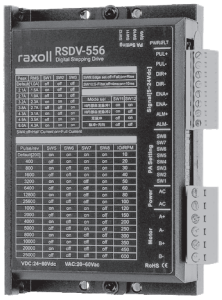
raxoll

raxoll.com

RSDV SERIES

Open-Loop Stepper Motor Driver

USER MANUAL



RSDV-556

6.0A

24-80VDC
20-60VAC

RoHS

Thank you for using raxoll open-loop stepper motor driver. Before using this product, please read this manual carefully to understand the necessary safety information, precautions, and operation methods. Incorrect operation can have extremely serious consequences. This product is designed and manufactured without the ability to protect personal safety from mechanical system threats. Users are advised to consider safety precautions during mechanical system design and manufacturing to prevent accidents caused by improper operation or product abnormalities. Due to product improvements, the contents of this manual are subject to change without notice. Our company will not be responsible for any modification of the product by the user. When reading, please pay attention to the following signs in the manual.

Product Introduction

RSDV-556 is a new digital stepper motor driver introduced by our company. It adopts the latest 32-bit DSP digital processing technology. The driver control algorithm adopts advanced variable current technology and advanced frequency conversion technology. The driver generates less heat and the motor vibrates less, smooth operation. USERS can set 200 ~ 51200 within the arbitrary subdivision and rated current within the arbitrary current value, to meet the needs of most applications. Due to the use of built-in micro-subdivision technology, even in the conditions of low subdivision, but also can achieve high subdivision effect, low, medium and high-speed operation is very smooth, ultra-low noise. The auto-tuning function is integrated in the driver, which can automatically generate the optimal operating parameters for different motors and maximize the performance of the motors.

Characteristics

- New 32 Bit DSP technology
- Ultra-low vibration noise
- Built-in high subdivision
- Automatic parameter power-on setting function
- Variable current control greatly reduces the heat generation of the motor.
- Automatic halving of current at rest
- Can drive 4,6,8-wire two-phase stepping motor
- Photoelectric isolated differential signal input
- Photoelectric isolation, alarm output
- Impulse response frequency up to 500KHz (factory default 200KHz)
- Voltage Range 24-80VDC or 20-60VAC
- The current setting is convenient and can be selected between 1.0-6.0 A
- Sub-set range 200-51200, higher sub-customizable
- It has the protection functions of overvoltage, undervoltage and overcurrent.
- It has rising/falling edge, IO control spontaneous pulse, single/double pulse, high response/high speed and low vibration, self-measuring function

Use Environment

Cooling Mode		Natural Cooling
Service Environment	Occasion	Can not be placed to other heating equipment, to avoid dust, oil mist, corrosive gases, humidity is too large and strong vibration sites, prohibited combustible gases and conductive dust.
	Temperature	-10°C ～ +50°C
	Humidity	40～ 90%RH
	Vibration	5.9m/s2MAX
Storage Temperature		-20°C ～ +60°C
Use Elevation		Below 1000 meters
Weight		0.2kg

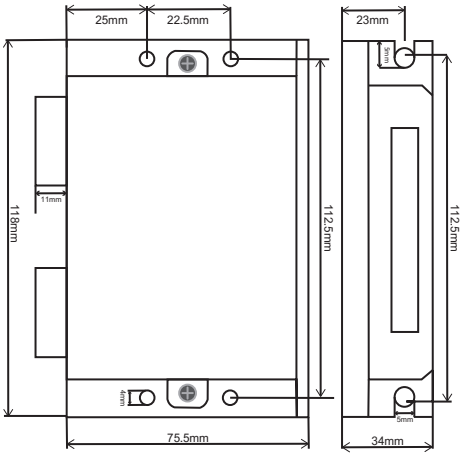
Installation Method

The reliable operating temperature of the driver is usually within 60°C, and the motor operating temperature is within 80°C. It is recommended to use the automatic semi-flow mode when using the motor. When the motor stops, the current is automatically reduced by half to reduce the heat of the motor and the drive. Install the drive with vertical side mounting so that the heat dissipating teeth form a strong air convection. Install a fan near the drive when necessary to force heat dissipation to ensure that the drive works within a reliable operating temperature range.

