

Autonics

MOTOR DRIVER(5 PHASE MICRO STEP DRIVER)  
KR-55MC/KR-55M

M A N U A L



Thank you very much for selecting Autonics products.  
For your safety, please read the following before using.

Caution for your safety

- \*Please keep these instructions and review them before using this unit.
- \*Please observe the cautions that follow;
- Warning** Serious injury may result if instructions are not followed.
- Caution** Product may be damaged, or injury may result if instructions are not followed.
- \*The following is an explanation of the symbols used in the operation manual.  
⚠ caution: Injury or danger may occur under special conditions.

Warning

- In case of using this unit with machineries(Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, entertainment or safety device etc.), it requires installing fail-safe device, or contact us for information on type required.**  
It may result in serious damage, fire or human injury.
- Installation, connection, operation, control, maintenance should be carried out by person who has been qualified.**  
It may cause a fire or human injury, give electronic shock.
- Please use reinforcement insulated DC power for DC type input product.**  
It may give electronic shock.
- Please install this unit after considering count plan against power failure.**  
It may cause human injury or damage to product by releasing holding torque of motor.
- Do not use this unit outdoors or place where there are flammable, corrosive gas, water, big vibration etc.**  
It may cause a fire or give electronic shock.
- Do not disassemble and modify this unit, when it requires, please contact us**  
It may cause a fire or give electronic shock, damage to product.
- Please install board type product with protection equipment.**  
It may cause a fire.

Caution

- Power input voltage must be used within rating specification and power line should be over than AWG NO. 18(0.75mm<sup>2</sup> ).**  
It may cause a fire or give electronic shock.
- Please check the connection before power.**  
It may cause a fire or give electronic shock, damage to product.
- Please turn power off when power failure occurred.**  
It may cause human injury or damage to product due to sudden movement when recover power failure.
- Do not touch this unit during it is operating or after stopping. (Within few second)**  
It may cause a burn due to high temperature in surface.
- The emergency stop needed during operating.**  
It may cause human injury or damage to product.
- Please supply power after checking control input signal.**  
It may cause human injury or damage to product by sudden movement.
- Do not turn on the HOLD OFF signal input while it is maintaining vertical position.**  
It may cause human injury or damage to product by releasing holding torque of motor.
- Please install a safety device when need to remain the vertical position after turn off the power.**  
It may cause human injury or damage to product by releasing holding torque of motor.
- Please check if HOLD OFF signal input is ON when need to set the output manually.**  
It may cause human injury by sudden movement.
- Please stop this unit when mechanical trouble occurred.**  
It may cause a fire or human injury.
- Do not touch the terminal when test check pressure or insulation resistance.**  
It may give electronic shock.
- Please observe rating specification.**  
It may cause human injury or give electronic shock, damage to product.
- In cleaning the unit, do not use water or an oil-based detergent.**  
It may cause a fire or give electronic shock.
- Please separate as industrial scrapped material when disuse this unit.**

Features

- Able to drive micro step for low vibration and noise.
- Use step angle with conversion signal.
- Maximum 80 divisions, step angle of 0.72 ° , controlling as accurate as down to 0.009 ° .  
It needs 40,000 pulses for 1 revolution of motor.
- Various functions built-in, including an automatic current-down or self-diagnosis function.
- Realization of small, light and high speed/torque.
- Photo coupler input insulation method to minimize the effects from external noise.

