

# Autonics

Pulse Control DC Servo System

## AiS SERIES

M A N U A L



[AiS-42 Series]

[AiS-56 Series]

Thank you for choosing our Autonics product.

Please read the following safety considerations before use.

### ■ Safety Considerations

- ⊗ Please observe all safety considerations for safe and proper product operation to avoid hazards.
- ⊗ Safety considerations are categorized as follows.
- Warning** Failure to follow these instructions may result in serious injury or death.
- Caution** Failure to follow these instructions may result in personal injury, fire, or economic loss.
- ⊗ The symbols used on the product and instruction manual represent the following
- ⚠ symbol represents caution due to special circumstances in which hazards may occur.

### ⚠ Warning

- Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss.** (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.) Failure to follow this instruction may result in personal injury, fire, or economic loss.
- Do not use the unit where flammable or explosive gas, corrosive material, water, or combustible material may be present.** Failure to follow this instruction may result in fire or burn.
- Installation, connection, operation, maintenance, and inspection should be handled by qualified individuals.** Failure to follow this instruction may result in fire, or product damage.
- Disconnect all power sources for installation, connection, operation, maintenance, and inspection.** Failure to follow this instruction may result in product damage.
- Do not disassemble or modify the unit. Please contact us if necessary.** Failure to follow this instruction may result in fire, or product damage.
- When using the motor at the lifting device, install position maintenance device against power failure.** When the motor power is cut off, the position retention of the unit is lost or reduced.
- Install the motor in the housing not to touch of human body.** Failure to follow this instruction may result in fire.
- Install the driver after considering counter plan against power failure.** Failure to follow this instruction may result in personal injury, or product damage by releasing holding torque of motor.
- Do not put a finger or any object into this driver.** Failure to follow this instruction may result in fire, or personal injury.

### ⚠ Caution

- Use the unit within the rated specifications.** Failure to follow this instruction may result in product damage, performance loss, shorten the life cycle of the unit, personal injury, or ambient equipment damage.
- Do not put obstacles around the unit which may obstruct ventilation.** Failure to follow this instruction may result in product damage, ambient equipment damage, or malfunction by heat.
- Do not use water or oil-based detergent when cleaning the unit. Use dry cloth to clean the unit.** Failure to follow this instruction may result in fire.
- Affix the unit tightly on a metal plate.** Failure to follow this instruction may result in personal injury, or product and ambient equipment damage.
- The surface temperature of the motor may reach 70°C in normal operating conditions. Please place a warning sign in conditions where someone may approach the operating motor.** Failure to follow this instruction may result in burn.
- Do not carry the unit by the cable or rotor.** Failure to follow this instruction may result in motor damage or personal injury.
- Make sure to install covers on rotating components.** Failure to follow this instruction may result in personal injury.
- Power input voltage for this driver must be used within the rated specification and power line should be over than AWG 18 (0.75mm²).** Failure to follow this instruction may result in fire.
- Check the connection is correct based on the connection diagram before supplying the power to the driver.** Failure to follow this instruction may result in fire, or driver damage.
- Install over-current prevention device (e.g. the current breaker, etc) to connect the driver with power.** Failure to follow this instruction may result in fire.
- Turn OFF the driver power in case of a power failure.** Failure to follow this instruction may result in personal injury or product damage due to restoration.
- Do not touch the unit while operating or right after stop the driver.** Failure to follow this instruction may result in burn due to high temperature in surface of the driver.
- The emergency stop should be available while the driver is operating.** Failure to follow this instruction may result in personal injury or product damage.
- Before supplying the power to the driver, check the control input signal of this unit.** Failure to follow this instruction may result in personal injury or product damage by unexpected signal input.
- Please install a safety device when requiring to maintain the vertical position after turn off the power of this driver.** Failure to follow this instruction may result in personal injury or product damage by releasing holding torque of the motor.
- Stop with emergency this unit when any error occurs to this driver.** Failure to follow this instruction may result in fire, personal injury.
- Do not touch the terminal during measuring insulation resistance and testing insulation dielectric strength at the driver.** Failure to follow this instruction may result in product damage.
- Use the designated 2-phase stepper motor only.** Failure to follow this instruction may result in fire or product damage.
- When disposing the unit, please categorize it as industrial waste.** ⊗The above specifications are subject to change and some models may be discontinued without notice.

### ■ Ordering Information

AIS - 42 L A	Encoder resolution	A	10,000P/R (2,500P/R×4-multiply)
	Motor axis length	S	Short
		M	Middle
		L	Long
	Motor frame size	42	□42 (42mm×42mm)
		56	□56 (56mm×56mm)
	Series	AiS	Artificial Intelligence Standard

### ○ Model

Set	Driver	Motor
AiS-42SA	AiS-D-42SA	Ai-M-42SA
AiS-42MA	AiS-D-42MA	Ai-M-42MA
AiS-42LA	AiS-D-42LA	Ai-M-42LA
AiS-56SA	AiS-D-56SA	Ai-M-56SA
AiS-56MA	AiS-D-56MA	Ai-M-56MA
AiS-56LA	AiS-D-56LA	Ai-M-56LA

