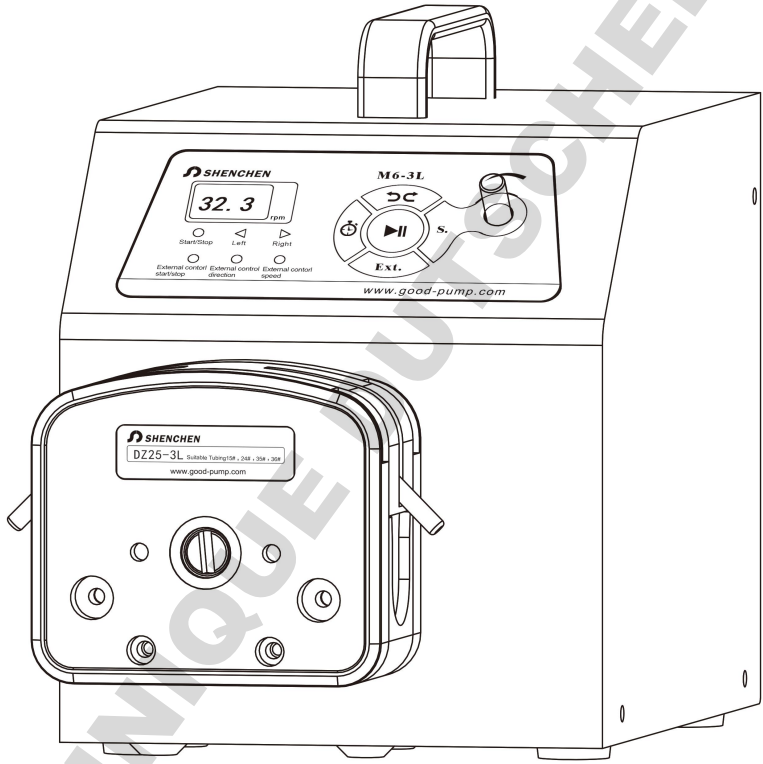
Shenchen Precision Pump
Manual of M6 Series



Baoding Shenchen Precision Pump Co., Ltd.

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Note:

Please read the instruction 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 hurt. Must check usually and change tubing in time.
- Please connect directly the power line to the wall socket, and avoid using the extension electric line.
- If power line or plug have wear and other damage, please unplug it.
- If following situations happened, please turn off the pump, take off the power plug.

  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 switch and other external control plugs must be installed and removed in the power-off state to prevent the external control interface from being burned.

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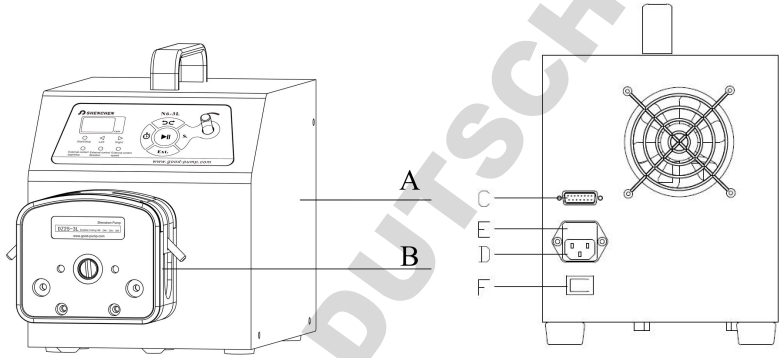
1. M6 Series Product Instruction

M6 series pump speed range is 0.1-600 rpm, flow rate range is 0.211~12000 ml/min. Adjust speed manually or automatically through analog interface. Memory function, storing the running parameters automatically. Timing test function, timing range: 0.5~999 seconds, convenient for calibration. It can support 7 different external control modes.

2. M6 Product Appearance



A- Drive

B- Pump head

C- External control interface

D- Power socket

E- Internal fuse

F- Power switch

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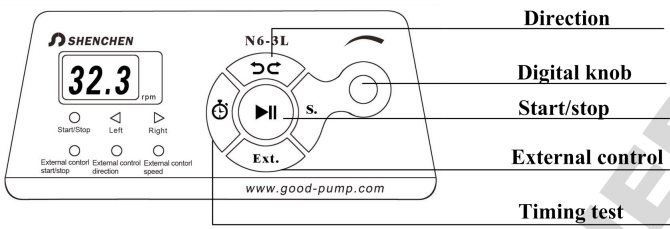
3. M6 Series Product Keypad Instruction



Start /stop button

Control the pump start and stop, press each time, the pump change working status once. When the pump is running, the start/stop indicator is light on. When the pump is stop, the start/stop indicator is light off.

Direction button

Control the pump working direction, press each time, the pump change working direction once. When the pump is running left, the left indicator is light on. When the pump is running right, the right indicator is light on.

Digital knob

① Turn it to adjust the motor speed.

② When the pump is stop, press this button, enter RS485 address setting interface, the LED display start twinkle, now turn the knob to change address, press the knob again to confirm and escape from this setting.

③ In internal control mode, keep press this button, the pump running with full speed, LED display 'FULL'. Release the button, pump back to normal speed.

