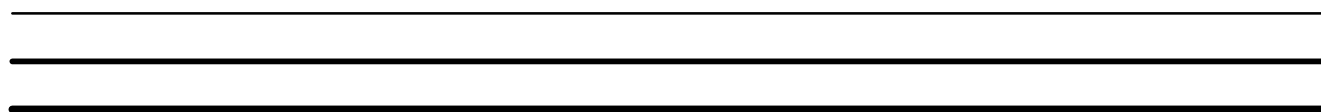




Stepping driver for 2 phase stepping motor

IMS200-220 (L) Series



**【User's manual】**

**MYCOM**

MYCOM, INC.

## Attention on safety

Please read this user's manual carefully before using and use rightly.

The purpose of this attention is to protect users or others from the injure, damage or loss of property in advance and use this product rightly and safely.



**DANGER**

This danger shows the possibility that the user may die or get serious injures by fire or electrical shock and the contents which are high emergency of caution when danger is occurred if this warning is neglected and operated.



**WARNING**

This warning shows the possibility that the user may die or get serious injures, fire or electrical shock if this warning is neglected and operated.



**CAUTION**

This caution shows the possibility that the user may be injured by electrical shock or the contents which expect to issue physical damage if this caution is neglected and operated.



## Danger

Do not use or leave the unit broken or disassemble. It may become the cause of fire, electric shock or accident.

Do not repair or reconstruct by no means because repair and reconstruction may issue a danger which causes serious accident.

Do not use the unit near by corrosive gas, inflammable gas, explosive atmosphere, watery or oily place or inflammables. It may cause fire, electric shock or injury.

Only person who has special knowledge is requested to work for setting, wiring, operation, inspection, maintenance and so on. There is a reason of fire, electric shock and injury.

Keep rated input power voltage range. There is a reason of fire, electric shock or damage.

Make sure the wiring according to wiring example. There is a reason of fire, electric shock or damage.

Do not touch the terminal base during power on by no means because some terminals have high voltage. There is a reason of fire and electric shock.

Do not put finger or objects on the board. There is a reason of fire, electric shock, injury and damage.

Do not bent, expand or put into the power cable and motor cable by force. There is a reason of fire, electric shock and damage.

There is a possibility of fire if motor output and earth or power is connected by mistake. Observe the installation method described in user's manual and do not install to prevent radiation. There is a reason of fire.



## Warning

Do not operate to move, wire, maintain and test etc. during power on. After power-off and ten seconds pass, please start to operate. It may cause electric shock.

Do not touch the unit with wet hand by no means during power on. There is a reason of electric shock.

Connect the protective earth (PE) with the protective earth terminal by no means. It may cause electric shock.

Install and use the driver in the control box. It may cause electric shock and injure.

Fix the driver tightly when installing. It may cause injury.

Do not touch the driver during operation and for the time being after stop. Because the surface of driver is hot depending of operating condition, it may cause injury.

Use power isolated from dangerous voltage. It may cause electric shock



## Caution

Avoid using or storing the unit where air is dusty. It may cause malfunctions.

Do not give a large shock. It may cause malfunctions.

Do not use or store this unit in a place of high or low temperature, extreme high or low humidity. It may cause a short circuit or malfunctions.

Avoid dews to form. It may cause a short circuit or malfunctions.

We do not have the responsibility about user's repair and modification because it is out of our guarantee.

When abandoning the driver, treat it as industrial wastes.

Do not leave the name plate.

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<p>If necessary, we would ask the trading company or distributor to translate this manual into the importer's mother language.</p>
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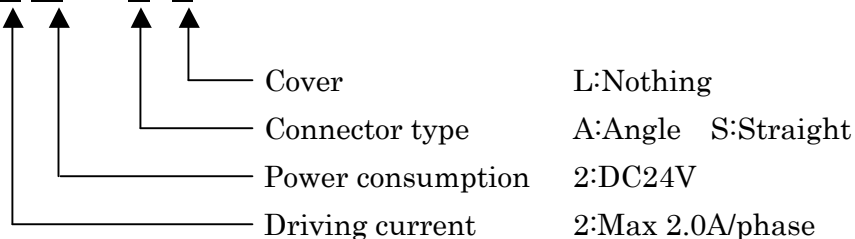
# 1.Driver specification

Driver model	IMS200-220 (L)
Driving current	MAX 2.0A/phase
Power consumption	40W ( 40W )
Power voltage	DC24V $\pm$ 10%
Driving type	Bi-polar constant current type
Resolution	Basic step : 1.8 ° Resolution : 1/1,1/2,1/4,1/8
Function	Resolution selection, Input pulse type selection, Motor output current down
Signal input	Photo-coupler input; Input resistance 390 Input signal voltage: L : 0 - +0.5V, H : +4 - +5V 1 pulse(PULSE, CW/CCW), 2 pulses (CW, CCW)
Applied standard	Accordance with EN60950
Insulation Resistance	There is 100M $\Omega$ or higher when DC500V is applied at the below sections in normal temperature and humidity. Power input/Motor output terminal – PE terminal Power input/Motor output terminal – Signal I/O terminal
Operating environment temperature	0 to +40      No freezing
Operating environment humidity	Less than 80%, No condensation
Storing environment temperature	-10 to +60      No freezing
Storing humidity	Less than 80%      No condensation
Operating height	Less than 1,000m from sea level
Atmosphere	In the room without corrosive gas, inflammable gas and dust. Without splashing water and oil
Weight	75g IMS200-220AL(110g IMS200-220A/IMS200-220S)
Accessories	User's manual(This book) Connector brand : J.A.E. Housing : CN1:IL-6S-S3L-N ..... 1 pc. Housing : CN2:IL-4S-S3L-N ..... 1 pc. Contact : IL-C2-0001 ..... 10 pcs.