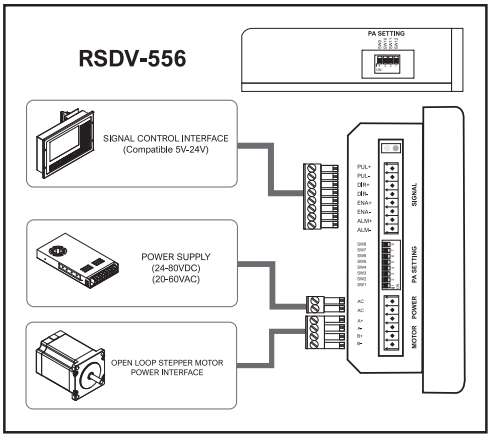
Electrical Characteristics

Model Code	RSDV-556			
Explanation	Minimum Value	Typical Value	Maximal Value	Unit
Continuous Output Current	1.0	-	6.0	A
Power Supply Voltage(DC/AC)	24/20	24/36/48	80/60	VDC/VAC
Logic Input Current	6	10	16	mA
Logic Input Voltage	5	5	24	VDC
Pulse Frequency	0	-	200	KHz
Pulse High Width	1.5	-	-	US
Insulation Resistance	100	-	-	MΩ

Dimensions



Wiring Diagram



LED Status Indication

LED power indicator is green, when the drive power, the LED is lit; when the drive power is cut off, the LED is off. Fault indicator red LED, when a failure occurs, the indicator is blinking cycle to cycle 3 seconds. When the fault is cleared by the user, the red LED turns off. Red LED flashing number within 3 seconds represent different fault information, the specific relationship shown in the following table.

No.	The Number of Flashes	Red LED Flashes Waveform	Description of the Fault
1	1		Overcurrent Fault (I peak ≥ 25A)
2	2		Overvoltage Fault (VDC ≥ 92V)
3	3		No Definition
4	4		Motor open circuit or the poor contact failure
5	7		No Definition

Control Signal Interface

Interface Name	Features	Explanation
PUL+	Pulse Positive Input Or IO Control- Start Signal+	Compatible 5V-24V Level Signal
PUL-	Pulse Negative Input Or IO Control- Start Signal-	
DIR+	Directional Positive Input Or IO Control- Direct Signal-	
DIR-	Directional Negative Input Or IO Control- Direct Signal-	
ENA+	Enable Positive Input Or IO Level Control	
ENA-	Enable Negative Input Or IO Level Control	
ALM+	Positive Output of Alarm Signal	
ALM-	Negative Output of Alarm Signal	

Current Setting

PEAK	RMS	SW1	SW2	SW3
Default [RMS=1.0A]		OFF	OFF	OFF
2.1A	1.5A	ON	OFF	OFF
2.7A	1.9A	OFF	ON	OFF
3.2A	2.3A	ON	ON	OFF
3.8A	2.7A	OFF	OFF	ON
4.3A	3.1A	ON	OFF	ON
4.9A	3.5A	OFF	ON	ON
6.0A	4.3A	ON	ON	ON

SW4 is a half-current function, when SW4=OFF, for half-current settings, when SW4=ON, current static state for full-current lock axis.

*Note:If the current is standard product RSDV-556 current, other current can be derived according to customer demand, can set the current range between 0.3-6.0 a arbitrary value.

Microstep Setting & IO Table

Dial Switch / Microsteps	SW5	SW6	SW7	SW8	IO/RPM
Default [200]	ON	ON	ON	ON	10
400	OFF	ON	ON	ON	20
800	ON	OFF	ON	ON	30
1600	OFF	OFF	ON	ON	40
3200	ON	ON	OFF	ON	50
6400	OFF	ON	OFF	ON	60
12800	ON	OFF	OFF	ON	80
25600	OFF	OFF	OFF	ON	100
1000	ON	ON	ON	OFF	120
2000	OFF	ON	ON	OFF	150
4000	ON	OFF	ON	OFF	200
5000	OFF	OFF	ON	OFF	250
8000	ON	ON	OFF	OFF	300
10000	OFF	ON	OFF	OFF	350
20000	ON	OFF	OFF	OFF	450
25000	OFF	OFF	OFF	OFF	600

Function Setting

Functions:
SW9:Edge Sel, OFF=Fall (Falling Edge)
ON=Rtse (Rising Edge)
SW10:S-Filter, OFF=4ms
ON=10ms

Model Sel	SW11	SW12
IO Internal Spontaneous Pulse	ON	ON
Self-test Check	ON	OFF
Double Pulse	OFF	ON
Pulse,Direction	OFF	OFF

Power Ports Interface

Interface Name	Features
AC	DC AC Common Source, Supply Voltage Range: 20-80VDC, 20-60VAC
AC	DC AC Common Source, Supply Voltage Range: 20-80VDC, 20-60VAC
A+	Stepper Motor A + Phase Winding Interface
A-	Stepper Motor A - Phase Winding Interface
B+	Stepper Motor B + Phase Winding Interface
B-	Stepper Motor B - Phase Winding Interface

The power supply voltage can work normally between the specified ranges. The driver is preferably powered by an unregulated DC power supply, or a transformer buck + bridge rectifier + capacitor filter. Note, however, that the peak voltage ripple after rectification should not exceed its specified maximum voltage. It is recommended that the user supply power with a DC voltage lower than the maximum voltage to prevent the grid from fluctuating beyond the operating range of the driver voltage.

