

# CC-Link Comm. Type 2-Phase Closed-loop Stepper Motor Driver



## AiC-D-CL 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
- Multi-axis simultaneous control with CC-Link communication
- Windows-based software (atMotion) for easy parameter setting and monitoring
- 7 segment display for alarm / status reading
- Built-in brake type motors available (AiC-D-B-CL 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.

**AiC - D - ① ② ③ - ④ - CL**

#### ① Frame size

Number: Frame size (unit: mm)

#### ② Axial length

S: Short  
M: Medium  
L: Long

#### ③ Encoder resolution

	□ 20 / 28 / 35 mm	□ 42 / 56 / 60 mm
<b>A</b>	4,000 PPR (1,000 PPR × 4)	10,000 PPR (2,500 PPR × 4)
<b>B</b>	16,000 PPR (4,000 PPR × 4)	-

#### ④ Motor type

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

### Product Components

- Product
- Instruction manual
- Brake connector (AiC-D-B-CL Series)
- Power connector
- I/O connector
- RS485 comm. connector
- CC-Link comm. connector

### 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	AiC-D-20□A-CL	AiC-D-28□B-CL	AiC-D-35□B-CL
Power supply	24 VDC $\pm$ 10%		
Max. RUN power <sup>(01)</sup>	≤ 60 W		
Stop power <sup>(02)</sup>	≤ 10 W		
Max. RUN current <sup>(03)</sup>	0.6 A / Phase	1.0 A / Phase	1.2 A / Phase
Stop current	20 to 100% of max. RUN current (factory default: 50%)		
Resolution	500 (factory default), 1000, 1600, 2000, 3600, 4000, 5000, 6400, 7200, 10000 PPR	500 (factory default), 1000, 1600, 2000, 3600, 5000, 6400, 7200, 10000, 16000 PPR	

Model	AiC-D-42□A-CL	AiC-D-56□A-CL	AiC-D-60□A-CL
Power supply	24 VDC $\pm$ 10%		
Max. RUN power <sup>(01)</sup>	≤ 60 W	≤ 120 W	≤ 240 W
Stop power <sup>(02)</sup>	≤ 10 W	≤ 12 W	≤ 15 W
Max. RUN current <sup>(03)</sup>	1.7 A / Phase	3.5 A / Phase	
Stop current	20 to 100% of max. RUN current (factory default: 50%)		
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) 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 14, Fine Gain
Max. rotation speed	3000 rpm
Positioning 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 steps	64 step
Program steps	256 step
Program function	Power On Program Start, Power On Home Search
Control command	ABS, INC, HOM, ICI, IRD, OPC, OPT, JMP, REP, RPE, END, POS, TIM

I/O voltage level	[H]: 5 - 30 VDC $\pm$ , [L]: 0 - 2 VDC $\pm$
Input	Exclusive input: 3, General input: 8
Output	General output: 7
External power supply	VEX (recommended: 24 VDC $\pm$ ), GEX (GND)
Insulation resistance	≥ 100 M $\Omega$ (500 VDC $\pm$ megger)
Dielectric strength	1,000 VAC $\sim$ 60 Hz for 1 minute
Vibration	1.5 mm double amplitude at frequency of 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 2 hours
Shock	300 m/s <sup>2</sup> ( $\approx$ 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
Unit weight (packaged)	$\approx$ 320 g ( $\approx$ 470 g)

## Communication Interface

### ■ CC-Link

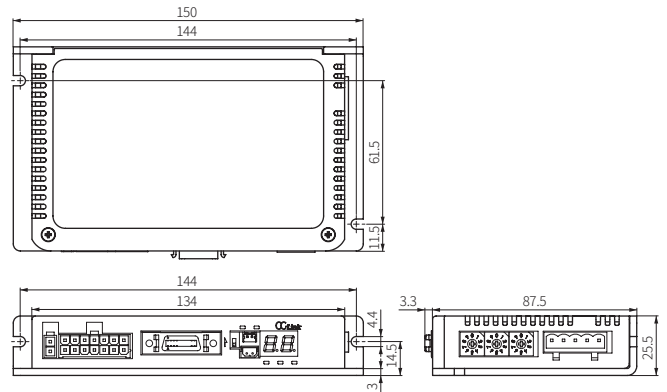
Comm. specifications	CC-Link Ver.1.10
Association approval	CC-Link
Station type	Remote device station
Connection cable	CC-Link Exclusive Cable
Baud rate	156 k, 625 k, 2.5 M, 5 M, 10 M bps
Station number	01 to 64
No. of occupied station	1 station occupied, 2 stations occupied
Comm. distance	Depend on baud rate
Remote I/O	1 station occupied: Ryn / RXn 32 points each 2 stations occupied: Ryn / RXn 64 points each
Remote register	1 station occupied: RWm / RWwn 4 points each 2 stations occupied: RWm / RWwn 8 points each
Command code	Point table R/W, parameter R/W, read only, special command monitor only, network connection, drive control, motion control, drive status
Comm. setting switch	10 bit rotary switch (0 to 9): 3, 1 bit DIP switch (ON / OFF)

### ■ RS485

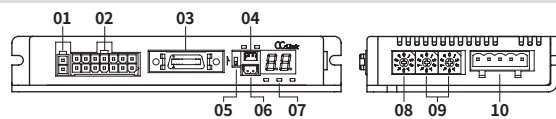
Comm. protocol	Modbus RTU
Applied standard	Compliance with EIA RS485
Max. connections	1 (fixed)
Baud rate	9600, 19200, 38400, 57600, 115200 (factory default) bps
Start bit	1 bit (fixed)
Data bit	8 bit (fixed)
Parity bit	None (fixed)
Stop bit	2 bit (fixed)

## Dimensions

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



## Unit Descriptions



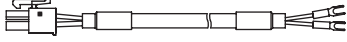
- 01. Power connector
- 02. Motor + Encoder connector
- 03. I/O connector
- 04. RS485 comm. connector
- 05. CC-Link station setting DIP switch
- 06. Brake connector (AiC-D-B-CL Series)
- 07. Status display part / indicators
- 08. CC-Link comm. speed setting rotary switch
- 09. CC-Link comm. station setting rotary switch
- 10. CC-Link comm. connector

## Sold Separately

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

## Sold Separately : Power Cable

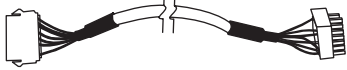
### ■ CJ-PW-□



- Recommended to use ferrite core at both ends of the cable.
- The model name is 010, 020 which indicates the cable length.  
E.g.) CJ-PW-010: 1 m power cable

## 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-□, moving type: C1DF14MB-□)

## Sold Separately : I/O Cable

### ■ CO20-MP□-R (specifications: AiC-CL TAG)



Pin	Function (Name TAG)	Cable color	Dot line color-number
1	VEX	Yellow	Black-1
2	IN0		Red-1
3	IN1		Black-2
4	IN2		Red-2
5	IN3		Black-3
6	IN4		Red-3
7	IN5		Black-4
8	IN6		Red-4
9	IN7		Black-5
10	ORG		Red-5
11	+Limit	White	Black-1
12	-Limit		Red-1
13	OUT0		Black-2
14	OUT1		Red-2
15	OUT2		Black-3
16	OUT3		Red-3
17	OUT4		Black-4
18	OUT5		Red-4
19	OUT6		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