## 2. Model number and default setting

### 2-1. Model number of driver

IMS200 - 2 2 0 A L



### 2-2. Default setting

Driver model	IMS200-220AL
Driving current	MAX 2.0 A/phase
Input pulse type	2 pulses type
Resolution	1/8 division
Connector	RightAngle connector
Cover	None



If not specified, IMS200-220AL(Standard) will be supplied.

The cover is not sold separately.

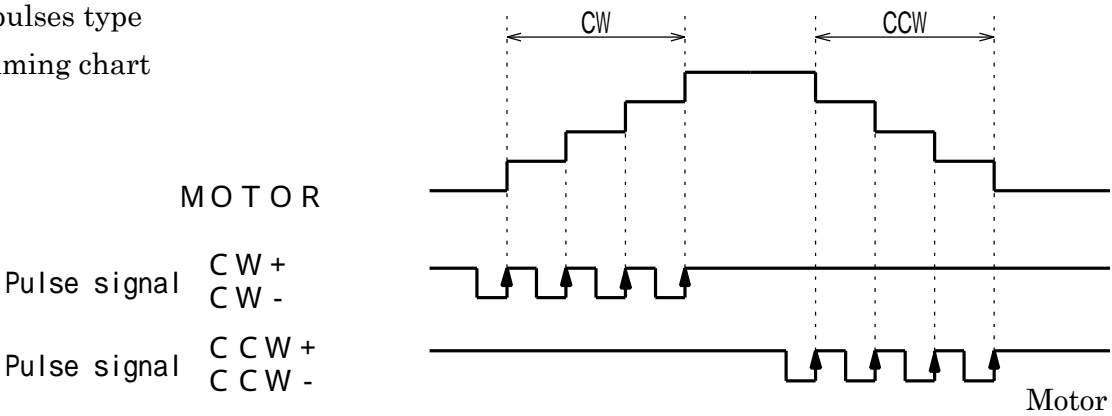
Please refer “4. Part name and function” for the detail of changing of function.



### 3. Pulse signal

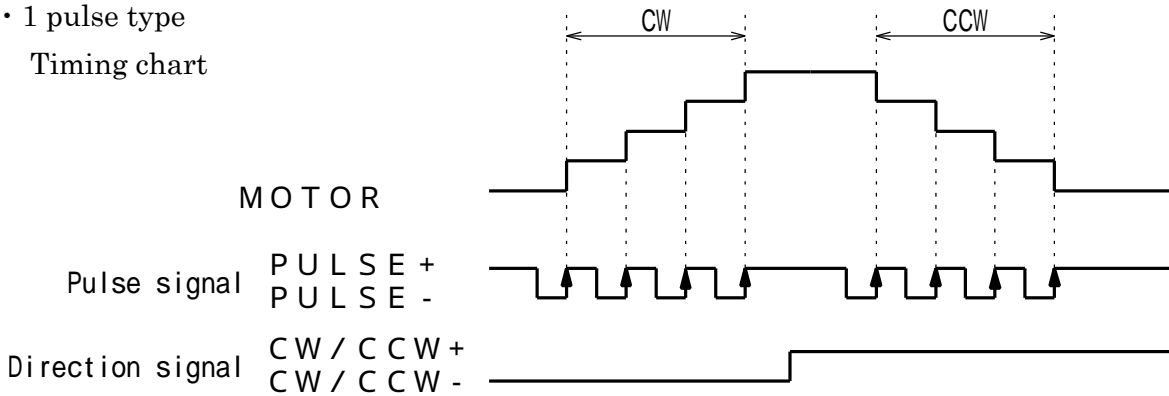
#### 3-1. Input pulse type

- 2 pulses type  
Timing chart



Motor starts to rotate by rising edge( ) of CCW or CW signal.