Characteristics of input pulse

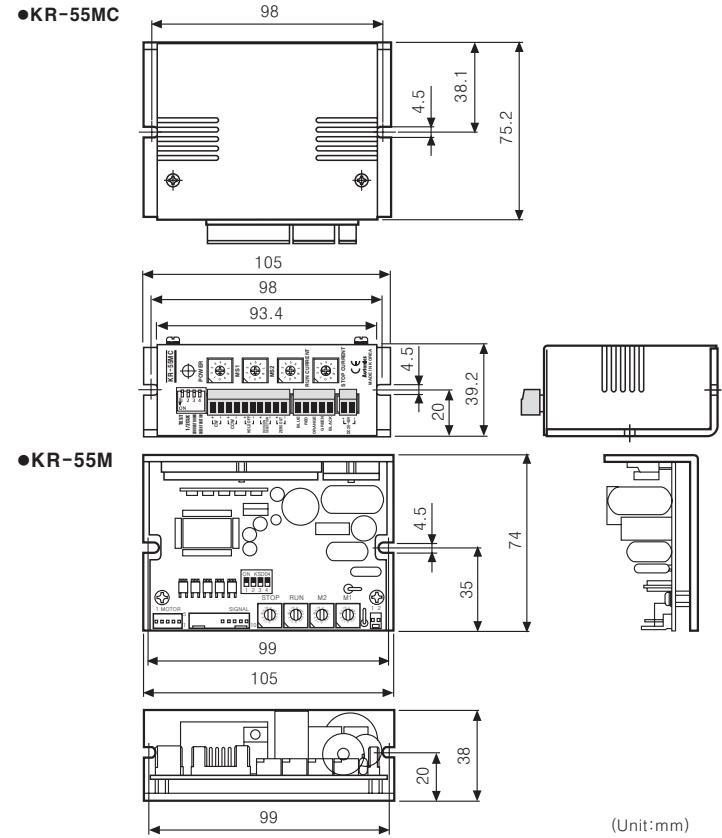
- Pulse width : Min. 0.5μs
  - Pulse interval : Min. 0.5μs
  - Rising・Falling time : Max. 1μs
  - Max. input pulse frequency : 500k pps
  - Pulse input voltage : [H]4V~8V, [L]0~0.5V
  - Input resistor : 300Ω(CW, CCW), 390Ω(HOLD OFF, DIVISION SELECTION)
- \*The above specifications are changeable without notice anytime.

Specifications

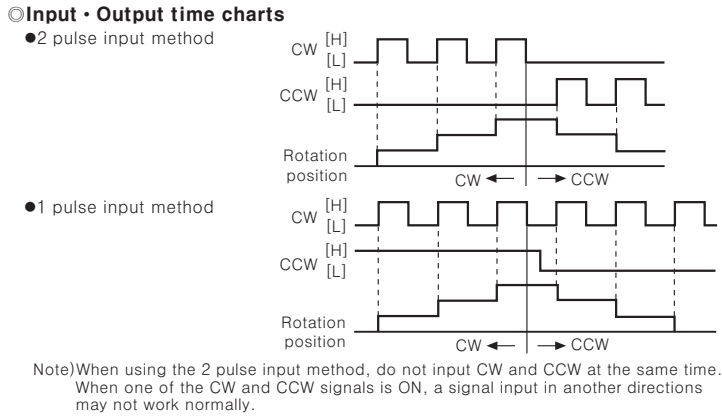
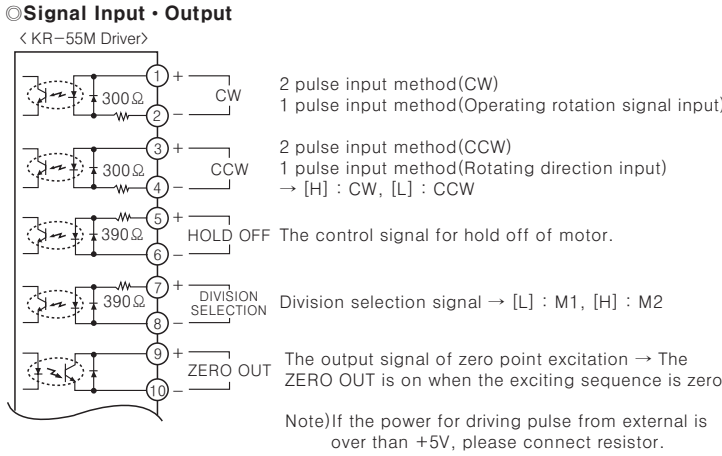
Model	KR-55MC	KR-55M
Input power	20-40VDC(Max. rating) 3A	
RUN current	1.4A/phase max.	
Drive method	Micro step(1, 2, 4, 5, 8, 10, 16, 20, 40, 80 Division)	
Ambient temperature	0 to 40℃	
Ambient humidity	35 to 85%RH	
Weight	Approx. 240g	Approx. 200g
Approval	CE	

\*There is torque difference by input power.

