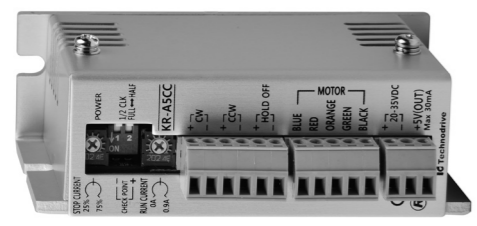


Technodrive
Motor Driver (5-phase Stepper Motor Driver)
KR-A5CC
M A N U A L



Thank you for choosing our Technodrive 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 or product damage.
- ※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

1. **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.
2. **Installation, connection, operation, maintenance, and inspection should be handled by qualified individuals.**
 Failure to follow this instruction may result in fire, electric shock or personal injury.
3. **Use reinforced insulation DC power at primary and secondary part for DC type input product.**
 Failure to follow this instruction may result in electric shock.
4. **Install the unit 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.
5. **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, electric shock or burn.
6. **Do not disassemble or modify the unit. Please contact us if maintenance necessary.**
 Failure to follow this instruction may result in fire, electric shock or product damage.
7. **Do not insert any objects at the openings of the unit.**
 Failure to follow this instruction may result in fire, electric shock, or personal injury.

▲ Caution

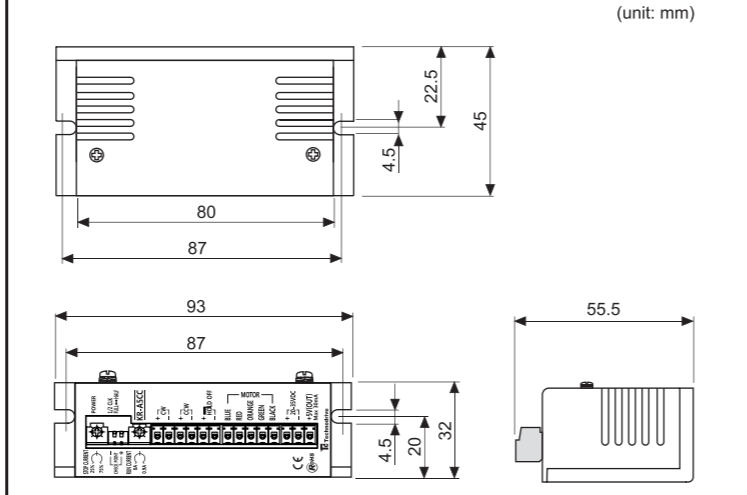
1. **Use the unit within the rated specifications.**
 Failure to follow this instruction may result in product damage, shorten the life cycle of the unit personal injury, or peripheral devices damage.
2. **Do not put obstacles around the unit which may obstruct ventilation.**
 Failure to follow this instruction may result in product damage by overheat, or malfunction of peripheral devices.
3. **When connecting the power input cables, use the unit within the rated power supply and AWG18 (0.75mm²) cables.**
 Failure to follow this instruction may result in fire or electric shock.
4. **Refer to the connection diagrams and check the connection correctly before supplying the power.**
 Failure to follow this instruction may result in fire, electric shock or product damage.
5. **Turn OFF the power when power is failed.**
 Failure to follow this instruction may result in personal injury or product damage due to sudden movement when recover power failure.
6. **Do not touch the unit during or after operation for a while.**
 Failure to follow this instruction may result in burn due to high temperature of the surface.
7. **Emergency stop should be available during operation.**
 Failure to follow this instruction may result in personal injury or product damage.
8. **Check the control input signal of the unit before supplying the power.**
 Failure to follow this instruction may result in personal injury or product damage by unexpected signal input.
9. **Do not turn on the HOLD OFF signal input while it is maintaining vertical position.**
 Failure to follow this instruction may result in personal injury or product damage by releasing holding torque of motor.
10. **Install safety device when it is required to remain the vertical position after turn off the power.**
 Failure to follow this instruction may result in personal injury or product damage by releasing holding torque of motor.
11. **Check HOLD OFF signal input is ON when moving the output axis (manual positioning etc) manually.**
 Failure to follow this instruction may result in personal injury by unexpected signal input.
12. **Stop the unit when mechanical problem occurs.**
 Failure to follow this instruction may result in fire, or personal injury.
13. **Do not touch terminals when testing insulation resistance or dielectric strength.**
 Failure to follow this instruction may result in electric shock.
14. **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 electric shock or fire.
15. **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.