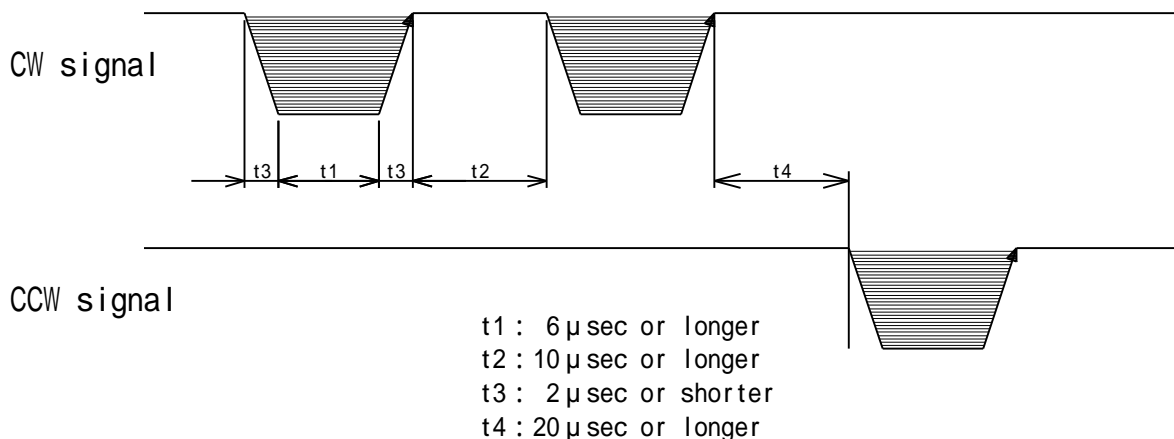
- 1 pulse type  
Timing chart




Motor starts to rotate by rising edge( ) of Pulse signal.

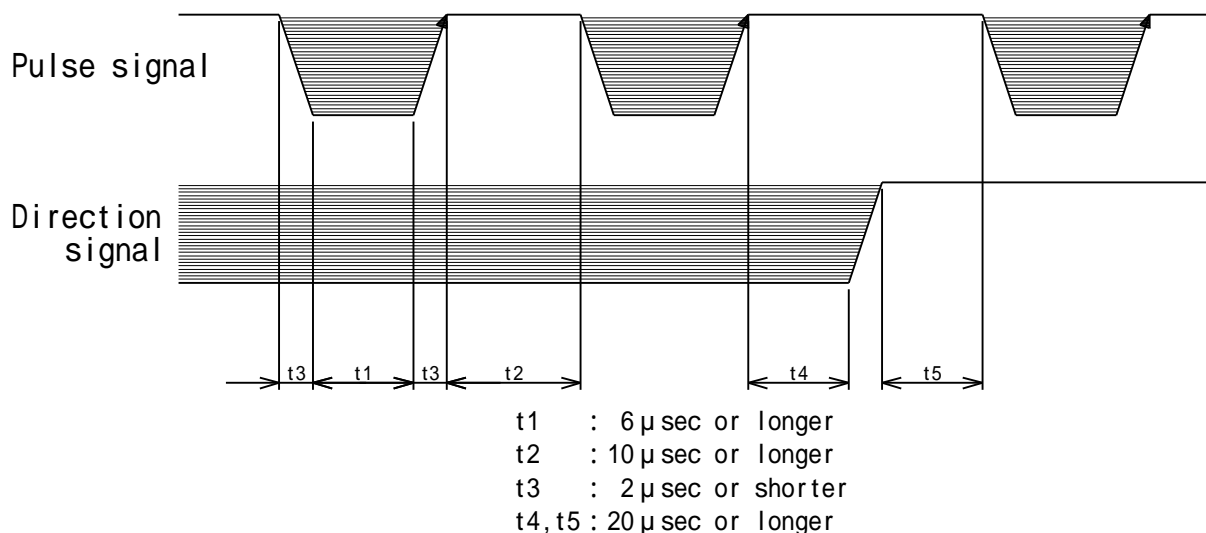
### 3-2. Wave of pulse


• 2 pulses type



-  section shows ON status(turn on of photo coupler) of input circuit photo coupler.
- Motor starts to rotate by rising edge( ) of CCW or CW signal.

• 1 pulse type



-  section shows ON status(turn on of photo coupler) of input circuit photo coupler.
- Motor starts to rotate by rising edge( ) of pulse signal.
- Direction signal input is to rotate CW direction by inputting pulse signal at ON status. Also if pulse is inputted at OFF status, motor rotates to CCW direction.
- Signal name of product uses pulse signal as CW input and direction signal as CCW input.



#### Attention

- 1 . If the signal exceeds the voltage of DC5V in use, please insert the series resistor near to output terminal(connector) of using controller so that 10mA current pass.

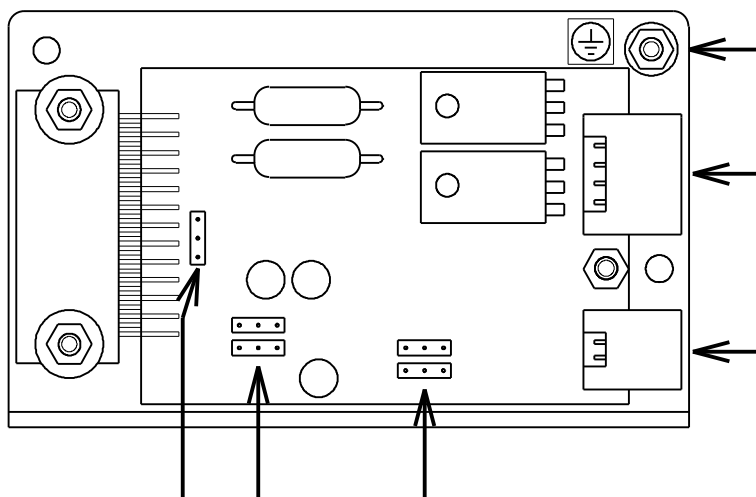
Value of resistor to be inserted( ) =  $\frac{\text{Input voltage} - 5V}{10mA}$  - Register value of wiring( )

- 2 . Current down function is invalid if the photo coupler of pulse input keeps ON status at stopping.

