LabM Series
USER'S MANUAL

Innofluid Co., Ltd.

Note:

- Please read the manual carefully before operating the product.

Warning:

- Connect the power cord to the wall socket and avoid using electric extension cords.
- If the power cord or plug shows wear and/or other damage, please disconnect from socket by pulling the plug, not the wire and contact service.
- In the following circumstances, turn off the power supply and disconnect the plug by holding the plug itself, not the wire:
  1. Fluid has splashed onto the pump.
  2. Pump needs maintenance or repair.
- The power socket should be equipped with a ground wire and properly grounded.

Note: Ensure that the foot pedal switch and other external control plugs are connected or disconnected only when the power is off, to prevent damage.

Table of contents

1. Product Overview

Basic model peristaltic pump with the super silent performance have become the best choice for laboratory, also widely used for analytical instrument.

The LabM series supports both manual speed adjustment and automatic control via the external interface. It features power-loss memory: upon restart, the pump resumes operation in the exact state it was in before power interruption. Timing test function, it is convenient for users to test the flow rate or calibration. It can support 7 different external control modes. It makes more convenient and flexible to use it.

This series products include many product types: LabM1, LabM3, LabM6, LabM1-II, LabM3-II, LabM1-III, LabM3-III, LabM6-III.

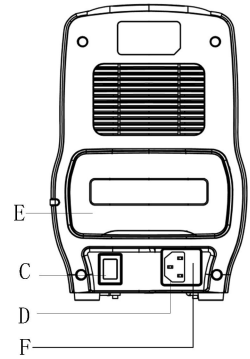
Suitable Pump Head: EasyPump, AMC (AMC1-AMC12), KD, YZ1515x, YZ2515x, MC (MC1-MC12), SN (SN15,SN25).

Typical Application:

University research institute laboratory dedicated;

Chromatography of ions, titration equipment.

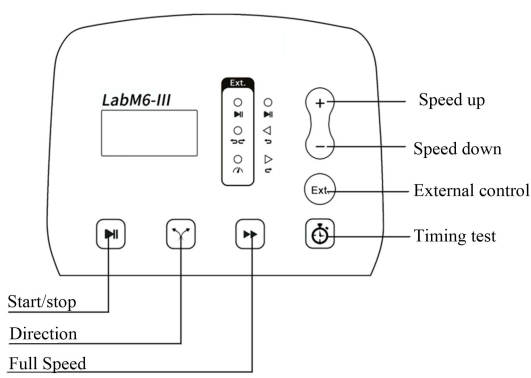
2. Product Appearance



A—— Drive B—— Pump Head C——Power Switch

D——Power Socket E——External Control F——Built-in Fuse

3. Operating Panel Instruction



- **Start/stop button**

This button controls the pump's start and stop functions. Press once to toggle the pump status. The Run indicator is ON when the drive is running and OFF when the drive is stopped.

To set the RS485 address, press and hold this key. This function is available only in internal control mode and when the drive is stopped. Press and hold the key for more than 5 seconds until the display digits begin to flash. Use the "+" and "–" keys to select the desired address. Once the address is set, press the Start/Stop key again to confirm and activate the new address.

- **Change direction button**

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

- **Speed up/down button**

This button used for increase or decrease the motor speed. When you press the **speed up / speed down** button, the motor speed increase or decrease 0.1rpm (When the

speed is greater than 100rpm, the motor speed increases/decreases by 1rpm). Keep pressing this button, the speed increase or decrease fast, to short the adjustment time.

- **Full speed button**

Under internal control mode, pressing **full speed** button, pump runs at the highest speed, the screen displays "Full". That is to 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 drive stops working. It is used for change different kinds of external control modes. It has 7 kinds of modes.

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

① The only mode of external control start/stop (the indicator light of external control start/stop is on; the indicator lights of external control direction and speed are off).

② The only mode of external control direction (the indicator light of external control direction is on; the indicator lights of external control start/stop and speed are off).

③ The only mode of external control speed (the indicator light of external control speed is on; the indicator lights of external control start/stop and direction are on).

④ The mode of external control start/stop and external direction (the indicator lights of external control start/stop and direction are on; the indicator light of external control speed is off).

⑤ The mode of external control start/stop and speed (the indicator lights of external control start/stop and speed are on; the indicator light of external control direction is off).

⑥ The mode of external control direction and speed (the indicator lights of

external control direction and speed are on; the indicator light of external control start/stop is off).

