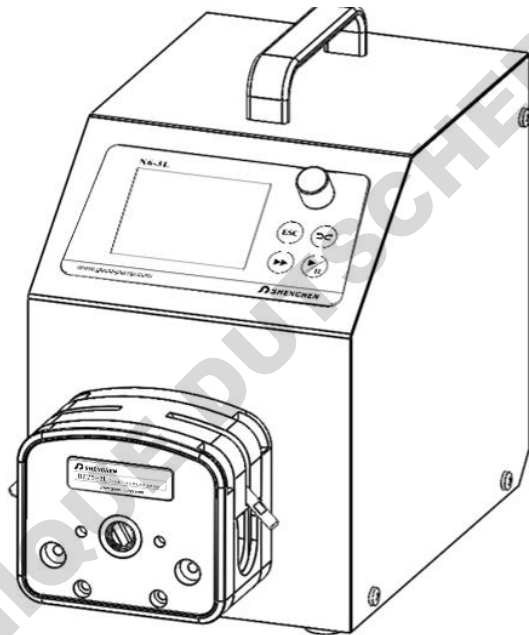


Shenchen Precision Pump

Manual of N6 Series





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: When connect foot pedal switch or external control, must turn off the pump.

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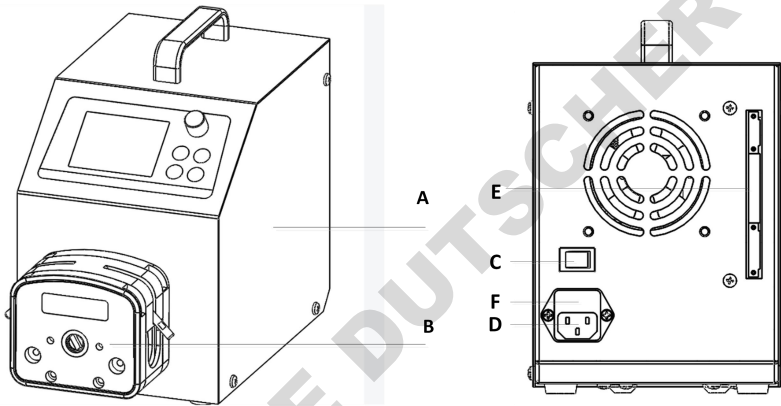
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1. N6 Series Product Introduction

N6 series products with 303 stainless steel housing, 3.2 inch LCD screen display; support variety of external control, RS232/RS485 communication, standard MODBUS protocol (RTU mode), meet different requirements.

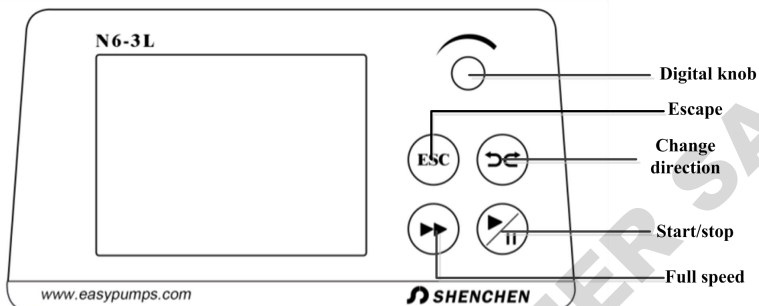
Suitable head: DZ25-3L, DZ25-6L, YZ35

2. N6 Series Product Appearance



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

3. N6 Series Keypad Instruction



Start/stop button: Press this button, the pump start running. Press this button again, pump stop running.

Change direction button: Press this button to change the pump running direction.

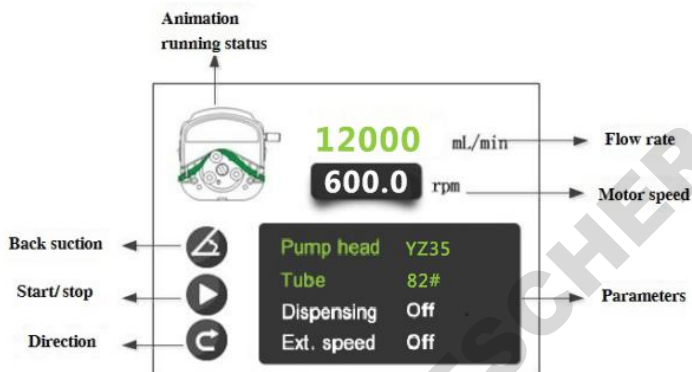
Full speed button: When the pump is stop or in transferring state, press this button, pump will run with full speed. This function used for fast fill liquid into tube or wash the tube. In dispensing function, this button is invalid.