## 4. Each part name and functions

Using Toshiba TA8435H, constant current is realized by PWM control and stepping motor is driven high efficiently with low vibration. W1-2 phase excitation can realize the micro-stepping of maximum 1/8 resolution

### 4-1. Each part name (Refer ~ )



#### . Power input and motor output connector (CN1)

This is connected with power source and motor lead.

CN1	1	6
1	DC24V	
2	0V	
3	/B phase	
4	B phase	
5	/A phase	
6	A phase	

Name	Model	Memo
PinHeader	IL-6P-S3FP2	
Socket Housing	IL-6S-S3L-N	Accessory
Socket Contact	IL-C2-0001	Accessory

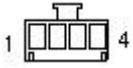
Please use DC24V power source.

Electric wire Please use AWG22 (0.5mm<sup>2</sup>).

Please refer “6-3. Applicable tool” for the method of pressure connection

### . Signal input connector(CN2)

This is connected with input pulse signal.

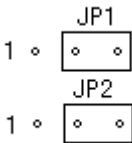
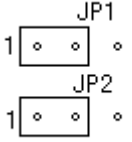
CN2		
	1 pulse type	2 pulses type
1	PULSE +	CW +
2	PULSE -	CW -
3	CW/CCW +	CCW +
4	CW/CCW -	CCW -

Name	Model	Memo
PinHeader	IL-4P-S3FP2	
Socket Housing	IL-4S-S3L-N	Accessory
Socket Contact	IL-C2-0001	Accessory

Please refer “6-3. Applicable tool” for the method of pressure connection.

### . Input pulse type select switch(JP1,JP2)

This selects the input pulse type.

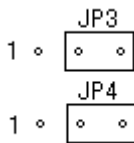
Setting	Jumper setting	Input pulse type	Ref.
	JP1 : 2-3 JP2 : 2-3	1 pulse type	
	JP1 : 1-2 JP2 : 1-2	2 pulses type	Default setting

Remark : Set JP1 and JP2 same position

Please refer “3-1. Input pulse type” for the input pulse type.



### . Resolution select switch (JP3, JP4)

This selects the resolution of micro stepping.

Setting	Type of excitation	Step angle	JP3	JP4	Ref.
	2 phase excitation	1/1	1-2	1-2	
	1-2 phase excitation	1/2	2-3	1-2	
	W1-2 phase excitation	1/4	1-2	2-3	
	2W1-2 phase excitation	1/8	2-3	2-3	Default setting

## . Output current select switch (JP5)

This selects the motor output current.

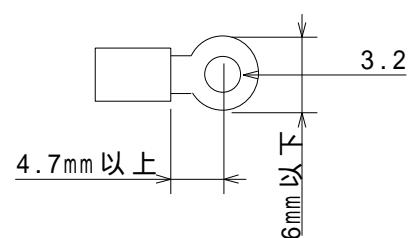
Setting	Jumper setting	Current of each phase	Ref.
JP5 	JP5 : 2-3	1.2A/phase	
JP5 	JP5 : 1-2	2.0A/phase	Default setting

## . Protective earth terminal

This connects with the protective earth terminal of the machine. Use round type pressure terminal for connecting with protective earth terminal. V1.25-MS3(J.A.E), TGV1.25-3(Nichifu) or equivalent.

For safety please connect with the protective earth terminal of the machine by no means.

Use bigger wire than power line for the connection of protective earth terminal.



## 4-2. Manufactured month and serial number

S/N: Serial number

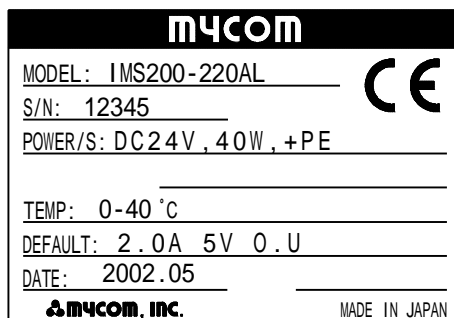
DATE: Manufactured month

Do not remove name plate

Serial number is used for quality and product control.

If the name plate is removed or the serial number is unidentified, it is impossible to trace the driver.

An example of filled nameplate



The name plate is stuck at reverse side of metal plate of heat sink.

## 5. Wiring

### 5-1. Wiring for power input and motor output lines

- In case that the motor wiring is longer, please use the shield cable equal to or bigger than AWG22(0.5mm<sup>2</sup>)
- The radiant noise can be depressed by shield cable equal to or bigger than AWG22(0.5mm<sup>2</sup>) in case that redundant radiant noise is trouble.
- Install noise filter at power input if noise sources exist near the driver.
- It is dangerous to connect DC power supply with motor output.

