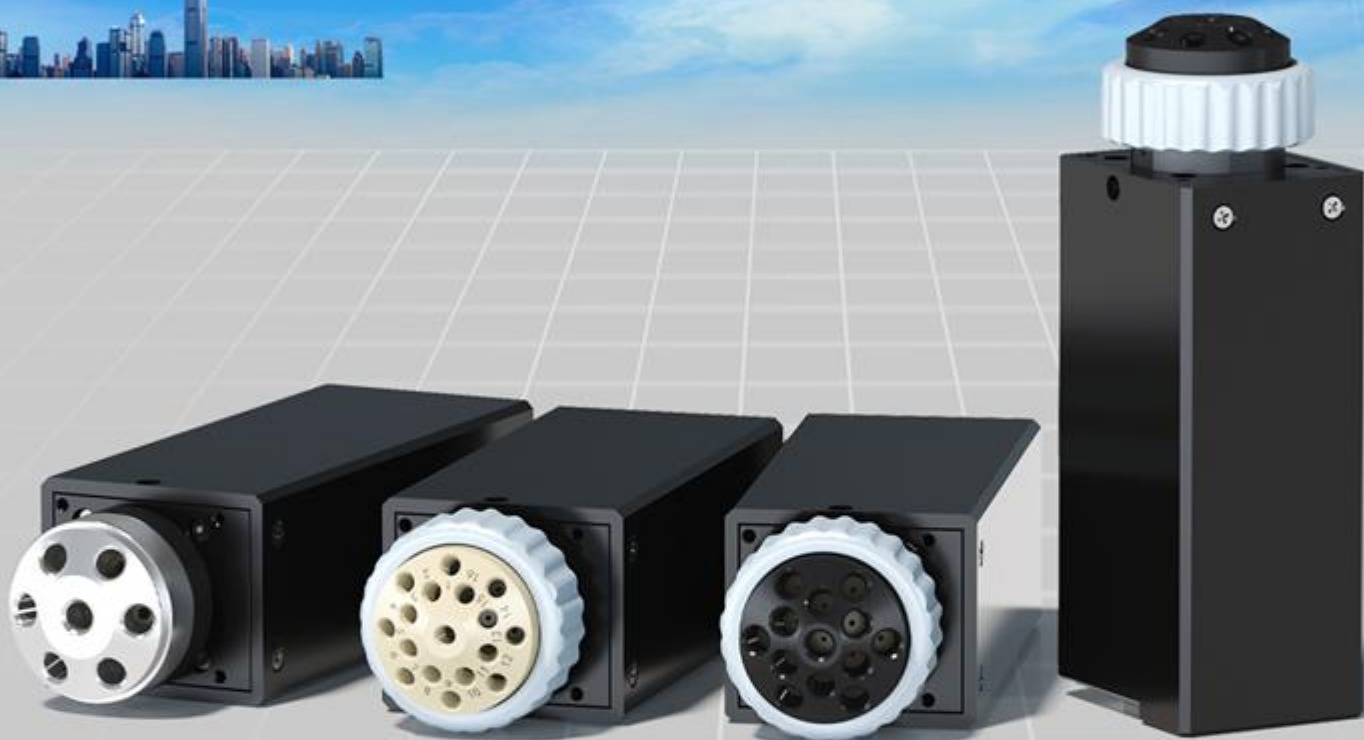




V 1.3

SV-07M Selector valve Manual

南京润泽流体控制设备有限公司
NANJING RUNZE FLUID CONTROL EQUIPMENT CO.,LTD

Note: This manual applies to the RUNZE protocol of the infusion pump. If you are unsure of the protocol currently used by the pump, please first refer to P21 [Query and Switch Protocol].

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Chapter 1: Overview and Precautions

1.1 Company Overview

Nanjing RunZe Fluid Control Equipment Co., Ltd. was established in 2014 as a supplier of analytical instrument components and a national high-tech enterprise focused on the research and development of fluid components. The product range includes injection pumps, selector valves, high-pressure valves, gas-tight samplers, peristaltic pumps, pipeline connectors, and other standard products. The company covers the entire industrial chain from product customization, design and development, manufacturing, sales, and after-sales service, consistently providing high-quality products and services to fields such as environmental monitoring, biopharmaceuticals, medical equipment, industrial automation, and laboratory instrumentation.

Since its establishment, RunZe has obtained ISO9001 certification and has been recognized as a "National High-Tech Enterprise" and "Jiangsu Province Private Technology Enterprise," among other certifications. It has also been rated as a 5A credit user by Bank of Nanjing. Through its pursuit of high technology and years of R&D investment and accumulation, by 2022, the company had obtained nearly a hundred patents in the fluid field and multiple software copyrights.

RunZe consistently focuses on strategy and independent innovation, accurately grasping the major trends in the fluid equipment industry. The company has made continuous and substantial R&D investments in core technologies for its product series, giving it a tremendous advantage in the production and sales of analytical instrument components and keeping it at the forefront of the industry. RunZe's technology center possesses a series of advanced processing equipment and testing instruments, including an EMC reliability laboratory, imported white light interferometer, Keyence plane rapid detection device, five-axis machining center, high-precision nano-grinding machines, and more. The company employs leading production processes and technologies, fully implementing lean production concepts to maintain professional world-class manufacturing capabilities.

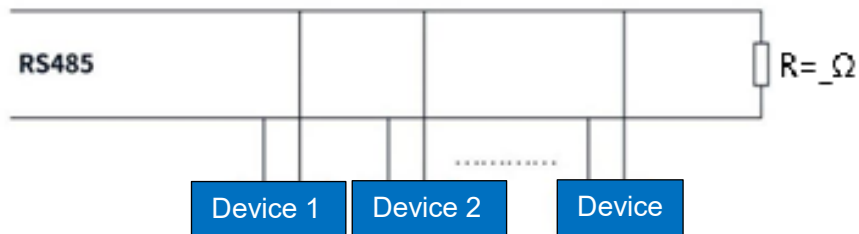
1.2 Product Overview

The SV07M Multi-Position Switching Valve is a switching valve designed to perform fluid path selection by receiving commands from the host controller. It operates a stepper motor to rotate the rotor to the specified port position, thereby achieving precise channel switching.