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External control button

The external control mode button is enable only when the pump stop working. It used for changing external control mode, total 7 different modes.

In internal control mode, the external control mode indicators all light off.

① Only external control start/stop mode: the external control start/stop indicator light on, external control direction and speed indicators light off.

② Only external control direction mode: the external control direction indicator light on, external control start/stop and speed indicators light off.

③ Only external control speed mode: the external control speed indicator light on, external control start/stop and direction indicators light off.

④ External control start/stop and direction mode: the external control start/stop and direction indicator light on, external control speed indicator light off.

⑤ External control start/stop and speed mode: the external control start/stop and speed indicator light on, external control direction indicator light off.

⑥ External control direction and speed mode: the external control direction and speed indicator light on, external control start/stop indicator light off.

⑦ External control start/stop, direction and speed mode: the external control start/stop, direction and speed indicators all light on.

Note: When external control indicator light on, the relative internal control buttons can not be used.

Timing test button

Timing test button only working when the pump is in internal control mode and when the pump is stop running. Keep press **Timing test button** more than 3 seconds then enter the setting timing interface, turn the digital knob to adjust the time, time range is 0.5s to 999s, when finish setting, press the **timing button** again, back to motor speed display. In stop status, press the **Timing test button**, the pump will run with current speed and the set test time, will stop automatically. This function usually used for calibration or flow rate test. (If press the star/stop button during the test, the

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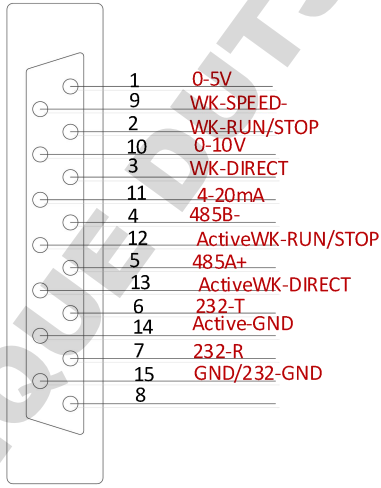
pump will stop running. Press the **Timing test button** again, the pump will re-clock.)

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. M6 Series External Control Instruction

The 15 pin connector on the back of pump is for external control, the wiring definition as below:



① **Pin 1, 0-5V**: Positive pole of external control motor speed signal, 0-5V terminal.

② **Pin 2, WK-RUN/STOP**: External control start/stop input port (Passive signal: Motor running in normal closed status, motor stop running in normal open status.)

③ **Pin 3, WK-DIRECT**: External control motor running direction signal input port. (Passive signal: Motor running in clockwise direction in normal closed status, motor

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running in anticlockwise direction in normal open status.)

④ **Pin 9, WK-SPEED-**: Connect with external control speed signal negative pole.

⑤ **Pin 10, 0-10V**: Connect with external control speed signal positive pole, 0-10V terminal.

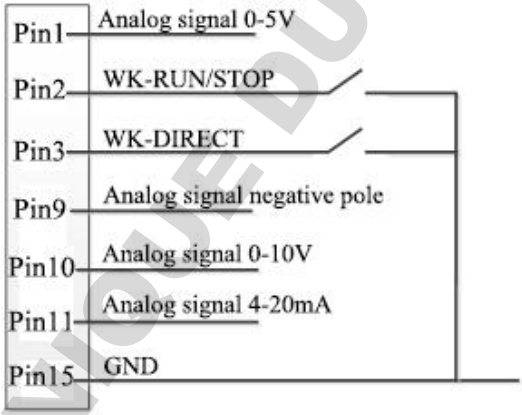
⑥ **Pin 11, 4-20mA**: Connect with external control motor speed signal positive pole, 4-20mA terminal.

⑦ **Pin 15, GND**: Ground wire.

Note: 1. External control start/stop, direction signal all is passive signal.

2. The external control plug must be connected or disconnected when the power is off to prevent the external control board from being burned.

DB15 external control port regular wire sequence as below:



DB15 external control interface

RS232 Communication Pin Definition

① Pin 6, 232-T: The host computer sends data port, connect to DB-9 connector Pin 3.

② Pin 7, 232-R: The host computer sends data port, connect to DB-9 connector

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Pin 2.

③ Pin 15. GND: Ground wire, connect to DB-9 connector Pin 5.

RS485 Communication Pin Definition

① Pin 4, 485-B-: 485 communication signal port, connect with 485 converter B-.

② Pin 5, 485-A+: 485 communication signal port, connect with 485 converter A+.

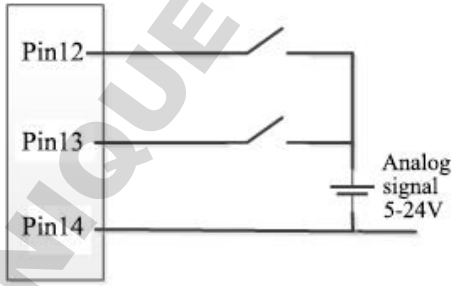
Isolated External Control Pin Definition

① Pin 12, Active WK-RUN/STOP: Isolated external control start/stop signal input port (Active signal: 5-24V).