⑦ The mode of external control start/stop, direction and speed (the indicator lights of external control start/stop, direction and speed are all on).

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

- **Timing test button**

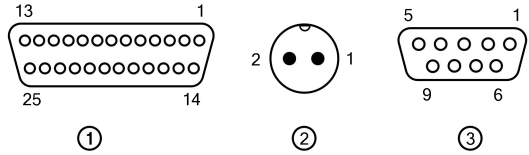
At status of manual control mode and the drive stop working, press **Timing test** button, the pump will run with current speed for 60 seconds (the default timing time is 60s) and will stop automatically. That is used to flow rate calibration and test (if press the start/stop button during test process, the pump will stop, and when test again, the drive will re-time.

At the status of internal mode and the drive stops working, to set the timing time, keep press **Timing test button** more than 5 seconds, the numbers will flashes. Press **+/-** button to adjust the time (Keep pressing the '+' or '-' key to increase or decrease rapidly), the setting range is 0.5s-999s. After setting, to press **timing test** button again back to the speed displayed interface.

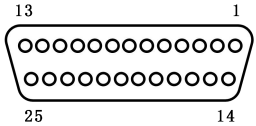
In external control speed mode, press the **Timing test** button to switch external control speed analog signal 0-5V, 0-10V, 4-20mA. (Analog signal distinguished according to different flashing frequency of external control speed control indicator light: 0-5V always on, 0-10V flashes once every 1 second,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

4. External Control Interface

The external control connector as the below shows:



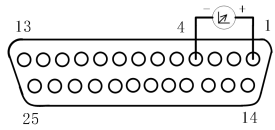
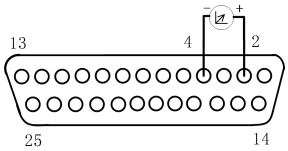
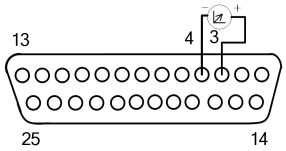
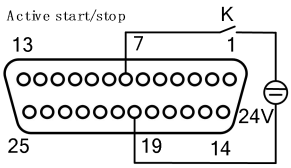
① DB25 external control connector instruction

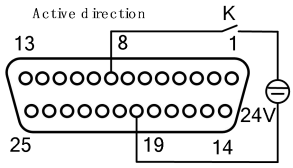
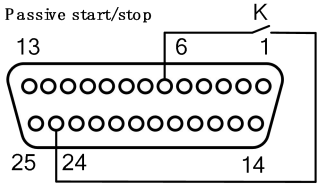
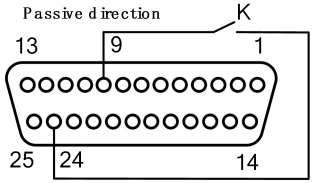


Pin	Pin Definition	Explanation	Note
1	0-5V	0V to 5V voltage signal input terminal	Analog signal input terminal
2	0-10V	0V to 10V voltage signal input terminal	
3	4-20mA	4-20mA current signal input terminal	
4	I_/V_	Analog signal negative terminal	
5	/	/	/
6	R/S1	External control start/stop signal with passive signal input	The passive switch or foot pedal switch can be connected between R/S1 and GD1 to control start or stop running.
7	R/S2	External start/stop signal with	This input terminal is for a

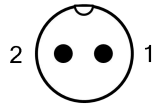
		active signal input	sourced signal with a voltage range of 5-24VDC on the positive terminal, and the negative terminal should be connected to GD2.
8	NC	External direction signal with active signal input	
9	CW/CCW	External direction signal with passive signal input	You can connect a passive switch between CW/CCW and GD1 to control the direction change
10	/	/	/
11	/	/	/
12	/	/	/
13	/	/	/
14	/	/	/
15	/	/	/
16	/	/	/
17	/	/	/
18	/	/	/
19	GD2	Sourced signal common terminal	/
20	/	/	/
21	/	/	/
22	/	/	/
23	/	/	/
24	GD1	Passive signal common terminal	
25	/	/	/

External control wiring and function description

<table>
<tr><th>Signal and wiring</th><th colspan="2">Function description</th></tr>
<tr><td>Analog:0-5V
 
</td><td colspan="2" rowspan="2">Analog signal input terminal: Turn on the Ext. Speed in external control setting interface, control the motor speed from 0 rpm to maximum speed through analog signal.
Notice: Please do not connect 0-10V signal to 0-5V terminal or 4-20mA input terminal. This is forbidden. Wrong connection may damage the pump.</td></tr>
<tr><td>Analog: 0-10V
 
