



FCS KA5

Basic Peristaltic Pump
Operation Manual



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flowcontrollersystems.com



Note:

- Please read the manual carefully before operating the product.



Warning:

Tubing may have crack due to wear. It results in the overflow of fluid from tubing. In that time human body and instruments may be harmed.

Users must check frequently and change tubing in time.

Connect the power cord to the wall socket directly, and avoid using the extended electric wire.

If the power cord or plug had wear and other damage, please disconnect the plug. (Hold the plug instead of the wire)

If following situations happened, please turn off the power supply and disconnect the plug. (Hold the plug instead of the wire)

1. Fluid splash on the pump.
2. You think the pump need to maintain or repair.

The user's power socket must have ground wire, and have reliable grounding.

Note: The foot pedal switch and other external control plugs must be connected or disconnected in the power-off status to prevent the external control interface from being burned.

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1. Product Introduction

Basic model peristaltic pump with the super silent performance have become the best choice for laboratory, also widely used for analytical instrument. And won the unanimous praise of users with excellent cost performance.

The speed can be adjusted by manually also can be controlled by external control interface automatically. Power down memory function, turn on the pump again, it will continue work with same status. It is convenient for users to test the flow rate or calibration because of 60sec One-click test function. It can support 7 different external control modes.

Suitable Pump Head:

EasyPump Head: EasyPump I, EasyPump II, EasyPump III, EasyPump IV, EasyPump V, EasyPump VI;

Multichannel pump head: AMC series (AMC1-AMC12);

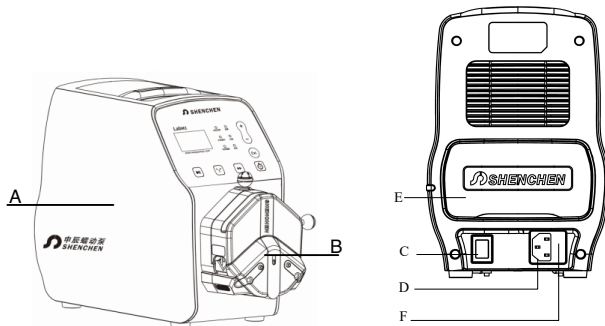
Standard pump head: SN series (SN15, SN25)

Fast Load Pump Head: DZ25-3L.

Typical Application:

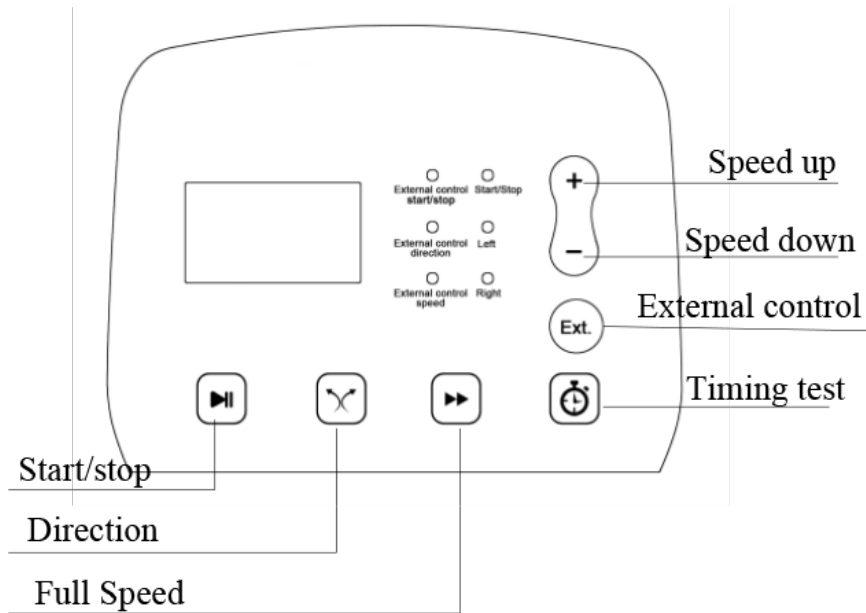
University research institute laboratory dedicated, chromatography of ions, titration equipment.

