

# Product Manual

**Kamoer Fluid Tech (Shanghai) Co., Ltd.**

Edition: A/7

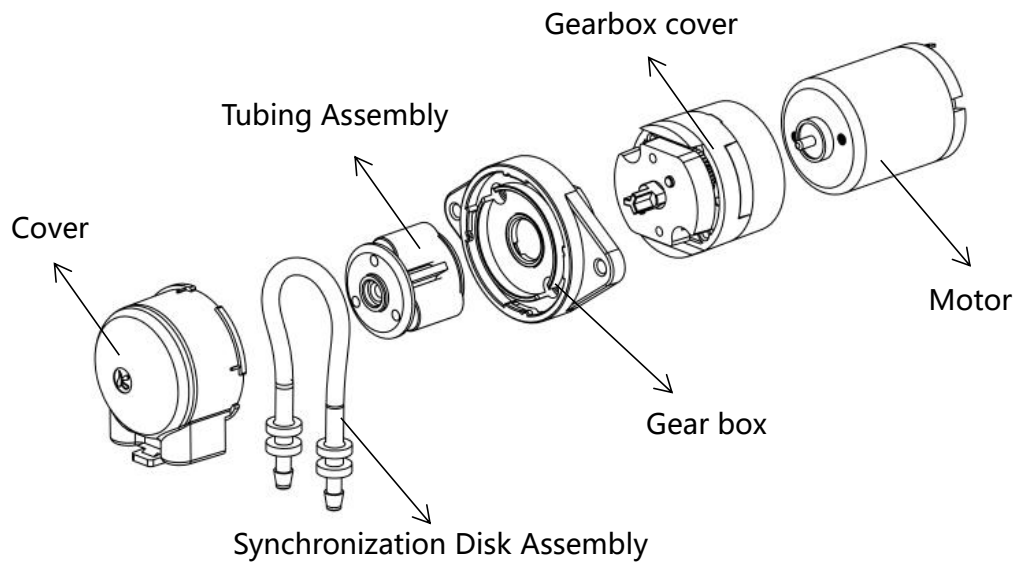
<b>Product name</b>	Micro peristaltic pump
<b>Product number</b>	KFS
<b>Execution date</b>	2023.01.04
<b>Manufacturing unit</b>	Kamoer Fluid Tech(Shanghai) Co., Ltd.

## A、 Product Overview

### 1. Product physical map



### 2. Product assembly drawing



### 3. Model definition

<b>KFS</b>	<b>HA</b>	<b>1</b>	<b>B</b>	<b>04</b>	<b>R</b>	<b>null</b>	<b>null</b>	<b>null</b>
Model	Motor model	Slow down	Cast	Pipe number	Cover color	Takeover method	Installation method	Number of rotors



### 3.1 Motor model



Brush motor

HA 24V DC brushed

HB 12V DC brushed

HC 6V DC brushed



Brushless motor

HD 24V DC brushless

HE 12V DC brushless



Stepper motor

ST 24V stepper motor

### 3.2 Deceleration

1: 1-stage deceleration, reduction ratio 1:14

2: 2-stage deceleration, reduction ratio 1:196

0: No deceleration (stepping motor only)

### 3.3 Tube type

B: BPT pump tube

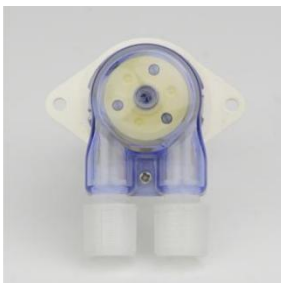
S: Silicone tube

V: Fluorine rubber tube

### 3.4 Pipe number

Pipe number	01 # (Only applicable to fluorine hose)	04#	06#	10#
<b>Metric (ID × OD)</b>	2.54mm×4.24mm	1mm×3mm	2mm×4mm	3mm×5mm
<b>Inch (ID × OD)</b>	/	/	/	/

### 3.5 Cover color



P: purple



R: red



G: green



Y: yellow



### 3.6 Takeover method

Empty: Straight-through connector

S: Threaded connector

D: Pressure tube buckle (stepper motor only)

### 3.7 Installation method

Empty: Standard installation

I: Internal locking screw

O: External locking screw

### 3.8 Number of rotors

Empty: 3 rotors

6:6 rotors (stepper motors only)

