



## OPERATING MANUAL

Stepping Motor **αSTEP**



KCC-REM-OMC-068

**AR Series/**

**Motorized actuator equipped with AR Series**

**DC power input **FLEX** Built-in controller type**

**Driver**

## Introduction

### ■ Before use

Only qualified personnel of electrical and mechanical engineering should work with the product.

Use the product correctly after thoroughly reading the section "Safety precautions."

In addition, be sure to observe the contents described in warning, caution, and note in this manual.

The product described in this manual has been designed and manufactured to be incorporated in general industrial equipment. Do not use for any other purpose. Oriental Motor Co., Ltd. is not responsible for any damage caused through failure to observe this warning.

### ■ Related operating manuals

For operating manuals not included with the product, contact your nearest Oriental Motor sales office or download from Oriental Motor Website Download Page.

Operating manual name	Included or not included with product
AR Series/Motorized actuator equipped with AR Series OPERATING MANUAL Driver (this document)	Included
AR Series/Motorized actuator equipped with AR Series USER MANUAL	Not included
APPENDIX UL Standards for AR Series	Included

## Safety precautions

The precautions described below are intended to prevent danger or injury to the user and other personnel through safe, correct use of the product. Use the product only after carefully reading and fully understanding these instructions.

### Description of signs

	Handling the product without observing the instructions that accompany a "WARNING" symbol may result in serious injury or death.
	Handling the product without observing the instructions that accompany a "CAUTION" symbol may result in injury or property damage.
	The items under this heading contain important handling instructions that the user should observe to ensure the safe use of the product.

Thank you for purchasing an Oriental Motor product.

This Operating Manual describes product handling procedures and safety precautions.

- Please read it thoroughly to ensure safe operation.
- Always keep the manual where it is readily available.

## ! WARNING

### General

- Do not use the product in explosive or corrosive environments, in the presence of flammable gases, locations subjected to splashing water, or near combustibles. Doing so may result in fire or injury.
- Assign qualified personnel to the task of installing, wiring, operating/controlling, inspecting, and troubleshooting the product. Failure to do so may result in fire, injury, or damage to equipment.
- When the driver generates an alarm (any of the driver's protective functions is triggered), the motor will stop and lose its holding torque. Accordingly, provide measures to hold the moving part in place in the event of an alarm. Failure to do so may result in injury or damage to equipment.
- When the driver generates an alarm (any of the driver's protective functions is triggered), first remove the cause and then clear the protection function. Continuing the operation without removing the cause of the problem may cause malfunction of the motor and driver, leading to injury or damage to equipment.

### Installation

- Install the driver inside an enclosure. Failure to do so may result in injury.
- When installing the driver, install it inside an enclosure so that it is out of the direct reach of users. Be sure to ground if users can touch it. Failure to do so may result in electric shock.

### Connection

- Always keep the power supply voltage of the driver within the specified range. Failure to do so may result in fire.
- For the driver power supply, use a DC power supply with reinforced insulation on its primary and secondary sides. Failure to do so may result in electric shock.
- Connect the cables securely according to the wiring diagram. Failure to do so may result in fire.
- Do not forcibly bend, pull, or pinch the connection cable. Doing so may result in fire.

### Operation

- Turn off the driver power supply in the event of a power failure. Otherwise, the motor may suddenly start when the power is restored, causing injury or damage to equipment.
- Do not turn the FREE input to ON while the motor is operating. The motor will stop and lose its holding power. Doing so may result in injury or damage to equipment.

### Repair, disassembly, and modification

- Do not disassemble or modify the driver. Doing so may result in injury. Refer all such internal inspections and repairs to the Oriental Motor sales office from which you purchased the product.

## ! CAUTION

### General

- Do not use the driver beyond its specifications. Doing so may result in injury or damage to equipment.
- Keep your fingers and objects out of the openings in the driver. Failure to do so may result in fire or injury.
- Do not touch the driver during operation or immediately after stopping. The surface is hot and may cause a skin burn(s).
- Do not use other batteries than the accessory dedicated battery. Doing so may result in injury or damage to equipment.

### Installation

- Do not leave anything around the driver that would obstruct ventilation. Doing so may result in damage to equipment.

## Connection

- The power supply connector (CN1), data edit connector (CN3), and RS-485 communication connectors (CN6/CN7) are not insulated. When grounding the positive terminal of the power supply, do not connect any equipment (PC, etc.) whose negative terminal is grounded. Doing so may cause the driver and these equipment to short, damaging both.
- When connecting, check the silk screen of the driver and pay attention to the polarity of the power supply. The power-supply circuit and the RS-485 communication circuit are not insulated. When controlling multiple drivers via RS-485 communication, the reverse polarity of the power supply will cause a short circuit and may result in damage to the drivers.