1.3 Precautions

- After powering on, allow at least a 1-second delay before communicating or operating. This mainly applies to scenarios where valve switching occurs directly without automatic reset at power-up.

- Please ensure effective grounding of the product to prevent interference. See Section 3.3 for grounding method instructions.
- Please use the original serial cable and power connection supplied with this product.
- Ensure that the voltage matches the instrument's standard voltage.
- The two communication modes (RS232/RS485) of this product operate in non-isolated mode.
- For any unused ports, please use the matching plugs and gaskets to seal them tightly to prevent impurities and airflow from entering the valve body and affecting normal use.
- Do not disassemble the product components arbitrarily. Warranty is void if the anti-tampering label is damaged.
- For software operation, please refer to the software operation instructions and communication protocol. Do not fabricate input data without authorization.
- When disposing of the instrument, please follow the regulations for instrument equipment waste disposal. Please handle waste after using this machine according to national environmental protection requirements. Users should not discard it arbitrarily.
- When connecting multiple devices using the RS485 bus protocol, please refer to the connection method shown in the diagram below. However, the resistance value should be determined based on the number of devices connected by the user.



Chapter 2: Main Technology and Functions

2.1 Product Features

(1) Name

The multi-position switching valve is an electrically actuated sample injection valve developed in-house by Nanjing Runze Fluid Control. It is also referred to as an electric rotary valve or electric switching valve.

(2) Control Method

The valve operates by receiving commands from the host controller, which drives a stepper motor to rotate the rotor to a specified port, enabling fluid path switching. Serial communication protocols supported include **RS232** and **RS485**.

(3) Valve Head Structure

The valve core uses a multi-directional self-adaptive flat contact design, which significantly extends product life. *(This design has been granted a utility model patent: CN204852471U.)*

The ceramic valve core offers exceptional wear resistance, high temperature resistance, corrosion resistance, excellent sealing, low friction, and long service life.

Its application greatly enhances the reliability and longevity of the product while significantly reducing maintenance costs and operational risks. The ceramic valve core performs well under high-pressure and high-temperature conditions, offering superior durability.

The valve head utilizes advanced ceramic grinding technology, achieving nano-scale flatness and surface roughness, which boosts pressure tolerance, reduces leakage risk, and ensures system stability and operational safety.

(4) Valve Head Options

Standard ceramic valve head models for SV07M include: T06, T08, T10, T12, T16, T24, and T28.

Custom configurations are supported for both port diameter and number of valve ports.

Customers can choose from fully ceramic valve heads or request customized configurations.

Complete valve head module replacement is also supported.

(5) Positioning

Port positioning uses an absolute rotary encoder, which improves contamination resistance and error correction.

In harsh electromagnetic environments, the absolute encoder provides strong self-recovery capabilities, ensuring reliable performance.

(6) EMC Interference Immunity

The SV07M has passed rigorous EMC (Electromagnetic Compatibility) testing, including:

- Radiated emissions
- Conducted emissions
- Electrostatic discharge (ESD) immunity
- Electrical fast transient/burst (EFT) immunity
- Surge immunity

These features significantly enhance anti-interference performance, enabling stable operation in complex electromagnetic environments and reducing malfunctions or false triggering caused by EMI.

(7) Communication Protocols

Compatible with both custom protocols and ASCII-based protocols, which can be switched via command.

Modbus protocol support is available upon request (customizable).

(8) Drive Module

Uses a two-phase bipolar stepper motor driver with constant current control, featuring:

- High-efficiency current regulation
- Built-in fault detection circuit
- Fault output signals (TSD/ISD)

(9) Controller Interface

Connector: XH terminal, 2.50 mm pitch

(10) Application

Switching valves are widely used in fluid sampling and distribution systems.

(11) Application Scenarios

Ideal for use in:

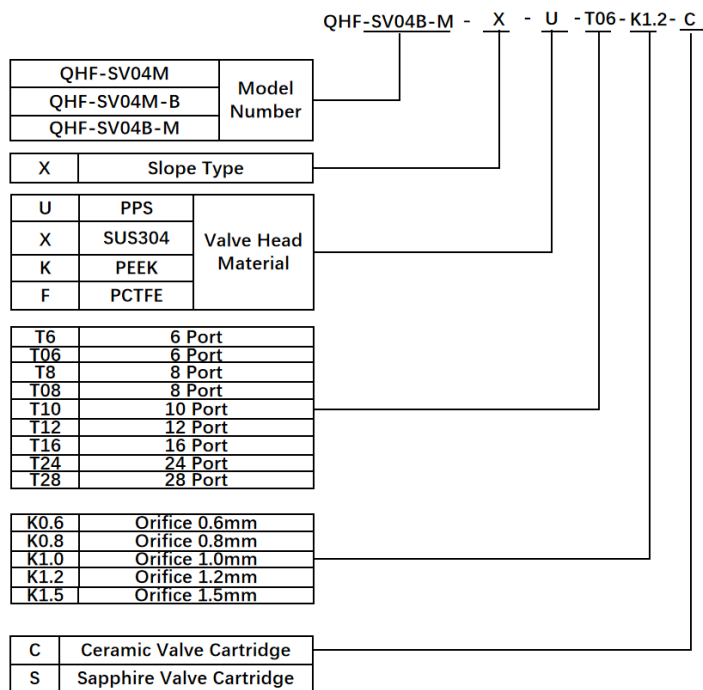
- Environmental monitoring instruments
- Laboratory analysis equipment
- Medical diagnostic instruments
- Chromatography systems, etc.

