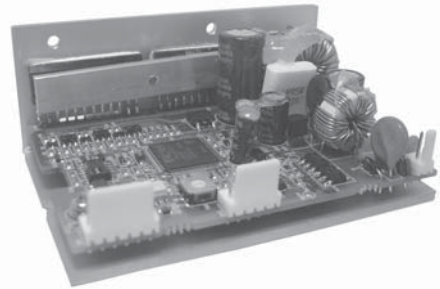


Motor Driver(5-Phase microstepping driver)
MD-55CS

M A N U A L



Thank you very much for selecting Technodrive 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 machinery(Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, entertainment or safety device etc), it is required to install fail-safe device, or contact us for information on type required. It may cause serious human injury or a fire, property.
- Installation, connection, operation, control, maintenance should be carried out by person who has been qualified. It may cause a fire, human injury or give an electric shock.
- Please use DC power with reinforced insulating the primary and secondary part for the DC power product. It may give an electric shock.
- Please install this unit after consider countplan 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 explosiveness, flammable, corrosive gas, water and frequent vibration etc. It may cause a fire or give an electric shock.
- Do not disassemble or modify this unit. Please contact us if it required. It may cause a fire, give an electric shock or damage to product.
- Please install protection equipment on board type product. 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(0.75mm²). It may cause a fire or give an electric shock.
 - Please check the connection before power. It may cause a fire or give an electric shock.
 - Please turn off when power failure occurred. It may cause human injury or damage to product due to sudden movement by recovering from power failure.
 - Do not touch during the operation or after a while of operation. It may cause a burn due to high temperature in surface.
 - The emergency stop should be enabled during the operation. It may cause human injury or damage to product.
 - Please apply 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 problem is occurred. It may cause a fire or human injury.
 - Do not touch the terminal when during the insulation dielectric strength test or insulation resistance measurement. It may give an electric shock.
 - Please observe rating specification. It may cause a fire, give an electric shock or damage to product.
 - In cleaning the unit, do not use water or an oil-based detergent. It may cause a fire or give an electric shock.
 - Please separate as industrial waste when disuse this unit.
- ※ The above specifications are changeable at anytime without notice.

Features

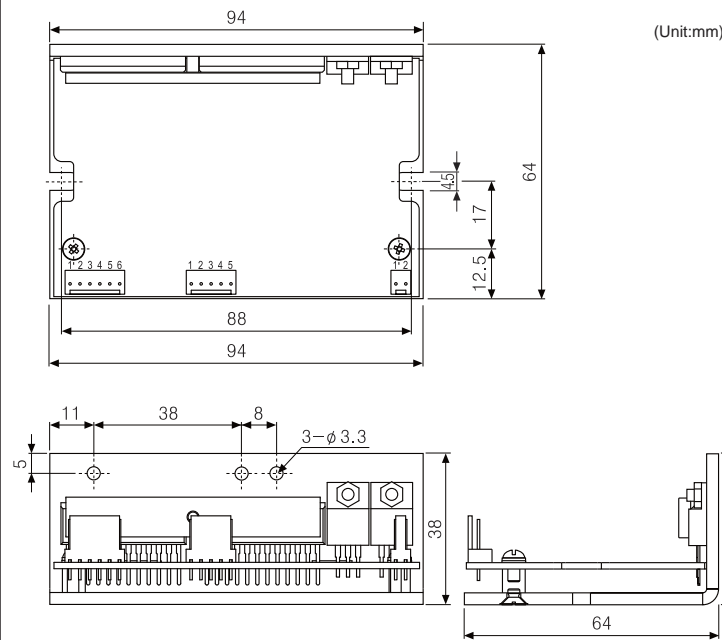
- Microstep operation for silent and low vibration of rotation.
- It can be divided up to 250 of microstep and 5-phase stepping motor with 0.72° of basic step is rotated as 0.00288° per 1 pulse and it is required to input 125,000 pulse for 1 rotation of motor.
- Small, light weight and advanced quality by custom IC and surface mounted circuit.
- Photocoupler input insulation method to minimize the effects from external noise.