Digital knob: Turn this knob to adjust the speed/flow rate. When the pump is in stop status, press this knob to enter **menu interface**, turn and press the knob to set the parameters.

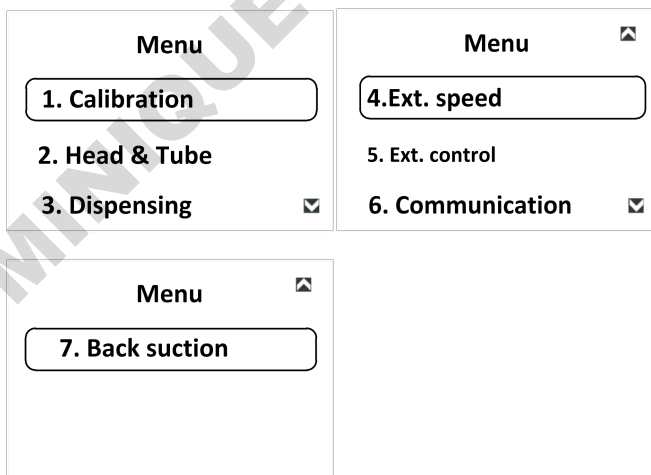
ESC button: In menu interface, press this button back to previous menu. In stop status, press this button more than 5 seconds, to check the pump SN code and programme version.

4. N6 Series Operation Interface

4.1 Main Interface

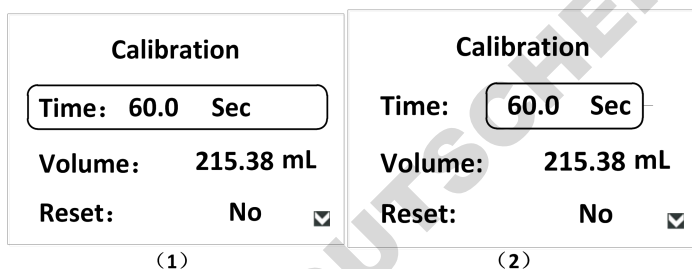


4.2 Menu Setting Interface



Steps:

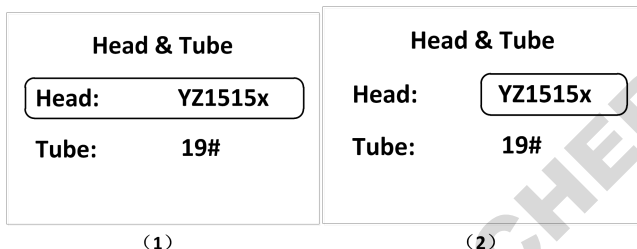
- A. Press [digital knob] in the main interface to enter the menu setting interface, press again to select the setting parameters.
- B. Turn the [digital knob] to move up and down to select the parameter to be set.
- C. Press [digital knob] to enter the next setting parameters interface.
- D. Press [ESC] to back to main interface.

4.2.1 Calibration Interface

Steps:

- A. After entering this interface, the test time defaults to 60 seconds, and the actual liquid volume defaults to the liquid volume displayed according to the current set flow rate.
- B. Press the [digital knob] key to select the **test time**. In the (1) state, turn the [knob], move the cursor to the [volume] line, and then press the [Start] button to start the pump for calibration. A countdown is displayed at the test time.
- C. You can also switch to the (2) state by pressing the [digital knob] in the (1) state, then turn the [digital knob] in the (2) state to **set the test time**.
- D. After the countdown is over, the cursor jumps directly to the actual liquid volume, then **turn the knob enters the actual liquid volume**.
- E. After enter the actual volume, press the [digital knob] to confirm the entry. The 'Calibration finished!' dialog box will pop up. Press the knob again back to calibration interface.