■ Specifications

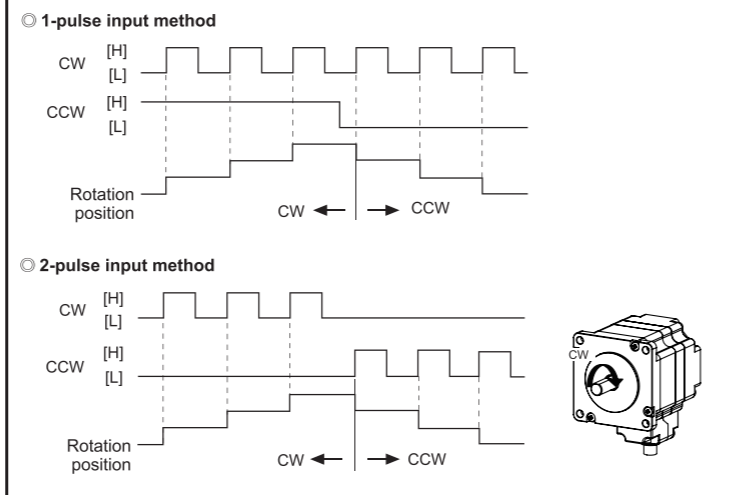
Model	KR-A5CC		
Power supply ^{※1}	20-35VDC		
Allowable voltage fluctuation range	90 to 110% of the rated voltage		
Power consumption ^{※2}	Max. 70W		
RUN current ^{※3}	0 to 0.9A/Phase		
STOP current	25 to 75% of RUN current (set by STOP current volume)		
Drive method	Bipolar constant current pentagon drive		
Resolution	1-division (0.72°/1Step), 2-division (0.36°/1Step)		
Input pulse characteristics	CW, CCW	HOLD OFF	
	Pulse width	Min. 1μs	Min. 1ms
	Duty Rate	Max. 50%	—
	Rising/Falling time	Below 0.5μs	—
	Pulse input voltage	[H]: 4-8VDC, [L]: 0-0.5VDC	—
Input pulse current	7.5 to 14mA	10 to 16mA	
	Max. input pulse frequency ^{※4}	500kHz	—
Input resistance	390Ω		
Insulation resistance	Min. 100MΩ (at 500VDC megger, between external terminal and case)		
Dielectric strength	1,000VAC 50/60Hz for 1min.(between external terminal and case)		
Noise resistance	±500V the square wave noise (pulse width: 1μs) by the noise simulator		
Vibration	Mechanical	1.5mm amplitude at frequency of 5 to 60Hz(for 1 min.) in each X, Y, Z direction for 2 hours	
	Malfunction	1.5mm amplitude at frequency of 5 to 60Hz(for 1 min.) in each X, Y, Z direction for 10 min.	
Environment	Ambient temp.	0 to 40°C, storage: -10 to 60°C	
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH	
Approval	CE RoHS		
Weight ^{※5}	Approx. 183g (approx. 130g)		

- ※1: When using over 30VDC power supply, torque characteristics are improved but the driver temperature raise. The unit should be installed at the well ventilation environment.
- ※2: Based on ambient temperature 25°C, ambient humidity 55%, STOP current 75%.
- ※3: RUN current is varied by inputted RUN frequency. RUN current of max. moment is varied by loads.
- ※4: Max. input pulse frequency is varied by max. pull-out frequency and max. slewing frequency area.
- ※5: The weight includes packaging. The weight in parentheses is for unit only.
- ※Environment resistance is rated at no freezing or condensation.