## Operation

- Use a motor and driver only in the specified combination. An incorrect combination may cause a fire.
- Provide an emergency stop device or emergency stop circuit external to the equipment so that the entire equipment will operate safely in the event of a system failure or malfunction. Failure to do so may result in injury.
- Before supplying power to the driver, turn all input signals to the driver to OFF. Otherwise, the motor may suddenly start when the power is turned on, leading to injury or damage to equipment.
- Before rotating the motor output shaft manually while the motor stops, confirm that the FREE input turns ON. Failure to do so may result in injury.
- Immediately when trouble has occurred, stop running and turn off the driver power. Failure to do so may result in fire or injury.

## Maintenance and inspection

- Do not touch the terminals while conducting the insulation resistance measurement or dielectric strength test. Doing so may cause electric shock.

## Precautions for use

This chapter covers restrictions and requirements the user should consider when using the product.

- **Always use the accessory cable to connect the motor and driver.**
- **When conducting the insulation resistance measurement or the dielectric strength test, be sure to separate the connection between the motor and the driver.**

Conducting the insulation resistance measurement or dielectric strength test with the motor and driver connected may result in damage to the product.

### Preventing electrical noise

See the [USER MANUAL](#) for measures with regard to noise.

### When an alarm of overvoltage protection is generated

If vertical drive (gravitational operation) such as elevator applications is performed or if sudden start-stop operation of a large inertial load is repeated frequently, an alarm of overvoltage protection may be detected. If an overvoltage protection alarm is detected, adjust the driving condition.

### Saving data to the non-volatile memory

Do not turn off the power supply while writing the data to the non-volatile memory, and also do not turn off for 5 seconds after the completion of writing the data. Doing so may abort writing the data and cause an EEPROM error alarm to generate. The non-volatile memory can be rewritten approximately 100,000 times.

### Motor excitation at power ON

The motor is excited when the power is on. If the motor is required to be in non-excitation status when turning on the power, assign the C-ON input to the direct I/O or remote I/O. Refer to the [USER MANUAL](#) for details.

### Note on connecting a power supply whose positive terminal is grounded

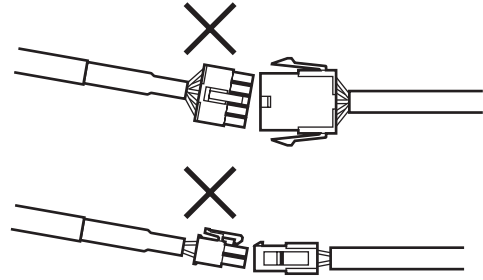
The power supply connector (CN1), data edit connector (CN3), and RS-485 communication connectors (CN6/CN7) are not insulated. When grounding the positive terminal of the power supply, do not connect any equipment (PC, etc.) whose negative terminal is grounded. Doing so may cause the driver and these equipment to short, damaging both. Use the accessory data setter **OPX-2A** to set data, etc.

## Notes when the connection cable is used

Note the following points when an accessory cable is used.

### When inserting the connector

Hold the connector main body, and insert it in straight securely. Inserting the connector in an inclined state may result in damage to terminals or a connection failure.



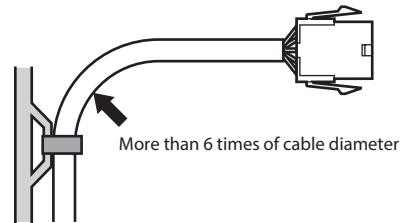
### When unplugging the connector

Pull out the connector in straight while releasing the lock part of the connector. Pulling out the connector with holding the cable (lead wire) may result in damage to the connector.

### Bending radius of cable

Use the cable in a state where the bending radius of the cable is more than six times of the cable diameter.

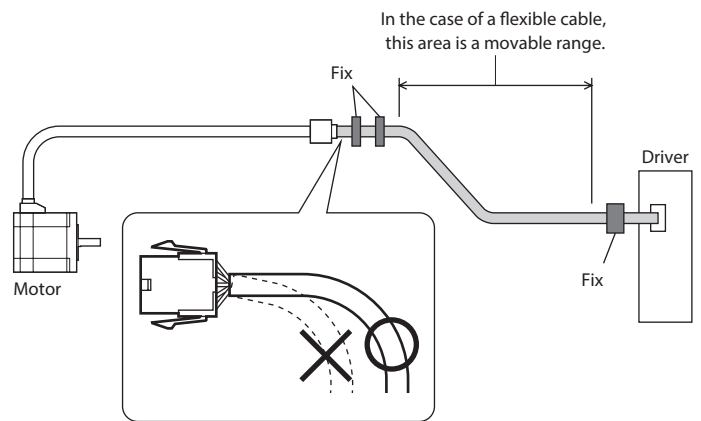
In the case of the lead wire type, use in a state where the bending radius is more than four times of the diameter of the lead wires.