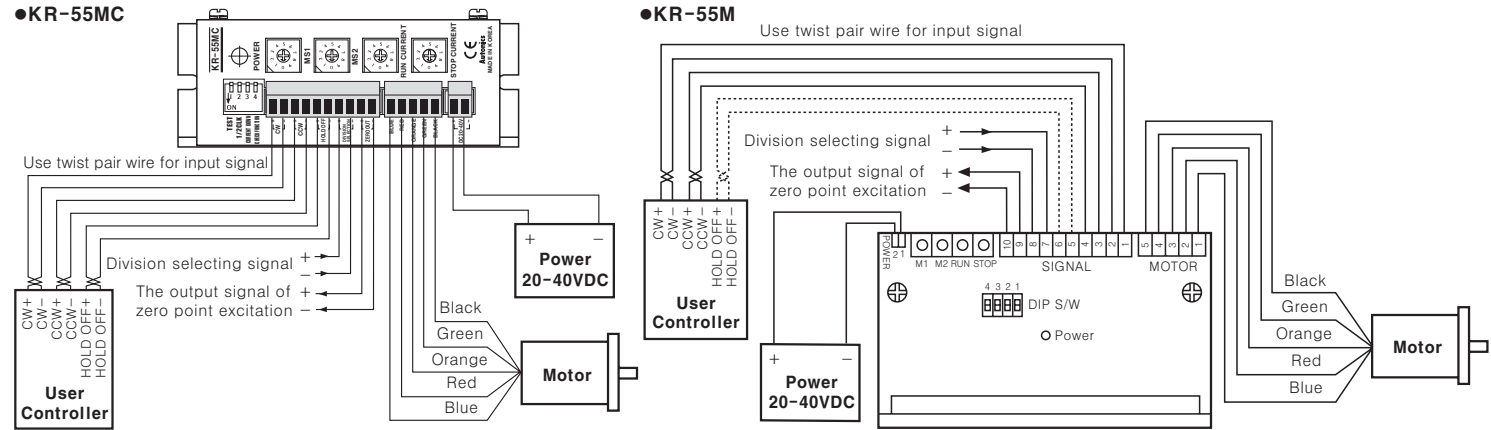
Dimensions



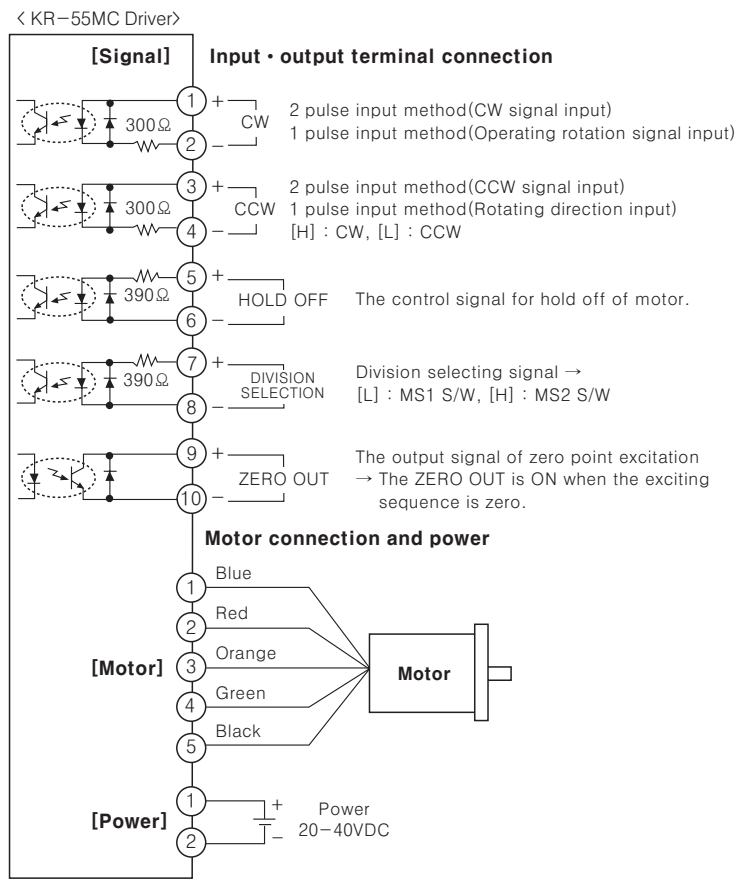
Signal Input・Output circuit and time charts



