MΩ (500 VDC≡ megger)
Dielectric strength	1,500 VAC ~ 60 Hz for 1 minute
Vibration	1.5 mm double amplitude at frequency 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 2 hours
Shock	300 m/s ² (≈ 30 G) in each X, Y, Z direction for 3 times
Ambient temp.	0 to 50°C, storage: -10 to 60°C (no freezing or condensation)
Ambient humi.	35 to 85%RH, storage: 10 to 90%RH (no freezing or condensation)
Protection rating	IP20 (IEC standard)
Approval	CE ENEC
Unit weight (packaged)	≈ 780 g (≈ 1,050 g)

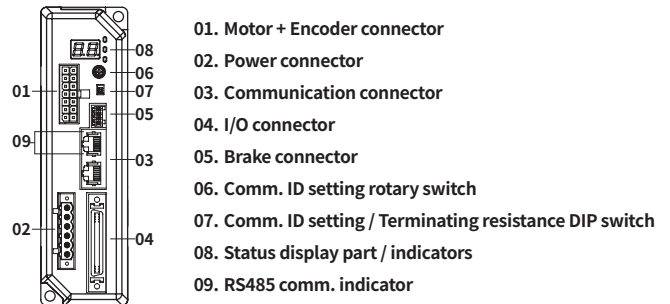
01) Brake ON/OFF function can be changed from general input IN8 in case of built-in brake type.

Dimensions

• Unit: mm, For the detailed drawings, follow the Autonics website.



Unit Descriptions



- 01. Motor + Encoder connector
- 02. Power connector
- 03. Communication connector
- 04. I/O connector
- 05. Brake connector
- 06. Comm. ID setting rotary switch
- 07. Comm. ID setting / Terminating resistance DIP switch
- 08. Status display part / indicators
- 09. RS485 comm. indicator

Communication Interface

■ RS485

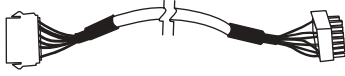
Comm. protocol	Modbus RTU
Applied standard	Compliance with EIA RS485
Max. connections	31 units (address: 01 to 31)
Synchronous method	Asynchronous
Comm. method	2-wire half duplex
Comm. distance	≤ 800 m
Baud rate	9600, 19200, 38400, 57600, 115200 (factory default) bps
Start bit	1 bit (fixed)
Data bit	8 bit (fixed)
Parity bit	None (factory default), Even, Odd
Stop bit	1 bit (factory default), 2 bit

Sold Separately

- Motor + Encoder cable: C1D14M-□ (fixed type), C1DF14M-□ (flexible type)
- I/O Cable: CO50-MP□-R (specifications: AiC TAG)

Sold Separately : Motor + Encoder Cable

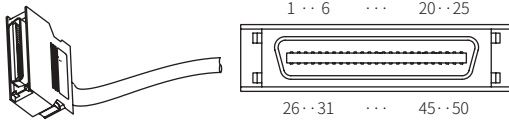
■ Fixed type: C1D14M-□, Flexible type: C1DF14M-□



- Recommended to use ferrite core at both ends of the cable.
- The model name is 1, 2, 3, 5, 7, 10, 15, 20 which indicates the cable length.
E.g.) C1DF14M-10: 10 m flexible type, Motor + Encoder cable

Sold Separately : I/O Cable

■ CO50-MP□-R (specifications: AiC TAG)



Pin	Function (Name TAG)	Cable Color	Dot line color-number	Pin	Function (Name TAG)	Cable Color	Dot line color-number
1	N·C	Orange	Black-1	26	IN0	White	Red-3
2	N·C		Red-1	27	IN1		Black-4
3	Reset		Black-2	28	IN2		Red-4
4	Start		Red-2	29	N·C		Black-5
5	Stop		Black-3	30	IN3		Red-5
6	EMG		Red-3	31	IN4		Black-1
7	Step0/+Run/+Jog		Black-4	32	IN5		Red-1
8	Step1/-Run/-Jog		Red-4	33	IN6		Black-2
9	Step2/SSP0		Black-5	34	IN7		Red-2
10	Step3/SSP1		Red-5	35	IN8, Brake ON/OFF		Black-3
11	Step4/MSP0	Yellow	Black-1	36	VEX	Gray	Red-3
12	Step5/MSP1		Red-1	37	GEX		Black-4
13	MD0/HMD0		Black-2	38	Alarm		Red-4
14	MD1/HMD1		Red-2	39	Compare1 (Trigger)		Black-5
15	Pause		Black-3	40	Compare2 (Trigger)		Red-5
16	Servo ON/OFF		Red-3	41	OUT0		Black-1
17	Home		Black-4	42	OUT1		Red-1
18	Alarm Reset		Red-4	43	OUT2		Black-2
19	+Limit		Black-5	44	OUT3		Red-2
20	-Limit		Red-5	45	OUT4		Black-3
21	ORG	White	Black-1	46	OUT5	Pink	Red-3
22	SD		Red-1	47	OUT6		Black-4
23	In-Position		Black-2	48	OUT7		Red-4
24	VEX		Red-2	49	OUT8		Black-5
25	GEX		Black-3	50	OUT9		Red-5

- Recommended to use ferrite core at both ends of the cable.
- The model name is 010, 020, 030, 050, 070, 100, 150, 200 which indicates the cable length.
E.g.) CO50-MP070-R: 7 m I/O cable