### How to fix the cable

Fix the cable at the positions near the connector so as to apply no stress on the connector part.

Take measures so as to apply no stress on the connector by using wide clamps or by fixing at two places.



## Preparation

### ■ Checking the product

Verify that the items listed below are included. Report any missing or damaged items to the Oriental Motor sales office from which you purchased the product.

- Driver.....1 unit
- CN1 connector (5 pins).....1 pc.
- CN5 connector (5 pins).....1 pc.
- CN8 connector (9 pins).....1 pc.
- CN9 connector (7 pins).....1 pc.
- OPERATING MANUAL Driver (this document).....1 copy
- APPENDIX UL Standards for AR Series DC power input type.....1 copy \*

\* Included with products conform to the UL Standards

#### Included connector model

Type	Model	Manufacturer
CN1 connector	MC1,5/5-STF-3,5	PHOENIX CONTACT GmbH & Co. KG
CN5 connector	FK-MC0,5/5-ST-2,5	PHOENIX CONTACT GmbH & Co. KG
CN8 connector	FK-MC0,5/9-ST-2,5	PHOENIX CONTACT GmbH & Co. KG
CN9 connector	FK-MC0,5/7-ST-2,5	PHOENIX CONTACT GmbH & Co. KG

### ■ How to identify the product model

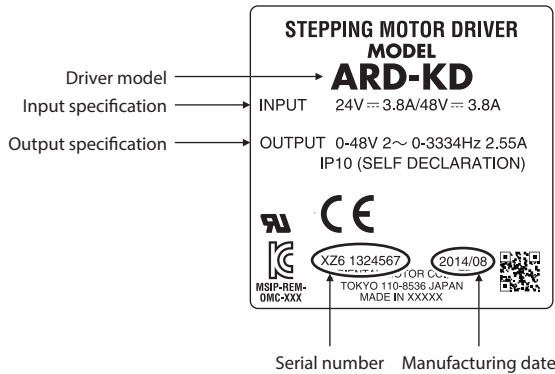
Verify the model number of the purchased product against the number shown on the nameplate.

**ARD – K D**  
1            2    3

1	Series name	<b>ARD: AR</b> Series driver
2	Power supply input	<b>K: 24/48</b> VDC
3	Type	<b>D: Built-in</b> controller type

### ■ Information about nameplate

The figure shows an example.



**memo** The position describing the information may vary depending on the product.

### ■ Products for possible combinations

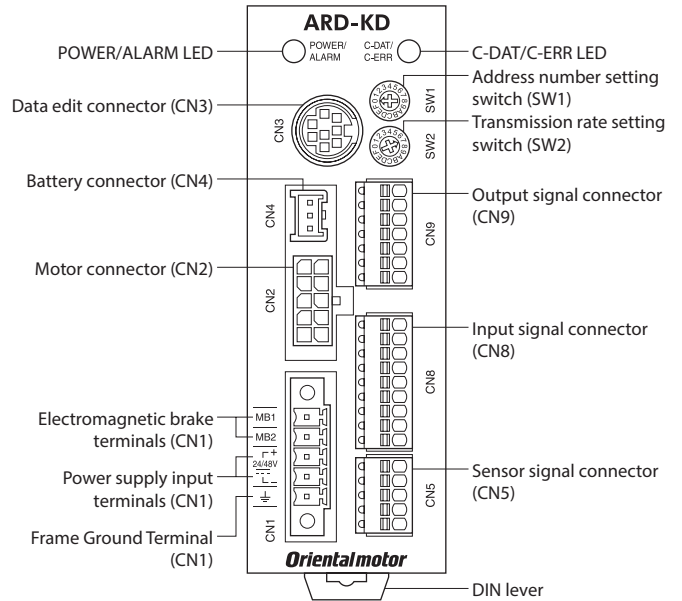
Products with which the driver can be combined are listed below. Check the model name with the nameplate.

Driver model	Type	Applicable Series	Model
ARD-KD	Stepping motor	AR Series	ARM14, ARM15
	Motorized actuator	EAS Series *	ARM24, ARM26
		EAC Series *	ARM46, ARM66
		EZS Series *	ARM69, ARM98
	DGII Series	DGM60	

\* For these motorized actuators, check the motor model name.