Note: Please read the User Manual carefully before operating the motorized injection valve, and strictly follow the instructions provided.

2.2 Naming Rules and Selection

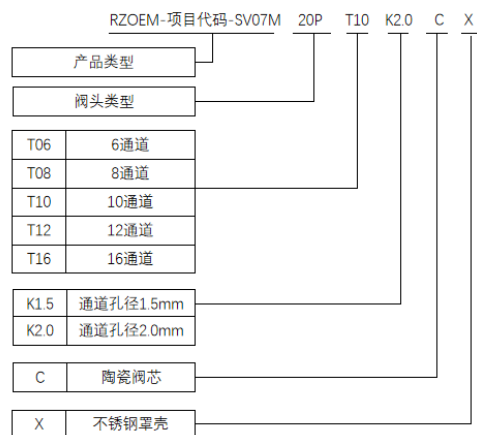
2.2.1 Model Parameters

1. Standard Models (channel inner diameter: 0.6/1.0/1.2 mm): Switching valves are standardly selected by the number of flow channels, including 6/8/10/12-channel, 16-channel, and 24/28-channel models.

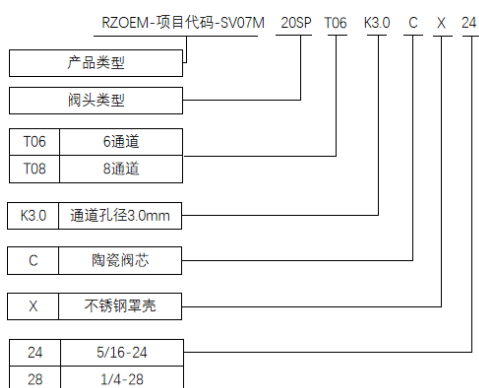


2. Custom Models:

① Large-aperture valve heads (Channel inner diameter: 1.5 / 2.0 mm): The TC20P valve head is available in 6-channel, 8-channel, 10-channel, 12-channel, and 16-channel configurations.



② Large-Aperture Valve Head (Channel inner diameter: 3.0 mm): The TC20SP valve head is available in 6-channel and 8-channel configurations.



2.3 Product Technical Parameters

Standard Models Selection Table (Channel Inner Diameter: 0.6 mm / 1.0 mm / 1.2 mm)					
Name	Specifications				
Valve head material	PPS OEM: PEEK /PCTFE /SUS304	SUS304 OEM: PEEK /PCTFE	PEEK		
Channels	6/8/10	12	16	24	28
Flow Path Diameter	1.2mm	1.2mm	1.0mm	0.6mm	0.6mm
Port-to-Port Volume (Dead Volume)	27.5μl	26.3/27μl ^{注1}	24.1/25.1μl ^{注1}	4.4μl	4.7μl
Rotor Groove Volume (Dead Volume)	5μl	5μl	3.1μl	1.3μl	1.55μl
Tubing Interface (Female Thread)	1/4-28UNF	1/4-28UNF	10-32UNF	6-40UNF	6-40UNF
Wetted Materials	Alumina Ceramic				
Pressure Rating	Air: 0-0.6 Mpa; Water: 0-1.0 MPa				
Initial Position Detection	Automatically detects home position upon power-on (configurable: enable or disable))				
Valve Head Liquid Contact Temperature	Maximum Tested Temperature: 100 °C				
Replaceable Parts	Valve head assembly				
Switching Performance	Multi-position, random start				
Optional Driver Board	No				
Switching Time	4 seconds / cycle				
Home Position	Port No.1				
Homing Direction	CCW				
Communication Interface	RS232/RS485				
Communication Baud Rate (or: Communication Speed)	9600bps、19200bps、38400bps、57600bps、115200bps				
Communication Protocol	RUNZE/ASCII, (Modbus available upon request)				
Power Supply Requirements (or: Applicable Power Supply)	24V/3A				
Operating Ambient Temperature	0°C ~ 50°C				
Operating Relative Humidity	≤80% non-condensing				
Dimensions (L × W × H, mm)	60x51x158.9	60x51x158.7	60x51x158.7	60x51x158.7	60x51x158.7
Device Weight	0.85kg (For reference only)				

Customized Model (Channel Aperture 1.5/2.0/3.0mm) Selection Table				
Name	Specifications			
Valve head model	TC20P			TC20SP
Valve head material	SUS304 and Alumina Ceramic			
Channels	6/8/10/12		16	6/8
Flow Path Diameter	1.5mm	2.0mm	1.5mm	3.0mm

Port-to-Port Dead Volume	47.8μl	84.2μl	49.6 /51.5μl ^{注1}	199.8μl
Rotor Groove Dead Volume	18.3μl	31.7μl	18.3μl	81.4μl
Tubing Interface (Female Thread)	1/4-28UNF		1/4-28UNF	1/4-28UNF、5/16-24UNF
Wetted Materials	Alumina Ceramic			
Pressure Rating	Air: 0–0.6 Mpa; Water: 0–1.0 MPa			
Initial Position Detection	Automatically detects home position upon power-on (configurable: enable or disable)			
Valve Head Liquid Contact Temperature	Maximum Tested Temperature: 100 °C			
Replaceable Parts	Valve head assembly			
Switching Performance	Multi-position, random start			
Optional Driver Board	No			
Switching Time	4 seconds / cycle			
Home Position	Port No.1			
Homing Direction	CCW			
Communication Interface	RS232/RS485			
Communication Baud Rate (or: Communication Speed)	9600bps、19200bps、38400bps、57600bps、115200bps			
Communication Protocol	RUNZE/ASCII, (Modbus available upon request)			
Power Supply Requirements (or: Applicable Power Supply)	24V/3A			
Operating Ambient Temperature	0℃ ~ 50℃			
Operating Relative Humidity	≤80% non-condensing			
Dimensions (L × W × H, mm)	60x51x174.2mm		60x51x175.2mm	60x51x176.2mm
Device Weight	0.95kg (for reference only)			

Note 1: Because the SV07M multi-channel switching valve T12/T16 valve head channel distribution consists of two loops (as shown in Figure 2-4-1), there are two different dead volume parameter values.