■ Dimensions

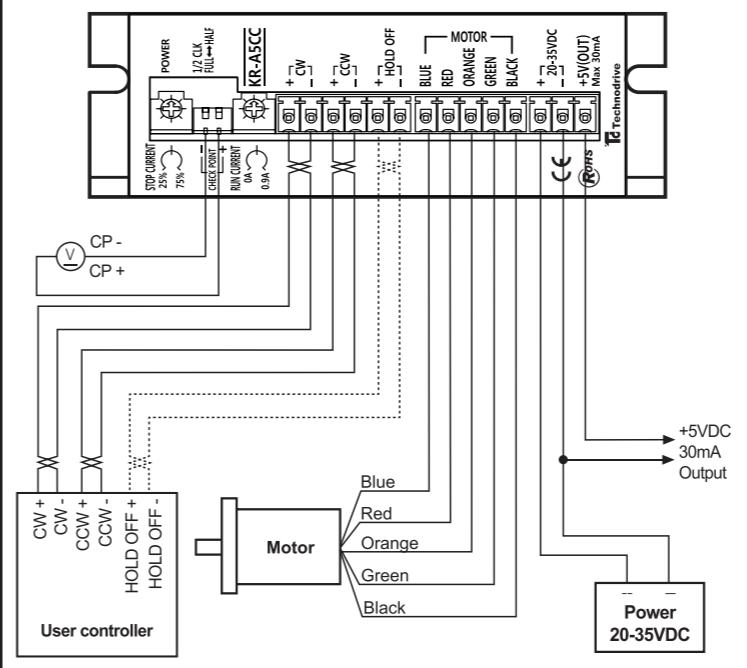


■ Time Chart

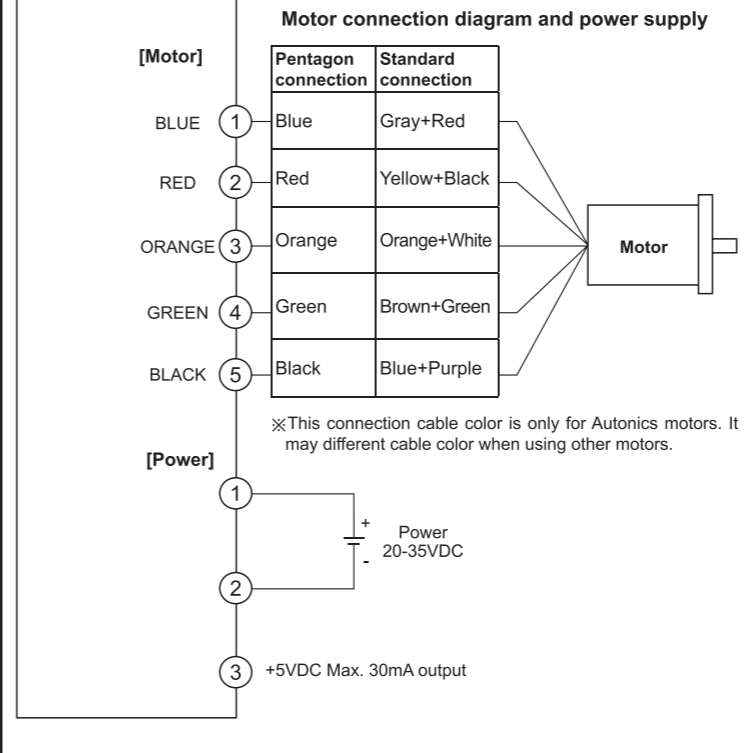
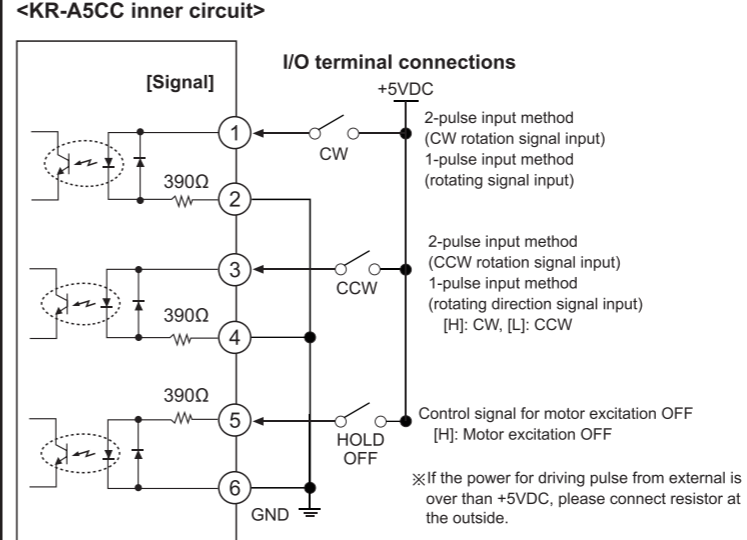