Pump head model	Pump cover	Base	Rotor	Turn frame	Connector
KFS	PC plastic	POM	Engineering plastics	POM	PP

## 4. Performance characteristics, typical applications

### 4.1 Performance characteristics

- KFS series peristaltic pump is a peristaltic pump driven by 3 motors, 24V/12V/6V motor, which can provide different voltage options
- The product is fashionable and beautiful, with multi-color options (blue, red, transparent natural color, yellow, black, purple, green) for visual management
- Pump tube selection - the pump tube is imported BPT (B) tube, imported fluorine rubber tube (V) and silicone tube (S), which can be applied to different transmission liquid requirements.
- Pump tubing size optional (04#, 06#, 10#) peristaltic pump tubing to meet different flow requirements
- This peristaltic pump can be adapted to ordinary DC brush, DC brushless and stepper motors
- The pump body comes with a 2-hole mounting plate, no need to add it separately
- 3-rotor and 6-rotor are optional, 3-rotor hose has longer service life and larger flow rate, 6-rotor delivery pulse is smaller
- Installation method - the installation method is fixed through the plate, and the pump head adopts quick release type, and the direction of the pipe joint can be selected in any direction of up, down, left, and right
- Transmission mode - the transmission mode is gear transmission, the primary reduction ratio is 1:14, and the secondary reduction ratio is 1:196. The output speed of the first-stage deceleration



is fast,

- Focus on large flow; the output speed of the two-stage deceleration is slow, focusing on micro flow
- Suitable for wall thickness 1.0 pump tubing

## 4.2 Typical applications

Analytical instruments: ion chromatograph, five-class blood analyzer, hypochlorous acid water generator

Detergent Delivery: Automatic Car Wash Machines



ion chromatograph



Automatic Car Wash Machines



Five-class blood analyzer



Acid water generator

## 5. Product Certification, Intellectual Property

CN201920366667.1 CN201830069030.7 CN201830069031.1 ROHS certification CE certification



◆ Hoses are resistant to liquid media Need to check chemical compatibility or conduct immersion tests, improper hose selection may cause hose damage quickly

◆ The working environment of the product should not exceed 45°C, and the humidity should not exceed 70% (no condensation). The harsh working environment will cause premature damage to the



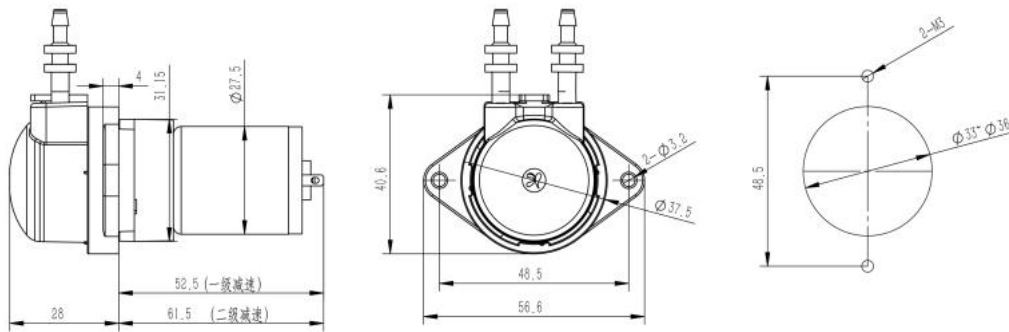
product

- ◆ Fluid leakage accidents due to hose ruptures depend on the fluid medium and your specific application conditions
- ◆ High overloading may result in premature failure of the product

## B、 product specification

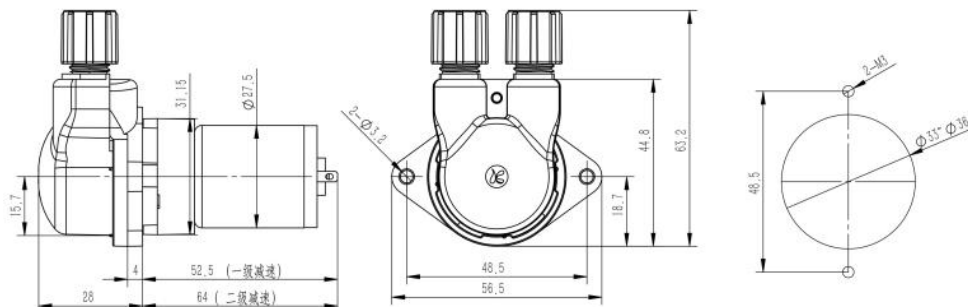
### ◆ KFS DC Brush Product Specifications