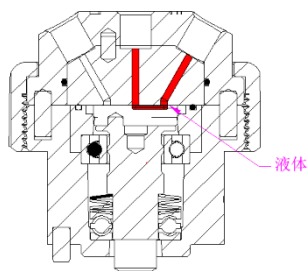


Fig 2-3-1 Schematic of Port-to-Port Volume for Standard Model Valve Heads

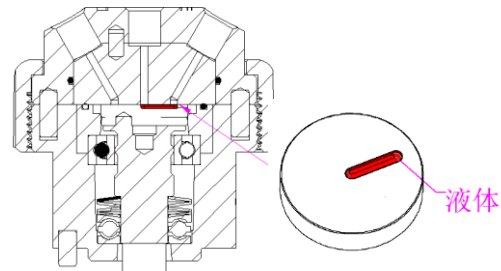


Figure 2-3-2 Schematic Diagram of Rotor Groove Volume for Standard Model Valve Heads

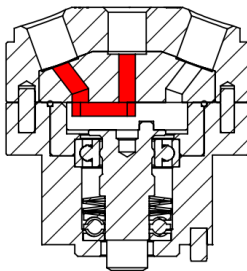


Fig2-3-3 Schematic of Port-to-Port Volume for TC20P/TC20SP

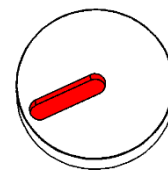


Figure 2-3-4 Schematic Diagram of Rotor Groove Volume for TC20P/TC20SP

2.4 Product Function Introduction

2.4.1 Valve Body Channel Diagram (Selector Valve)

The center hole is the common channel position, which can switch between multiple channel positions via the rotor. The flow diagram is shown in Figure 2-4.

1、Flow Diagram of Switching Valve for Standard Models (Through-Hole Diameter 0.6/1.0/1.2mm)

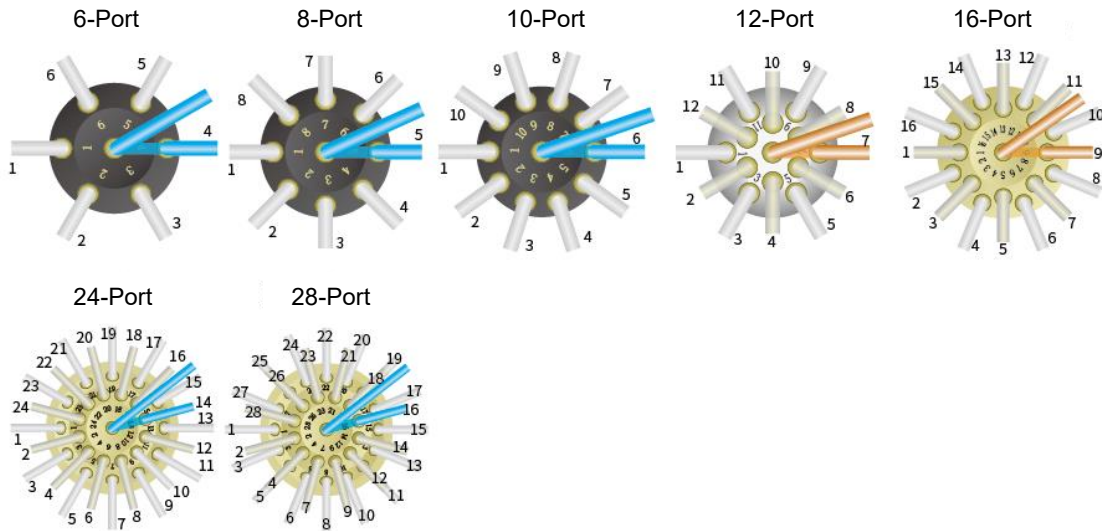


Fig 2-4-1

2、Customized Models (Through-Hole Diameter 1.5/2.0/3.0mm) Switching Valve —

TC20P/TC20SP, Valve Head Flow Diagram:

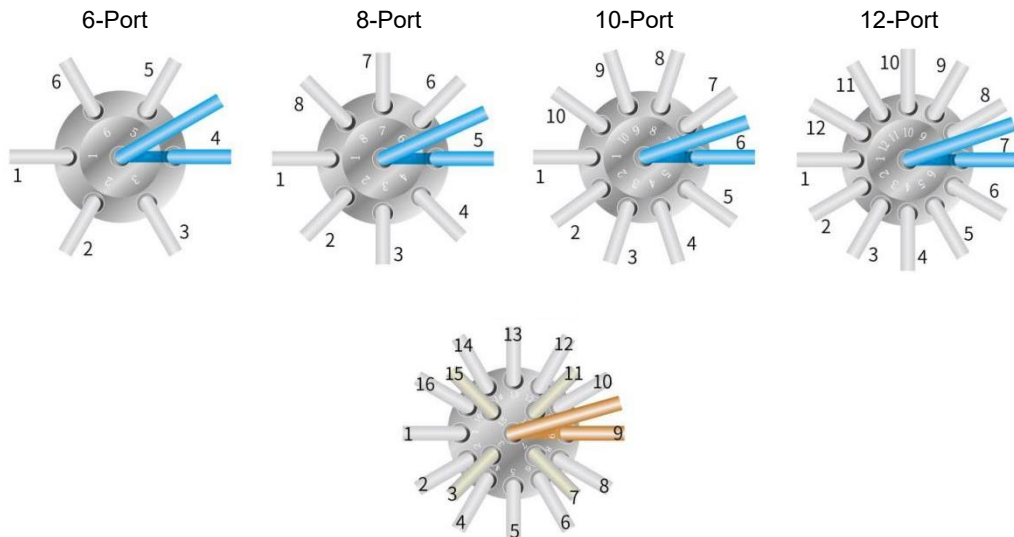


Fig 2-4-2

2.4.2 Reset state

Reset direction: The SV07M reset direction is counterclockwise (cannot be changed)