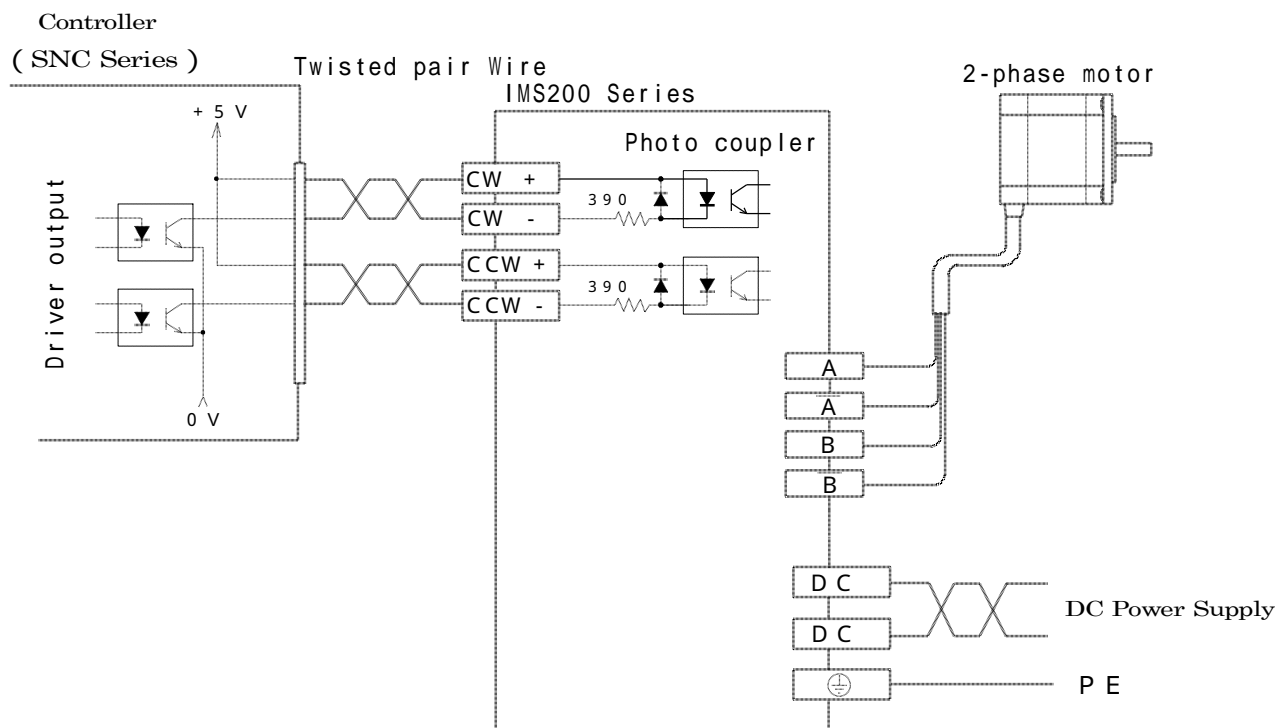
### 5-2. Wiring for input pulse signal

- If the input signal line becomes longer, wrong operation can be depressed by using shield wire..

### 5-3. Applicable tool

Use CT150-1C-IL of Japan Aviation Electronics Industry, Limited(J.A.E.) to press the socket contact(IL-C2-0001).

## 6. Example of connection



## 7. Install condition

- Fix the driver on heat conductive and earthed metal plate tightly.
- Put 15mm or more space between each driver and fix the drivers for well ventilation when multiple drivers are arranged.
- There is a possibility that driver temperature exceeds 60 °C, therefore install the driver to flow air of cooling fan against the driver and avoid overheat.
- Do not use driver outside of control box. This unit is designed for the following condition.

Over voltage category : Category II, Material group : III.

Degree of pollution : Class 2

Protective structure : IP20 (IMS200-220A/IMS200-220S)

: IP00 (IMS200-220AL/IMS200-220SL)

Protect against electric shock : Class III device

### 7-1. Cooling fan

Model number	IMS200-220A(L)/S(L)	
Select of JP5	2-3pin short	1-2pin short
Output current	1.2A/phase	2.0/phase
Cooling fan	×	

In case that 1-2 of JP5 is shorted, please use cooling fan surely and set this unit not to stand heat.