#### 1. Product Size



直通接头

Straight connector



螺纹接头

Threaded connector



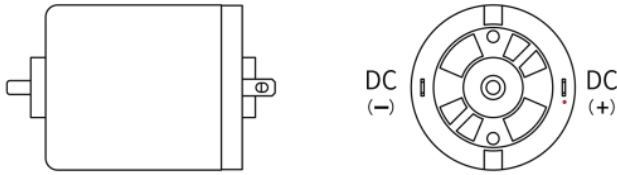
## 2. Technical Parameters

Item		Technical Parameters								
Basic parameters	Motor type	DC brushed motor								
	Flow range	1- 85ml /min								
	Noise	≤60dB								
	Power	5W								
	Control method	Switch control								
	Weight	About 92g								
	Rated voltage	6V/12V/24V								
	Pump tube life	S: 200h      BPT: 1000h								
	Motor life	800h								
<b>Reference flow rate (unit: ml/min)</b>										
Pump flow	Pump tube	S04	S06	S10	B04	B06	B10	V01		
	ID×OD	1mm×3mm	2mm×4mm	3mm×5mm	1mm×3mm	2mm×4mm	3mm×5mm	2.54mm×4.24mm		
	Pump tube material	Silicone tube				BPT			Fluorine hose	
	HA/current: 0.2A HB/current: 0.4A HC/Current: 0.6A	Level 1 deceleration	12 ml /min	45ml /min	85ml /min	12ml /min	45ml /min	85ml /min	50ml /min	
		Level 2 deceleration	1 ml /min	4ml /min	7ml /min	1ml /min	4ml /min	7ml /min	5ml /min	
Precautions	Remark	<p>The above parameters are measured with pure water without pressure at room temperature and standard atmospheric pressure at 20°C. Actually, there will be certain errors in the flow rate due to different media, different outlet pressures, and DC motor speed errors. The data are for reference only. In addition, it can be customized according to customer needs.</p> <p>Due to the material characteristics of the fluorine rubber tube, if it is installed in the pump head for a long time without medium and does not work, it will stick to the tube wall with a small probability, resulting in the possibility of not being able to absorb liquid. If it has been stuck accidentally, the pump tube can be removed and twisted round by hand to restore the elasticity of the pump tube. If it is placed for a long time, the liquid needs to stay in the pump tube, which will prevent the occurrence of the above phenomenon.</p>								
	Reference noise value	Under the ambient noise of 35dB, the actual measurement at a distance of 50cm is 57 dB , and the actual measurement of the sticker product is 67 dB								





