



High negative pressure, Brushless DC motor  
Long lifetime, High performance price ratio

## KVP04 Vacuum Pump



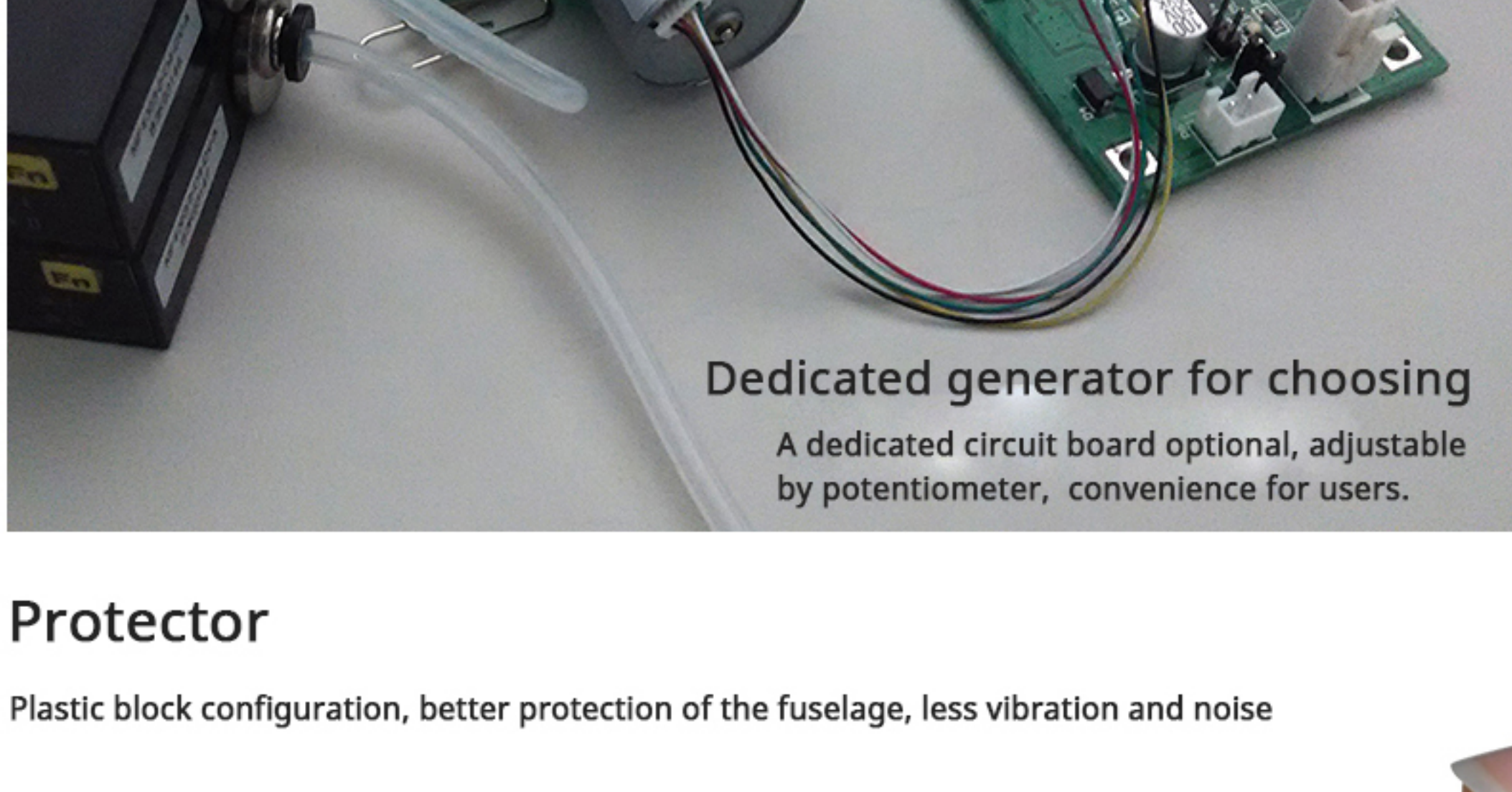
