

# Stepping Motor & Driver

# 2-Phase Hybrid Stepping Motor Driver

## FSD2U3P13-01



### Features

1. The high current (3 A MAX) small FSD driver.
2. Uni-polar constant current driver.
3. The micro-stepping feature may be selected from any one of the following settings: 1/1 (full step), 1/2 (micro-step), and 1/4 (micro step).
4. Through the use of 3-bit external signals, electric current settings may be specified to any one of 8 different settings from 0.50 - 3.00 A/phase.
5. Input commands may be selected from either direction-of-rotation separate serial pulse signals or a combination of directional signals and pulse signals.

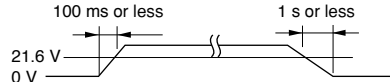
### Applicable Motor

KH4234-B901
KH4238-B901
KH4238-B902
KH4242-B901
KH4242-B902
KH4248-B901
KH4254-B901

### Power Supply Specifications

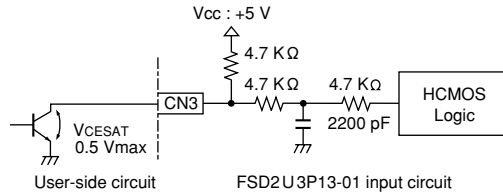
Motor Power Supply Voltage (VM): 21.6 V~26.4 V

Set up time



Motor output current: About 2 A max. (different depending on the drive parameters of the motor being used)

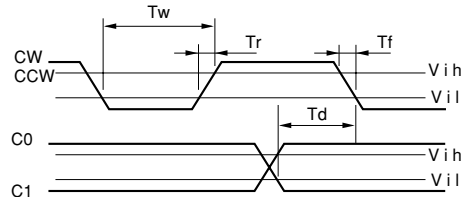
### Input Circuit: C0, C1, C2, H-OFF, CW, CCW



### Input Signal Specifications

Item	Signal	Specification	
		MIN	MAX
High Level Input Voltage	Vih(V)	3.5	5.3
Low Level Input Voltage	Vil(V)	0	0.8
Rise Time	Tr(μs)	—	25
Fall Time	Tf(μs)	—	15
Input Pulse Range	Twl(μs)	18	—
Direction of Rotation Change Timing	Twh(μs)	10	—

Note: Specified by the voltage waveform between the user circuit ground and the FSD2U3P13-01 terminal



### Required Operating Environment Conditions

	In Operation	In Storage	Comments
Ambient Temperature (°C)	0 ~ +50	-20 ~ +60	
Ambient Humidity %	35 ~ 85	35 ~ 85	Non Condensation

### Functions, Setting and Connections

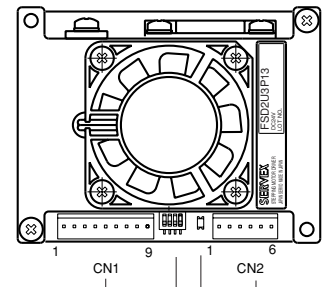
#### [CN1 Input Signal Connector]

Terminal No.	Signal Name	Function
1 (Red)	VM	Motor power supply 24 VDC
2 (Black)	P.GND	Motor power supply ground (GND)
3 (Orange)	CW (Note 1)	The CW direction drive pulse or the step command pulse (Switch No.1)
4 (Yellow)	CCW (Note 1)	The CCW direction drive pulse or the direction signal (Switch No.1)
(Note 2) Motor Current (A)		0.50 0.88 1.24 1.60 1.98 2.35 2.68 3.00
7 (Purple)	C0	H L H L L H L H L L
6 (Blue)	C1	H H L L L H H L L L
5 (Green)	C2	H H H H L L L L
Current (A) (save)		0.38 0.60 0.86 1.05 1.19 1.35 1.50 1.74
8 (Gray)	H.OFF	Motor on/off (H: off)
9 (White)	S.GND	Signal ground (GND)

Note1: The CW or CCW rotation starts at the falling edge of the signal. (Please refer to Table.1)  
 Note2: It is defined at the RMS value of each winding when the motor is in holding mode (0 PPS) at full step without current saving stops.

Table.1 Input Signal and Motor Direction Relation

Drive Pulse Format	Terminal No.3	Terminal No.4	Motor Direction
CW/CCW	HIGH	HIGH	CW
	HIGH	LOW	CCW
CLK/DIR	HIGH	HIGH	HOLDING
	HIGH	LOW	CW
	HIGH	X	HOLDING



Power Supply Input Display LED

#### [Functions Setting Switch] On Name Plate Side

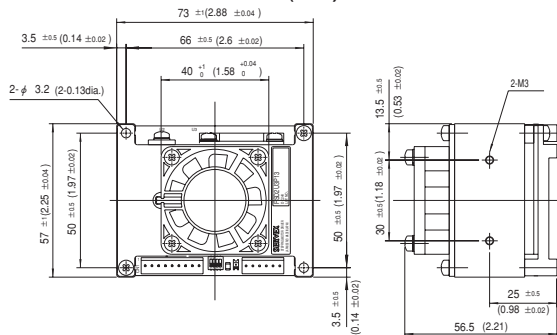
Switch No.	Name	Function	Switch Settings	
			OFF	ON
1	SEL	Drive Pulse Format	CW/CCW	CLK/DIR
2	SAVE (Note 3)	Automatic Power Saving	Saving	Not Saving
			Division of Step Angle	1/2
3	MS0	ON OFF	ON	OFF
4	MS1	ON ON	OFF	OFF

Note3: The motor enters current saving mode about 0.25 sec. after the input pulse signal stops.

#### [CN2 Motor connector]

Terminal No.	Name	Function
1 (Red)	A	To Motor Phase A
2 (Black)	A.COM	To Motor Phase A Common Line
3 (White/Red)	$\bar{A}$	To Motor Phase $\bar{A}$
4 (Green)	B	To Motor Phase B
5 (White)	B.COM	To Motor Phase B Common Line
6 (White/Green)	$\bar{B}$	To Motor Phase $\bar{B}$

### Dimensions Unit: mm (inch)



### Connector Specifications

	FSD2U3P13-01 Side Maker Model	Lead Wire	User Side		Maker
			Applicable Housing	Applicable Terminal (reel)	
CN1	IL-G-9P-S3T2-SA	UL3266, AWG22	IL-G-9S-S3C2-SA	IL-G-C2-SC-10000	J. A. E.
CN2	IL-G-6P-S3T2-SA	UL3266, AWG22	IL-G-6S-S3C2-SA	IL-G-C2-SC-10000	J. A. E.

### Accessory Leadwire Assembly