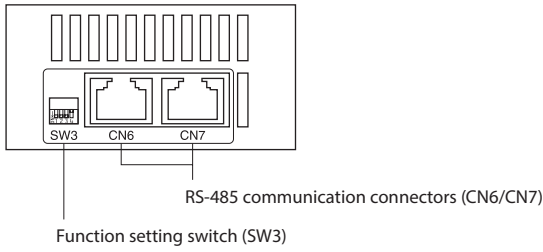
## ■ Names and functions of parts

### • Driver front face



Name	Description
POWER LED (green)	This LED is lit while the power is input.
ALARM LED (red)	This LED will blink if an alarm generates (a protective function is triggered). It is possible to check the generated alarm by counting the number of times the LED blinks.
C-DAT LED (green)	This LED blinks or is lit when the driver is communicating with the master controller properly via RS-485 communication.
C-ERR LED (red)	This LED will be lit if a RS-485 communication error occurs with the master controller.
Address number setting switch (SW1)	This switch is used when controlling the system via RS-485 communication. Sets the address number (slave address) of RS-485 communication using this switch and SW3-No.1 of the function setting switch. (Factory setting: 0)
Transmission rate setting switch (SW2)	This switch is used when controlling the system via RS-485 communication. Sets the transmission rate of RS-485 communication. (Factory setting: 7)
Electromagnetic brake terminals (CN1-MB1/MB2)	Connects the lead wires from the electromagnetic brake cable. MB1: Electromagnetic brake – (black) MB2: Electromagnetic brake + (white)
Power supply input terminals (CN1)	Connects the power supply of the driver. +: +24 VDC/48 VDC power supply input –: Power supply GND
Frame Ground Terminal (CN1)	Ground using a wire of AWG24 to 16 (0.2 to 1.25 mm <sup>2</sup> ).
Motor connector (CN2)	Connects the motor.
Data edit connector (CN3)	Connects a PC in which the support software <b>MEXE02</b> has been installed, or the accessory <b>OPX-2A</b> .
Battery connector (CN4)	Connects the accessory battery.
Sensor signal connector (CN5)	Connects the sensor signals.
Input signal connector (CN8)	Connects the input signals.
Output signal connector (CN9)	Connects the output signals.

● Driver upper face



Name	Description
Function setting switch (SW3)	This switch is used when controlling the system via RS-485 communication. No.1: Sets the address number (slave address) using this switch and the address number setting switch (SW1). (Factory setting: OFF) No.2: Sets the protocol of RS-485 communication. (Factory setting: OFF) No.3: Not used. No.4: Sets the termination resistor (120 Ω) of RS-485 communication. (Factory setting: OFF)
RS-485 communication connectors (CN6/CN7)	Connects the RS-485 communication cable.

## Installation

### ■ Location for installation

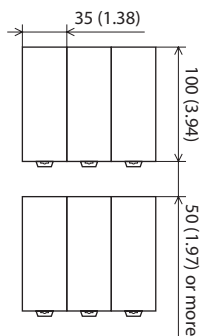
The driver has been designed and manufactured to be incorporated in equipment. Install them in a well-ventilated location that provides easy access for inspection. The location must also satisfy the following conditions:

- Inside an enclosure that is installed indoors (provide vent holes)
- Operating ambient temperature 0 to +50 °C (+32 to +122 °F) (non-freezing)
- Operating ambient humidity 85% or less (non-condensing)
- Area that is free of explosive atmosphere or toxic gas (such as sulfuric gas) or liquid
- Area not exposed to direct sun
- Area free of excessive amount of dust, iron particles or the like
- Area not subject to splashing water (rain, water droplets), oil (oil droplets) or other liquids
- Area free of excessive salt
- Area not subject to continuous vibration or excessive shocks
- Area free of excessive electromagnetic noise (from welders, power machinery, etc.)
- Area free of radioactive materials, magnetic fields or vacuum
- 1,000 m (3,300 ft.) or lower above sea level

### ■ Installation method

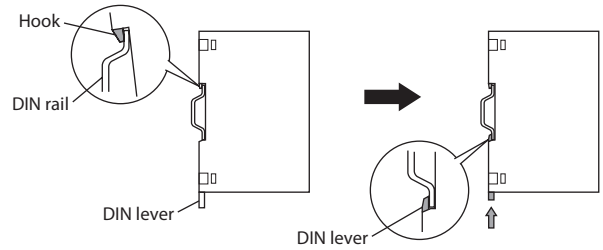
Mount the driver to a 35 mm (1.38 in.) width DIN rail. When installing two or more drivers in parallel, it is possible to install them closely in the horizontal direction. Provide a minimum clearance of 50 mm (1.97 in.) in the vertical direction.