### ■ Specifications

#### ○ Driver

Model	AiS-D-42SA	AiS-D-42MA	AiS-D-42LA	AiS-D-56SA	AiS-D-56MA	AiS-D-56LA
Power supply	24VDC					
Allowable voltage range	90 to 110% of the rated voltage					
Current consumption	STOP <sup>※1</sup>	Max. 6W	Max. 6.5W	Max. 7W	Max. 8W	Max. 9W
	Max. during operation <sup>※2</sup>	Max. 60W			Max. 120W	
	Max. RUN current <sup>※3</sup>	1.7A/Phase			3.5A/Phase	
STOP current	25% or 50% of max. RUN current (set by SW3 switch)					
Resolution	500, 1000, 1600, 2000, 3200, 3600, 5000, 6400, 7200, 10000					
Pulse input method	1pulse or 2 pulse input method (set by SW3 switch)					
Status indicator	Power indicator: green LED, Alarm indicator: red LED, In-position indicator: Yellow LED					
Input signal	RUN pulse, HOLD OFF, Alarm reset (photocoupler input)					
Output signal	In-position, Alarm output (photocoupler output), Encoder signal (A/A/B/B/Z/Z phase) (line driver output)					
Input pulse specifications	Pulse width	CW, CCW: Max. 0.5µs				
	Rising/Falling time	CW, CCW: Max. 0.5µs				
	Pulse input voltage	[H]: 4-8VDC, [L]: 0-0.5VDC				
	Max. input pulse freq. <sup>※4</sup>	CW, CCW: 500kHz				
	Max. input pulse freq. <sup>※4</sup>	220Ω (CW, CCW), 270Ω (HOLD OFF, ALARM RESET)				
Insulation voltage	Min. 100MΩ (at 500VDC megger)					
Dielectric strength	1,000VAC 60Hz for 1min.					
Vibration	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min.) in each X, Y, Z direction for 2 hours					
Shock	300m/s <sup>2</sup> (approx. 30G) in each X, Y, Z direction for 3 times					
Environment	Ambient temp.	10 to 50°C, storage: -10 to 60°C				
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH				
Approval	CE, RoHS					
Weight <sup>※5</sup>	Approx. 400g (approx. 290g)					

- ※1: Based on the ambient temperature 25°C, ambient humidity 55%RH, and STOP current 50%.
- ※2: Max. power consumption during operation. 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. power consumption.
- ※3: RUN current varies depending on the input RUN frequency and max. RUN current at the moment varies also.
- ※4: Max. input pulse frequency is max. frequency to be input and does not same as max. pull-out frequency or max. slewing frequency.
- ※5: The weight includes packaging. The weight in parentheses is for unit only.
- ※Environment resistance is rated at no freezing or condensation.

#### ○ Motor

Model	Ai-M-42SA	Ai-M-42MA	Ai-M-42LA	Ai-M-56SA	Ai-M-56MA	Ai-M-56LA
Max. holding torque <sup>※1</sup>	2.75kgf·cm (0.275N·m)	4.56kgf·cm (0.456N·m)	5.0kgf·cm (0.5N·m)	7.5kgf·cm (1.23N·m)	12.3kgf·cm (2.3N·m)	23kgf·cm (2.3N·m)
Rotor moment of inertia	38g·cm <sup>2</sup> (38×10 <sup>-7</sup> kg·m <sup>2</sup> )	55g·cm <sup>2</sup> (55×10 <sup>-7</sup> kg·m <sup>2</sup> )	80g·cm <sup>2</sup> (80×10 <sup>-7</sup> kg·m <sup>2</sup> )	120g·cm <sup>2</sup> (120×10 <sup>-7</sup> kg·m <sup>2</sup> )	300g·cm <sup>2</sup> (300×10 <sup>-7</sup> kg·m <sup>2</sup> )	520g·cm <sup>2</sup> (520×10 <sup>-7</sup> kg·m <sup>2</sup> )
Weight <sup>※2</sup>	Approx. 0.49kg (approx. 0.3kg)	Approx. 0.56kg (approx. 0.37kg)	Approx. 0.63kg (approx. 0.44kg)	Approx. 0.73kg (approx. 0.55kg)	Approx. 0.92kg (approx. 0.75kg)	Approx. 1.35kg (approx. 1.17kg)

#### ■ Common specifications

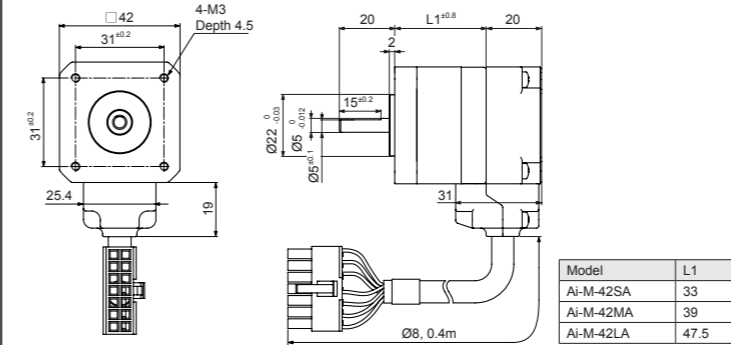
Basic step angle	1.8°/step	
Number of phases	2-phase	
Operation method	Bipolar	
Insulation class	B type (130°C)	
Insulation resistance	Min. 100MΩ (at 500VDC megger), between motor coil-case	
Dielectric strength	500VAC 50/60Hz for 1 min., between motor coil-case	
Environment	Ambient temperature	0 to 50°C, storage: -20 to 70°C
	Ambient humidity	20 to 90%RH, storage: 15 to 95%RH
Radial movement	Max. 0.025mm (load 5N)	
Protection structure	IP30 (IEC standards)	