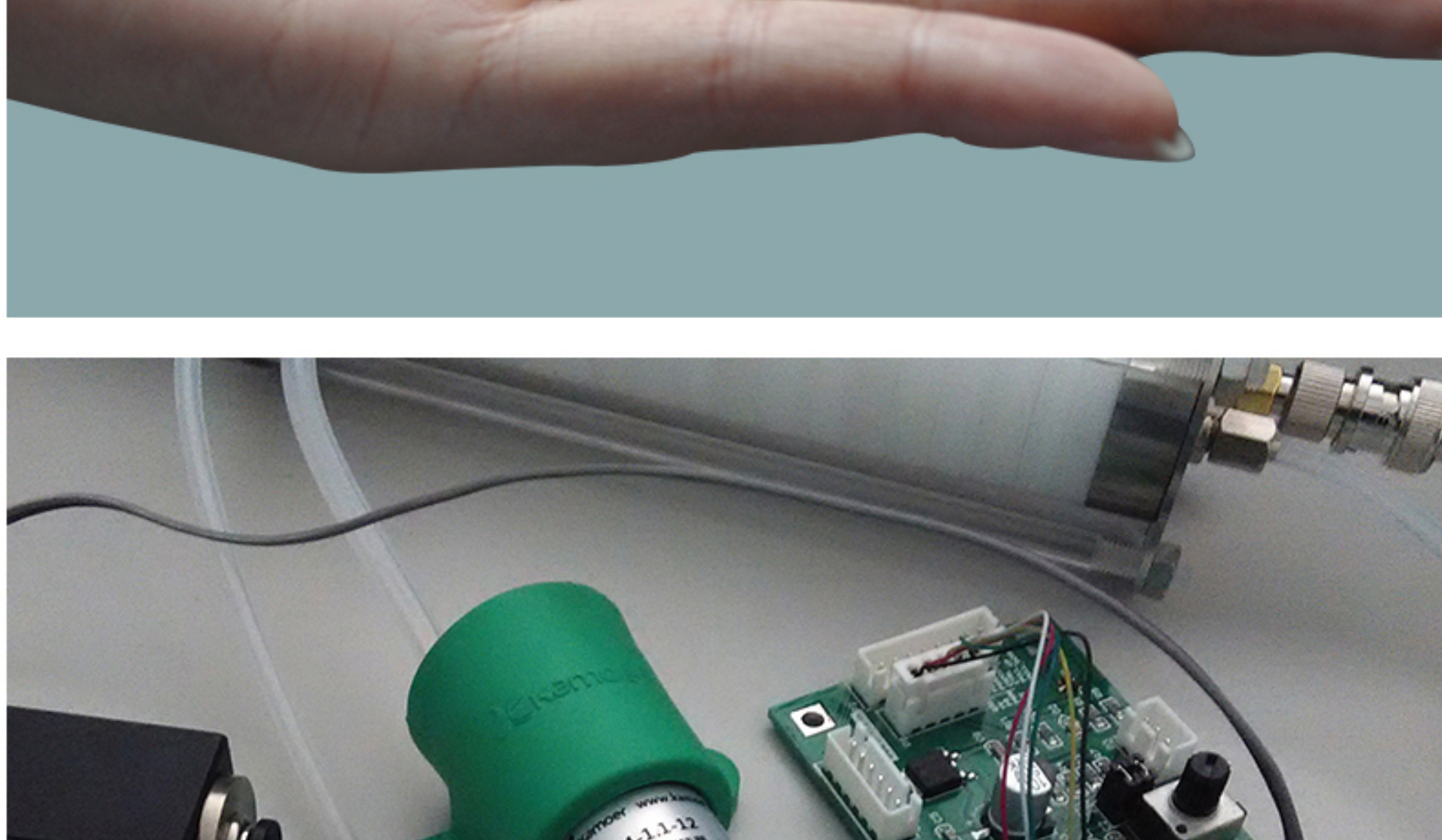
- Pretty: Small Size
- Ultra-silent
- Maintenance free
- Long life: Long lifetime
- Good Sealing
- Extreme chemical stability