F. **Reset** function: Select ‘Yes’ and press [digital knob], the ‘Reset calibration finished!’ dialog box will pop up, the calibrate factor been restored.

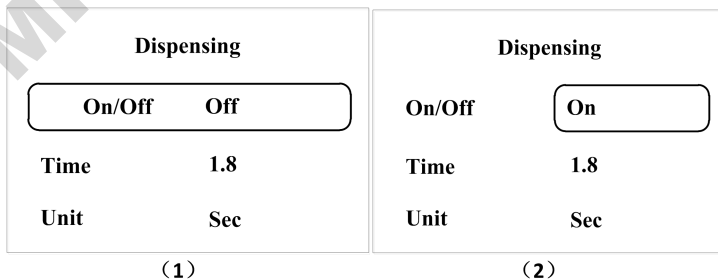
4.2.2 Select Pump Head & Tube Interface



Steps:

- a. Select the pump head model by pressing the [digital knob] in Head & Tube interface. In the (1) state, turn the [digital knob] to move the cursor up and down to select set pump head or tube size.
- b. In the (1) state, press the [digital knob] to switch to the (2) state.
- c. In the (2) state, turn the [digital knob] to select the pump head model.
- e. In the (2) state, press the [digital knob] or [ESC] to return to the (1) state and confirm the selected pump head or tube size.

4.2.3 Dispensing Interface



Steps:

- A. Press [digital knob] in the dispensing interface, the interface turn to (1) state.
Turn the knob to select setting On/Off, Time or Unit.
- B. In (1) state, press the knob change the interface to (2) state.
- C. In (1) state, press [ESC] back to menu interface.
- D. In (2) state, turn knob to turn On/off dispensing function, or set the dispensing time(0.1-9999s), or set the time unit (second, minute, hour).
- E. In (2) state, press knob or [ESC] back to (1) state and confirm the setting parameters.

Note: 1. After turn on the dispensing function, the pump will stop automatically when reach the setting time.

2. After turn on the dispensing function, external control speed is invalid.

4.2.4 External Control Speed Interface

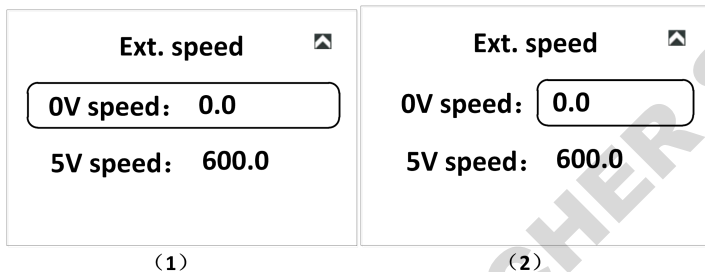
Ext. Speed	Ext. speed
On/Off: Off	On/Off: Off
Signal: 0-5V	Signal: 0-5V
Max. Speed: 600.0 <input checked="" type="checkbox"/>	Max. Speed 600.0 <input checked="" type="checkbox"/>
(1)	(2)

Steps:

- A. Press [digital knob] on the external control speed interface to select the external control speed. In the (1) state, turn the knob to move up and down to select the external control speed, signal type or maximum speed.
- B. In the (1) state, press knob to the (2) state.
- C. In the (1) state, press the [ESC] back to menu interface.
- D. In the (2) state, turn the [digital knob] to select the external control speed control on/off or select the signal type: 0-5V/0-10V/4-20mA or select the maximum speed.

E. In the (2) state, press the [digital knob] or [ESC] to return to the (1) state and confirm the selected item.

F. In the (1) state, turn the [digital knob] clockwise to enter the external control speed customization interface, as shown below:



G. In the (1) state, turn the [digital knob] to select (4mA corresponding speed: 0) or (20mA corresponding speed: 600).

H. In the (1) state, press the [digital knob] to the (2) state.

I. In the (1) state, press the [ESC] to return to the [Setup Menu Selection Screen]

J. In the (2) state, turn the [digital knob] to set the corresponding speed for each part.

K. In the (2) state, press the [digital knob] or the [ESC] to return to the (1) state and confirm the selected item.

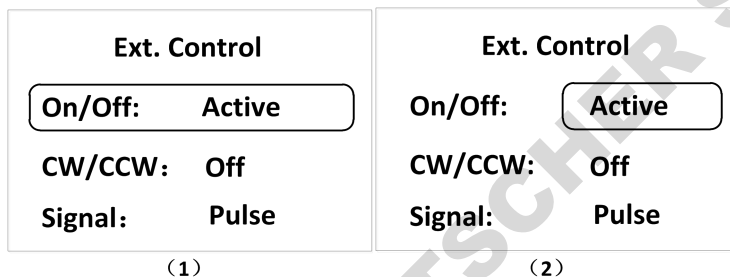
External control speed limit

Select external control signal according to external input signal, 0-5V, 0-10V, 4-20mA for option. External control speed can set the maximum speed, when the maximum speed is 600rpm, the analog signal voltage range has a linear relationship with the motor speed.

If the maximum speed is not 600 rpm, the motor speed will be limited by the analog signal. When the motor speed and the analog signal amount reach the set maximum speed according to the corresponding proportional relationship, then when the analog signal amount is increased, the motor speed is set by The operation at a fixed maximum speed does not follow the increase of analog signal quantity. For example:

set 0V to 0 rpm, 5V to 600 rpm (2.5V should be 300 rpm), the maximum speed is set to 300 rpm, if the external input analog signal is 2.5V, then the motor speed is 300 rpm, input signal The motor speed remains unchanged at 300 rpm after exceeding 2.5V.

4.2.5 External Control Interface



Operation steps:

- A. In the (1) state, turn the [digital knob] to select the external control start/stop, change direction or signal type.
- B. In the (1) state, press the [digital knob] to the (2) state.
- C. In the (1) state, press the [ESC] to return to the menu interface.
- D. In the (2) state, turn the [digital knob] to select the external control start/stop on/off or external control direction on/off or select the signal type: level/pulse (in level mode, the corresponding internal control buttons are invalid.)
- E. In the (2) state, press the [ESC] or the [digital knob] to back to the (1) state and confirm the selected item.

External control full-speed function is level mode. Connect to full speed, stop full speed after disconnection;

External control start/stop, change direction signal is active signal and passive signal.

External control start/stop, change direction signal: Level mode and pulse mode,

detailed interface refer to external control interface instruction.

After turn on the dispensing function, external control start/stop only valid in pulse mode, invalid in level mode.

External control have independent switch, only works when the corresponding external control function is turned on

4.2.6 Communication Setting Interface

Communication	Communication
Address: 1	Address: 1
Port: RS485	Port: RS485
Baud Rate: 9600	Baud Rate: 9600
(1)	(2)

Operation steps:

Serial communication is always on and the On/Off option is not set.

A. In the (1) state, turn the [digital knob] to select setting local address, communication port or Baud rate.

B. In the (1) state, press the [digital knob] change to the (2) state.

C. In the (1) state, press the [ESC] to return to menu interface.

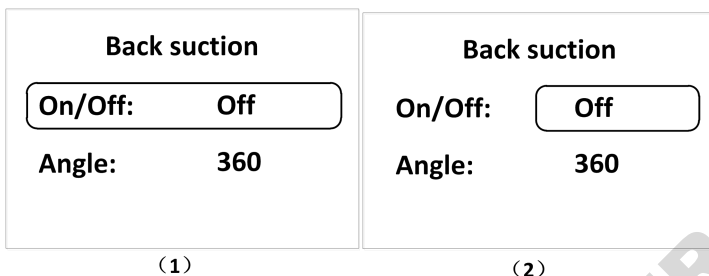
E. In the (2) state, turn the [digital knob] to select the local address (01-32) or the interface to select RS232/RS485 or baud rate selection: 2400/4800/9600/19200.

F. In the (2) state, press the [ESC] or the [digital knob] to return to the (1) state and confirm the setting parameters.

Note: 1. N6 series pump support Modbus communication protocol-- RTH mode, communication port RS232 or RS485, baud rate 9600.

2. After the setting is completed, **the pump only receive communication signal control in main interface**; in other setting interface, the communication is invalid.