2. KA5 Series Pump Appearance



- A—— Drive
- B—— Pump head
- C——Power switch
- D——Power socket
- E——External control interface
- F——Fuse

3. Operating Panel



- **Start/stop button**

Control drive running and stopping. Pressing the key of **Start/stop** one time, drive running state will change one time. When drive run, start/stop display indicator light; when drive stop working, start/stop display indicator black out.

Keep pressing this button can set the RS485's address. When you press this button over 5 seconds, the display digital will twinkling, then press speed up or speed down to set the request address. Then press the start/stop button again, the address effective (Optional).

- **Change direction button**

Press this button to change the pump working direction. Pressing the key of Direction one time, drive running direction will change one time. When the pump runs left, the left running light on; when the pump runs right, the right running light on.

- **Speed up/down button**

This button used for increase or decrease the motor speed. The motor speed increase or decrease 0.1rpm when you press the **Speed up / Speed down** button. Keep pressing this button, the speed increase or decrease fast, to short the adjust time.

- **Full speed button**

Under internal control mode, pressing **Full speed / Empty** button, pump runs under the full speed. In this time, it shows "Full" state that finish emptying quickly, filling or washing operation; pressing full speed button again, pump will return to the state before full state. (Under the full mode, pressing start/stop button also stop drive from working.)

- **External control button**

External control button only effect when the pump stops working. It is used for change different kinds of external control modes. It has 7 kinds of modes.

Internal control mode (the indicator of external control start/stop, direction and speed are all dark).

- ① The only mode of external control start/stop (the display indicator of external control start/stop is light; the display indicators of external control direction and speed are dark).
- ② The only mode of external control direction (the display indicator of external control direction is light; the display indicators of external control start/stop and speed are dark).
- ③ The only mode of external control speed (the display indicator of external control speed is light; the display indicators of external control start/stop and direction are dark).
- ④ The mode of external control start/stop and external direction (the display indicators of external control start/stop and direction are light; the display indicator of external control speed is dark).

- ⑤ The mode of external control start/stop and speed (the display indicators of external control start/stop and speed are light; the display indicator of external control direction is dark).
- ⑥ The mode of external control direction and speed (the display indicators of external control direction and speed are light; the display indicator of external control start/stop is dark).
- ⑦ The mode of external control start/stop, direction and speed (the display indicators of external control start/stop, direction and speed are all light).

Note: When the display indicator of external control is light, the relevant button of internal function will be shielded.

● **Timing test button**

Timing test button only works when the pump is in internal control mode and when the pump stops running. Press the **Timing test** button, the pump will run with current speed for 60 seconds (the default timing time is 60s), and will stop automatically.

Keep press **Timing test button** more than 5 seconds, the numbers will flash. Press **Speed up/Speed down** button to adjust the time. This function usually used for calibration or flow rate test. (If press the star/stop button during the test, the pump will stop running. Press the **Timing test button** again, the pump will re-clock.)

In external control speed mode, press the Timing test button to switch external control speed analog signal 0-5V, 0-10V, 4-20mA. (Analog signal distinguished according to different flashing frequency of external control speed control indicator: 0-5V always on, 0-10V flashes once every 1 second, 4-20mA flashes once every 0.3 seconds.)

4. Technical Specification

Speed range	KA5 1-III: 0.1-150rpm	Power supply	AC220V±10%, 50Hz/60Hz(standard)
	KA5 3-III: 0.1-350rpm		AC110V±10%, 50Hz/60Hz(optional)
	KA5 6-III: 0.1-600rpm	Communication interface	RS232:communication protocol RS485: Modbus protocol
Speed resolution	0.1-100rpm is 0.1rpm 100-600rpm is 1rpm	Temperature	0-40°C
Test time range	0.5s-999s	Relative humidity	<80%
Control method	Mechanical keypad	Dimension (L*W*H)	261.4*157.3*236.9mm
Display	3 digital LED	Weight	4.40kg
External speed control signal	0-5V, 0-10V, 4-20mA for optional (default is 0-5V).	Power consumption	<80W
External control method	Passive switch signal: foot pedal switch; Active switch signal: 5-24V	IP rate	IP31

5. Main Function and Features

Easy to operate, control speed by keypad or external control interface,

Compatible with dispensing controller to realize filling function.