### Application



### Small size with powerful supply

The whole length is 59.5 mm, the motor's diameter is 24 mm, small and nice, greatly reduce the use of space.



### Dedicated generator for choosing

A dedicated circuit board optional, adjustable by potentiometer, convenience for users.

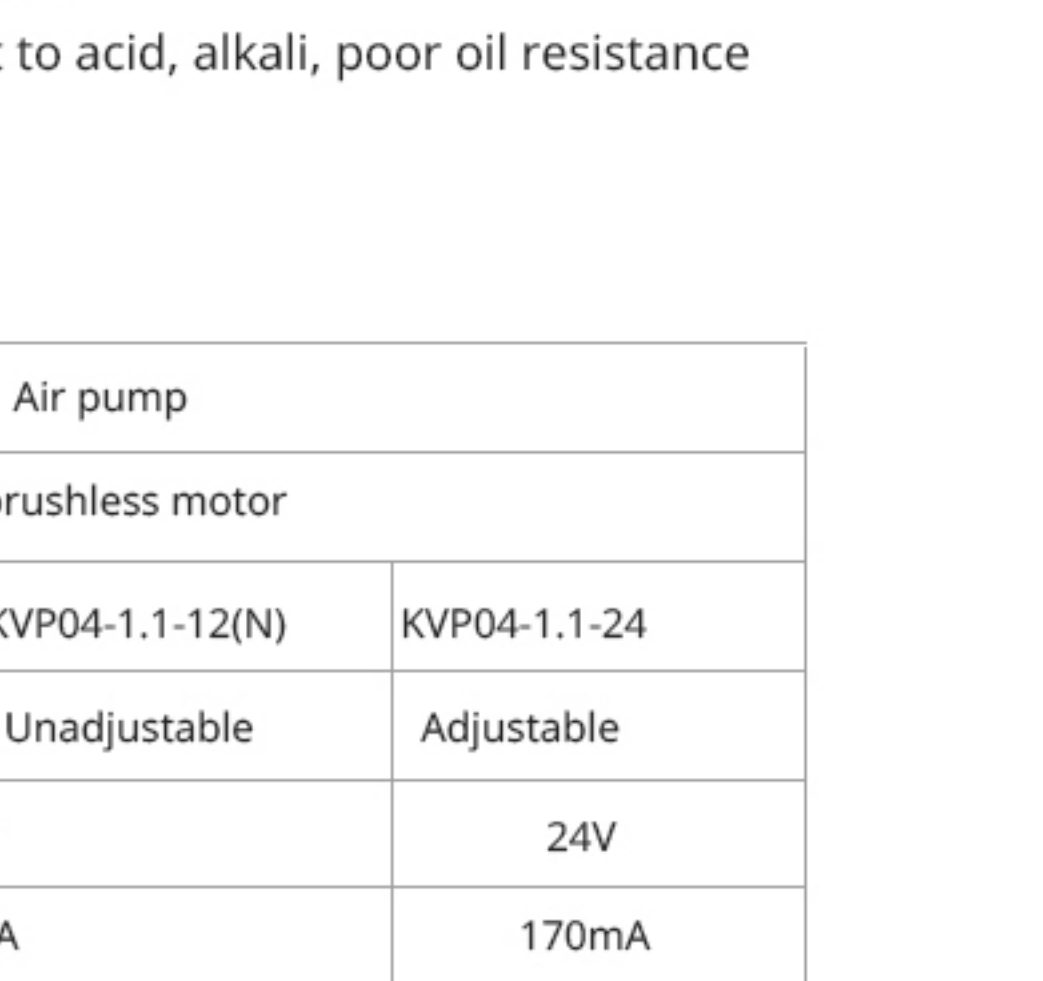
### Protector

Plastic block configuration, better protection of the fuselage, less vibration and noise



### Product Parameters

The product is mini DC diaphragm air pump with brushless motor. It is designed based on the positive displacement pumps. It is powered by the rotation of motor. The eccentric vane drives the rubber inside to reciprocate, forming absorbing and discharging force to pump air.

