Stepping Motor Driver

Stepping Motor Driver recommendation

KSS provides recommended Stepping Motor Driver as an option in order to make it easy to use.

●Precaution of Driver usage

Please adjust the run current according to the rated current of the Motor before use.
The adjustment method of the Run current is different for each driver. To adjust the Run current, it is available to down load each instruction manuals from KSS website and follow the steps to make the correct adjustment.

●Standard Stepping Motor Driver

KR-A5CC

This Driver is for 5-phase Stepping Motor operated by DC24V power supply. It has automatic current reduction circuits. You can choose full-step or half step function.

KR-A55MC

Micro-Step Driver for 5-phase Stepping Motor with DC24V power supply. 16 step angle types can be set with up to 250 divisions.

KR-A535M

Micro-Step Driver for 5-phase Stepping Motor, which can be used with AC100~220V power supply. 16 step angle types can be set with up to 250 divisions.

SD4015B3

This is recommended Bipolar 2-phase stepping Motor Driver for rated current 0.25A/phase~1.5A/phase. It has Micro-Step function with 8-step angle.

SD4030B3

This is recommended Bipolar 2-phase stepping Motor Driver for rated current 0.5A/phase~3.0A/phase. It has Micro-Step function with 8-step angle.

Outer dimensions and specifications of KSS recommended Driver are shown from next page.

KR-A5CC

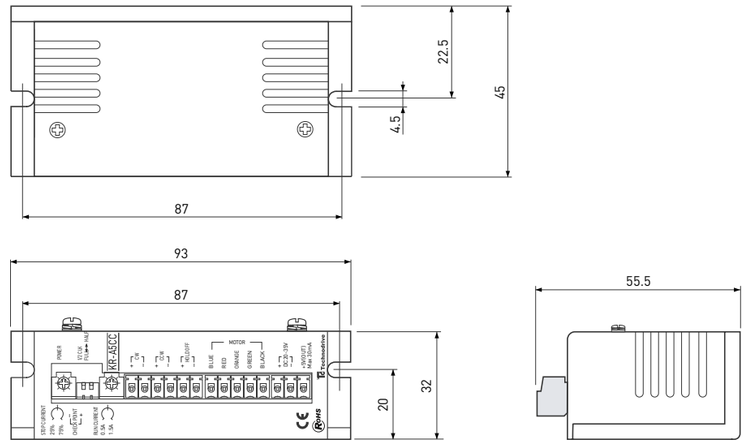
DC24V Input 5-phase Stepping Motor Driver

DC24V | 0.1~0.9A / phase | Full / Half-Step | Case type

■Specifications

Items		Specification	
Power supply		DC20-35V(-10%,+20%) max.3A	
Output current (0.35A/phase at shipping)		Rated current : 0.1~0.9A/phase	
Driving Type		Bipolar pentagon constant current drive	
Input signal circuit	Signal name	Functional description	Input resistance
	CW+	Pulse signal input for 1 clock mode CW rotation input for 2 clock mode	390Ω
	CW-		
	CCW+	Rotational direction input for 1 clock CCW rotation input for 2 clock	390Ω
	CCW-		
	H.O.+	Motor exciting OFF control signal "H" for motor exciting OFF	390Ω
	H.O.-		
		Pulse width : 0.5μs min., Rising-up time : 10μs max. Pulse interval : 0.5μs min., Pulse frequency : 50kpps max. Pulse voltage : "H" for 4~8V & "L" for 0~0.5V Triggerd at the edge of OFF (Logic"L") to ON (Logic"H") of photo-coupler current CCW rotation with CCW input of "L" in 1-clock system	
Setting of driving current		To change the RUN current, connect the CP+ to the (+) terminal of the voltmeter and the CP- to the (-) terminal of the voltmeter then adjust RUN CURRENT volume. Setting current (A) = CP voltage (V) / 4 Setting example) When drive current is set to 0.35A/phase, the CP voltage is adjusted to 1.4V. Note) Run current should be changed during the operating of motor.	
Setting of Stop current		In order to reduce the heat adjusting the current, change it using STOP CURRENT volume. The setting value of STOP CURRENT volume is a percentage of the setting volume of RUN CURRENT. Ex) After setting 1.4A for Run current then put STOP CURRENT volume at 50%, the stop current will be 0.7A.	
Setting of Dip-switches (All off at shipping)	No. / Symbol / Function / ON / OFF		
	1 / 1/2 CLK / Switching of clock / 1 clock mode / 2 clock mode		
	2 / Full / Half / Setting of Interpolation / Full-step (0.72°) / Half-step (0.36°)		
Operating temperature & humidity		0~40℃ 85%RH max. without any dew condensation.	
Storage temperature & humidity		-10~70℃ 85%RH max. without any dew condensation.	
Mass		Approximately 130g	