When installing three or more drivers closely, the heat generation of the inside drivers become high. Install the less frequently used drivers toward the inside.



[Unit: mm (in.)]

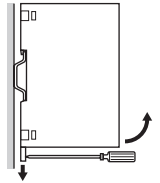
1. Pull down the DIN lever of the driver and lock it. Hang the hook at the rear to the DIN rail.
2. Hold the driver to the DIN rail, and push up the DIN lever to secure.
3. Secure both sides of the driver using end plates.



- Install the driver inside an enclosure whose pollution degree is 2 or better environment, or whose degree of protection is IP54 minimum.
- Do not install any equipment that generates a large amount of heat or noise near the driver.
- Do not install the driver underneath the controller or other equipment vulnerable to heat.
- If the ambient temperature of the driver exceeds 50 °C (122 °F), improve the ventilation condition such as providing forced cooling with fans or creating spaces between the drivers.
- Be sure to install the driver vertically (vertical position).

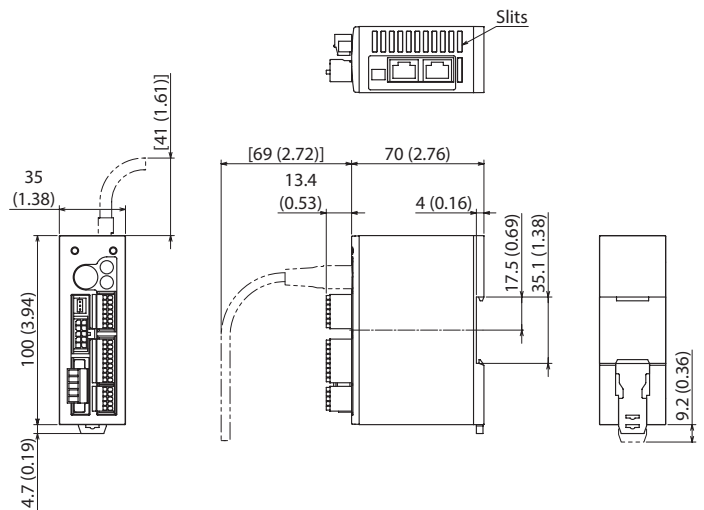
### Removing from DIN rail

Pull the DIN lever down until it locks using a slotted screwdriver, and lift the bottom of the driver to remove it from the rail. Use force of about 10 to 20 N (2.2 to 4.5 lb.) to pull the DIN lever to lock it. Excessive force may damage the DIN lever.



### Dimension [unit: mm (in.)]

Mass: 0.17 kg (0.37 lb.)

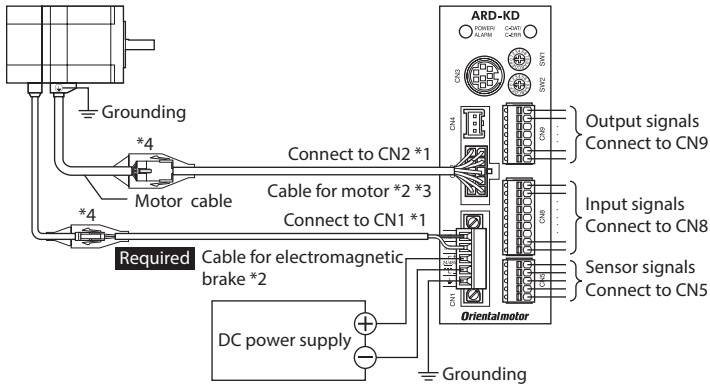


## Connection

**⚠ WARNING** For protection against electric shock, do not turn on the power supply until the wiring is completed.

### ● Connection example

The figure shows the electromagnetic brake motor.



- \*1 Keep 30 m (98.4 ft.) or less for the wiring distance between the motor and driver.
- \*2 Accessory.
- \*3 Use the cable for motor when the length of the motor cable is not enough.
- \*4 If connector covers are attached on cables, cover the connected connectors using them.