② Pin 13, Active WK-DIRECT: Isolated external control direction signal input port (Active signal: 5-24V).

③ Pin 14, Active -GND: Isolated external control signal input ground wire.

Isolated External Control Wiring Diagram



DB15 external control interface

Note: M6 series pump can connect with foot pedal or handling dispenser, please contact with us if needed.

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5. M6 Series Technical Specifications

Flow rate accuracy	<±0.5%	Display	3 digital LED
Control	Mechanical keypad	External control	Passive switch signal
Speed range	0.1-600rpm	Speed control	Rotary encoded knob
Speed resolution	0.1rpm(0-100rpm) 1rpm(100-600rpm)	External speed control signal	0-5V, 0-10V, 4-20mA for option
Timing test range	0.5-999s	Power supply	AC 220V±10% 50Hz/60Hz(standard) AC 110V±10% 50Hz/60Hz(optional)
Condition Temperature	0-40℃	Communication	RS232, Shenchen-N232 protocol, RS485,Modbus protocol
IP rate	IP31	Relative humidity	<80%
Power consumption	M6-3L	<80W	
	M6-6L	<180W	
	M6-12L	<300W	
Flow rate range	M6-3L	0.211-3600ml/min	
	M6-6L	0.3-6000ml/min	
	M6-12L	0.00069-12L/min	

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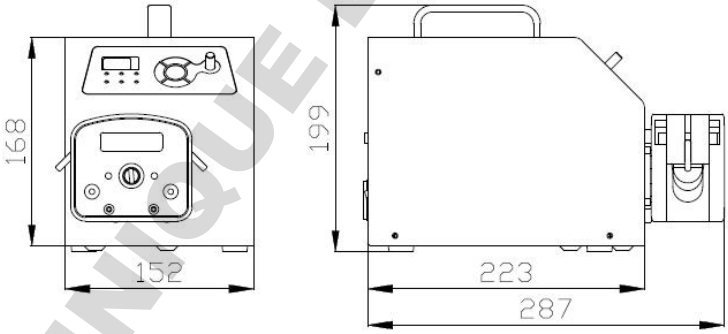
6. M6 Series Main Functions and Features

- Digital knob control speed manually or automatically through external control interface.
- Timing function, easy for calibration or test the flow rate.
- Full speed for fast filling and emptying.
- Support RS232 communication with Shenchen-N232 protocol.
- RS485 communication with MODBUS protocol for optional.
- Big torque, big flow rate, big suction and head distance.
- Memory function, storing the running parameters automatically.
- Good performance and low price.

7. M6 Series Dimension Drawing

(Unit: mm)

M6-3L Dimension Drawing:



M6-6L Dimension Drawing:

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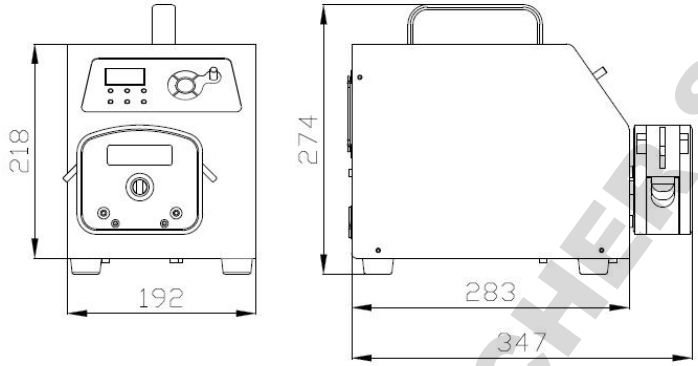
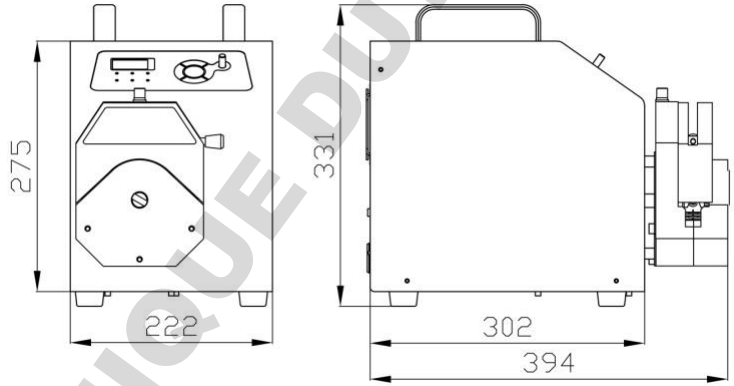


M6-12L Dimension Drawing:



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8. Maintenance

- When the pump is not working, loosen the tubing, avoid the tubing get plastic deformation because of long time pressure.
- The pump drive and pump head do not resist strong corrosive liquids, please pay attention to this when use the pump.
- 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.

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9. Warranty and After Sales Service

We support **three years** warranty (do not include tubing). During the warranty, the pump is damaged by wrong operation or man-made sabotage, our company do not responsible for warranty. If the product out of warranty, we only charge cost for the replacement parts and shipping cost.

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