- ※1: Max. holding torque is standard torque when supply the rated current (2-phase holding) and stop the motor for comparing the specifications of motors.
- ※2: The weight includes packaging. The weight in parentheses is for unit only.

### ■ Dimensions

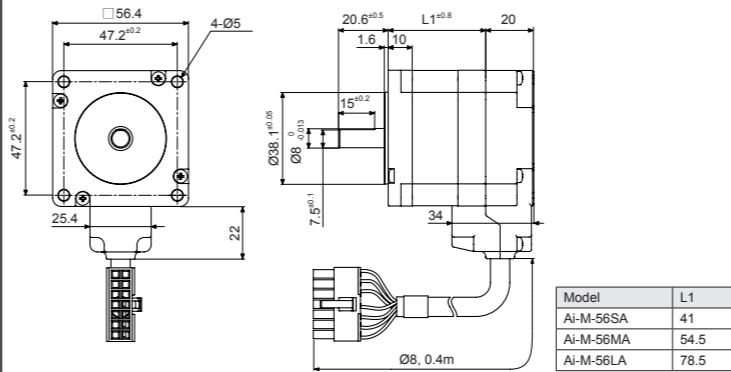
#### ○ Motor

##### ● Ai-M-42 Series



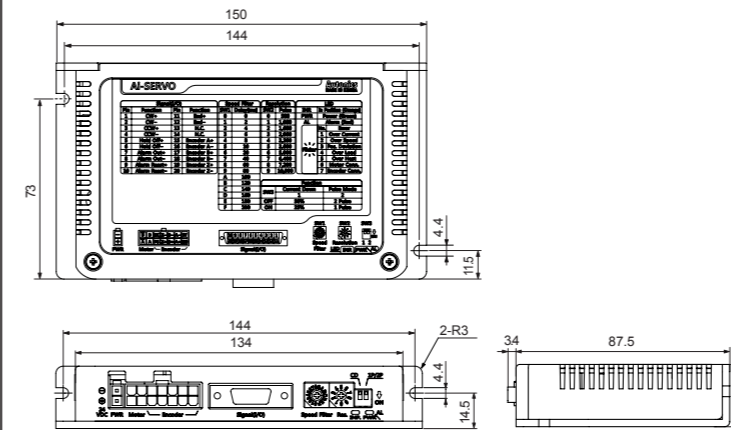
Model	L1
Ai-M-42SA	33
Ai-M-42MA	39
Ai-M-42LA	47.5

##### ● Ai-M-56 Series

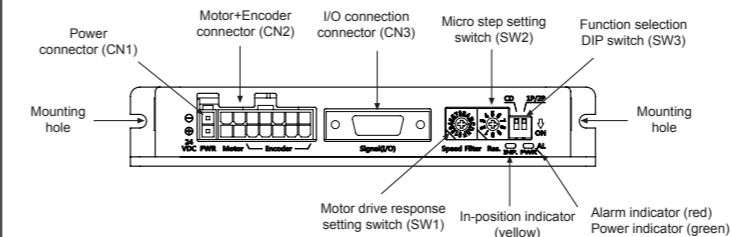


Model	L1
Ai-M-56SA	41
Ai-M-56MA	54.5
Ai-M-56LA	78.5

#### ○ Driver



### ■ Driver Unit Descriptions



### ■ Driver Status Indicators

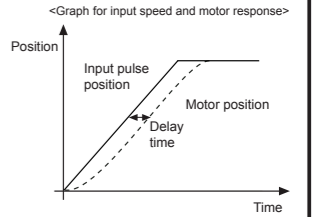
Name	LED Color	Function	Descriptions
PWR	Green	Displays power input	Turns ON when the unit operates normally after supplying power
AL	Red	Displays alarm	Flashes for alarm status.
INP.	Yellow	Displays complete in-position	Turns ON when motor is placed at command position after positioning input.

### ■ Driver Setting

#### ○ SW1: Motor drive response setting switch (speed filter)

- ⊗ Set motor drive response for input pulse.
- ⊗ Set the delay time between the position of input pulse and the position of motor to prevent load changing or disturbance with soft operation function.
- ⊗ If the setting value is too high, the synchronous response by command is decreased.