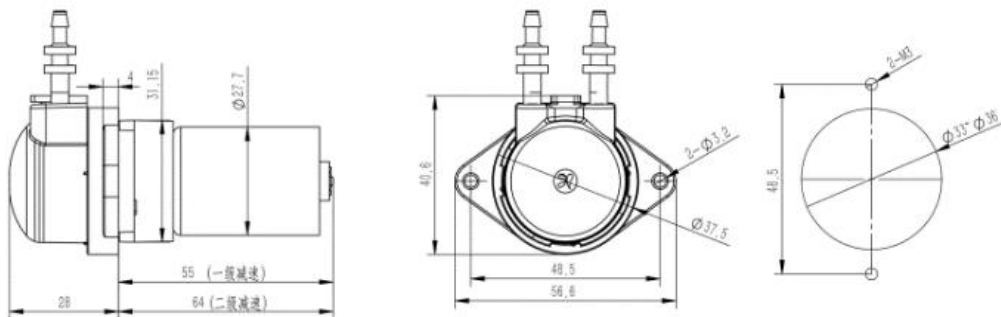
### 3. Motor control



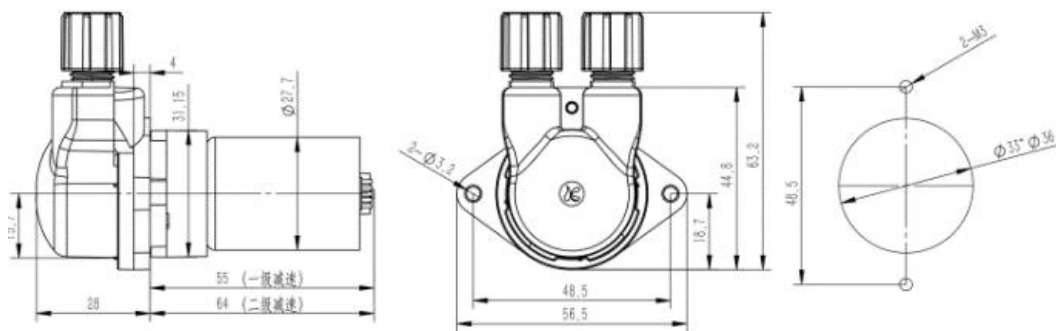
Note: According to the motor wiring diagram, the positive pole of the power supply is connected to the positive pole, and the negative pole is connected to the negative pole.

### ◆ KFS DC Brushless Product Specifications

#### 1. Product Size



Straight connector



Threaded connector



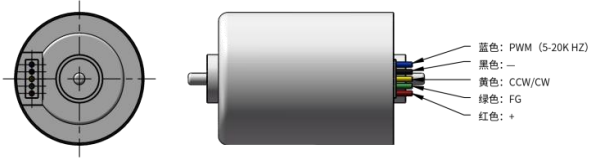


## 2. Technical Parameters

Item		Technical Parameters							
Basic parameters	Motor type	DC brushless motor							
	Flow range	1.2-122ml/min							
	Noise	≤60dB							
	Power	5W							
	Control method	Switching value control or PWM speed regulation							
	Weight	About 135g							
	Rated voltage	12V/24V							
	Pump tube life	S: 200h    BPT: 1000h							
	Motor life	2000h							
<b>Reference flow rate (unit: ml/min)</b>									
Pump flow	Pump tube code	S04	S06	S10	B04	B06	B10	V01	
	ID×OD	1mm×3mm	2mm×4mm	3mm×5mm	1mm×3mm	2mm×4mm	3mm×5mm	2.54mm×4.24mm	
	Pump tube material	silicone tube				BPT			Fluorine hose
	HD/current: 0.2A HE/current: 0.4A	Level 1 deceleration	12 ml/min	65ml/min	116ml/min	18ml/min	56ml/min	122ml/min	70ml/min
		Level 2 deceleration	1.2 ml/min	4.5ml/min	8.3ml/min	1.3ml/min	4.3ml/min	8.5ml/min	6ml/min
Precautions	Remark	<p>The above parameters are measured with pure water without pressure at room temperature and standard atmospheric pressure at 20°C. Actually, there will be certain errors in the flow rate due to different media, different outlet pressures, and DC motor speed errors. The data are for reference only. In addition, it can be customized according to customer needs.</p> <p>Due to the material characteristics of the fluorine rubber tube, if it is installed in the pump head for a long time without medium and does not work, it will stick to the tube wall with a small probability, resulting in the possibility of not being able to absorb liquid. If it has been stuck accidentally, the pump tube can be removed and twisted round by hand to restore the elasticity of the pump tube. If it is placed for a long time, the liquid needs to stay in the pump tube, which will prevent the occurrence of the above phenomenon.</p>							
	Reference noise value	Under the ambient noise of 35dB, the actual measurement at a distance of 50cm is 57 dB , and the actual measurement of the sticker product is 67 dB							