Specifications

Model	MD-55CS	
Power supply	20-35VDC 3A[Max.]	
RUN current	0.35 or 0.75A/Phase	
Drive method	Bipolar constant current pentagon drive	
Resolution(Rotating angle)	1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250 division	
CW/CCW Input pulse	Pulse width	Min. 0.25μs
	Pulse interval	Min. 0.25μs
	Rising/Falling time	Max. 1μs
	Frequency	Max. 500kpps
	Voltage	High:4-8VDC, Low:0-0.5VDC
	Current	10-20mA
Ambient temperature	0-40°C(at non-freezing status)	
Ambient humidity	35-85%RH(at non-dew status)	
Unit weight	Approx. 160g	

※ There is torque difference by input power.

Dimensions

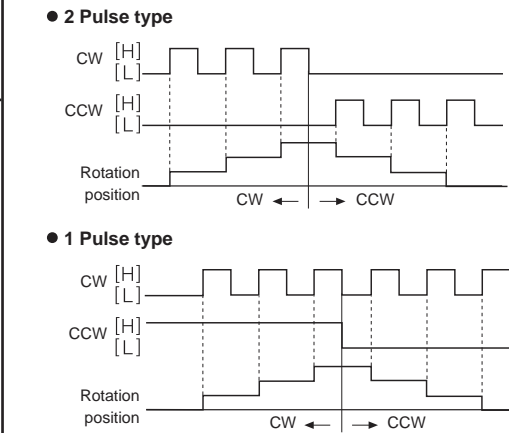


※ Accessory connector specification (manufacturer: MOLEX)

	Model	Quantity
2-pin power connector	5051-02	1
5-pin motor connector	5051-05	1
10-pin signal connector	5051-06	1
Connector pin	5159TL	13

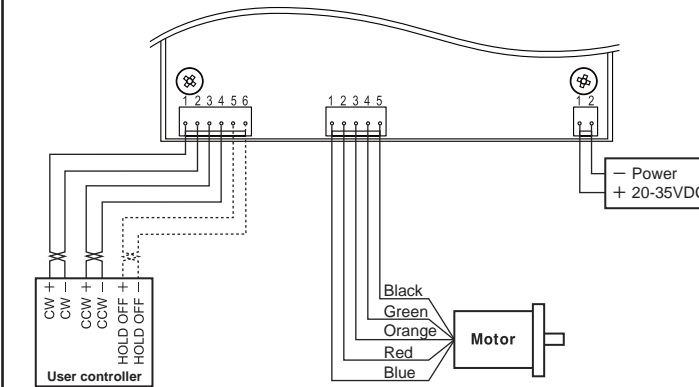
Time charts

◎ CW / CCW Input(CW : Clockwise direction from the front view of shaft)