●Driver Outer Dimensions



KR-A55MC

DC24V Input Microstep Driver

DC24V | 0.4～1.4A / phase | Micro-step | Case type

■Specifications

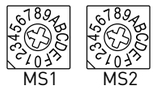
Items		Specification	
Power supply		DC20-35V (-10%,+20%) max.3A	
Output current (0.75A/phase at shipping)		Rated current : 0.4～1.4A/phase Capable of setting the current to 0.4～1.4A/phase by the digital switch "RUN"	
Driving Type		Bipolar pentagon constant current drive	
Input signal circuit	Signal name	Functional description	Input resistance
	CW+	Pulse signal input for 1 clock mode CW rotation input for 2 clock mode	270Ω
	CW-		
	CCW+	Rotational direction input for 1 clock CCW rotation input for 2 clock	270Ω
	CCW-		
	H.O.+	Motor excitation OFF control signal "H" for motor exciting OFF	390Ω
	H.O.-		
	D.S.+	Micro-step interpolation selection "L" for MS1 & "H" for MS2	390Ω
	D.S.-		
		Pulse width : 0.25μs min., Rising-up time : 10μs max. Pulse interval : 0.25μs min., Pulse frequency : 500kpps max. Pulse voltage : "H" for 4～8V & "L" for 0～0.5V Triggerd at the edge of OFF (Logic"L") to ON (Logic"H") of photo-coupler current CCW rotation with CCW input of "L" in 1-clock system	
Output signal Circuit	Signal name	Functional description	Output capacity
	Z.P.+	Origin exciting output signal Switched ON while origin is being excited	DC30V max. 50mA max.
	Z.P.-		
		This signal is ON at the exciting sequence of [0] and is transmitted at each 7.2 degrees for the Step Motor with 0.72°steps. When micro-step angle is changed after the power supply is turned on, it may not be transmitted.	

Setting of micro-step Interpolation (MS1 : 5, MS2 : 0 at shipping)

For micro-step driving of one type only, set the number interpolution using the digital SW MS1.
For micro-step driving of two types. (i.e. when changing speed for going and returning in reciprocating motion) set respective numbers of interpolation using the digital SW MS1 and MS2.

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

Note 1)



When the setting of micro-step interpolating No. is "0.1", 1/4-interpolate low-frequency driving takes place inside.

Setting of driving current (Setting "5" at shipping)

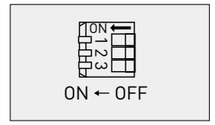
The output current to the motor in rotation is set by the digital switch "RUN" to select from the table below.

Set No.	0	1	2	3	4	5	6	7	8	9
Current (A)	0.4	0.5	0.57	0.63	0.71	0.77	0.84	0.9	0.96	1.02
	A	B	C	D	E	F				
	1.09	1.15	1.22	1.27	1.33	1.4				

Automatic current-down (Setting "5" at shipping)

