TCD210204AB

Autonics

AC Power Input EtherCAT Comm. Type 2-Phase Closed-loop Stepper Motor Driver

AiCA-D-EC 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
- Multi-axis simultaneous control with EtherCAT communication
- Windows-based software (atMotion) for easy parameter setting and monitoring
- 7-segment display for alarm / status reading
- Supports torque mode
- Supports Auto Current Down mode
- Built-in brake type motors available (AiCA-D-B-EC Series)
- Built-in geared/rotary actuator type motors available

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	-	❶	❷	A	-	❸	-	EC

❶ Frame size
Number: Frame size (mm)

❷ Axial length
M: Medium
L: Long

❸ Motor type
No mark: Standard type
B: Built-in brake type

Product Components

- Product
- Instruction manual
- Power connector × 1
- I/O connector × 1
- Brake connector (AiCA-D-B-EC Series) × 1

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-□-EC	AiCA-D-60LA-□-EC	AiCA-D-86MA-□-EC	AiCA-D-86LA-□-EC
Main power	Power supply	200 - 240 VAC~ 50/60 Hz			
	Max. RUN power[01]	≤ 800 VA			
	Stop power[02]	≤ 60 VA		≤ 65 VA	
AUX power[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, 1000, 1600, 2000, 3200, 3600, 5000, 6400, 7200, 10000 (factory default) 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 20%
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 31, (31: Fine Gain)
Max. rotation speed	3,000 rpm
In-Position	Fast Response: 0 to 7 (factory default), Accurate Response: 0 to 7
Operation mode	CSP, CSV, CST, PP, PV, HM
Home search	Homing on the negative limit switch and index pulse Homing on the positive limit switch and index pulse Homing on the home switch and index pulse (Positive) Homing on the home switch and index pulse (Negative) Homing without an index pulse (negative limit switch) Homing without an index pulse (positive limit switch) Homing without an index pulse (Positive and Home sensor ON) Homing without an index pulse (Negative and Home sensor ON) Homing on the index pulse (Negative) Homing on the index pulse (Positive) Set the Origin with Home offset Set the Origin and Reset Current Position Torque Homing Search- with Home offset Torque Homing Search+ with Home offset

Input	Exclusive input: 7, General input: 5
Output	Exclusive output: 2 General output: 4
External power supply	VEX (Default: 24 VDC⎓), GEX (GND)
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 KC RoHS
Unit weight (packaged)	≈ 770 g (≈ 1,040 g)

Communication Interface

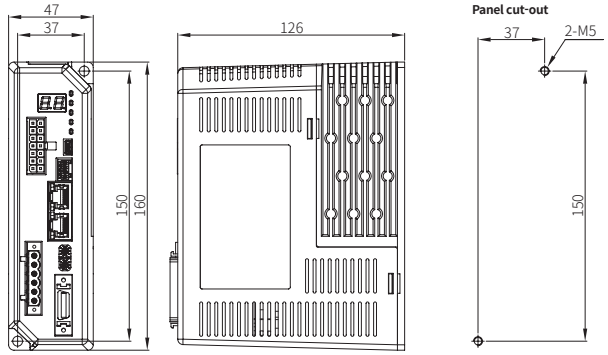
■ EtherCAT

Comm. specifications	EtherCAT
Association approval[01]	EtherCAT Conformance tested
Support protocol	CoE (support CiA402 profile), support FoE
Physical layer	100BASE-TX (IEEE802.3)
Connection cable	CAT5e class or over (Shield type: SF/FTP, S/FTP, SF/UTP)
Max. comm. distance	Within 100 m distance between nodes
Baud rate	10 / 100 Mbps
Distributed clock	DC cycle: 250 us, 500 us, 1 ms, 2 ms, 4 ms, 8 ms
Node ID setting	ECAT ID switch setting: 1 to 99 Physical address setting at Master: 1 to 65535
Topology	Star, Line, Tree

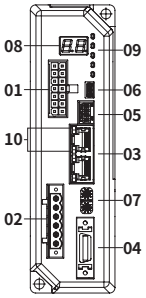
01) EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Dimensions

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



Unit Descriptions



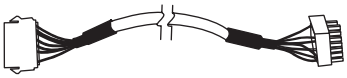
01. Motor + Encoder connector
02. Power connector
03. Comm. connector
04. I/O connector
05. Brake connector (AiCA-D-B-EC Series)
06. USB connector
07. Comm. ID setting rotary switch
08. Status display part
09. Status indicators
10. Comm. indicator

Sold Separately

- I/O cable: CO20-MP□-R (specifications: AiC-EC TAG)
- Motor + Encoder cable: C1D14M(B)-□ (fixed type), C1DF14M(B)-□ (flexible type)

Sold Separately : Motor + Encoder Cable

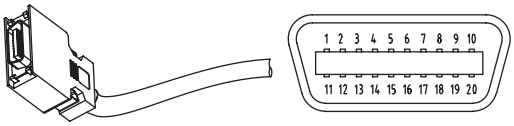
■ Fixed type: C1D14M-□, Flexible type: C1DF14M-□



- 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
- For built-in brake type, use dedicated cable.
  (fixed type: C1D14MB-□, flexible type: C1DF14MB-□)

Sold Separately : I/O Cable

■ CO20-MP□-R (Specifications: AiC-EC TAG)



Pin	Function (Name TAG)	Cable Color	Dot line color-number
1	VEX	Yellow	Black-1
2	ORG		Red-1
3	+Limit		Black-2
4	-Limit		Red-2
5	Alarm Reset		Black-3
6	Hold Off		Red-3
7	Stop		Black-4
8	EMG		Red-4
9	IN1		Black-5
10	IN2		Red-5
11	IN3	White	Black-1
12	IN4		Red-1
13	IN5		Black-2
14	In-Position		Red-2
15	Alarm		Black-3
16	OUT1		Red-3
17	OUT2		Black-4
18	OUT3		Red-4
19	OUT4		Black-5
20	GEX		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.) CO20-MP070-R: 7 m I/O cable