If using a regulated switching power supply, be aware that the output current range of the switching power supply must be set to maximum.

>>Next Page>>

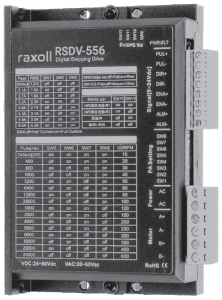
raxoll

raxoll.com

RSDV SERIES

Open-Loop Stepper Motor Driver

USER MANUAL



RSDV-556

6.0A

24-80VDC
20-60VAC

RoHS

Power Ports Interface *more*

*When wiring, pay attention to the positive and negative poles of the power supply, do not reverse connection.

*It is better to use an unregulated power supply.

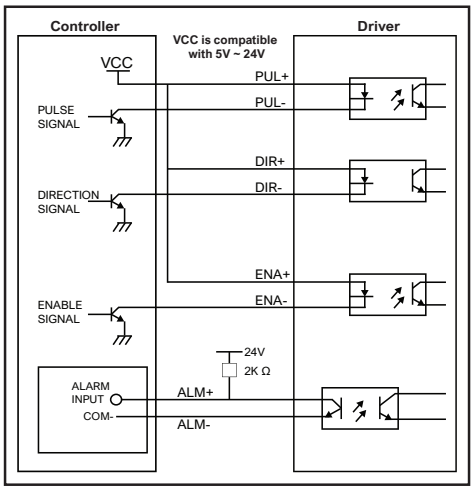
*The output capacity of the power supply current should be greater than 60% of the set current of the driver when an unstable power supply is used.

*When a regulated switching power supply is adopted, the output current of the power supply shall be greater than or equal to the working current of the driver.

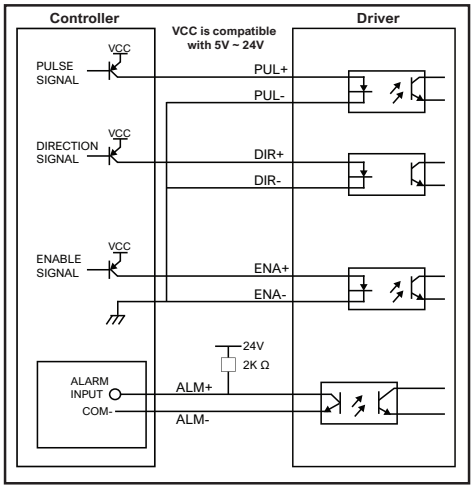
*To reduce costs, two or three drives can share a power supply, but the power supply should be large enough.

Connections to Control Signal

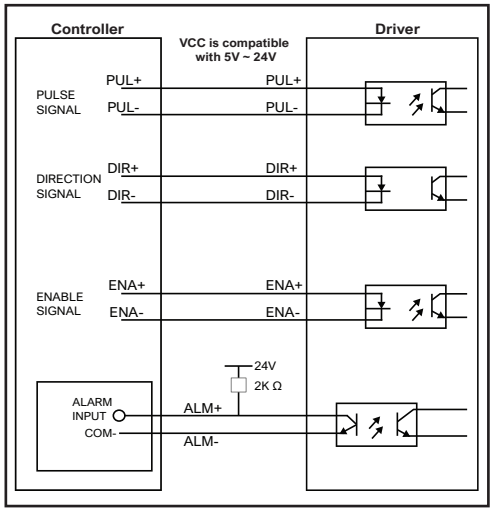
Connections to Common Anode



Connections to Common Cathode

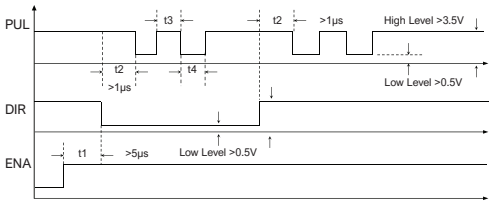


Connections to Differential Signal



Sequence Chart of Control Signals

In order to avoid some fault operations and deviations, PUL, DIR and ENA should abide by some rules, shown as following diagram:



a. t1: ENA must be ahead of DIR by at least 5μs. Usually, ENA+ and ENA- are NC (not connected).