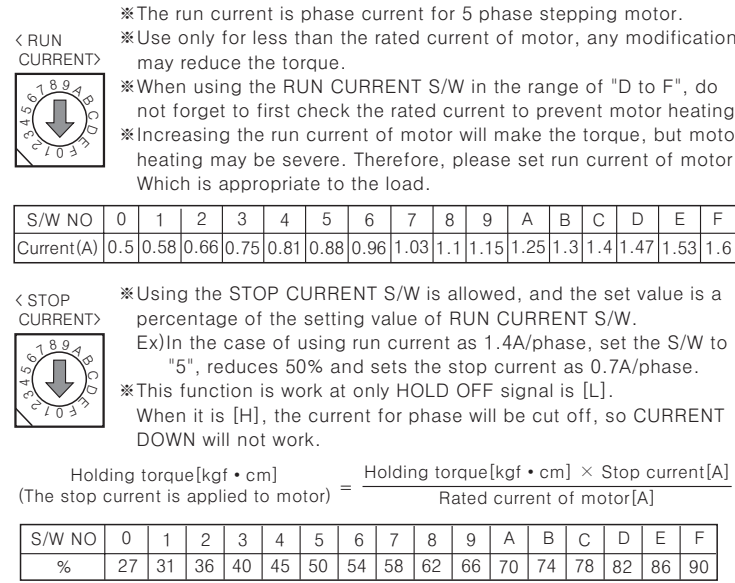
Connections



Input・Output diagram



RUN and STOP Current setting



Division setting

S/W NO	0	1	2	3	4	5	6	7	8	9
Division	1	2	4	5	8	10	20	40	80	16

MS1 (M1) 5 Phase motor rotation angle =  $\frac{\text{Step angle}(0.72^\circ)}{\text{Division}}$

\*Operates the selective division with MS1 S/W on the selection signal [L] and MS2 S/W on the selection signal [H] according to the division selecting signal.  
\*Enables the adjustment of division during stepping motor operation(Rotation) and allows a double Micro-Step operation with the division selecting signal.  
\*The Zero point excitation signal is ON when the excitation sequence is 0.  
In the case of a 5 phase motor with 0.72 ° with an output every 7.2 ° , changing the step angle after turning on the power might not produce any output.

Function S/W

NO	Function	S/W position	
		ON	OFF
1	Self diagnosis function	100pps Rotation	Normal
2	Input signal method	1pulse input method	2pulse input method
3	Auto Current Down	Not use	Use
4	Check inner function	When it is used, OFF	

Caution for using

- Caution for signal input  
①When using the 2 pulse input method, do not input CW and CCW at the same time. When one of the CW and CCW signals is [H], a signal input in another directions may not work normally.  
②Current of input power maximum current.  
③Please use enough power enables to supply for motor driving.
  - Caution for wiring  
①Use Twist pair(Over than 0.2mm<sup>2</sup> ) for the signal wire should be shorter than 2m.  
②Please use over than AWG No.18(0.75mm<sup>2</sup> ) wire for motor wiring(when it needs to extend) and power line.  
③Please check the polarity of power before driving it.
  - Caution for installation  
①Please mount a heating panel on metal surface closely.  
②Please mount this product at well-ventilated place in order to increase the heating efficiency of heating panel.
  - Function S/W  
①The self-diagnosis is outputting a pulse of 100pps while the position of S/W is ON, which is setting to test the motor and driver.  
②Check the position of self-diagnosis S/W before turn on the power. If turn on the power at the state of ON, It could be dangerous due to abrupt motor starting.  
③The Auto Current Down reduces the run current at a constant rate to minimize heating when stop the motor.
  - Installation environment  
①It shall be used indoor  
②Altitude Max. 2000m  
③Pollution Degree 2  
④Installation Category II
- \*It may cause malfunction if above instructions are not followed.

Main products

- COUNTER
- TIMER
- TEMPERATURE CONTROLLER
- PANEL METER
- TACHOMETER/LINE SPEED METER
- PULSE METER
- DISPLAY UNIT
- PROXIMITY SENSOR
- PHOTOELECTRIC SENSOR
- FIBER OPTIC SENSOR
- PRESSURE SENSOR
- ROTARY ENCODER
- SENSOR CONTROLLER
- POWER CONTROLLER
- STEPPING MOTOR & DRIVER & CONTROLLER

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