Setting switch	Setting	Delay time	Setting	Delay time
0	Not used	8	(Factory default)	60ms
1	2ms	9	A	80ms
2	4ms	A	B	100ms
3	6ms	B	C	120ms
4	8ms	C	D	140ms
5	10ms	D	E	160ms
6	20ms	E	F	180ms
7	40ms	F		200ms



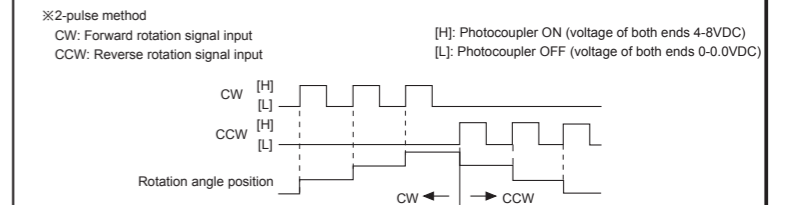
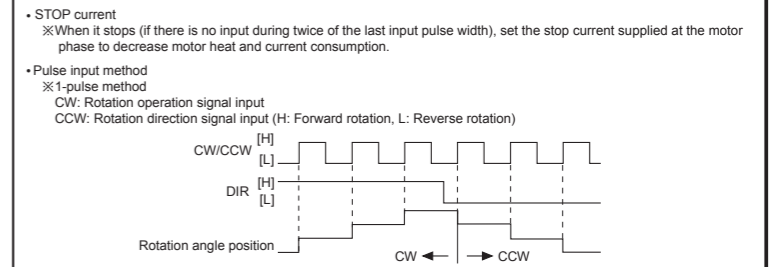
#### ○ SW2: Micro step setting switch (Resolution)

- ⊗ Set the micro step resolution of driver.
- ⊗ The number of pulses per 1 rotation by resolution is each 500, 1000, 1600, 2000, 3200, 3600, 5000, 6400, 7200, 10000.

Setting switch	Setting	Pulse/1 Revolution	Resolution
0	(Factory default)	500	2.5
1	1000	1000	5
2	1600	1600	8
3	2000	2000	10
4	3200	3200	16
5	3600	5000	18
6	5000	6400	25
7	6400	7200	32
8	7200	10000	36
9	10000		50

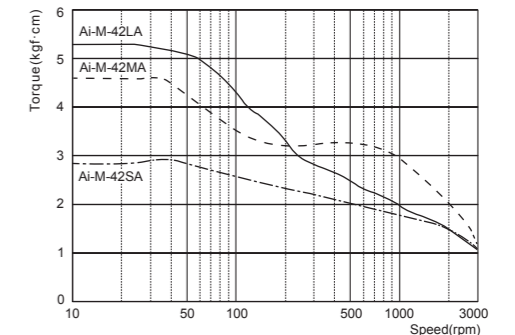
#### ○ SW3: Function selection DIP switch

No.	Name	Function	Switch position
1	CD	STOP current	ON: 20% of max. RUN current OFF (Factory default): 50% of max. RUN current
2	1P/2P	Pulse input method	1-pulse method 2-pulse method

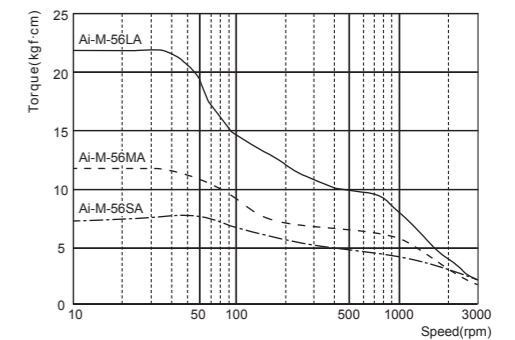


### ■ Motor Characteristics

#### ● Ai-M-42SA/42MA/42LA



#### ● Ai-M-56SA/56MA/56LA



### Control Input/Output

Inner signal of all input/output consists of photocoupler.  
ON, [H]: photocoupler power ON/ OFF, [L]: photocoupler power OFF.

#### Input

##### 1. HOLD OFF

- This signal is for rotating motor's axis using external force or used for manual positioning.
- When hold off signal maintains over 1ms as [H], motor excitation is released.
- When hold off signal maintains over 1ms as [L], motor excitation is in a normal status.
- ※When supplying hold off signal, in-position output and LED turn OFF.
- ※Stop the motor for using this signal.
- ※Refer to example of input circuit connection.

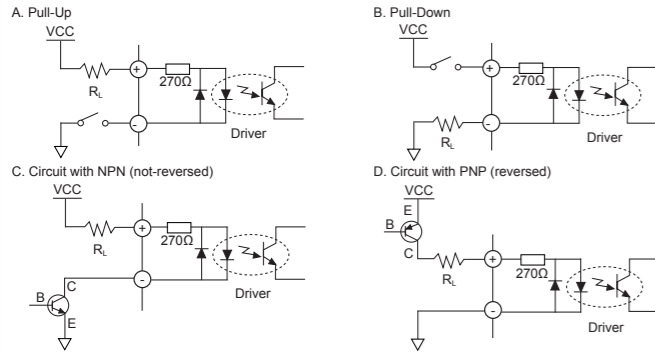
##### 2. ALARM RESET

- This signal is for clearing the alarm.
- When alarm reset signal maintains over 20ms as [H], alarm is cleared. The alarm LED and alarm output turns OFF and the driver returns to normal status.
- ※If the alarm causes are not removed clearly and using alarm reset, driver may not be returned at the normal status.
- ※Refer to example of input circuit connection.