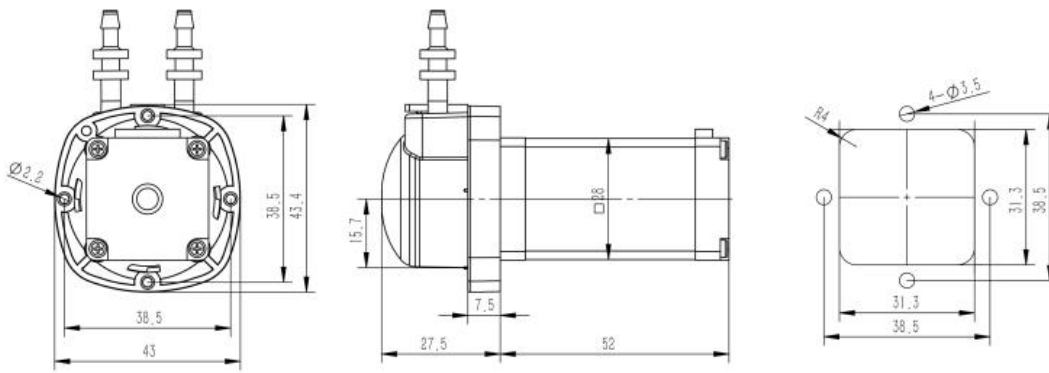
### 3. Motor control



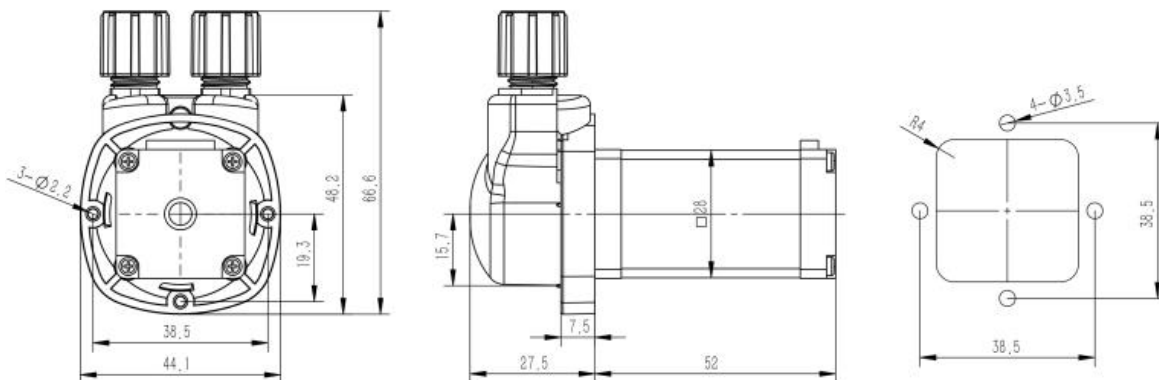
Note: According to the motor wiring diagram, the blue wire is connected to PWM, the black wire is connected to negative, the yellow wire is connected to commutation, the green wire is connected to feedback, and the red wire is connected to positive; Blue and black connected to negative, red connected to positive for full speed operation.

## ◆ KFS Stepper Product Specifications

### 1. Product Size



Straight connector



Threaded connector

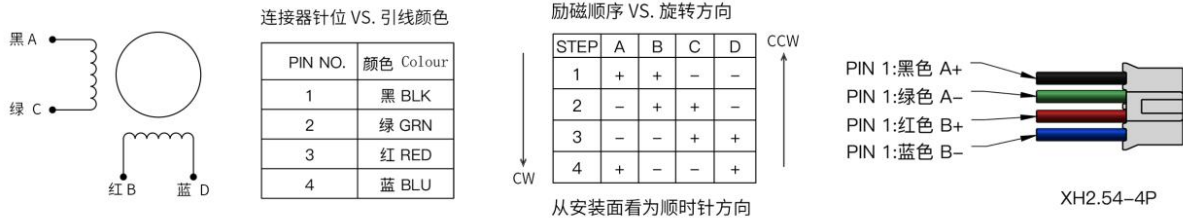


## 2. Technical Parameters

Item		Technical Parameters							
Basic parameters	Motor type	stepper motor							
	Flow range	9-65ml/min							
	Noise	≤60dB							
	Power	10W							
	Control method	stepper driver							
	Weight	About 235g							
	Rated voltage	24V							
	Pump tube life	S: 200h BPT: 1000h							
	Motor life	6000h							
<b>Reference flow rate (unit: ml/min)</b>									
Pump flow	Pump tube	S04		S06	S10	B04	B06	B10	V01
	ID×OD	1mm×3mm		2mm×4mm	3mm×5mm	1mm×3mm	2mm×4mm	3mm×5mm	2.54mm×4.24mm
	Pump tube material	Silicone tube				BPT			Fluorine hose
	ST start current: 1.5A	No reduction 3 rotors	10 ml/min	34ml/min	65ml/min	9ml/min	32ml/min	60ml/min	48ml/min
		No reduction 6 rotors	/	/	/	7ml/min	20ml/min	/	/
Precautions	Remark	<p>The above parameters are measured with pure water at room temperature and standard atmospheric pressure at 20°C with no pressure and a speed of 250 rpm. Actually, there will be some errors in the flow rate due to different media, different outlet pressures, and DC motor speed errors. The data are for reference only. In addition, it can be customized according to customer needs.</p> <p>Due to the material characteristics of the fluorine rubber tube, if it is installed in the pump head for a long time without medium and does not work, it will stick to the tube wall with a small probability, resulting in the possibility of not being able to absorb liquid. If it has been stuck accidentally, the pump tube can be removed and twisted round by hand to restore the elasticity of the pump tube. If it is placed for a long time, the liquid needs to stay in the pump tube, which will prevent the occurrence of the above phenomenon.</p>							
	Reference noise value	Under the ambient noise of 35dB, the actual measurement at a distance of 50cm is 55 dB, and the actual measurement of the sticker product is 65 dB							