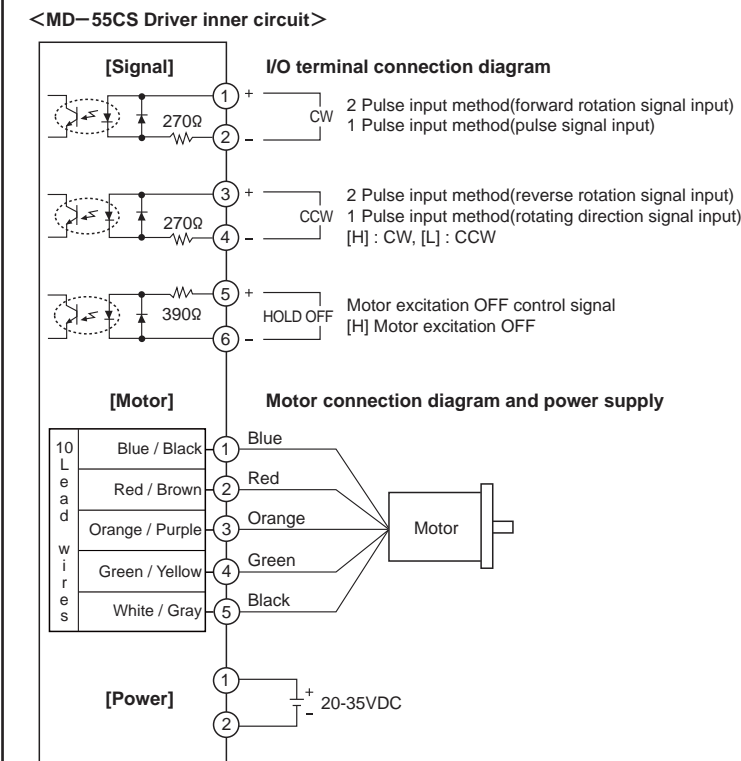


Note)
When using 2 pulse input method, do not input CW and CCW signal at the same time. When one of the CW and CCW signals is [ON], it may not be worked normally.

Connections



Input-Output diagram



Note)
Add external resistor when power for pulse from the external of the unit exceeds +5VDC.

Function

◎ Selectable function switch

Switch position	No	Name	Function	Switch position	
				ON	OFF
1	1	1/2 CLK	Pulse input method	1 Pulse input	2 Pulse input
	2	RC	Setting of RUN current	0.75A/Phase	0.35A/Phase

- 1/2 CLK**
 - ※ Pulse input method selection
 - ※ 1 Pulse method : Input pulse signal input in CW and rotating direction signal in CCW. It rotates to CCW when [L] and CW for [H].
 - ※ 2 Pulse method : Motor is rotated to CW when input pulse in CW and to CCW when input pulse in CCW.

- RC(RUN CURRENT)**
 - ※ Motor's RUN current setting
 - ※ STOP current is fixed to 50% of RUN current.

- HOLD OFF function**
 - HOLD OFF is [H], the excitation is released, because current provided to each phase is cut off.
 - HOLD OFF is [L], the excitation is in a normal status.
 - It rotates motor axis by external force or is used for manual positioning.
 - Input H/L means ON/OFF of photocoupler in a circuit.

◎ Setting micro step(Microstep:Resolution)

Switch No	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Resolution	1	2	4	5	8	10	16	20	25	40	50	80	100	125	200	250

- Setting resolution**
 - ※ It drives a motor dividing basic step angle(0.72°) by setting value of resolution.
 - ※ The calculation formula of divided step angle is as below.
 - 1 step angle of 5-phase stepping motor = $\frac{\text{Basic step angle}(0.72^\circ)}{\text{Resolution}}$
 - ※ When resolution is changed during the operation of motor, it may cause a step-out of motor.

Caution for using

- Caution for signal input
 - Do not input CW, CCW signal at the same time in 2 Pulse input method. It may not work properly if another signal is supplied when one of them is ON.
 - In case, the signal input supply is higher than rated supply expressed on the specification, please connect the additional resistor to external part.
- Caution for supplying power
 - Use the power enough to supply the run current when turn on the power.
 - The current value indicated on power supply is the max. input of driver.
 - Please check the polarity of power before using.
- Caution for wiring
 - Use Twist pair(Over 0.2mm²) for the signal wire should be shorter than 2m.
 - Please use an electric wire is thicker than the motor lead when product the motor wire connection.
- Caution for installation
 - In order to increase heat protection efficiency, keep the heat sink as close as possible to metal panel and keep it well-ventilated.
 - Excessive heat generation may occur on Driver. Keep the heat sink under 80°C when installing the unit.(In case it is over 80°C, forcible cooling shall be required.)
- Installation environment
 - It shall be used indoor
 - Altitude Max. 2000m
 - Pollution Degree 2
 - Installation Category II

※ It may cause malfunction if above instructions are not followed.



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