##### 3. Example of input circuit connection

-When using 5VDC for V<sub>CC</sub>, short the R<sub>i</sub>. In case of over 5VDC (below 30VDC is recommended), use the R<sub>i</sub> for I<sub>f</sub> of photo coupler (forward current of primary LED) to be within 10mA following the below formula.

$$R_i = \frac{V_{CC} - 1.25V}{0.01A} - 270\Omega$$



#### Output

##### 1. In-position

- ※In-position output is motor drive complete signal and it is output when drive is complete by command pulses.
- When motor is arrived at the command position, in-position output is [H]. (position error=0)
- When drive is complete and motor rotates by the external force, -1.8°s Position error ≤ 1.8° : In-position = [H]
- Position error < -1.8°, Position error > 1.8° : In-position = [L]
- ※The in-position LED turns ON/OFF depending on in-position output [H]/[L].
- ※For accurate drive, check the in-position output again and execute the next drive.
- ※Refer to example of output circuit connection.

##### 2. ALARM OUTPUT

- ※When alarm occurs, driver recognizes the alarm. The alarm LED (red) and alarm output represents the errors.
- Alarm output signal
- In case of normal status, output is [H]. When alarm occurs, output is [L].
- When supplying alarm reset, output turns [H].
- ※Refer to example of output circuit connection.
- Alarm indicator
- Depending on the number of flashing of alarm indicator, you can check alarm causes.

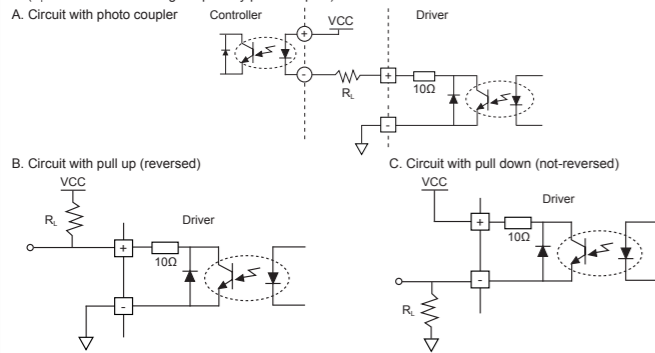
No. of flashing	Alarm type	Descriptions
1	Over current error	When over current flows at motor RUN element
2	Over speed error	When motor speed is over 4,000rpm
3	Position tracking error	When motor does not track the pulse input normally
4	Over load error	When applying over the rated load for over 1 sec.
5	Over heat error	When driver inner temperature is over 80°C
6	Motor connection error	When supplying power without connecting motor cable to the driver
7	Encoder connection error	When encoder cable connection error occurs at driver

※Depending on alarm type, it flashes the number of flashing with 400ms interval. After waiting 800ms, it outputs continuously until clearing alarm by alarm reset signal.

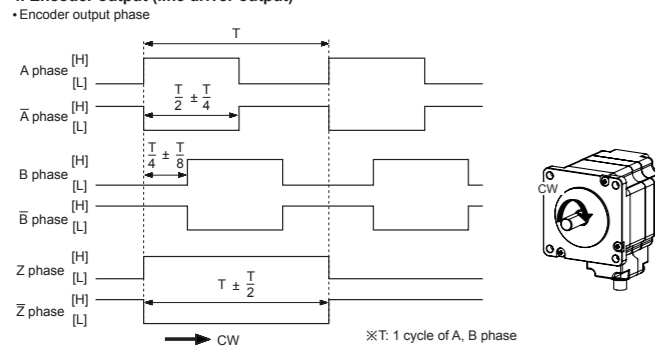
##### 3. Example of output circuit connection

-It is recommended to use below 50VDC at V<sub>CC</sub>. Use the R<sub>i</sub> for I<sub>c</sub> (collector current of secondary detector) of photo coupler inside the driver to be within 25mA following the below formula.

$$R_i = \frac{V_{CC} - 0.7V - V_f}{0.025A} - 10\Omega \quad \text{※} B, C, R_i = \frac{V_{CC} - 0.7V}{0.025A} - 10\Omega$$



##### 4. Encoder output (line driver output)



### Connection Connectors Of Driver

#### Connector function

##### Power connector (CN1)

Pin arrangement	Pin no.	Function
	2	GND
	1	24VDC

##### Motor+Encoder Connector (CN2)

Pin arrangement	Pin no.	Function	Pin no.	Function
	1	GND	8	+5VDC
	2	ENCODER A	9	ENCODER A̅
	3	ENCODER B	10	ENCODER B̅
	4	ENCODER Z	11	ENCODER Z̅
	5	GND EARTH	12	N-C
	6	MOTOR A	13	MOTOR B
	7	MOTOR A̅	14	MOTOR B̅