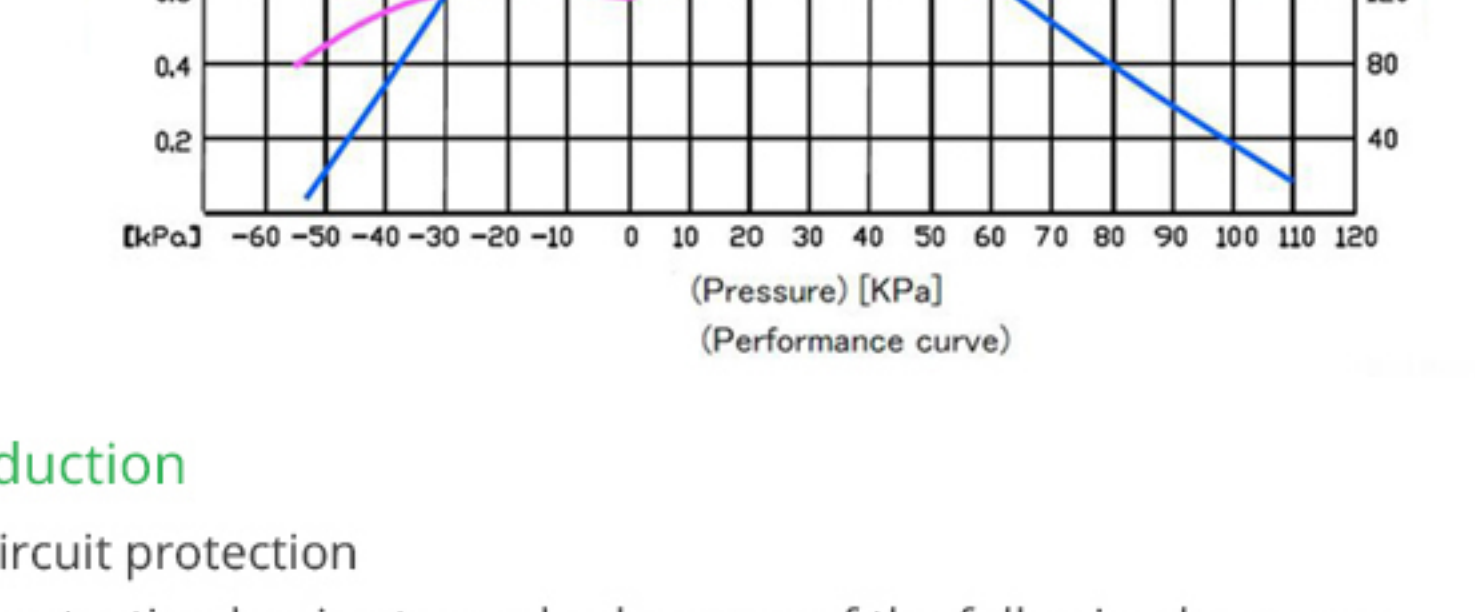
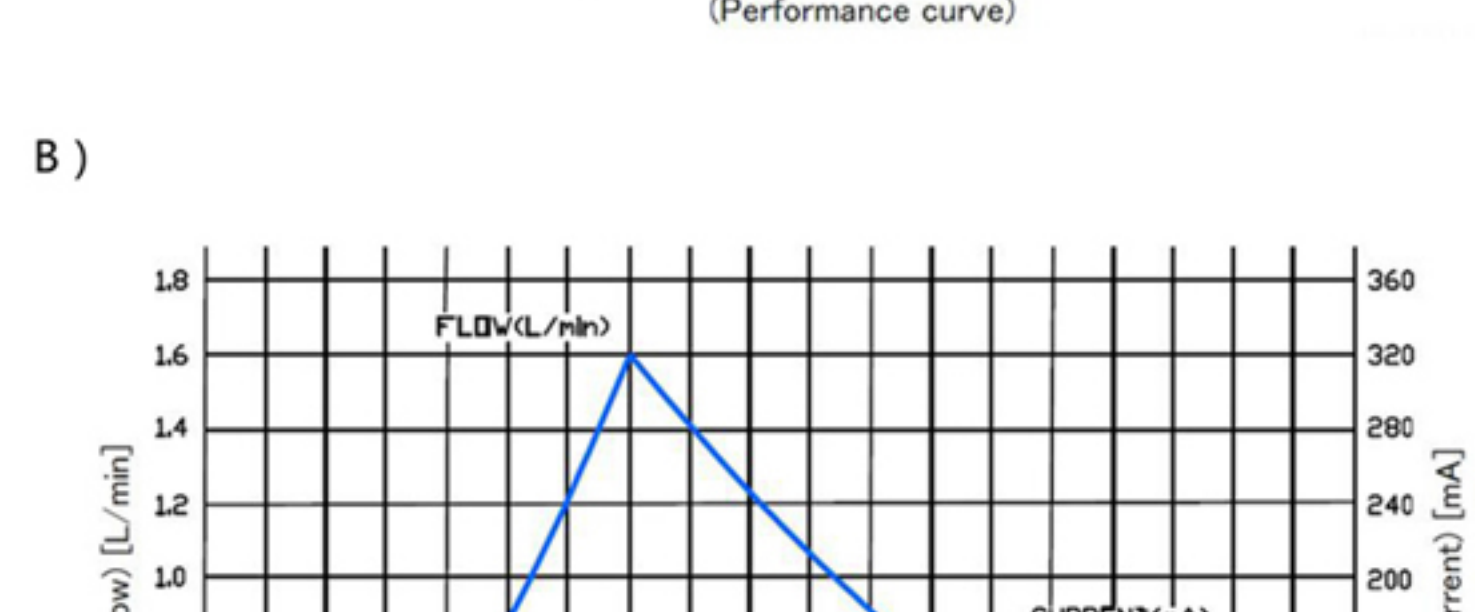


