

Stepping Motor & Driver

2-Phase Hybrid Stepping Motor Driver

FSD2U2P14-01



Features

- Ultra-compact driver measuring a mere 2.2 x 2.9 x 1.7 inches.
- Uni-polar constant current driver.
- 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).
- Through the use of 3-bit external signals, electric current settings may be specified to any one of 8 different settings from 0.33 - 2.00 A/phase.
- Input commands may be selected from either direction-of-rotation separate serial pulse signals or a combination of directional signals and pulse signals.

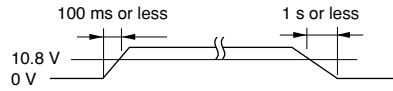
Applicable Motor

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

Power Supply Specifications

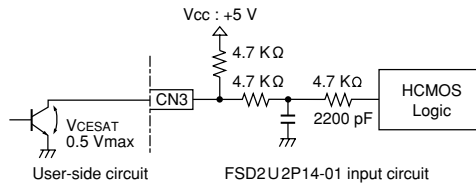
Motor Power Supply Voltage (VM): 10.8 V ~ 33.0 V

Set up time



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

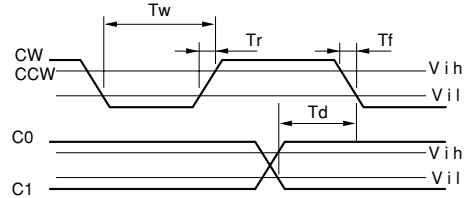
Input Circuit: C0, C1, C2, H-OFF, CW, CCW



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 FSD2U2P14-01 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 (to be connected to 12-30 V power supply) |
| 2 (Black) | P.GND | Motor power supply ground (GND) |
| 3 (Orange) | CW (Note 1) | CW directional drive pulse and serial pulse signal input |
| 4 (Yellow) | CCW (Note 1) | CCW directional drive pulse and direction-of-rotation signal input |
| (Note 2) | Motor Current (A) | 0.33 0.57 0.81 1.09 1.28 1.52 1.76 2.00 |
| 7 (Purple) | C0 | H L H L L L H L H L |
| 6 (Blue) | C1 | H L H L L L H L H L |
| 5 (Green) | C2 | H H H H L L L L |
| | Current (A) (save) | 0.25 0.39 0.51 0.70 0.81 0.98 1.12 1.29 |
| 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.

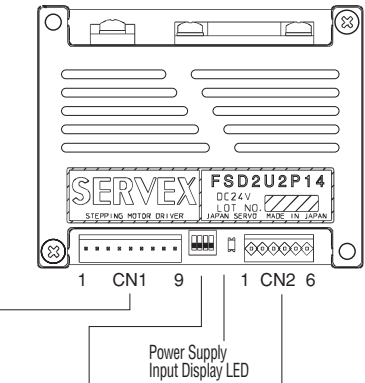
Table.1 Input Signal and Motor Direction Relation

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

[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 | 1/1 |
| 3 | MS0 | ON | OFF | ON | OFF |
| 4 | MS1 | ON | ON | OFF | OFF |

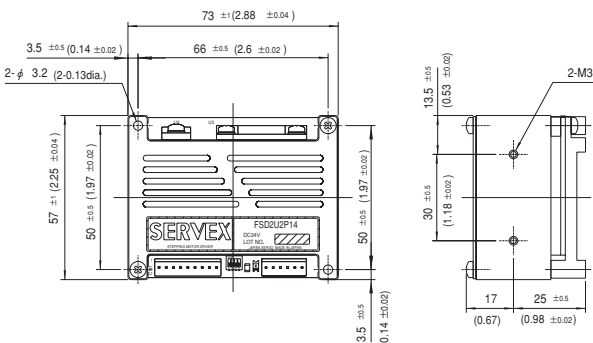
Note3: The motor enters current saving mode about 0.25 sec. after the input pulse signal stops.



[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) | A̅ | To Motor Phase A̅ |
| 4 (Green) | B | To Motor Phase B |
| 5 (White) | B.COM | To Motor Phase B Common Line |
| 6 (White/Green) | B̅ | To Motor Phase B̅ |

Dimensions Unit: mm (inch)



Connector Specifications

| | FSD2U2P14-01 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