Reset position: The SV07M reset position is at port #1

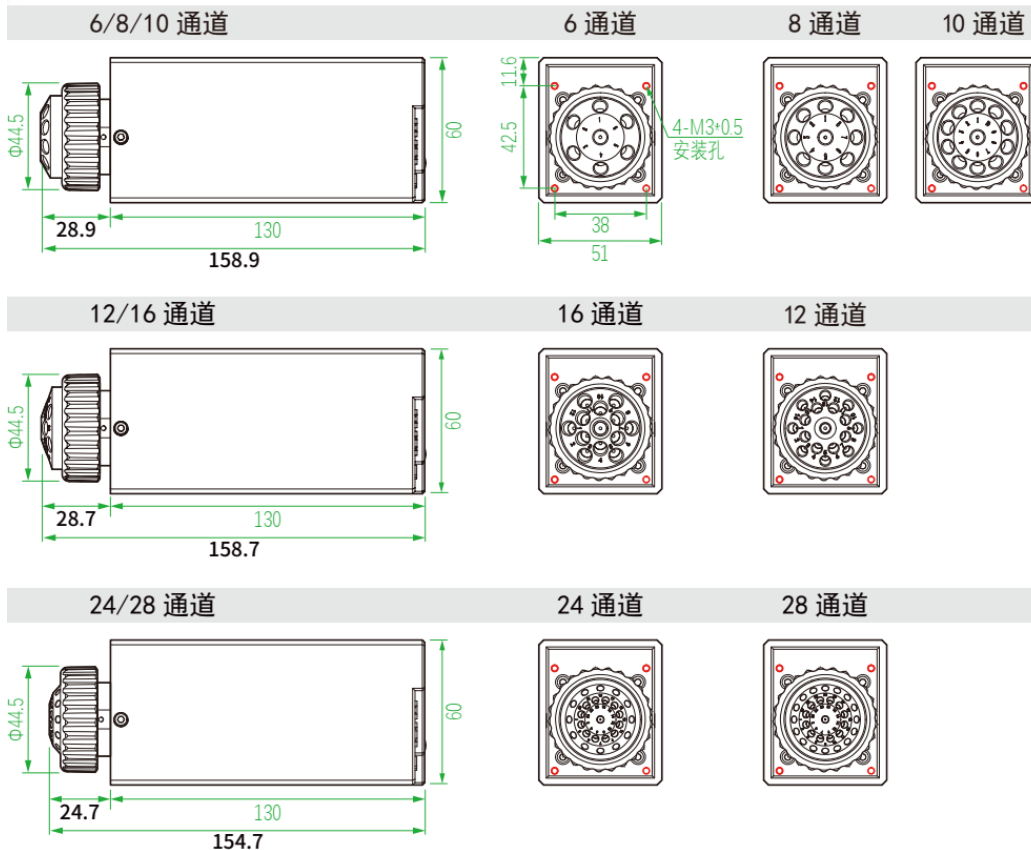
Chapter 3: Hardware Setup

3.1 Valve Installation

3.1.1 Product Dimension Drawing (unit: mm)

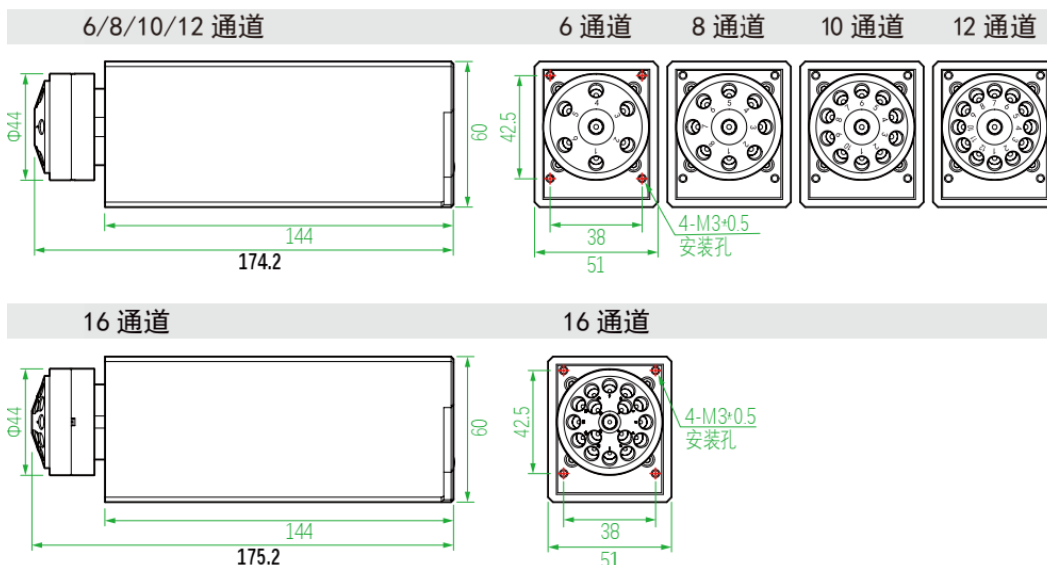
1、Dimensions of Switching Valve for Standard Models (Through-Hole Diameter 0.6/1.0/1.2mm)