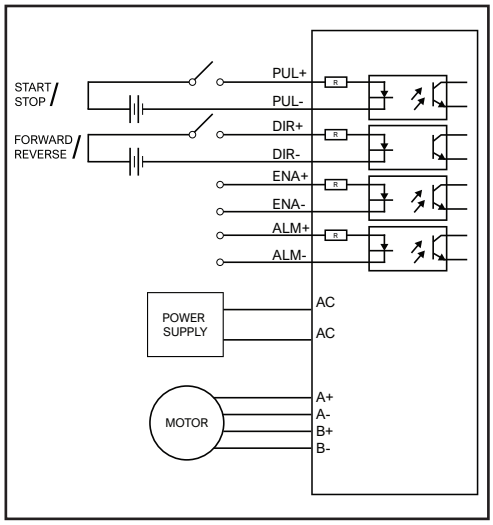
b. t2: DIR should be at least ahead of PUL falling edge 1μs to determine its state high or low.

c. t3: At least a pulse width of not less than 1.5μs.

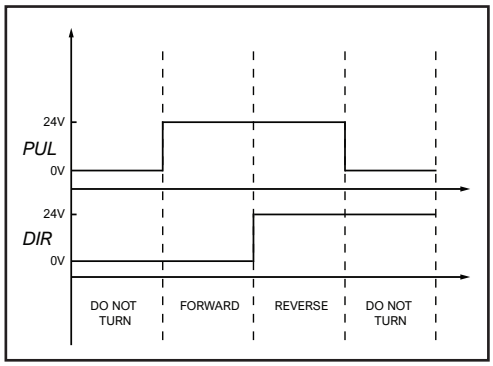
d. t4: low level width not less than 1.5μs.

IO Mode Wiring Definition

When SW11 / SW12 is switched to ON / ON, the driver can be used as a pulse control driver, and its control logic is as follows:



*The typical connection of the drive switching to IO Mode

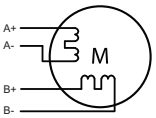


4, 6 and 8 Lead Motor Connections

The RSDV-556 can drive any 2-phase and 4-phase hybrid stepping motors.

Connections to 4-Lead Motors

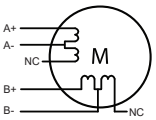
4 lead motors are the least flexible but easiest to wire. Speed and torque will depend on winding inductance. In setting the Driver output current, multiply the specified phase current by 1.4 to determine the peak output current.



4-Lead Motor Connection Diagram

Connections to 6-Lead Motors (Half Coil Configurations)

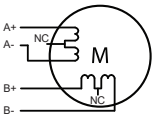
The half coil configuration uses 50% of the motor phase windings. This gives lower inductance, hence, lower torque output. Like the parallel connection of 8 lead motor, the torque output will be more stable at higher speeds. This configuration is also referred to as half chopper. In setting the Driver output current multiply the specified per phase (or unipolar) current rating by 1.4 to determine the peak output current.



6-Lead Motor Half Coil (High Speed) Connection Diagram

Connections to 6-Lead Motors (Full Coil Configurations)

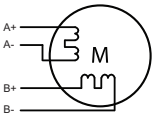
The full coil configuration on a six lead motor should be used in applications where higher torque at lower speeds is desired. This configuration is also referred to as full copper. In full coil mode, the motors should be run at only 70% of their rated current to prevent over heating.



6-Lead Motor Full Coil (High Torque) Connection Diagram

Connections to 8-Lead Motors (Series Connection)

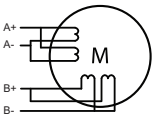
A series motor configuration would typically be used in applications where a higher torque at lower speeds is required. Because this configuration has the most inductance, the performance will start to degrade at higher speeds. In series mode, the motors should also be run at only 70% of their rated current to prevent over heating.



8-Lead Motor Series Connection Diagram

Connections to 8-Lead Motors (Parallel Connection)

An 8 lead motor in a parallel configuration offers a more stable, but lower torque at lower speeds. But because of the lower inductance, there will be higher torque at higher speeds. Multiply the per phase(or unipolar) current rating by 1.96, or the bipolar current rating by 1.4, to determine the peak output current.



8-Lead Motor Parallel Connection Diagram

***NEVER** disconnect or connect the motor while the power source is energized.

Notes

Contact Us

info@raxoll.com
+90 (232) 457 22 84

raxoll

PEAK OTOMASYON ELEKTRIK MAKINA IC VE DIS TIC. LTD. STI.
Halkapinar Mh. 1376 Sk. No:1/R
Konak/IZMIR

raxoll.com