</td></tr>
<tr><td>Analog: 4-20mA
 
</td><td>After selecting the external control start/stop mode, connect an external power supply of 5~24V. When switch K is closed, the peristaltic pump receives a start signal and begins to operate. Disconnecting K will stop the device from running.</td><td>The wiring here is for an external 5~24V power supply. Customers need to connect the lines according to the diagram provided to use the device correctly.</td></tr>
<tr><td>Active start/stop
 
</td><td colspan="2"></td></tr>
</table>

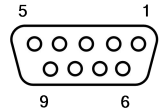
	After selecting the external control direction mode, connect an external power supply of 5~24V. When switch K is closed, the peristaltic pump receives a start signal and begins to run clockwise. Disconnecting K will cause the device to run counterclockwise	
	After selecting the external control start/stop mode, when switch K is closed, the peristaltic pump will run, when switch K is disconnected, the peristaltic pump will stop.	
	After selecting the external control direction mode, when switch K is closed, the peristaltic pump will run clockwise, when switch K is disconnected, the peristaltic pump will run counterclockwise.	

② XS6 Connector



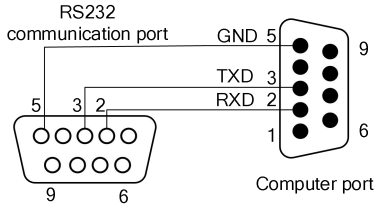
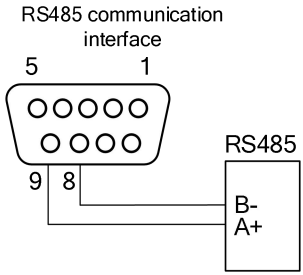
Pin	Pin Definition	Explanation	Note
1	R/S1	External control start/stop signal with passive signal input	The passive switch or foot pedal switch can be connected between R/S1 and GD1. After selecting the external control start/stop mode, controlling start/stop
2	GD1	Passive signal common terminal	

③ DB9 Connector



Pin	Pin Definition	Explanation	Note
1	/	/	/
2	RS232-TXD	Signal transmitted by peristaltic pump, received by upper computer	
3	RS232-RXD	Signal received by peristaltic pump, transmitted by upper computer	
4	/	/	/
5	GND	RS232 communication ground port	
6	/	/	/
7			
8	RS485-B	Connect RS485 B- terminal	
9	RS485-A	Connect RS485 A+ terminal	

Communication wiring and function description

Signal and wiring	Function description
	RS232 communication interface: Connect the lines according to the diagram provided. Once properly connected, this port will be active.
	RS485 Communication Interface: Connect the lines according to the diagram provided. Once properly connected, this port will be active, and the communication protocol used is the standard Modbus protocol

5. Technical Specification

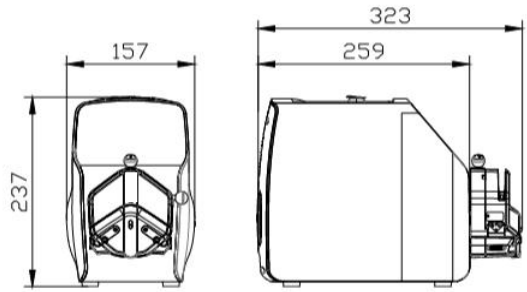
Communication port	RS232 RS485: Modbus protocol	Power supply	AC220V±10%, 50Hz/60Hz (standard) AC110V±10%, 50Hz/60Hz (optional)
Test time range	0.5s-999s	External control method	Passive switching signal: foot pedal switch Active switching signal: 5-24V
External control speed signal	Selectable from 0–5 V, 0–10 V, or 4–20 mA	Speed resolution	0.1-100rpm is 0.1rpm 100-600rpm is 1rpm
Drive weight	4.40kg	Drive dimension (L*W*H)	259*157*237mm
Speed range	LabM1, LabM1-II, LabM1-III		0.1-150rpm
	LabM3, LabM3-II, LabM3-III		0.1-350rpm
	LabM6, LabM6-III		0.1-600rpm
Operation method	Mechanical keypad	Display method	3-bit LED
IP rate	IP31	Power consumption	<50W
Relative humidity	<80%	Temperature	0-40℃

6. Main Functions and Features

- Membrane keypad control speed, also can be controlled automatically with external control interface. Easy operation.
- Can connect with dispensing controller, reach 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.