### Feature

- Small size, powerful input and output pressure
- Diaphragm material: EPDM, highly resistant to acid, alkali, poor oil resistance
- Good leakproofness
- Endurable, free maintenance

Pump types	Air pump		
Motor	DC brushless motor		
Model	KVP04-1.1-12	KVP04-1.1-12(N)	KVP04-1.1-24
PWM speed regulation	Adjustable	Unadjustable	Adjustable
Nominal voltage	12V		24V
Current	320mA		170mA
Flow rate	≥1.1L/min		
Highest pressure	90kpa		
Vacuum degree	-40kpa		
Material	EPDM/NBR: godd tightness		
Noise	60dB		
Product quality	40g		
Temperature	5-50°C		
Relative humidity	0-90%RH		
Life span	3000H		

### Curves of product characteristics



### Motor introduction

- A) Motor circuit protection  
Circuit protection begins to work when one of the following happens  
1. Current reaches 1A  
2. Motor temperature reaches 165 ±15°C

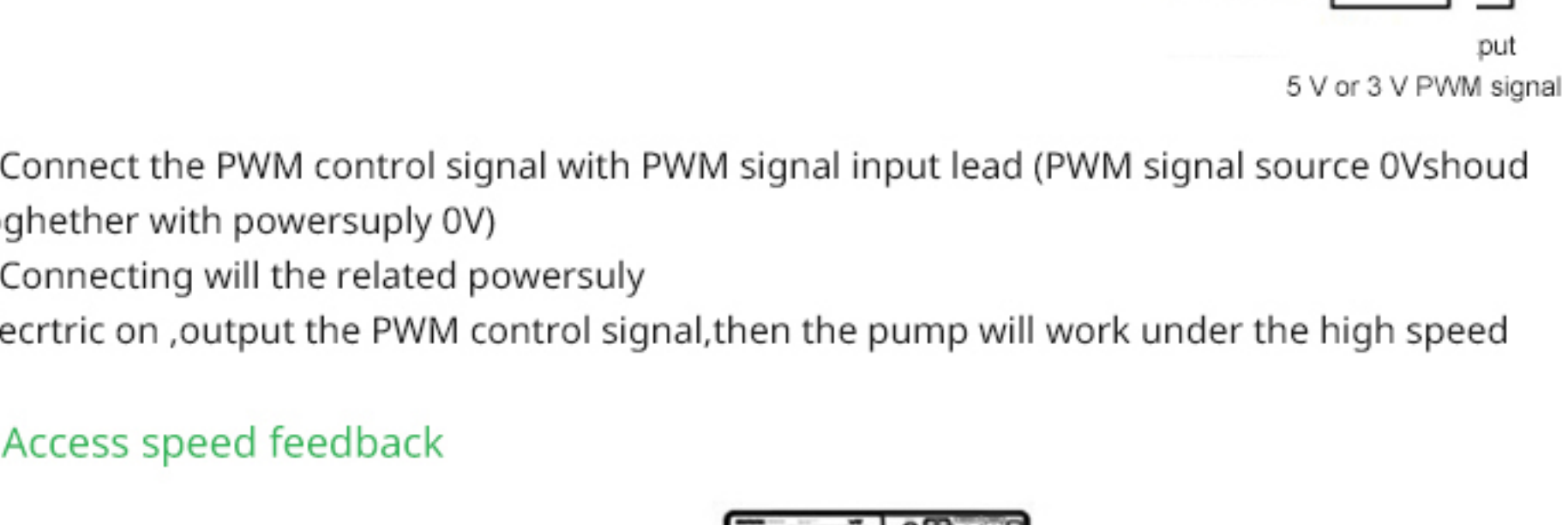
### B) Wiring

Wire No.	Color	Application
1	Black	Cathode
2	Red	Anode
3	Yellow	Output signal
4	White	PMW speed regulation
5	Green	None