### Note

- Have the connector plugged in securely. Insecure connector connection may cause malfunction or damage to the motor or driver.
- When plugging/unplugging the connector, turn off the power and wait for the POWER LED to turn off.
- When connecting, check the silk screen of the driver and pay attention to the polarity of the power supply. Reverse-polarity connection may cause damage to the driver. The power-supply circuit and the RS-485 communication circuit are not insulated. Therefore, when controlling multiple drivers via RS-485 communication, the reverse polarity of the power supply will cause a short circuit and may result in damage to the drivers.
- Do not wire the power supply cable of the driver in the same cable duct with other power lines or motor cables. Doing so may cause malfunction due to noise.
- The lead wires of the "cable for electromagnetic brake" have polarities, so connect them in the correct polarities. If the lead wires are connected with their polarities reversed, the electromagnetic brake will not operate properly.

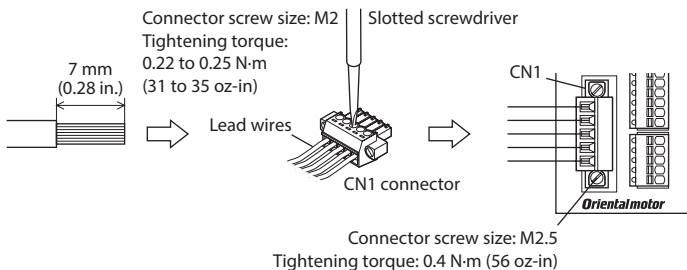
### memo

- When unplugging the connector, do so while pressing the latches on the connector.
- Use an accessory cable for motor when extending the wiring distance between the motor and driver. When installing the motor on a moving part, use a flexible cable having excellent flex resistance.

### ● Connecting the power supply and electromagnetic brake (CN1)

#### ● Connecting method

Applicable lead wire: AWG24 to 16 (0.2 to 1.25 mm<sup>2</sup>)  
Stripping length of wire insulation: 7 mm (0.28 in.)



Connector screw size: M2.5  
Tightening torque: 0.4 N-m (56 oz-in)

### Pin assignment

Pin No.	Signal name	Description
1	MB1	Electromagnetic brake – (Black)
2	MB2	Electromagnetic brake + (White)
3	+	24 VDC/48 VDC power supply input
4	–	Power supply ground
5	FG	Frame Ground



### ● Current capacity for the main power supply

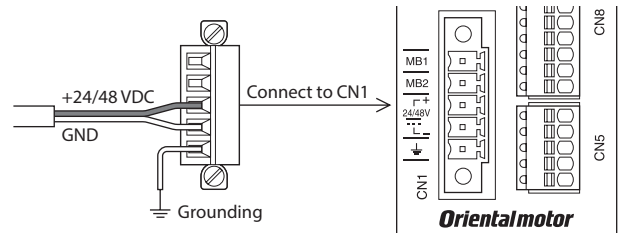
The current capacity for the power supply varies depending on the motor combined. When motorized actuators are used, check while referring to the model name of the equipped motor. In the case of the **DGII** Series, check the current capacity of a main power supply with the **DGII** Series OPERATING MANUAL Actuator.

Motor model	Input power supply voltage	Power supply current capacity	
		Without electromagnetic brake	With electromagnetic brake
ARM14	24 VDC±5% *	0.4 A or more	–
ARM15		0.5 A or more	–
ARM24 ARM26		1.25 A or more	1.3 A or more
ARM46	24 VDC±5% * 48 VDC±5%	1.72 A or more	1.8 A or more
ARM66		3.55 A or more	3.8 A or more
ARM69		3.45 A or more	3.7 A or more
ARM98		2.85 A or more	3.1 A or more

\* If the distance between the motor and driver is extended to 20 to 30 m (65.6 to 98.4 ft.), use a power supply of 24 VDC±4%.

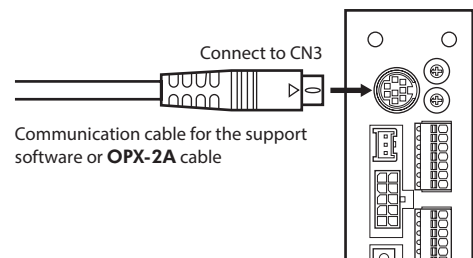
### ● Grounding the driver

Ground the Frame Ground Terminal (CN1) of driver as necessary. Use a grounding wire of AWG24 to 16 (0.2 to 1.25 mm<sup>2</sup>), and do not share the Frame Ground Terminal with a welder or any other power equipment.



### ● Connecting the data setter (CN3)

Connect the communication cable for the support software or **OPX-2A** cable to the data edit connector (CN3) on the driver.

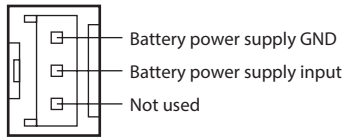


### ⚠ CAUTION

The power supply connector (CN1), data edit connector (CN3), and RS-485 communication connectors (CN6/CN7) of the driver are not insulated. When grounding the positive terminal of the power supply, do not connect any equipment (PC, etc.) whose negative terminal is grounded. Doing so may cause the driver and these equipment to short, damaging both.

