Stepping Motor Driver recommendation

KSS provides recommended Stepping Motor Driver for MoBo series and Miniature Actuator series in order to make it easy to use.

●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.

KS9110

This is recommended 2-phase stepping Motor Driver for Miniature Actuator series with □28 size 2-phase Stepping Motor made by TAMAGAWA SEIKI. It can be selected for Full-step or Half-step by Dip switch.

SD4030B2

This is recommended 2-phase stepping Motor Driver for 2-phase Rolled MoBo(Bi-polar) and Miniature Actuator series with □25 size 2-phase Stepping Motor made by Minebea Motor. It has Micro-Step function with 8-step angle.

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

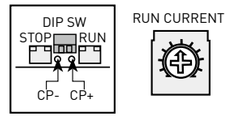
KR-A5CC

DC24V Input 5-phase Stepping Motor Driver

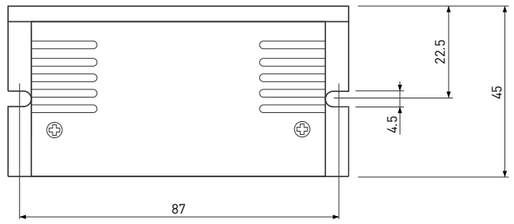
DC24V | 0.1~0.9A / phase | Full / Half-Step | Case type

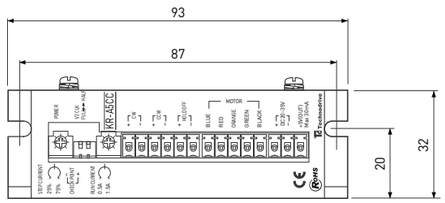
■Specifications

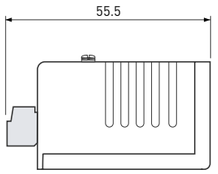
Items			Specification	
Power supply			DC20-35V(-10%,+20%) max.3A	
Output current (0.35A/phase at shipping)			Rated current : 0.1~0.9A/phase	
Driving Type			Bipolar pentagon constant current drive	
Input signal circuit	Signal name		Functional description	Input resistance
	CW+	CW-	Pulse signal input for 1 clock mode CW rotation input for 2 clock mode	390Ω
	CCW+	CCW-	Rotational direction input for 1 clock CCW rotation input for 2 clock	390Ω
	H.O.+	H.O.-	Motor exciting OFF control signal "H" for motor exciting OFF	390Ω
			Pulse width : 0.5μs min., Rising-up time : 1μs 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

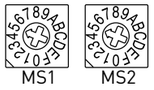
DC24V | 0.4～1.4A / phase | Micro-step | Case type

■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 : 1μs 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)

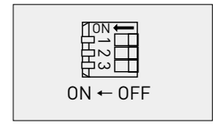
The output current to the motor in rotation is set by the digital switch "RUN" to select from the table below.

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)

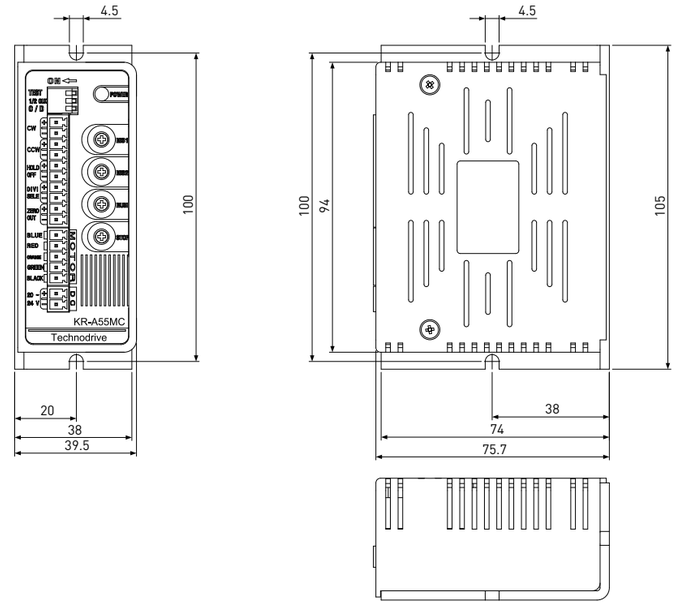
The output current to the motor at stationary is set by the digital switch "STOP" to select from the table below.
The value is set by the percent to "RUN" current. The current decreases at approx. 500ms after the last pulse.

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 : 1μs 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

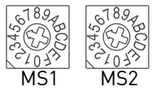
Signal name	Functional description	Output capacity
Z.P.+	Origin exciting output signal Switched ON while origin is being excited	DC30V max. 50mA max.
Z.P.-		

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)

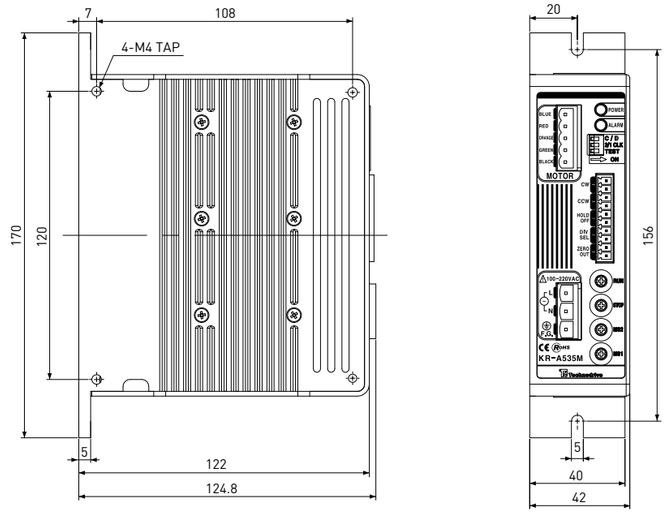
The output current to the motor at stationary is set by the digital switch "STOP" to select from the table below.
The value is set by the percent to "RUN" current.
The current decreases at approx. 500ms after the last pulse.