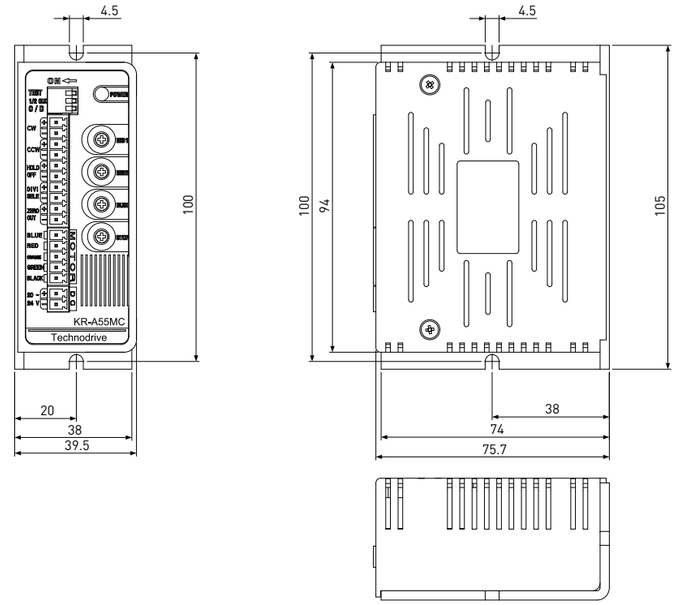
The output current to the motor at stationary is set by the digital switch "STOP" to select from the table below.
The value is set by the percent to "RUN" current. The current decreases at approx. 500ms after the last pulse.

設定番号　Set No.	0	1	2	3	4	5	6	7	8	9
(%)	27	31	36	40	45	50	54	58	62	66
	A	B	C	D	E	F				
	70	74	78	82	86	90				

Items	Specification					
Setting of dip-switches (All off at shipping)	No.	symbol	Function	ON	OFF	
	1	TEST	Self test function	Rotating at 250pps	Normal operation	
	2	1 / 2 CLK	Switching of clock	1 clock mode	2 clock mode	
	3	C / D	Automatic current-down	Invaild	Vaild	
						Note2
Operating temperature & humidity	0 ～ 40℃　85%RH Max. without any condensation.					
Storage temperature & humidity	-10 ～ 70℃　85%RH Max. without any dew condensation.					
Mass	Approximately 220g					

Note 1) Micro-step angle for 1 pulse=Basic step angle / Number of interpolation
Note 2) Approx. 250pps is generated inside, regardless of splits setting ; CCW rotation when the dip switch NO.2 is ON, and CW rotation when the dip switch NO.2 is OFF.

●Driver Outer Dimensions



Stepping Motor Driver

KR-A535M

AC100-220V Input Microstep Driver

AC100-220V | 0.4~1.4A / phase | Micro-step | Full connector

■Specifications

Items		Specification	
Power supply		AC100-220V (±10%) max.3A 50/60Hz	
Output current (0.75A/phase at shipping)		Rated current : 0.4~1.4A/phase Capable of setting the current to 0.4~1.4A/phase by the digital switch "RUN"	
Driving Type		Bipolar pentagon constant current drive	
Input signal circuit	Signal name	Functional description	Input resistance
	CW+	Pulse signal input for 1 clock mode CW rotation input for 2 clock mode	270Ω
	CW-		
	CCW+	Rotational direction input for 1 clock CCW rotation input for 2 clock	270Ω
	CCW-		
	H.O.+	Motor exciting OFF control signal "H" for motor exciting OFF	390Ω
	H.O.-		
	D.S.+	Micro-step interpolation selection "L" for MS1 & "H" for MS2	390Ω
	D.S.-		
		Pulse width : 0.25μs min., Rising-up time : 10μs max. Pulse interval : 0.25μs min., Pulse frequency : 500kpps max. Pulse voltage : "H" for 4~8V & "L" for 0~0.5V Triggerd at the edge of OFF (Logic"L") to ON (Logic"H") of photo-coupler current CCW rotation with CCW input of "L" in 1-clock system	
Output signal Circuit	Signal name	Functional description	Output capacity
	Z.P.+	Origin exciting output signal Switched ON while origin is being excited	DC30V max. 50mA max.
	Z.P.-		
		This signal is ON at the exciting sequence of [0] and is transmitted at each 7.2 degrees for the Step Motor with 0.72°steps. When micro-step angle is changed after the power supply is turned on,it may not be transmitted.	

Setting of micro-step interpolation (MS1 : 5, MS2 : 0 at shipping)

For micro-step driving of one type only, set the number interpolution using the digital SW MS1.
For micro-step driving of two types. (i.e. when changing speed for going and returning in reciprocating motion) set respective numbers of interpolation using the digital SW MS1 and MS2.