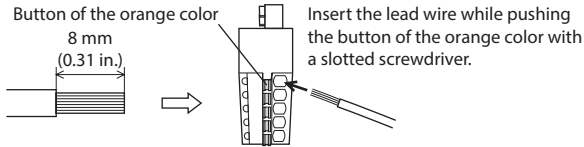
## ■ Connecting the battery (CN4)

Connect an accessory battery set when using in the absolute-position backup system. When the battery is connected to the battery connector (CN4) of the driver and the power supply is turned on, the battery will start charging. It takes approximately 32 hours to fully charge the battery [at an ambient temperature of 20 °C (68 °F)].



## ■ Connecting the I/O signals

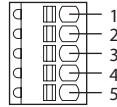
Applicable lead wire: AWG26 to 20 (0.14 to 0.5 mm<sup>2</sup>)  
Stripping length of wire insulation: 8 mm (0.31 in.)



## ● Connecting the sensor (CN5)

### Pin assignment

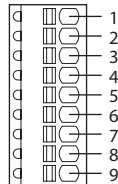
Pin No.	Signal name	Description
1	+LS	Limit sensor input +
2	-LS	Limit sensor input -
3	HOMES	Mechanical home sensor input
4	SLIT	Slit sensor input
5	IN-COM2	Sensor signals common



## ● Connecting the control input (CN8)

### Pin assignment

Pin No.	Signal name	Description *
1	IN0	Control input 0 (HOME)
2	IN1	Control input 1 (START)
3	IN2	Control input 2 (M0)
4	IN3	Control input 3 (M1)
5	IN4	Control input 4 (M2)
6	IN5	Control input 5 (FREE)
7	IN6	Control input 6 (STOP)
8	IN7	Control input 7 (ALM-RST)
9	IN-COM1	Input signals common

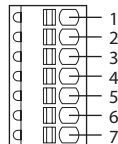


\* ( ): Initial value

## ● Connecting the control output (CN9)

### Pin assignment

Pin No.	Signal name	Description *
1	OUT0	Control output 0 (HOME-P)
2	OUT1	Control output 1 (END)
3	OUT2	Control output 2 (AREA1)
4	OUT3	Control output 3 (READY)
5	OUT4	Control output 4 (WNG)
6	OUT5	Control output 5 (ALM)
7	OUT-COM	Output signals common

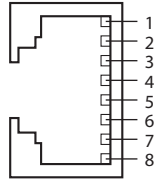


\* ( ): Initial value

## ■ Connecting the RS-485 communication cable (CN6, CN7)

### Pin assignment

Pin No.	Signal name	Description
1	N.C.	Not used
2	GND	GND
3	TR+	RS-485 communication signal (+)
4	N.C.	Not used
5	N.C.	Not used
6	TR-	RS-485 communication signal (-)
7	N.C.	Not used
8	N.C.	Not used

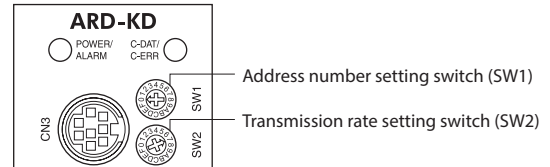


## Setting

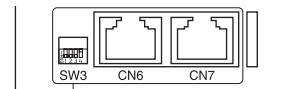


Be sure to turn off the driver power supply before setting the switches. If the switches are set while the power is still on, the new switch settings will not become effective until the driver power supply is cycled.

## ● Driver front face



## ● Driver upper face



Function setting switch (SW3)  
No.1: Sets the address number  
No.2: Sets the protocol  
No.3: Not used.  
No.4: Sets the termination resistor (120 Ω)

## ■ Address number (slave address)

Using the address number setting switch (SW1) and SW3-No.1 of the function setting switch, set the address number (slave address). Make sure each address number (slave address) you set for each driver is unique.

Factory setting SW1: 0, SW3-No.1: OFF

SW1	Address number (slave address)	
	SW3-No.1: OFF	SW3-No.1: ON
0	Not used *	16
1	1	17
2	2	18
3	3	19
4	4	20
5	5	21
6	6	22
7	7	23
8	8	24
9	9	25
A	10	26
B	11	27
C	12	28
D	13	29
E	14	30
F	15	31

\* In the case of Modbus protocol, the address number (slave address) 0 is reserved for broadcasting, so do not use this address.