注：所有型号切换阀的安装尺寸相同

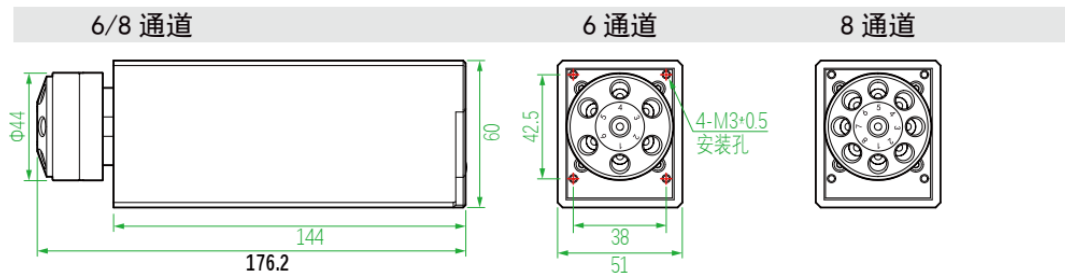


2、Dimensions of Switching Valve for Customized Models (Through-Hole Diameter 1.5/2.0/3.0 mm)

TC20P 阀头：所有阀体安装尺寸相同



TC20SP 阀头：所有阀体安装尺寸相同



3.2 Port definition

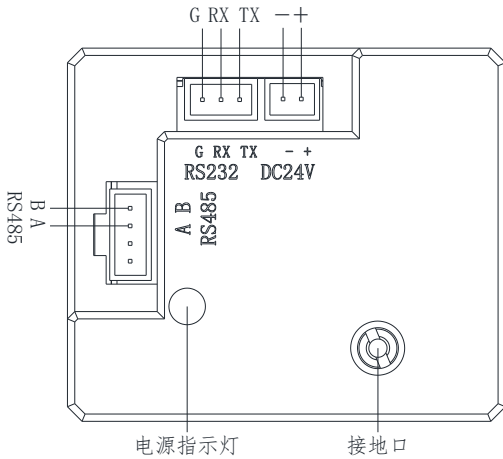


图 3-2 端口标示图

Port Name	Function
+	DC24V positive pole
-	DC24V negative pole
TX	RS232 data input
RX	RS232 data output
GND	RS232 ground wire
A	RS485A
B	RS485B

Table 3-2 Drive Board Port Description

3.3 Grounding Method Description

It is recommended to use a copper wire with a cross-sectional area of no less than 50mm² or a galvanized iron wire with a cross-sectional area of no less than 100mm² for grounding.

The grounding port of the switching valve is located as shown in Figure 3-3-1.

Grounding method: Unscrew the grounding screw, place a round washer, then tighten the screw. The other end should be connected to your equipment's equipotential terminal or the metal chassis enclosure, as shown in Figure 3-3-2.



图 3-3-1 接地口位置

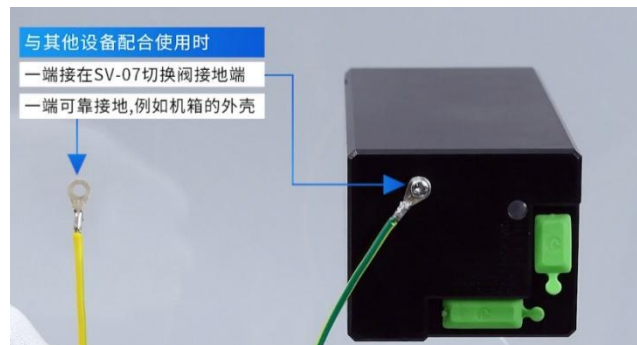


图 3-3-2 接地方法

Chapter 4: Software Communication

4.1 Overview

The data transmission between the switch valve/flow control valve and the host computer (such as a PC, microcontroller, PLC, etc.) uses serial communication (e.g., RS-232/RS-485 bus). The following is a description of the communication format: The communication adopts asynchronous serial communication, and the command and data frames use checksum for error checking. The checksum consists of two bytes (2 Byte). In the communication, both commands and data are represented in hexadecimal format, and parameters are stored in little-endian mode.

Other details:

- Communication interface: RS-232, RS-485
- Communication method: Bidirectional asynchronous, master-slave mode
- Corresponding baud rates for RS-232/RS-485: 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
- Data bits: 8 bits
- Parity: No parity check
- Response time after receiving a command: <1 second

4.2 Installation and Debugging\

- (1) Install debugging tools, please refer to the "Debugging Tools User Manual"
- (2) Usage instructions, refer to the "SV-07M Quick User Guide"

4.3 Command Format Description

4.3.1 Control Command Format

- a: Valve parameter setting command (Factory command)
- b: Valve parameter query command (Normal command)
- c: Valve action command (Normal command)

Table 4-3-1: Command Issuance (Normal Command)

The meaning of 0xXX:

- 0x indicates that the number is in hexadecimal format.
- XX represents a two-digit hexadecimal number. The values entered in the tool software are all in the XX format.

The "Command Issuance" message frame is 8 bytes long. The complete format is as follows:

Frame Header	Address Code	Function Code	Parameter Area	Frame Tail	Checksum
B0	B1	B2	B3-B4	B5	B6-B7
STX	ADDR	FUNC	1-8 bits	9-16 bits	ETX

Table 4-3-2: Command Issuance (Factory Command)

Frame Header	Address Code	Function Code	Password	Parameter Area	Frame Tail	Checksum
B0	B1	B2	B3, B4, B5, B6	B7, B8, B9, B10, B11, B12, B13	B14	
STX	ADDR	FUNC	PWD	1-8 bits	9-16 bits	17-24 bits

- **Byte 1 (STX):** Frame header (0xCC)
- **Byte 2 (ADDR):** Slave address (0x00–0x7F), multicast address (0x80–0xFE), or broadcast address (0xFF)
- **Byte 3 (FUNC):** Function code
- **Bytes 4-7 (PWD):** Password
- **Bytes 8-11:** Parameters corresponding to the function code
- **Byte 12 (ETX):** Frame tail (0xDD)
- **Bytes 13-14:** Checksum of the sum of bytes 1 to 12 (Low byte, High byte)

Table 4-3-3: Response Command The response command format is similar to the command issuance format. All response command frames are 8 bytes long.