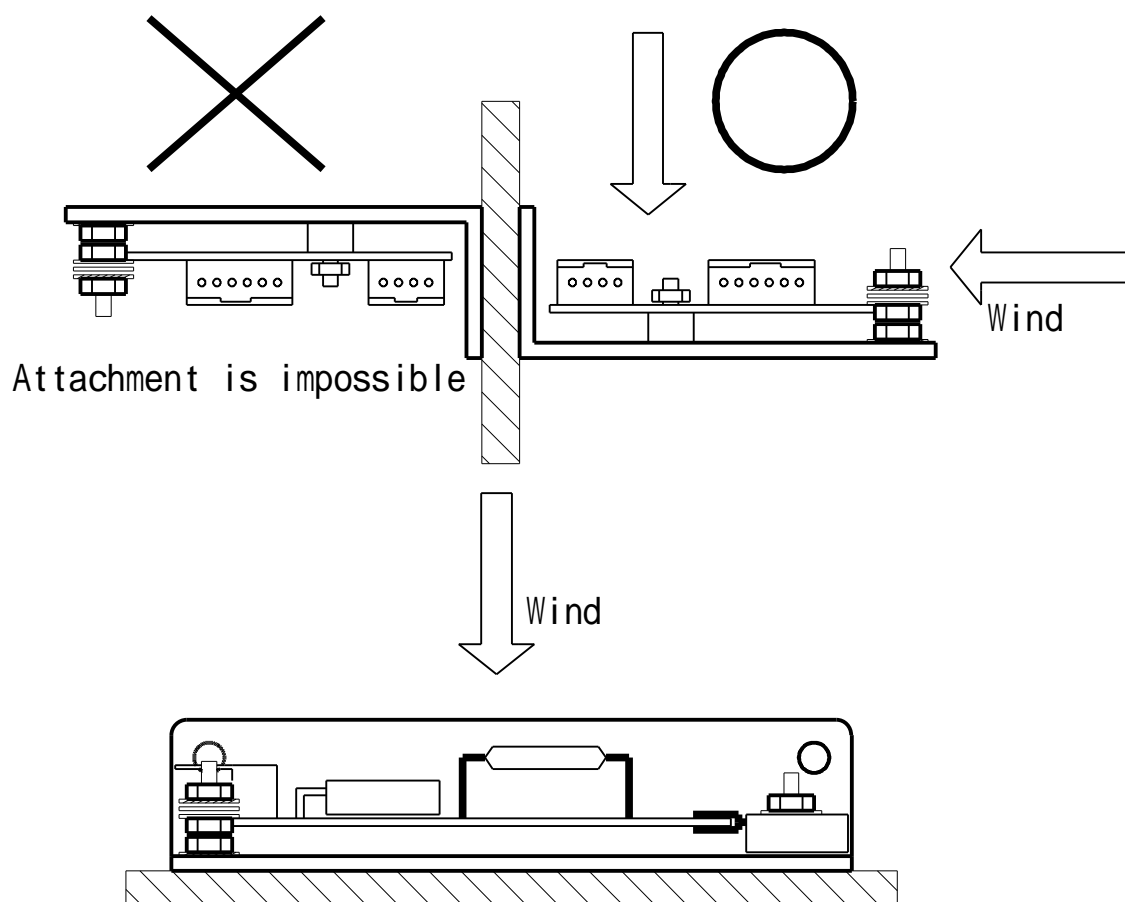
\*When the output current is 2A, install and use cooling fan without fail not to fill hot air.