4.2.7 Back Suction Interface



Operation steps:

- A. In the (1) state, turn the [digital knob] to select setting on/off or suction angle.
- B. In the (1) state, press the [digital knob] change to the (2) state.
- C. In the (1) state, press the [ESC] to return to menu interface.
- D. In the (2) state, turn the [digital knob] to set the back suction function on/off or to set the back suction angle (0-360).
- E. In the (2) state, press the [ESC] or the [digital knob] to return to the (1) state and confirm the setting parameters.

Note: When the back suction is off, the main interface does not display the back suction sign. Only when the back suction is turned on, the main interface will display the back suction sign.

5. N6 Series Technical Specification

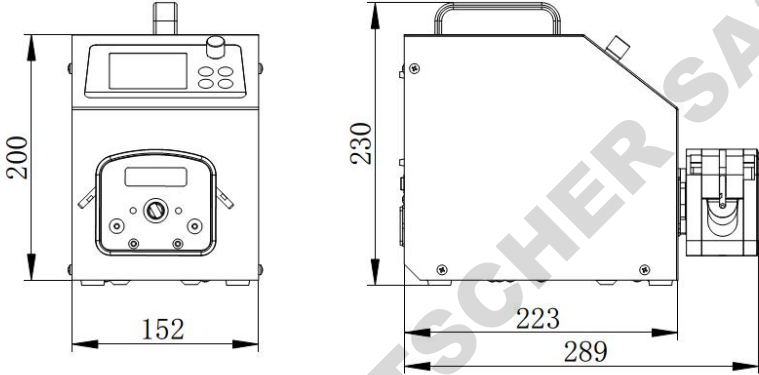
Speed range	0.1-600rpm	Power supply	AC220V±10%, 50Hz/60Hz (standard)
		Power consumption	AC110V±10%, 50Hz/60Hz (option) N6-3L: <80W N6-6L: <180W N6-12L: <300W
Speed resolution	0.1rpm	Communication Interface	RS232 /RS485, Modbus protocol (RTU mode)
Control	Mechanical keypad and digital knob	Dimension (L*W*H)	N6-3L:223*152*236mm N6-6L:283*192*274mm N6-12L:302*222*331mm
Display	3.2 inch LCD screen	Weight	N6-3L: 5.40Kg N6-6L: 9.75Kg N6-12L: 14Kg
Start/stop, change direction signal	Passive switch signal, such as: foot switch; Active switch signal: 5V-24V	Relative humidity	<80%
		Condition temperature	0-40℃
External speed control	0-5V, 0-10V, 4-20mA for optional	IP rate	IP31

6. N6 Series Main Functions & Features

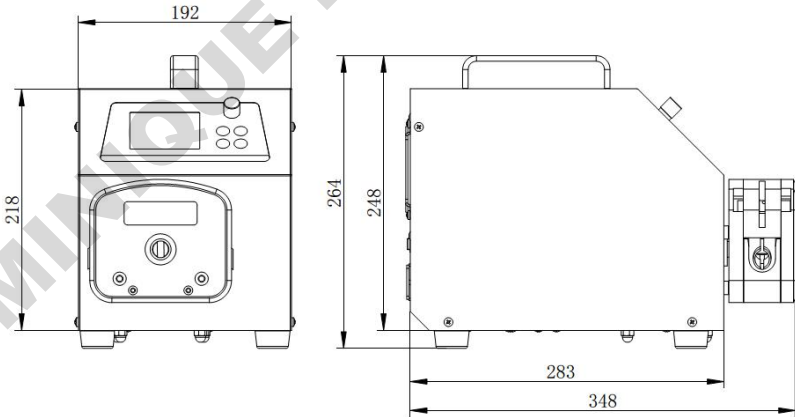
- 3.2 inch big screen LCD display working parameters in real time
- Super silent drive setting, precise control, low vibration and low noise.
- Mechanical keypad and digital knob control, convenient for users setting the parameters.
 - Timing function, the time range is 0.1s-9999 hours, can be used for simple dispensing function.
 - Various external control functions, support 0-5V, 0-10V, 4-20mA analog signal control speed.
 - Power down memory function, store parameters in time, safe and reliable.
 - Strong anti-jamming feature, wide voltage design, suitable for complex power supply environment.
 - Fast fluid-filled function, not only can clean the tubing, but also fill liquid into the tubing.
 - High torque and low power loss, it can load several pump heads or multichannel pump head, meet different application requests.