※Do not input CW, CCW signals at the same time in 2-pulse input type. It may not operate properly if another direction signal is inputted when one of CW or CCW is [H].

■ Connections



■ I/O Circuit And Connections

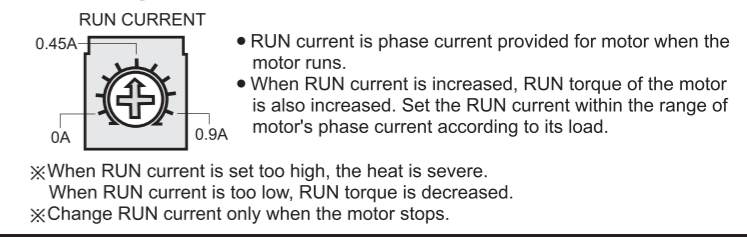


■ Function Selection DIP Switch

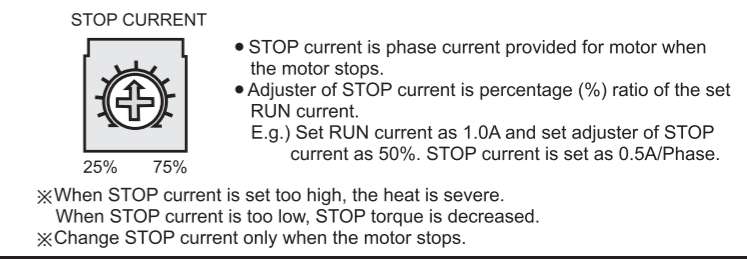
No.	Nameplate	Function	Switch position	
			ON	OFF(Factory default)
1	1/2 CLK	Pulse input method	1-pulse input method	2-pulse input method
2	FULL↔HALF	Select resolution	1-division(0.72°)	2-division(0.36°)

※Changing resolution is available only when stepper motor stops. If changing the resolution during operation, the motor may be out of phase.

■ Setting RUN Current



■ Setting STOP Current



■ HOLD OFF Function

- 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.
- ※Must stop the motor for using this function.
- ※Refer to the I/O Circuit And Connections.

■ Caution During Use

1. For signal input
 - ①Do not input CW, CCW signal at the same time in 2-pulse input type. It may not operate properly if another direction signal is inputted when one of CW or CCW is [H].
 - ②When the power for pulse operation is exceeded +5VDC, please connect resistor at the outside.
 2. For supplying power
 - ①Use the power enough to supply RUN current when turn on the power.
 - ②The current value indicated on power supply is the max. input of driver.
 - ③Check the polarity of power before operating the unit.
 3. For cable connection
 - ①Use twisted pair (over 0.2mm²) for the signal cable which should be shorter than 2m.
 - ②Use electric wire of AWG 18 (0.75mm²) for motor (for extending) and power connection.
 4. For installation
 - ①The unit must be installed with heat protection. Follow the below ②, ③ cautions.
 - ②In order to increase heat protection efficiency of the driver, must install the heat sink close to metal panel and keep it well-ventilated.
 - ③Excessive heat generation may occur on driver. Keep the heat sink under 80°C when installing the unit. (at over 80°C, forcible cooling shall be required.)
 5. This product may be used in the following environments.
 - ① It shall be used indoor
 - ② Altitude up to 2000m
 - ③ Pollution degree 2
 - ④ Installation category II
- ※Failure to follow these instructions may result in product malfunction.