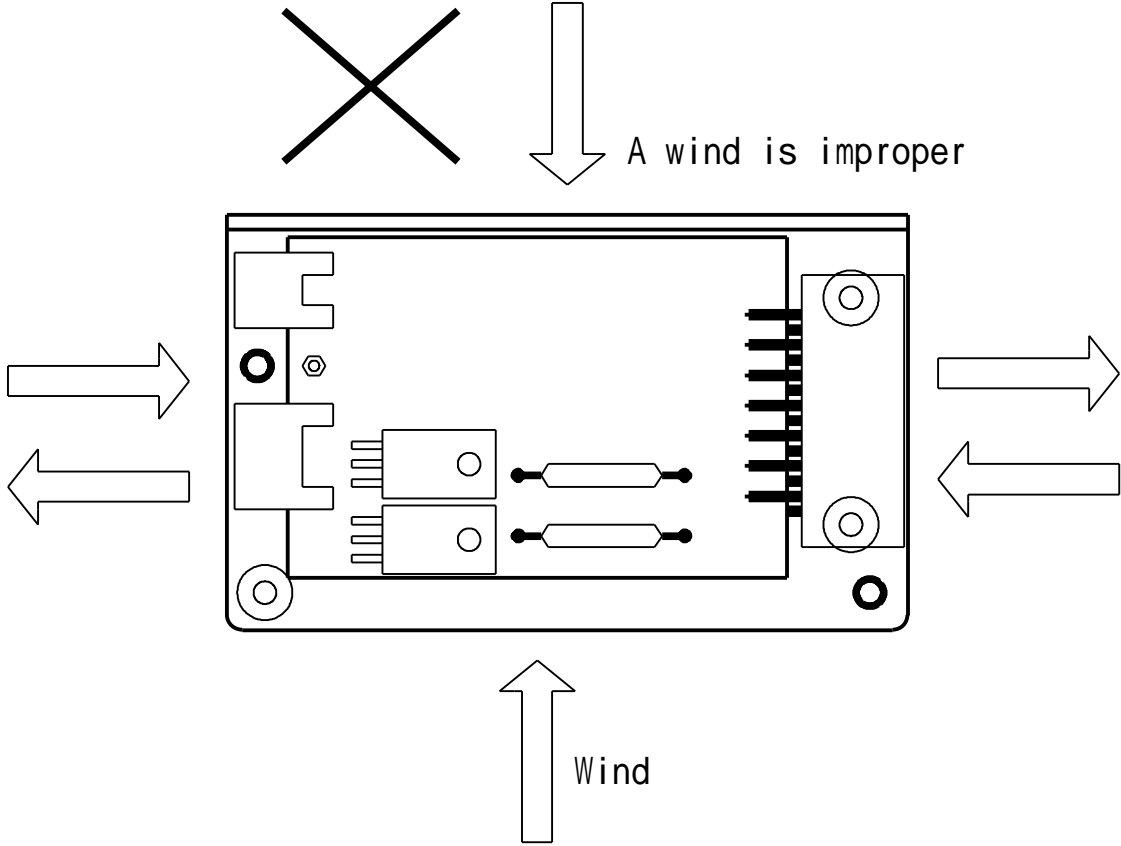


Caution

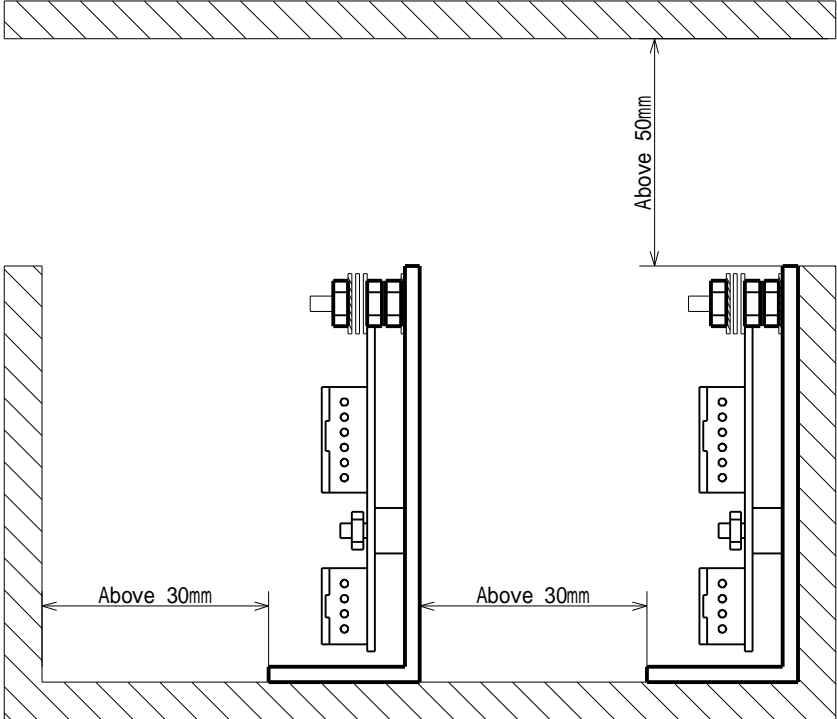
There is a possibility that driver temperature exceeds 60 depending on load or other environmental condition.