7. Product Dimension (Unit: mm)

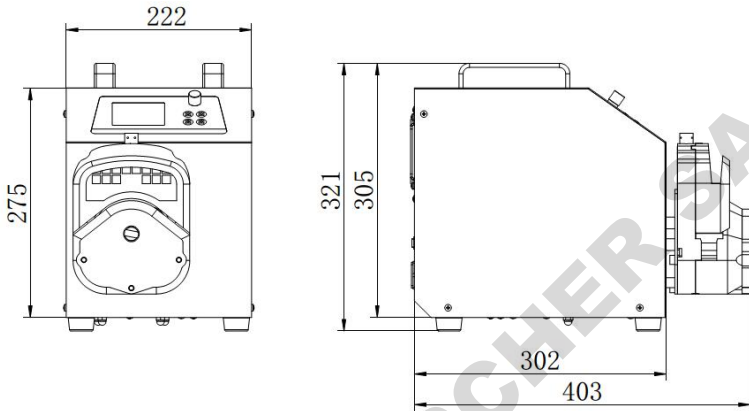
N6-3L/DZ25-3L



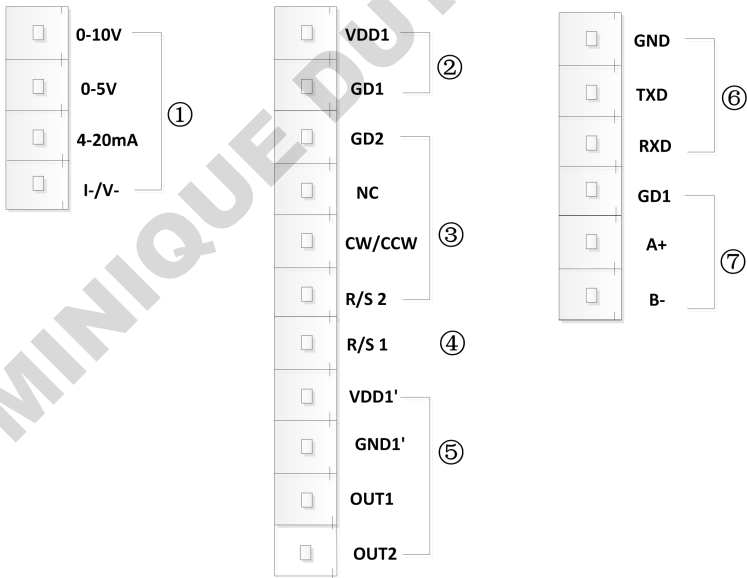
N6-6L/DZ25-6L



N6-12L/YZ35



8. External Control Instruction



① **Analog signal input port:** Turn on external control speed function in external control setting interface, control the pump speed from 0rpm to maximum speed through analog signal.

0-10V: 0V to 10V voltage signal input terminal.

0-5V: 0V to 5V voltage signal input terminal.

4-20mA: 4mA to 20mA current signal input terminal.

I_/V_: Analog signal negative terminal.

Note: It is forbidden to connect 0-10V signal to 0-5V or 4-20mA input terminal. Wrong connection may cause pump damage.

② **Internal isolation 5VDC output**

③ **External control start/stop, change direction, full speed signal input terminal:** Active signal input, 5V-24V.