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

Note) When the setting of micro-step interpolating No. is "0.1", 1/4-interpolate low-frequency driving takes place inside.

Setting of driving current (Setting "5" at shipping)

The output current to the motor in rotation is set by the digital switch "RUN" to select from the table below.

Set No.	0	1	2	3	4	5	6	7	8	9
Current (A)	0.4	0.5	0.57	0.63	0.71	0.77	0.84	0.9	0.96	1.02
	A	B	C	D	E	F				
	1.09	1.15	1.22	1.27	1.33	1.4				

Automatic current-down (Setting "5" at shipping)

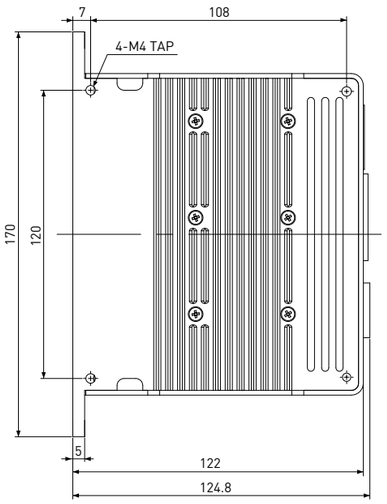
The output current to the motor at stationary is set by the digital switch "STOP" to select from the table below.
The value is set by the percent to "RUN" current. The current decreases at approx. 500ms after the last pulse.

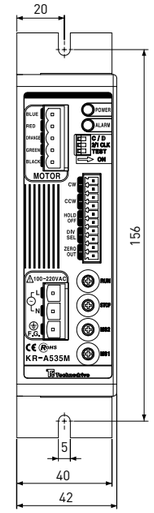
Set No.	0	1	2	3	4	5	6	7	8	9
(%)	27	31	36	40	45	50	54	58	62	66
	A	B	C	D	E	F				
	70	74	78	82	86	90				

Items	Specification					
Setting of dip-switches (All off at shipping)	No.	symbol	Function	ON	OFF	 OFF → ON Note2
	1	TEST	Self test function	Rotating at 250pps	Normal operation	
	2	1 / 2 CLK	Switching of clock	1 clock mode	2 clock mode	
	3	C / D	Automatic current-down	Invaild	Vaild	
Operating temperature & humidity	0 ~ 40℃ 85%RH Max. without any condensation.					
Storage temperature & humidity	-10 ~ 70℃ 85%RH Max. without any dew condensation.					
Mass	Approximately 660g					

Note 1) Micro-step angle for 1 pulse=Basic step angle / Number of interpolation
Note 2) Approx. 250pps is generated inside, regardless of splits setting ; CCW rotation when the dip switch NO.2 is ON, and CW rotation when the dip switch NO.2 is OFF.