### 7-2. Example of installation

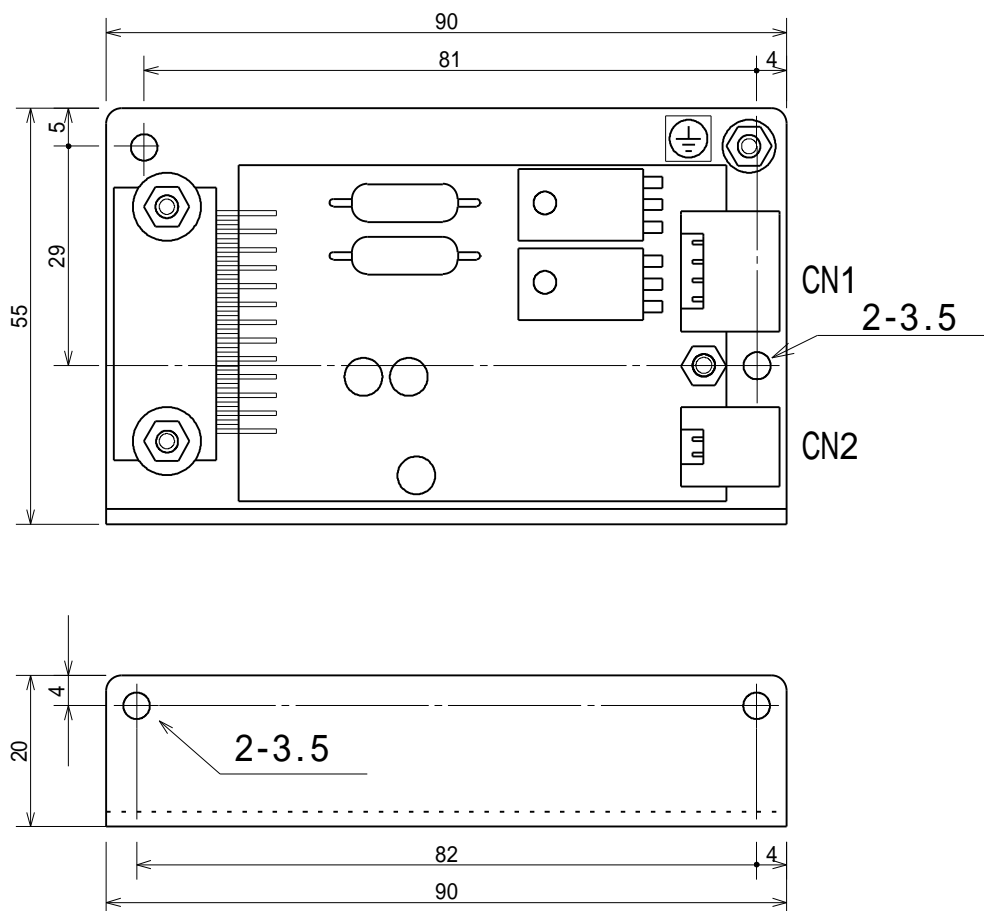




Distance from this driver



## 8. Dimension of IMS200-220AL



unit=mm

## 9. Optional accessories

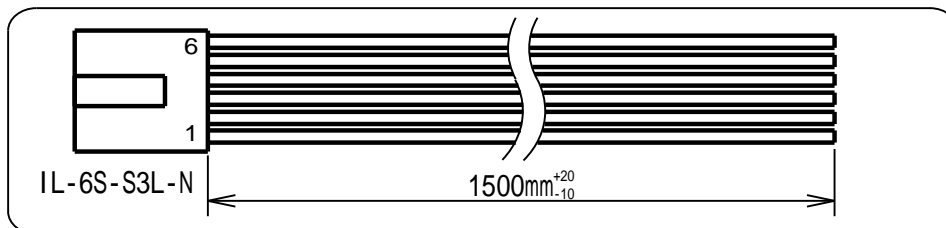
The optional cable is prepared which have below connector at the one side

- CN1 : Power/Motor cable

Model number : OPMC-IL6P15

Connector : IL-6S-S3L-N\*1

Cable : AWG22 Loose cable 1.5m

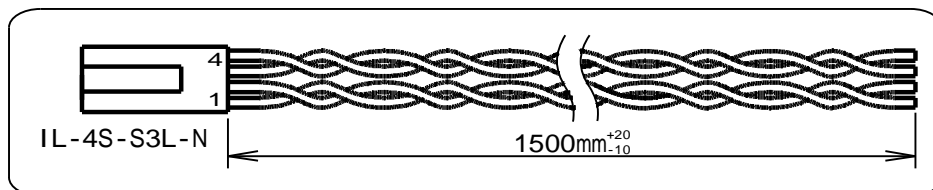


- CN2 : Signal cable

Model number : OSC-IL4P15

Connector : IL-4S-S3L-N\*1

Cable : AWG22 Twisted pair wire 1.5m



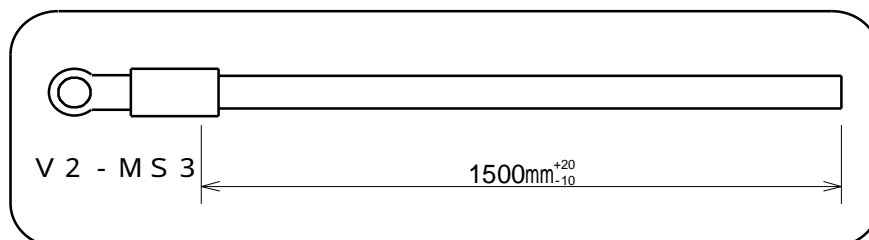
\*1 Housing of JAE brand (Contact, IL-C2-0001 is used)

- Frame ground cable for FG

Model number : OFC-V2MS315

Connector : V2-MS3

Cable : AWG18 Green/Yellow striped wire 1.5m



Please understand that we may make modifications to our products without notification in order to improve the capabilities and external appearance of our products.

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## **MYCOM**

MYCOM, INC. (Head office)

12, S. Shimobano, Saga hirosawa, Ukyo, Kyoto, Japan 616-8303

TEL: 81-75-882-3601

FAX : 81-75-882-6531

Home Page : <http://www.mycom-japan.co.jp/>

NYDEN CORP.

2610, North First St. #B San Jose, Ca, 95134, USA

TEL: 1-408-232-7700

Home Page: <http://www.nyden.com>

MYCOM TECHNOLOGY, INC.

2Fl., No.333, Fuhsing N, Road Taipei, Taiwan, R.O.C.

TEL : 886-2-2719-0525

MYCOM KOREA, INC.

RM. C-605, Woolim Lions Valley, Geum Cheon-Gu, Gasan-dong, Seoul, Korea

TEL : 02- 2635- 6703 ~ 4

MYCOM THCHNOLOGY (SINGAPORE) PTE. LTD.

No.1, Sims Lane #05-05, One Sims Lane, Singapore 387355

TEL : 65-6743-4476

Home Page : <http://www.mycommts.com.sg>

Malaysian Contact;

No.1E-12-07, Jalan Batu Uban, Sunny Ville, Penang, Malaysia

TEL : 60-04-656-0328