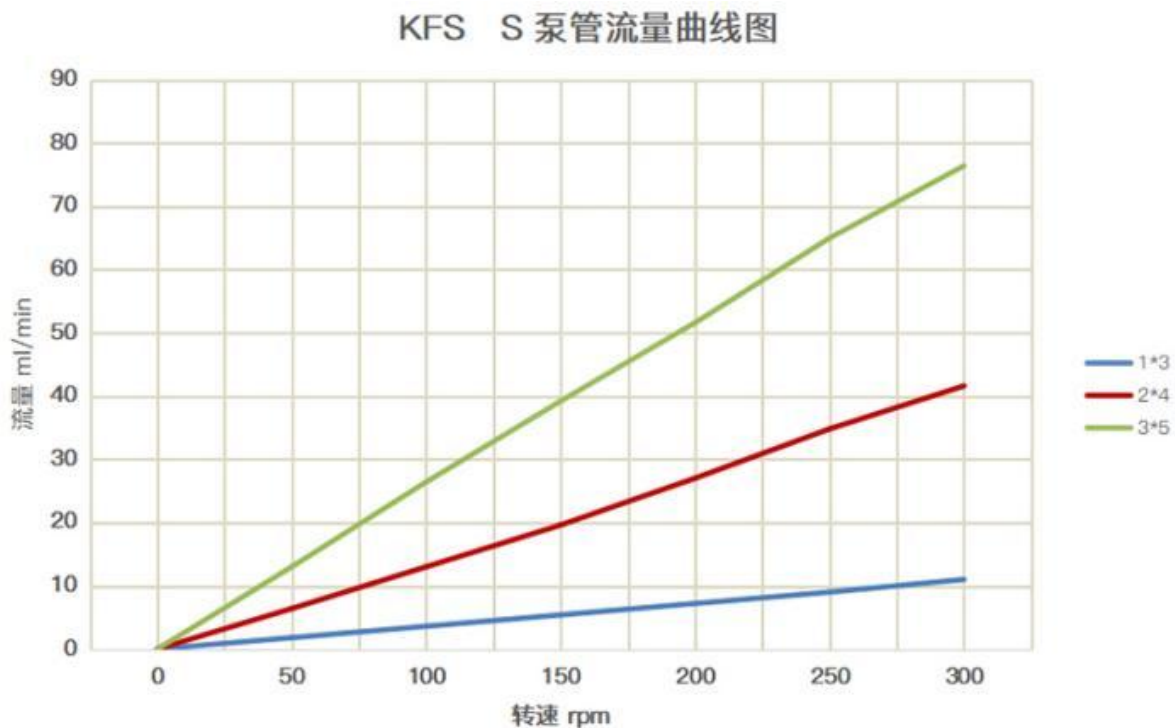
## 3. Motor parameters



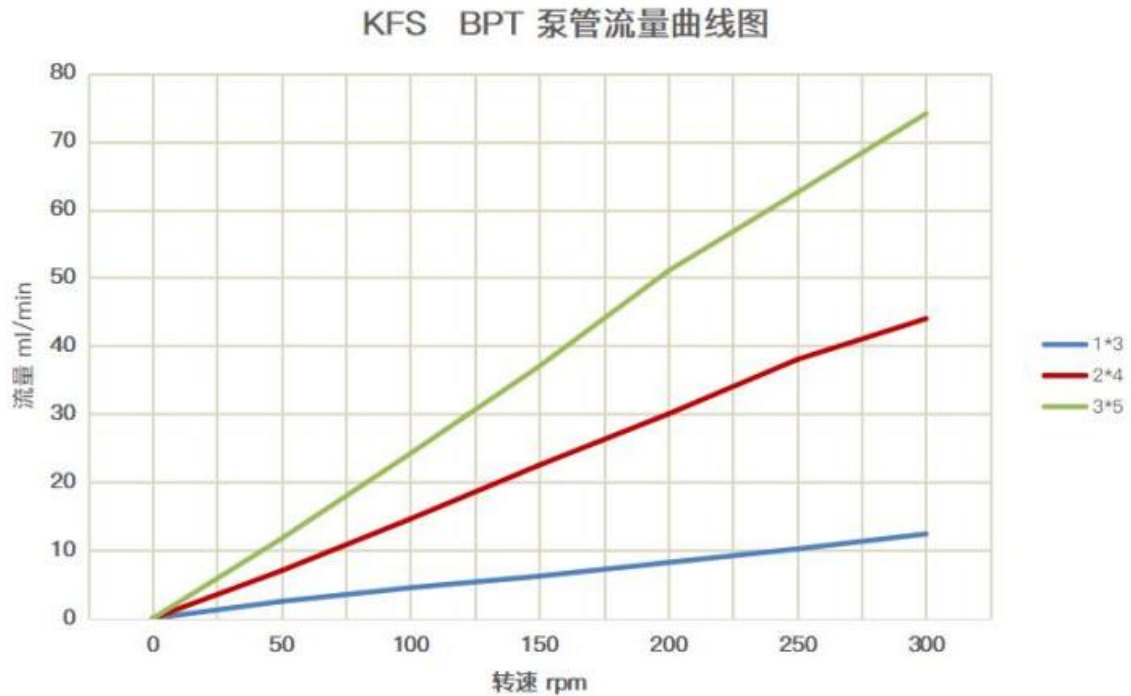
Phase	Resistance	Inductance	Rated current	Acceleration and deceleration time	Static torque	Insulation class
2	2.5 ± 10% Ω	2.5 ± 20% mH	1.0A	1rpm/ms	0.18N · m	B

## 4. Flow curve




### 4.1 KFS silicone flow graph



## 4.1 KFS BPT flow graph

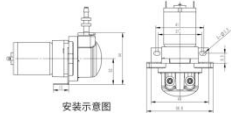











## C. Adapter hose

Pump tube material	Characteristic	Standards compliant	Pipe number
Silicone tube (S) 	Low adsorption, good temperature resistance, good resistance to chemical corrosion, life over 200h	RoHS Comply with food grade certification (GB 4806.11-2016)	04# 06# 10#
BPT tube (B) 	Resistance to common chemicals, acid and alkali and oxidation resistance life over 1000h	RoHS FDA	04# 06# 10#
Fluorine hose (V) 	Good resistance to oil and most other mineral acids, life over 200h	RoHS	01#



## D、 Optional accessories

Name	Specifications		Function introduction
Mounting plate	L shape 56.6×31.2×13mm		A variety of installation methods to meet different customer needs
Straight through pagoda connector	1/16		1*3 hard tube or similar hose can be connected externally
Straight connector	3/32		2*4 hard tubes or similar hoses can be connected externally
Straight connector	1/8		3*5 hard tubes or similar hoses can be connected externally
Threaded joint	1/16		3*5 hard tubes or similar hoses can be connected externally
Threaded joint	3/32		External can be connected to 4.5*7 hard tube or similar hose
Threaded joint	1/8		External can be connected to 4.5*7 hard tube or similar hose
Anti-floating sinking head	Path 6 diameter 2.5		Place the inlet of the pump tube completely in the liquid to ensure that the peristaltic pump tube can fully absorb the liquid
Peristaltic pump stepper drive	MODBUS - RTU		Can realize built-in and external potentiometer speed regulation, can realize MODBUS RS485 communication and 0-10V analog speed regulation, realize electric and trigger two start and stop modes, subdivision maximum 32, drive current can be set (0.7A, 1.2A, 1.7A, 2.2A, 2.7A, 2.9A, 3.2A, 4.0A)
Pulse generator board + stepper driver board	2802 + KMD-42B-P		Support clockwise and counterclockwise operation, LED 4- digit digital tube display, various control methods: rotary encoder, foot switch, external analog, 4 85 communication control