##### I/O connector (CN3)

Pin arrangement	Pin no.	Input/Output	Function	Pin no.	Input/Output	Function
	1	Input	CW+	11	Output	END+
	2	Input	CW-	12	Output	END-
	3	Input	CCW+	13	---	N-C
	4	Input	CCW-	14	---	N-C
	5	Input	HOLD OFF+	15	Output	ENCODER A
	6	Input	HOLD OFF-	16	Output	ENCODER A̅
	7	Output	ALARM OUT+	17	Output	ENCODER B
	8	Output	ALARM OUT-	18	Output	ENCODER B̅
	9	Input	ALARM RESET+	19	Output	ENCODER Z
	10	Input	ALARM RESET-	20	Output	ENCODER Z̅

##### Connector specifications

Type	Specifications	Connector terminal	Housing	Manufacture
CN1	Driver LAD1140-02 (X)	---	---	HANLIM
	Power CHD1140-02	CTD1140	---	HANLIM
CN2	Driver 35318-1420	---	---	Molex
	Motor+Encoder 5557-14R	5556T	---	Molex
CN3	Driver 10220-52A2 PL	---	---	3M
	I/O connector 10120-3000PE	---	10320-52F0-008	3M

※Above connectors are suitable for AIS Series. You can use equivalent or substitute connectors.

##### Cable (sold separately)

Type	Model					
	CJ-MP20-HP□□ (sold separately by Autonics)※1					
I/O cable						
	Pin No.	Cable color	Dot line color-numbers	Pin No.	Cable color	Dot line color-numbers
	1	Yellow	Black-1	11	White	Black-1
	2	Yellow	Red-1	12	White	Red-1
	3	Yellow	Black-2	13	White	Black-2
	4	Yellow	Red-2	14	White	Red-2
	5	Yellow	Black-3	15	White	Black-3
	6	Yellow	Red-3	16	White	Red-3
	7	Yellow	Black-4	17	White	Black-4
	8	Yellow	Red-4	18	White	Red-4
	9	Yellow	Black-5	19	White	Black-5
	Motor+Encoder cable					
	Normal C1D14M-□□※2					
	Moving C1DF14M-□□※2					

※1: □ indicates cable length (010, 020, 030, 050, 070, 100) E.g.) CJ-MP20-HP070: 7m I/O cable  
※2: □ indicates cable length (1, 2, 3, 5, 7, 10) E.g.) C1DF14M-10: 10m moving type motor+encoder cable.

### Caution During Use

#### Motor

- Do not disassemble or modify the product.**  
It may cause malfunction due to small dregs. Once disassembling the motor, its performance would significantly decline.
- Do not impact the motor.**  
The air-gap, the distance between rotor and stator is processed as 0.05mm, but if it is impacted, the balance of air-gap can be broken and it may cause a malfunction.  
This encoder consists of precision components. Therefore, if it is dropped or has strong shock, it may lose the function or generates wrong output pulses.
- Using at low temperature**  
Using motors at low temperature may cause reducing maximum starting / driving characteristics of the motor as ball bearing's grease consistency decreases due to low temperature. (Note that the lower the bearing's grease consistency, the higher the bearing's friction torques.) Start the motor in a steady manner since motor's torque is not to be influenced.
- Temperature rise**  
The surface temperature of motor shall be under 100°C and it can be significantly increased by operation conditions. In this case, use the cooling fan to lower the temperature forcibly.
- Insulation resistance measurement, Dielectric strength test**  
When executing insulation resistance measurement or dielectric strength test when motor and driver are connected, it may cause damage to the unit.
- Maintenance, Inspection**  
For using motor, it is recommended to Maintenance and inspection regularly.  
If motor has error, do not use the motor. Take maintenance and inspection before using it.  
Maintenance and inspection items are as below.  
① Unwinding bolt and connection parts for the unit installation and load connection  
② Strange sound from ball bearing of the unit  
③ Damage and Stress of lead cable of the unit  
④ Inconsistency between the axis of motor output and the center, concentric (eccentric, declination) of the load, etc.

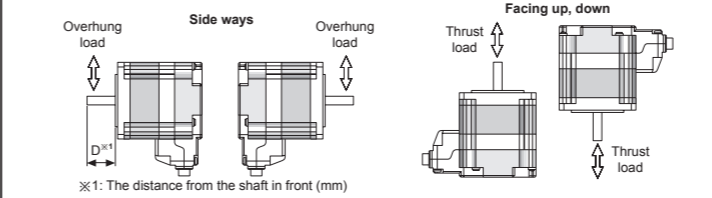
#### Driver

- Caution for signal input**  
If the signal input supply is higher than rated supply in the specification, connect the additional resistance to external part. (Connect 3kΩ of resistance when applying 24V of power)
  - Caution for wiring**(※Autonics product is recommended)  
① Use twisted pair shield (over 0.2mm<sup>2</sup>) for the signal wire should be shorter than 2m.  
② Please use an electric wire thicker than the motor lead wire when lengthening the motor wire connection.  
③ Please leave a space over 10cm between a signal wire connection and power wire.
  - Caution for installation**  
For heat radiation preventing installing this unit, contact this driver base tightly with the metal surface. When using this unit, overheat error occur. Install a fan for heat radiation or change the installation placement.
  - Caution for re-supplying power**  
Re-supply power after min. 1 sec. from disconnected power.
  - Motor vibration and noise can occur in specific frequency period**  
① Motor vibration and noise can be lowered by change motor installation or attach damper.  
② Use the unit in a range without vibration and noise range by RUN speed adjustment.
  - This product may be used in the following environments**  
① It shall be used indoor  
② Altitude up to 2,000m  
③ Pollution degree 2  
④ Installation category II
- ※Failure to follow these instructions may result in product damage.