### Connection Description

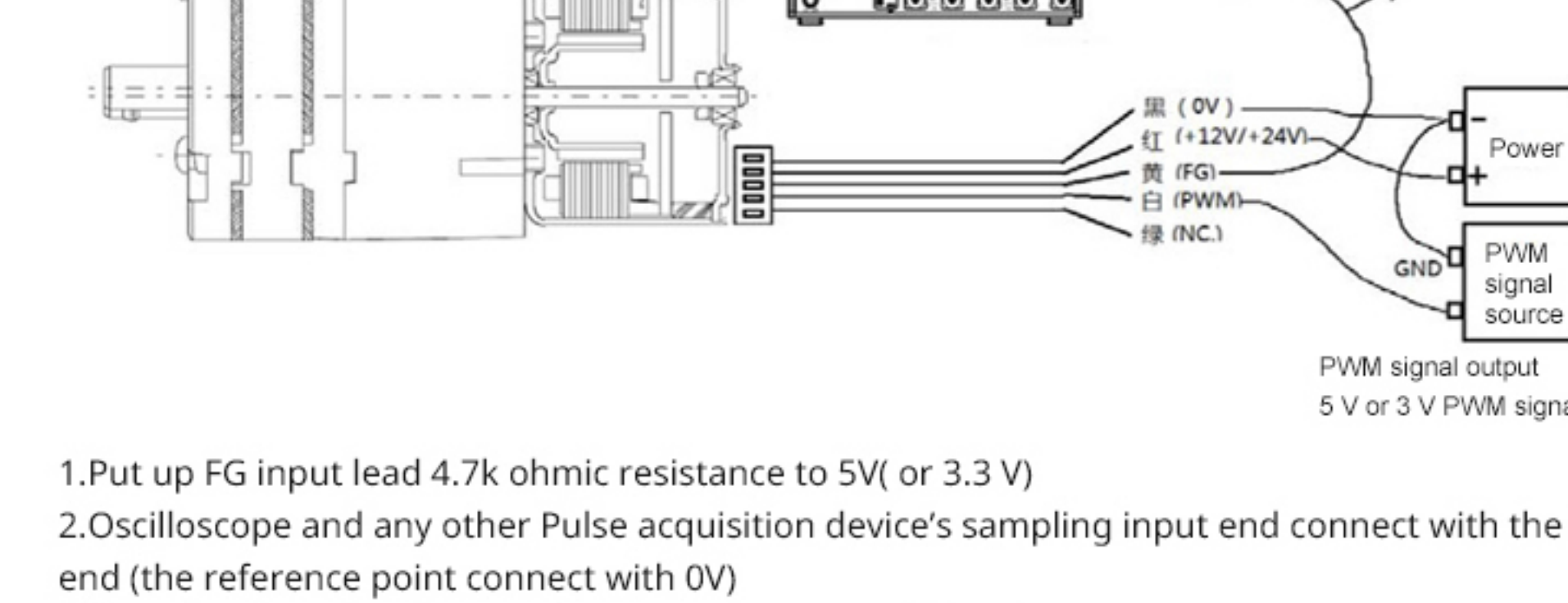
Please insure that the wire is connected right before you use it, any other question, feel free to contact our sales .