## Protocol

Using the SW3-No.2 of the function setting switch, set the protocol of RS-485 communication.

Factory setting OFF

SW3-No.2	Protocol
ON	Modbus RTU mode
OFF	Network converter

## Transmission rate

Using transmission rate setting switch (SW2), set the transmission rate. The transmission rate to be set should be the same as the transmission rate of the master controller.

Factory setting 7

SW2	Transmission rate
0	9,600 bps
1	19,200 bps
2	38,400 bps
3	57,600 bps
4	115,200 bps
5, 6	Not used
7	Network converter
8 to F	Not used



Do not set SW2 to positions 5, 6, and 8 to F.

## Termination resistor

Set a termination resistor for the driver located farthest away (positioned at the end) from the master controller.

Using the SW3-No.4 of the function setting switch, set the termination resistor of RS-485 communication (120 Ω).

Factory setting OFF (termination resistor disabled)

SW3-No.4	Termination resistor (120 Ω)
OFF	Disabled
ON	Enabled

## Alarm (protective function)

When an alarm generates, the ALM output will turn OFF and the ALARM LED will blink in red. Before resetting an alarm, always remove the cause of the alarm and ensure safety. For details of alarm, refer to [USER MANUAL](#).

## Inspection and maintenance

### Inspection

It is recommended that periodic inspections be conducted for the items listed below after each operation of the motor. If an abnormal condition is noted, discontinue any use and contact your nearest Oriental Motor sales office.

#### During inspection

- Are the openings in the driver blocked?
- Is there attachment of dust, etc., on the driver?
- Are any of the screws having installed the driver or power connection terminal screws loose?
- Are there any unusual smells or appearances within the driver?



The driver uses semiconductor elements. Handle the driver with care since static electricity may damage semiconductor elements.

### Warranty

Check on the Oriental Motor Website or General Catalog for the product warranty.

### Disposal

Dispose the product correctly in accordance with laws and regulations, or instructions of local governments.

## Specifications

Check on the Oriental Motor Website for the product specifications.

### General specifications

Degree of protection		IP10
Operation environment	Ambient temperature	0 to +50 °C (+32 to +122 °F) (non-freezing)
	Humidity	85% or less (non-condensing)
	Altitude	Up to 1,000 m (3,300 ft.) above sea level
	Surrounding atmosphere	No corrosive gas, dust, water, or oil
Storage environment Shipping environment	Ambient temperature	-25 to +70 °C (-13 to 158 °F) (non-freezing)
	Humidity	85% or less (non-condensing)
	Altitude	Up to 3,000 m (10,000 ft.) above sea level
	Surrounding atmosphere	No corrosive gas, dust, water, or oil
Insulation resistance	100 MΩ or more when 500 VDC megger is applied between the following places: · Frame Ground Terminal - power supply terminals	
Dielectric strength	Sufficient to withstand 500 VAC at 50/60 Hz applied between the following places for 1 minute: · Frame Ground Terminal - power supply terminals	

## Regulations and standards

### UL Standards

Check the "APPENDIX UL Standards for AR Series DC power input type" for recognition information about UL Standards.

### CE Marking

#### Low Voltage Directive

Although this product is exempt from the Low Voltage Directive since the input power supply voltage of this product is 24 VDC/48 VDC, perform the installation and connection as follows.

- This product is designed and manufactured to be incorporated in equipment. Be sure to install the product inside an enclosure.
- For the driver power supply, use a DC power supply with reinforced insulation on its primary and secondary sides.

#### EMC Directive

This product is conducted EMC testing under the conditions specified in "Example of installation and wiring" on the [USER MANUAL](#). The conformance of your mechanical equipment with the EMC Directive will vary depending on such factors as the configuration, wiring, and layout for other control system devices and electrical parts used with this product. It therefore must be verified through conducting EMC measures in a state where all parts including this product have been installed in the equipment.

#### Applicable Standards

EMI	EN 55011 group 1 class A, EN 61000-6-4
EMS	EN 61000-6-2



This equipment is not intended for use in residential environments nor for use on a low-voltage public network supplied in residential premises, and it may not provide adequate protection to radio reception interference in such environments.

### Combinations of motors and drivers in compliance with EMC Directive

Check "Products for possible combinations" on p.3 for the combinations of motors and drivers in compliance with EMC Directive.

### Republic of Korea, Radio Waves Act

This product is affixed the KC Mark under the Republic of Korea, Radio Waves Act.

### RoHS Directive

The products do not contain the substances exceeding the restriction values of RoHS Directive (2011/65/EU).

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