### Motor Installation

#### 1. Mounting direction

Motor can be mounted in any directions-facing up, facing down and side ways. No matter which direction motors to be mounted, be sure not to apply overhung or thrust load on the shaft. Refer to the table below for allowable shaft overhung load / thrust load.

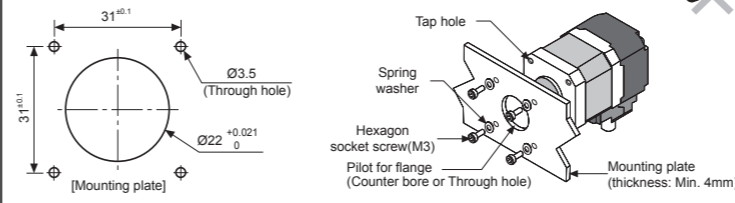


Motor size	Allowable overhung load [kg f (N)]				Allowable thrust load
	D=0	D=5	D=10	D=15	
AI-M-42 Series	2 (20)	2.5 (25)	3.4 (34)	5.2 (52)	Under the load of motor
AI-M-56 Series	5.4 (54)	6.7 (67)	8.9 (89)	13 (130)	

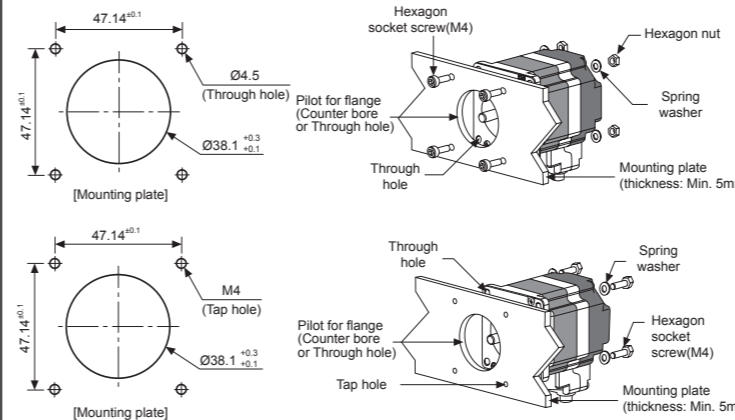
Do not apply excessive force on motor cable when mounting motors. Do not forcibly pull or insert the cable. It may cause poor connection or disconnection of the cable. In case of frequent cable movement required application, proper safety countermeasures must be ensured.

#### 2. Mounting method

##### AI-M-42 Series



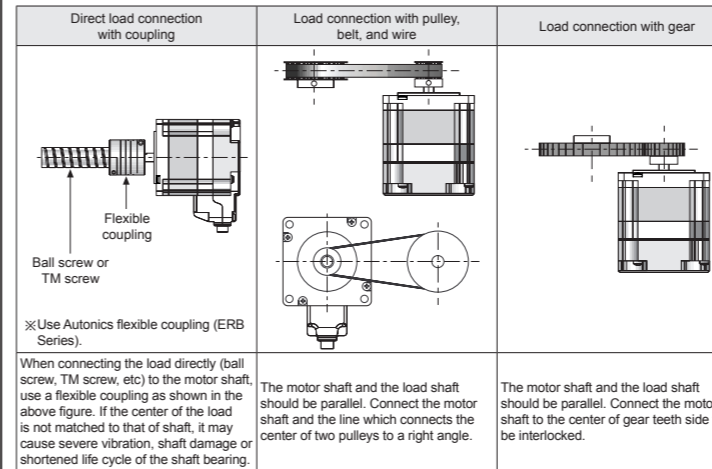
##### AI-M-56 Series



With considering heat radiation and vibration isolation, mount the motor as tight as possible against a metal panel having high thermal conductivity such as iron or aluminum.  
When mounting motors, use hexagon socket screws, hexagon nuts, spring washers and flat washers. Refer to the table below for allowable thickness of mounting plate and using bolt.