#### 1. Quickie Start Guide



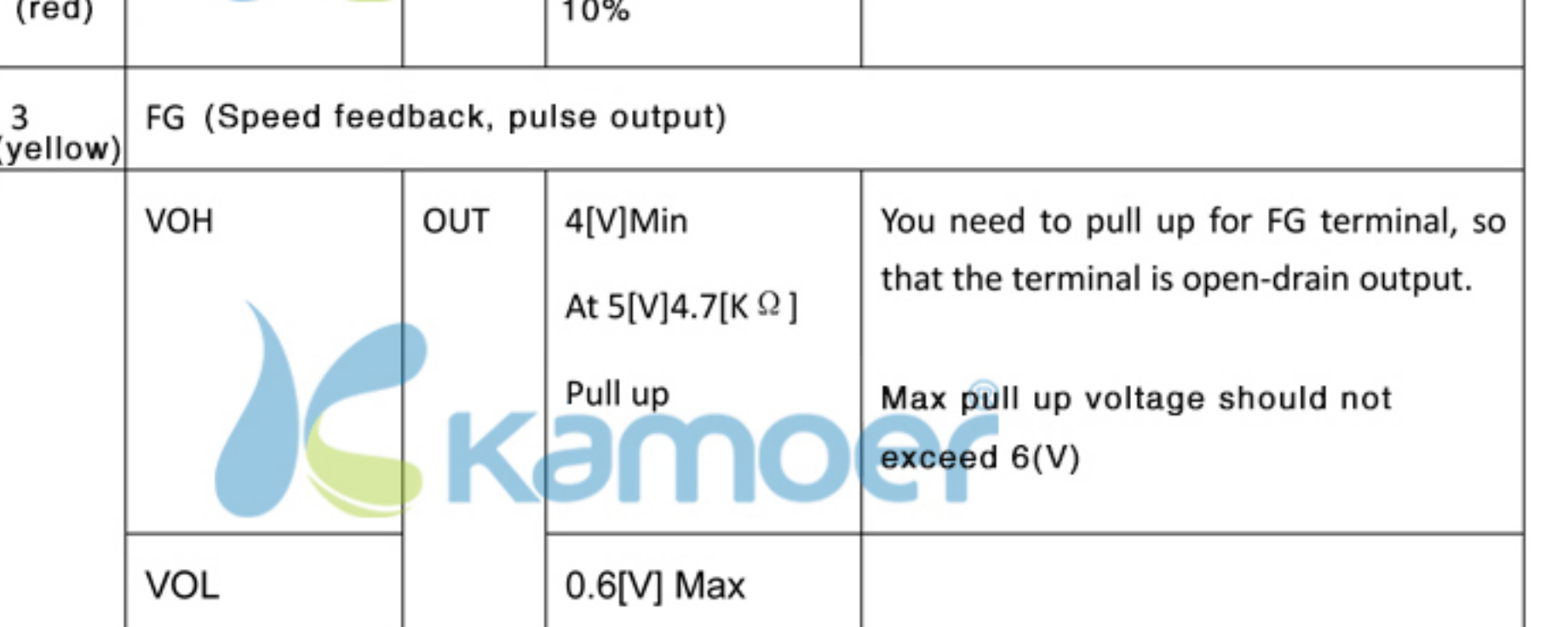
- Together the PWM input lead with the powersupply 0V input lead, Connect it to 0V
- Connect the positive power input lead with related powersupply
- Put other input lead hanging
- Electric on, then the pumps will be work under the high speed

#### 2. PWM Adjust the speed to control the flowrate



- Connect the PWM control signal with PWM signal input lead (PWM signal source 0V should together with powersupply 0V)
- Connecting will the related powersupply  
Electric on, output the PWM control signal, then the pump will work under the high speed

#### 3. Access speed feedback



- Put up FG input lead 4.7k ohmic resistance to 5V (or 3.3 V)
- Oscilloscope and any other Pulse acquisition device's sampling input end connect with the FG input end (the reference point connect with 0V)
- The other input lead connection can refer to one of the above way
- Open the pump, put the pump work, The Oscilloscope can see the speed feedback signal (the motor turn a circle, six pulse)
- Rotate speed calculation: Speed(RPM) = (Sampling frequency\*60)/6

Pin No.	Signal name	I/O	Specification	Note
1 (black)	GND	IN	Ground	Ground
2 (red)	Vm	IN	DC12/DC 24[V]±10%	Power supply
3 (yellow)	FG (Speed feedback, pulse output)			
	VOH	OUT	4[V]Min At 5[V]4.7[k Ω] Pull up	You need to pull up for FG terminal, so that the terminal is open-drain output. Max pull up voltage should not exceed 6(V)
	VOL		0.6[V] Max	
	Maximum ratings of FG sink current		3[mA]	
	The number of FG output pulse		6 pulse/circle	
4 (white)	PWM			
	Input voltage range	IN	0[V]~5[V]	
	VIH		2[V]Min	High Motor OFF
	VIL		0.8[V]Max	Low Motor ON
	Maxim PWM input frequency		60[KHz]Max	Our recommending PWM frequency rang is between 15(KHz) to 25(KHz).
5 (green)	NC			

You should connect a Schottky Barrie Diode between each signal line to ground to prevent IC from damage.

Unit: mm