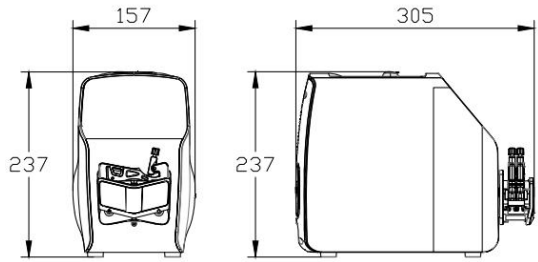
7. Dimension Drawing

(Unit: mm)



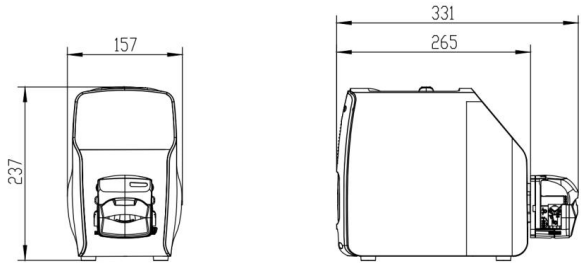
LabM+EasyPump

Note: For each additional pump head in series, the longitudinal dimension will be increased by 61mm.



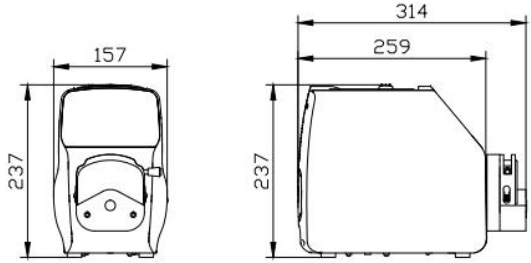
LabM+AMC2

Note: For each additional channel, the longitudinal dimension will be increased by 10mm.



LabM+ KD Pump head

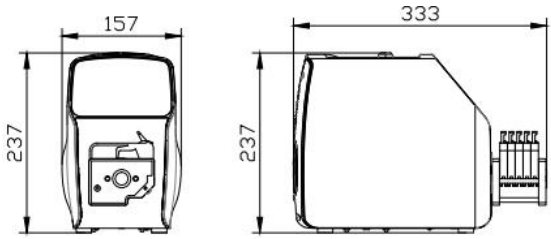
Note: For each additional pump head in series, the longitudinal dimension will be increased by 63mm.



LabM+YZ1515x/YZ2515x

Note: For each additional pump head in series, the longitudinal dimension will be

increased by 54mm.



LabM+MC5

Note: For each additional channel, the longitudinal dimension will be increased by 10mm.

8. Product Maintenance

- Verify the pump current operational status before turning on power. Operate only under normal conditions.
- Inspect for fluid leakage and promptly address any potential faults.
- Clean any spilled liquid around the pump promptly.
- If liquid splashes on the pump, turn off and unplug the power supply, check for internal leakage, and contact the manufacturer if liquid has entered the equipment
- Ensure that the foot pedal switch and other external control plugs are connected or disconnected only when the power is off, to prevent damage.
- The power socket should be equipped with a ground wire and properly grounded.
- This product is not designed to be waterproof. Operators are advised to implement appropriate protective measures when operating in wet environments.
- This product is not equipped with special certifications, such as medical certification. For applications in specialized fields like medical or military, users are responsible for conducting their own certification/validation.
- If the product will not be used for an extended period of time, please clean it

thoroughly and store it in a dry, well-ventilated area.

- The company is not liable for any losses resulting from product malfunctions or misuse of the product.

9. Warranty and After-Sales Service

A three-year warranty is provided for the pumps, with certain exceptions outlined below. The company is not responsible for any loss, damage, or expenses that are directly or indirectly associated with the use of its products. The warranty does not require the company to cover costs related to removal, installation, transportation, or other charges incurred in connection with a warranty claim.

If a pump fails within the warranty period, and the issue is confirmed by the company's technical department, spare parts will be supplied at no additional charge. Shipping costs must be covered by the customer.

Warranty Exceptions:

- The warranty does not cover repairs or service needed due to normal wear and tear, or insufficient maintenance.
- Tubing and pumping accessories, classified as consumable items, are not included under warranty.
- Failures caused by electrical surges are excluded from coverage.
- Damage resulting from chemical exposure is excluded.
- Failures due to improper operation or intentional damage are not covered.

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MADE IN CHINA