●Driver Outer Dimensions

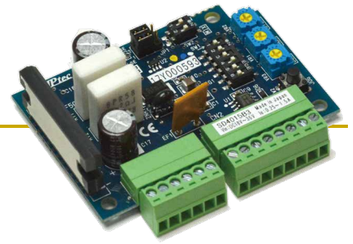




Stepping Motor Driver

SD4015B3

DC24V Input 2-phase Stepping Motor Driver

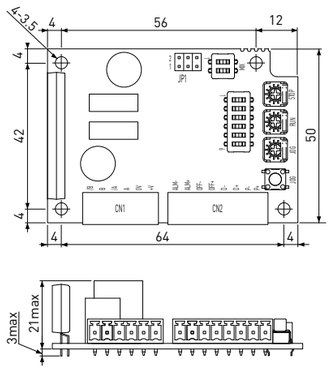


DC24V | 0.25～1.5A / phase | Full / half step | Board type

■Specifications

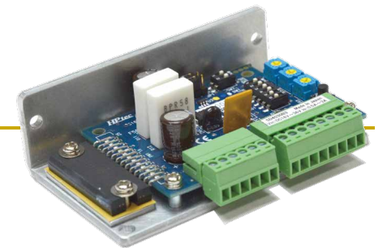
Items		Description	Note
Input voltagee		DC+18V～36V	
Output current		0.25～1.5A peak(±5%)/phase	Being lower rated output current beyond Power Supply 24V
Drive method		Chopper mode by Bipolar constant current	It can be used for uni-polar type.
Current down function		Auto Current down Adjusting to set lower current of CND volume about 0.25 ～ 1 second after pulse stop	Selectable by switch.
Maximum input pulse cycle		200Kpps	
Adjusting	RUN	For excitation current(0.25～1.5A)	The default factory setting is 1A.
	STOP	For current down value on current down mode.	Selectable between 10% to 60% of RUN current.
	MIX	Mixed Decay ratio(0%、20%、40%、80%)	The default factory setting is 80%
	JOG	For JOG speed setting.	300pps～14Kpps
Select function	SW-1,2,3	Select of Resolutions	1/2, 1/8, 1/10, 1/16, 1/20, 1/32, 1/40, 1/64
	SW-4	ON/OFF for function of auto current down mode.	Switch ON is active and OFF is no active. The default factory setting is ON.
	SW-5,6	Select of JOG function	SW-5 ON is active for JOG, SW6 ON is CW, OFF is CCW
	SW-3	Select of Mix-Decay ratio	
	JP1	Select of 1-pulse, 2-pulse	
Input signals	P+,P-	Pulse Command	Selection of 1 pulse an 2 pulse for pulse command. Isolated by photo coupler
	D+,D-	Direction Command	
	OFF+,OFF-	No excitation	
Output signals	ALM+,ALM-	Alarm (Prospecting of over-heat for Power device) Output at over 170℃(Typ.) of power device	Photo Isolation, ON is active, OFF is no active(ALARM).
Dimension		W72×D50×H21	
Operating Temperature and Humidity		0～40℃、35～80% RH	No condensation
Storage Temperature and Humidity		-20～+85℃、35～80% RH	No condensation
Mass		Approximately 40g	

●Driver Outer Dimensions



SD4030B3

DC24V Input 2-phase Microstep Driver



DC24V | 0.5～3A / phase | Micro-step | Board type

■Specifications

Items		Description	Note
Input voltagee		DC+18V～36V	
Output current		0.5～3A peak(±5%)/phase	Being lower rated output current beyond Power Supply 24V
Drive method		Chopper mode by Bipolar constant current	It can be used for uni-polar type.
Current down function		Auto Current down Adjusting to set lower current of CND volume about 0.7 second after pulse stop	Selectable by switch.
Maximum input pulse cycle		200Kpps	
Adjusting	RUN	For excitation current(0.5～3A)	The default factory setting is 2A.
	STOP	For current down value on current down mode.	Selectable between 10% to 60% of RUN current.
	MIX	Mixed Decay ratio(0%、20%、40%、80%)	The default factory setting is 80%
	JOG	For JOG speed setting.	300pps～14Kpps
Select function	SW-1,2,3	Select of Resolutions	1/2, 1/8, 1/10, 1/16, 1/20, 1/32, 1/40, 1/64
	SW-4	ON/OFF for function of auto current down mode.	Switch ON is active and OFF is no active. The default factory setting is ON.
	SW-5,6	Select of JOG function	SW-5 ON is active for JOG, SW6 ON is CW, OFF is CCW
	SW-3	Select of Mix-Decay ratio	
	JP1	Select of 1-pulse, 2-pulse	
Input signals	P+,P-	Pulse Command	Selection of 1 pulse an 2 pulse for pulse command. Isolated by photo coupler
	D+,D-	Direction Command	
	OFF+,OFF-	No excitation	
Output signals	ALM+,ALM-	Alarm (Prospecting of over-heat for Power device) Output at over 170℃(Typ.) of power device	Photo Isolation, ON is active, OFF is no active(ALARM).
Dimension		W90×D55.5×H28	
Operating Temperature and Humidity		0～40℃、35～80% RH	No condensation
Storage Temperature and Humidity		-20～+85℃、35～80% RH	No condensation
Mass		Approximately 112g	

●Driver Outer Dimensions