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

KS9110

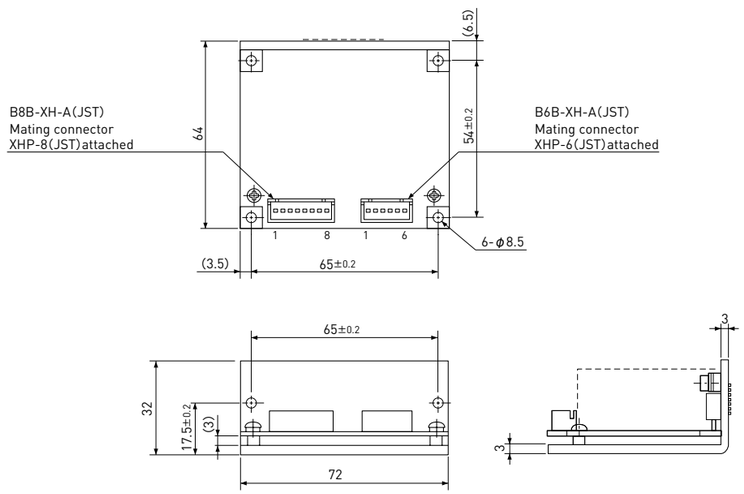
DC24V Input 2-phase Stepping Motor Driver

DC24V | 0.35～2A / phase | Full / half step | Board type

■Specifications

Items		Specification
Power supply		DC+24V ±10% 3A Max.(total current consumed)
Output current		0.35～2A Max. / phase Variable resistor(VR) setting(Set to 1 A / phase when shipped)
Drive method		Chopper mode by Uni-polar constant current
Excitation method (2 phase excitation at shipment) Full / half		1-phase excitation Dip switch 2 3 ON OFF (half step) 1-2 phase excitation Dip switch 2 3 ON OFF (full step) 2 phase excitation Dip switch 2 3 ON OFF
Input signal circuit		Photo coupler TLP521(Toshiba), Input resistance 200Ω Photo coupler input current, over 10mA, below 20mA
Input signal	1-pulse input PULSE DIR	Jumper switch 2 1 DIR signal's photo coupler current and rotation direction ON rotation OFF rotation
	2-pulse input CW CCW	Jumper switch 2 1 Note : Make sure that CCW input photo coupler current is OFF during CW input and CW input photo coupler current is OFF during CCW input. Never input pulse to both CW and CCW at the same time.
	ENABLE	When photo coupler current is ON, motor is not excitable. When photo coupler current is OFF, motor is excitable.
(Set to 1 pulse input at shipment)		Pulse duration is 5μsec or more, rise / fall time is 2μsec or less. Operation starts when photo coupler current is switched from ON to OFF.
Output signal	CKOUT(CKO)	Land for checking input pulse：TTL output
	Current terminal(IS)	Terminal for checking output current：0.23(V)=1(A/phase)
Automatic current down (Set ON at shipment)		When in operation Dip switch 1 ON OFF Approximately 1 sec after turning on input pulse, output current drops approximately 50%. When not in operation Dip switch 1 ON OFF
Surrounding environment	During operation	0～40℃ under 90% RH (no condensation)
	Stand-by	-10～70℃ under 90% RH (no condensation)
Accessories		Connector housing 1pc XHP-6(JST), 1pc XHP-8(JST), 14pcs contacts BXH-001T-P0.6 (JST)
Mass		106g

●Driver Outer Dimensions

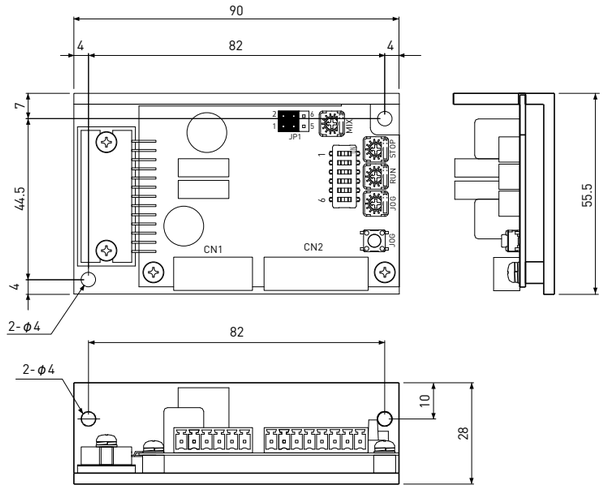


SD4030B2

DC24V Input 2-phase Microstep Driver

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

■Specifications

Items			Description	Note
Input voltagee			DC+18V～40V	
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			100Kpps	
Adjusting		RUN	For excitation current	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%、60%、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
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			Approximately106g	

●Driver Outer Dimensions