#### 3. Connection with load

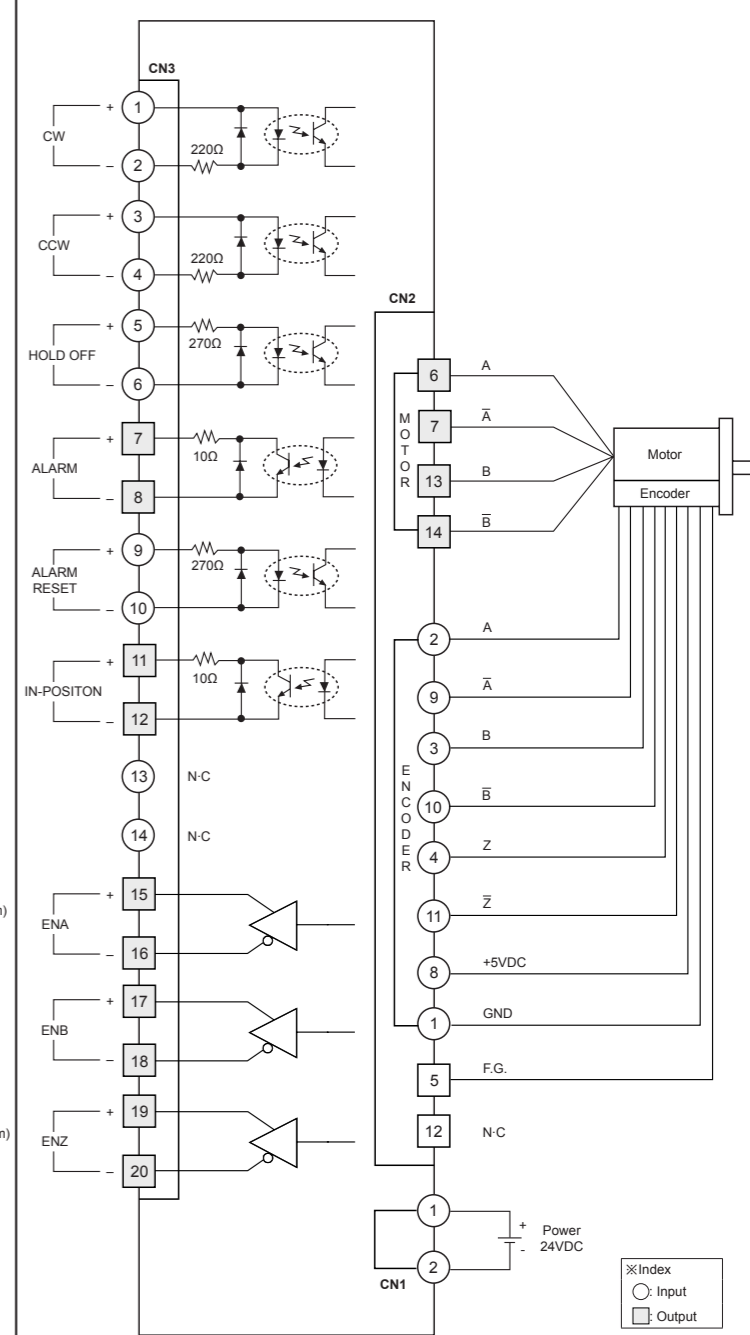
When connecting the load, be sure of the center, tension of the belt, and parallel of the pulley. When connecting the load such as a pulley, a belt, be sure of the allowable thrust load, radial load, and shock. Tighten the screw for a coupling or a pulley not to be unscrewed. When connecting a coupling or a pulley on the motor shaft, be sure of damage of the motor shaft and the motor shaft bearing. Do not disassemble or modify the motor shaft to connect with the load.



#### 4. Installation condition

- Install the motor in a place that meets certain conditions specified below. It may cause product damage if instructions are not following.
- ① The inner housing installed indoor (This unit is manufactured for attaching to equipment. Install a ventilation device.)
- ② Within 0 to 50°C (at non-freezing status) of ambient temperature
- ③ Within 20 to 80%RH (at non-dew status) of ambient humidity
- ④ The place without explosive, flammable and corrosive gas
- ⑤ The place without direct ray of light
- ⑥ The place where dust or metal scrap is not entered into the unit
- ⑦ The place where water, oil, or other liquid are not touched
- ⑧ The place where strong alkali or acidity does not exist closely
- ⑨ The place where easy heat dissipation could be made
- ⑩ The place where no continuous vibration or severe shock
- ⑪ The place with less salt content
- ⑫ The place with less electronic noise occurs by welding machine, motor, etc.
- ⑬ The place where no radioactive substances and magnetic fields exist. It shall be no vacuum status as well.

### Connection For Motor And Driver



※To input signal over 12VDC, connect external resistance for photocoupler I<sub>f</sub> to be within 10mA.

### Troubleshooting

- When motor does not rotate**
  - ① Check the connection status between controller and driver, and pulse input specifications (voltage, width).
  - ② Check the pulse and direction signal is connected correctly.
- When motor rotates to the opposite direction of the designated direction**
  - ① When RUN mode is 1-pulse method, CCW input [H] is for forward, [L] is for backward.
  - ② When RUN mode is 2-pulse method, check CW and CCW pulse input is changed.
- When motor drive is unstable**
  - ① Check that driver and motor is connected correctly.
  - ② Check the driver pulse input specifications (voltage, width).

### Major Products

- Photoelectric Sensors
- Fiber Optic Sensors
- Door Sensors
- Door Side Sensors
- Area Sensors
- Pressure Sensors
- Rotary Encoders
- Connector/Sockets
- Switching Mode Power Supplies
- Control Switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper Motors/Drivers/Motion Controllers
- Graphic/Logic Panels
- Field Network Devices
- Laser Marking System (Fiber, Co., Nd:Yag)
- Laser Welding/Soldering System
- Temperature Controllers
- Temperature/Humidity Transducers
- SSR/Power Controllers
- Counters
- Timers
- Panel Meters
- Tachometer/Pulse(Rate) Meters
- Sensor Controllers
- Sensor Controllers

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