Frame Header	Address Code	Status Code	Parameter Area	Frame Tail	Checksum
B0	B1	B2	B3-B4	B5	B6-B7
STX	ADDR	STATUS	1-8 bits	9-16 bits	ETX

Example: Using 0x50/51/52/53 Commands to Set Multicast Addresses

(This example only uses 0x50, 0x51, and 0x52 commands.)

Using three SV07M multi-channel switching valves with the same software version from our company, in RS485 communication mode, their addresses are set to 00, 01, and 02, and labeled accordingly. First, the multicast channel 1 address for the SV07M with address 00 is set using the 0x50 command, with parameter 0x81 (setting it to 81). The multicast channel 3 address is set using the 0x52 command with parameter 0x83 (setting it to 83). For the SV07M with address 01, the multicast channel 1 address is set using the 0x50 command with parameter 0x81 (setting it to 81), and the multicast channel 2 address is set using the 0x51 command with parameter 0x82 (setting it to 82). For the SV07M with address 02, the multicast channel 2 address is set using the 0x51 command with parameter 0x82 (setting it to 82), and the multicast channel 3 address is set using the 0x52 command with parameter 0x83 (setting it to 83).

Device Type	Device 1 (Address 0)	Device 2 (Address 1)	Device 3 (Address 2)
Multicast Addr	81	81	
	82	82	
	83		83
Broadcast Addr	FF	FF	FF

Once the addresses are set, all three devices are connected in parallel to the serial debugging tool. The company's debugging tool software MotorTest V0.8 is then used for debugging. In MotorTest V0.8, set the address to 0x81, command to 0x44, and parameter to 0x01. After clicking "Send," devices 1 and 2 will perform the switching action. Set the address to 0x82, command to 0x44, and parameter to 0x03. After clicking "Send," devices 2 and 3 will perform the switching action. Set the address to 0x83, command to 0x44, and parameter to 0x05. After clicking "Send," devices 1 and 3 will perform the switching action. Finally, set the address to 0xFF, command to 0x44, and parameter to 0x03. After clicking "Send," all three devices will perform the switching action.

The newly added command for setting multicast addresses greatly meets the needs of our customer base. It enables customers to more easily and conveniently select the devices they want to control, allowing them to complete work tasks more efficiently and quickly during operation.

b: Valve Parameter Query Command (Normal Command) (B2–B4)

Code B2	Abbreviation	Parameter Description	B3	B4
0x20	Query Address	Address range: 0x0000–0x007F, default: 00	B3B4=0x0000 (default 00)	
0x21	Query RS232 Baud Rate	5 baud rates available: Factory default: 9600bps	B3B4=0x0000 -> 9600bps, B3B4=0x0001 -> 19200bps, B3B4=0x0002 -> 38400bps, B3B4=0x0003 -> 57600bps, B3B4=0x0004 -> 115200bps	
0x22	Query RS485 Baud Rate	-	-	
0x2E	Query Power-On Auto Reset	B3=0x00, B4=0x00	-	
0x70	Query Multicast Channel 1 Address	B3=0x00, B4=0x00	-	
0x71	Query Multicast Channel 2 Address	B3=0x00, B4=0x00	-	
0x72	Query Multicast Channel 3 Address	B3=0x00, B4=0x00	-	
0x73	Query Multicast Channel 4 Address	B3=0x00, B4=0x00	-	
0x3E	Query Current Channel Position	B3=0x00, B4=0x00	-	
0x3F	Query Current Version	B3=0x01, B4=0x09 (for version V1.9)	-	
0x4A	Query Motor Status	B3=0x00, B4=0x00	-	

c: Valve Action Command (Normal Command) (B2–B4)

Code B2	Abbreviation	Parameter Description	B3	B4
0x44	Motor Rotation via Code Disc, Automatically Select Optimal Path	Based on the number of channels of the switching valve (e.g., 10-channel switching valve, B3=0xXX, B4=0x00, where XX ranges from 01 to 0A)	B3=0xXX (e.g., 01-10)	B4=0x00
0x45/0x4F	Origin Reset	B3=0x00, B4=0x00	-	
0xA4	Switch Hole Position in Required Direction	Based on actual number of channels. The parameter cannot exceed the valve's max channel. B3, B4 must be adjacent hole positions.	B3, B4 as adjacent holes	
0x49	Emergency Stop	B3=0x00, B4=0x00	-	

Example 1: 0xA4: Switch Hole Position in Required Direction (Switching Valve)

If the current valve is in position 1:

- Target: Rotate counterclockwise to position 4
- Command: 0xA4
- Parameter: 0x0304 (i.e., rotate through hole 3 to reach hole 4)

The valve will rotate counterclockwise, passing through hole 3 to reach hole 4.

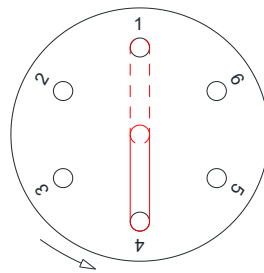


图 4-3-4-1

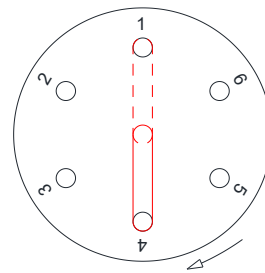


图 4-3-4-2

Checksum (B6, B7)

Name	Abbreviation	Code B6, B7	Notes
Checksum	Checksum	0xXX 0xXX	Sum of all bytes from header to footer

Note: For factory commands, the checksum is located at bytes **B12, B13**.