Full speed button: fast filling and empty function.

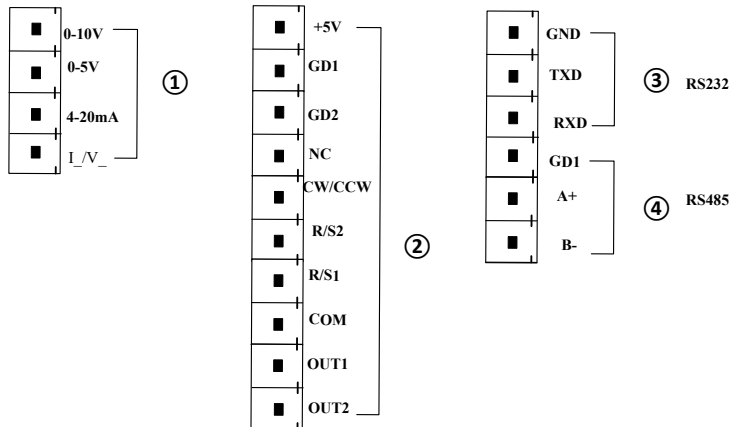
Big torque, low consumption and good adaptability.

Drive circuit has excellent performance, good heat dissipation conditions, low working noise and stable running. Have power-down memory function.

Not suitable for outdoor using.

High performance-price ratio.

6. External Control Interface



① Analog signal input port:

When in the external control speed, firstly, choose the external control speed indicator light on. Then the external control speed is effective.

0-10V: 0V ~10V voltage signal input port

0-5V: 0V~5V voltage signal input port

4-20mA: 4~20mA current signal input port

I_/V_: Analog signal negative port.

Note: The external control interface must be plugged or unplugged in power off status to prevent the interface from being burned.

② External control start/stop, change direction signal input port:

When in the external control start/stop, change direction function, please choose the indicator light of external control start/stop, change direction mode on first, to make them be effective.

+5V: Empty foot

GD1: Passive signal start/stop, change direction signal common port.

GD2: Active signal start/stop, change direction common port.

NC: Active change direction signal input port (5-24V)

CW/CCW: Passive change direction signal input port.

R/S2: Active start/stop signal input port (5-24V)

R/S1: Passive start/stop signal input port.

COM, OUT1, OUT2: Empty foot

③ RS232 Communication interface definition

TXD: Master send data port, connect with pin3 of DB-9 connector.

RXD: Master receive data port, connect with pin2 of DB-9 connector.

GND: Ground wire, connect with pin5 of DB-9 connector.

④ RS485 communication interface definition

GDI: Ground wire, connect with RS485 transformer GND.

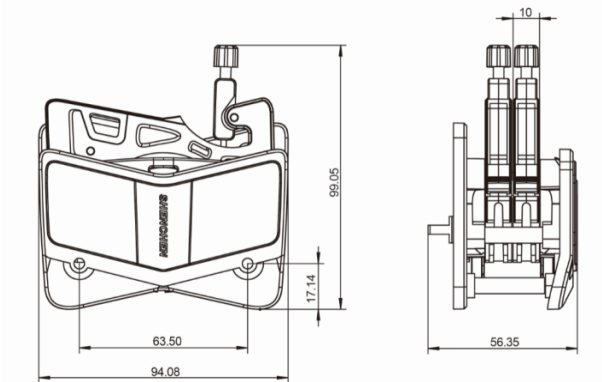
B-: 485 communication signal port, connect with 485 transformer B-.

A+: 485 communication signal port, connect with 485 transformer A+.