GD2: External control signal input common terminal

NC: External control full speed signal input terminal

CW/CCW: External control direction signal input

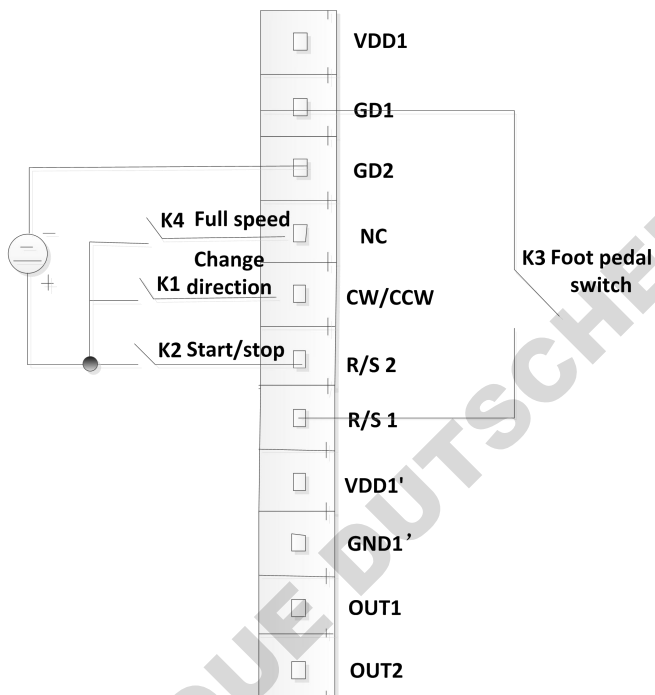
R/S 2: External control start/stop signal input

Set the external control mode in the external control setting interface and enable the corresponding external control function. The signal at the external control signal input terminal is valid. (The external control full-speed signal defaults to the level mode, short connect start, disconnect stop, no need to turn on in the setting interface)

④ **R/S1 external control start/stop signal input terminal:** Passive signal input.

This terminal can connect with passive switch or foot pedal switch, in external control setting interface to enable this terminal--Foot pedal switch.

External control wiring connection as below:



A. In pulse mode: Disconnect **K2** after short connect, the motor start running, disconnect again after short connect, motor stop running. **In level mode:** Short connect **K2**, motor start running; disconnect **K2**, motor stop running.

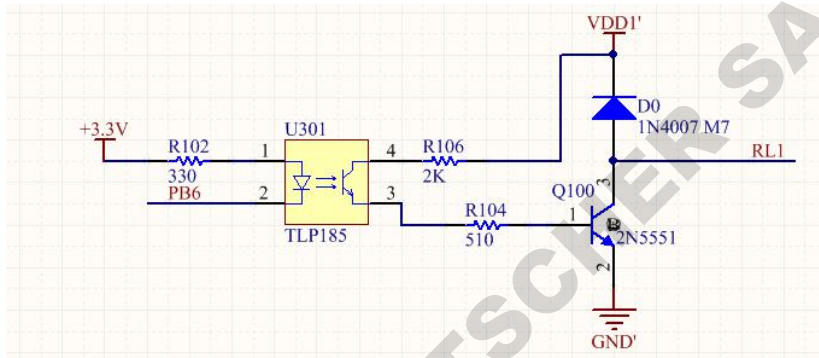
B. In pulse mode: Disconnect **K1** after short connect once, the motor change direction once. **In level mode:** Short connect **K1**, motor running clockwise; disconnect **K1**, motor running anticlockwise.

C. In pulse mode: Disconnect **K3** after short connect, motor start running; disconnect again after short connect, motor stop running. **In Level mode:** short connect **K3**, motor start running; disconnect **K3**, motor stop running.

D. Short connect **K4**, motor running with **full speed**; disconnect **K4**, motor back

to the state before running at full speed. (External control full speed default is level mode.)

⑤ The motor working status output terminal: Output motor working status as below:



If connect with external relay, when motor is running, K1 is connect; when motor is stop, K1 disconnect.

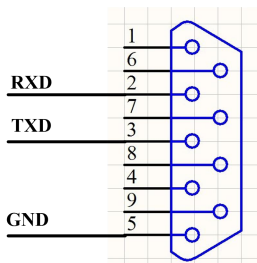
⑥ **RS232 communication** terminal: Select RS232 in communication setting interface, then this terminal is effective.

GND: Communication ground terminal

TXD: The external controller send, peristaltic pump receive signal terminal

RXD: Peristaltic pump send, external controller receive signal terminal.

Connect with computer RS232 communication interface connection wiring diagram as below:



⑦ **RS485 communication terminal:** Select RS485 in communication setting interface, then this terminal is effective.

GD1: RS485 signal ground

A+: Connect with RS485 A+ terminal

B-: Connect with RS485 B- terminal

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9. 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.

10. 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.

DOMINIQUE DUTSCHER SAS

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