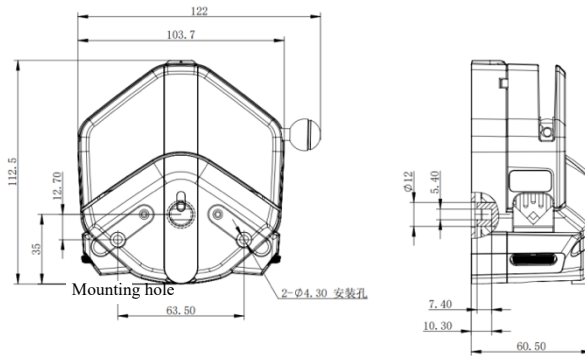
7. Dimension Drawing

(Unit: mm)

7.1 Single pump head:

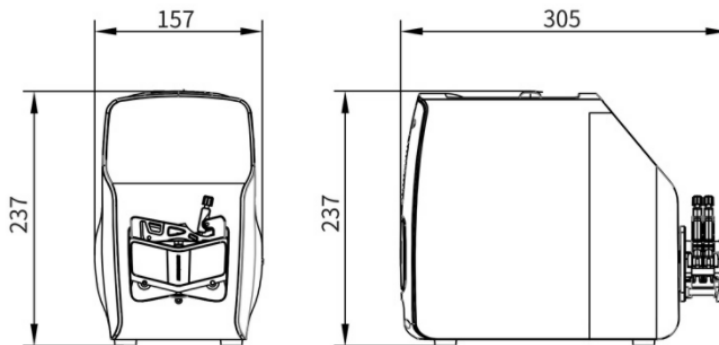


AMC Pump Head



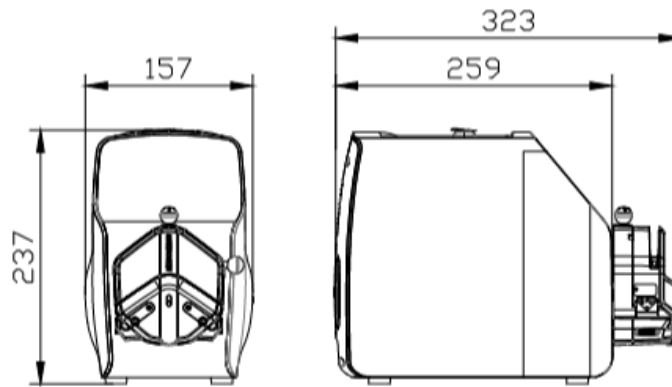
EasyPump Head

7.2 Product



Note: increasing or reducing one channel, the pump head size need to increase or reduce the thickness of one cartridge.

Lab+AMC-Model



Lab+EasyPump

8. Product Maintenance

- When the pump does not work, please loose the cartridges of pressing the tubing for avoiding changing the shape of tubing because of longtime extrusion.
- The pump head cannot resist strong corrosive liquids, please be attention when use it.
- Keep the pump head rollers clean and dry. If the rollers is not clean, it will increase the tubing wearing, shorten the tubing life and make the rollers damage very soon.
- If there is liquid drop on the rollers, clean it as soon as possible. Longtime moisture can damage the roller.

9. Warranty and After Sales Service

We support 3 years warranty for the pumps, subject to the exceptions below. Our company shall not be liable for any loss, damage, or expense directly or indirectly related to or arising out of the use of its products. This warranty does not obligate our company to bear any costs of removal, installation, transportation, or other charges which may arise in connection with a warranty claim.

If the pump fails during the warranty period, after confirmation by our technical department, we will provide spare parts free of charge. Customers will need to bear the shipping cost.

Exceptions:

- The warranty shall not apply to repairs or service necessitated by normal wear and tear or for lack of reasonable and proper maintenance.
- All tubing and pumping accessories as consumable items are excluded.
- Electrical surge as a cause of failure is excluded.
- Chemical attack is excluded.
- Improper operation or man-made damage as a cause of failure is excluded.



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