Response Parameter Description (B2, B3, B4)

Code B2	Description	Additional Parameter Info = B3 B4
0x00	Normal Status	B3 = 0x00, B4 = 0x00

• Example: When using the query command 0x3E, if B3 B4 returns 0x01 0x00 to 0x0A 0x00, it indicates the valve is in channel 1–10. |

| 0x01 | Frame Error | B3 = 0x00, B4 = 0x00 |

| 0x02 | Parameter Error | B3 = 0x00, B4 = 0x00 |

| 0x03 | Optocoupler Error | B3 = 0x00, B4 = 0x00 |

| 0x04 | Motor Busy | B3 = 0x00, B4 = 0x00 |

0x05	Motor Stalled	B3 = 0x00, B4 = 0x00
0x06	Unknown Position	B3 = 0x00, B4 = 0x00
0x07	Command Rejected	B3 = 0x00, B4 = 0x00
0xFE	Task Pending	B3 = 0x00, B4 = 0x00
0xFF	Unknown Error	B3 = 0x00, B4 = 0x00

⚠ Note: In RS485 communication, when sending an action command, if the response frame's B2 byte returns 0xFE, it means the command has been received and is being executed.

Explanation:

1. In the response command, byte B2 indicates the current motor status. Only when B2 = 0x00 is the motor functioning normally.
2. All other values indicate an abnormal condition, as outlined in the table above.
3. In principle, after the motor finishes running, the 0x4A command should be sent to query the motor status.
4. Only if the response returns B2 = 0x00 can other commands be correctly executed.

🔴 Important: All command codes and parameters are to be set using Little Endian format. In Little Endian, the least significant byte is stored in the lower address, and the most significant byte is stored in the higher address.

Chapter 5: Basic Troubleshooting

Phenomenon	Possible Issue	Solution
Device not working after power-on	Operating voltage is out of range	Check if the voltage is within the specified range
	Loose or disconnected power cables	Check for loose connections or broken wires
	Operating current is out of range	Verify if the current is within the specified range
No liquid is drawn during switching	Channel blocked by particles	Remove the pump tube and check for blockages
Bubbles in the liquid	Loose connections at joints	Replace with suitable connectors
No communication	RS232 TX/RX wires reversed or RS485 A/B lines reversed	Swap TX/RX for RS232 or A/B lines for RS485
RS232 transmission and reception are identical	TX and RX are shorted	Check for short circuit; if present, replace the cable

Chapter 6 Quick Command

A Quick Commands

Code B2	Abbreviation	Parameter Description B3 B4
0x20	Query Address	The address value range is 0x0000 to 0x007F, with a default of 00.
0x3E	Query Motor Status	B3=0x01, B4=0x09 is an example; if the query returns these parameters, it indicates the version is V1.9, as shown on the version label.
0x4A	Motor rotates by code wheel, automatically selects optimal path	B3=0x00 B4=0x00
0x44	Query Address	This depends on the actual number of channels of the switching valve. For example, for a 10-channel switching valve, B3=0xXX, B4=0x00, where XX ranges from 01 to 0A.
0x45	Reset	B3=0x00 B4=0x00 The switching valve stops when it reaches the reset optical coupler.
0x4F	Home Reset	The switching valve stops at the encoder home position, overlapping with the reset position of the 0x45 command.
0xA4	Switch Port Position According to Required Direction	According to the actual number of channels of the switching valve, the parameter values must not exceed the maximum number of channels of the valve, and B3 and B4 must be two adjacent port positions.
0x49	Emergency Stop	B3=0x00 B4=0x00

B. Hexadecimal Quick Lookup Table

Decimal	Hexadecimal	Decimal	Hexadecimal	Decimal	Hexadecimal	Decimal	Hexadecimal
1	1	110	6E	300	12C	1000	3E8
5	5	120	78	325	145	1100	44C
10	A	130	82	350	15E	1200	4B0
15	F	140	8C	375	177	1300	514
20	14	150	96	400	190	1400	578
25	19	160	A0	425	1A9	1500	5DC
30	1E	170	AA	450	1C2	1600	640
35	23	180	B4	475	1DB	1700	6A4
40	28	190	BE	500	1F4	1800	708
45	2D	200	C8	525	20D	1900	76C
50	32	210	D2	550	226	2000	7D0
55	37	220	DC	575	23F	2100	834
60	3C	230	E6	600	258	2200	898

65	41	240	F0	650	28A	2300	8FC
70	46	250	FA	700	2BC	2400	960
75	4B	260	104	750	2EE	2500	9C4
80	50	270	10E	800	320	2600	A28
90	5A	280	118	850	352	2700	A8C
100	64	290	122	900	384	2800	AF0

C. Query and Switch Protocol

This switch valve supports two protocols: **RUNZE Protocol** and **ASCII Protocol**. To switch between protocols, follow the steps below (the switch requires power off):

C.1 Query Default Protocol

Send the following query code and check the response:

Send: 91 EB 07 00 00 00 00 00 D5 28 FF F8

1. **If the valve is using the RUNZE protocol**, the response code will be:

- **Receive:** 91 EB 02 01 00 63 D7 F6 AB 00
- Code 02 indicates **RUNZE Protocol**.

2. **If the valve is using the ASCII protocol**, the response code will be:

- **Receive:** 91 EB 0A 01 00 02 C4 47 0B 00
- Code 0A indicates **ASCII Protocol**.

C.2 Switch Protocol

To switch the protocol, use the **RS232 port**. After switching, the valve must be powered off.

1. **To switch to RUNZE Protocol**, use the following command:

- **Send:** 91 EB 03 00 00 02 08 00 00 0C 0A 69 69

2. **To switch to ASCII Protocol**, use the following command:

- **Send:** 91 EB 03 00 00 0A 08 00 00 6D 19 D8 C9

After the switch, you can send the query code (91 EB 07 00 00 00 00 00 D5 28 FF F8) again to confirm if the valve has switched to the desired protocol (see C.1).

Chapter 7 Version Description

Version	Description	Release Date
V1.0	Initial Version	2024.09.10
V1.1	Communication Protocol Identifier: Modbus Protocol Requires Customization	2024.11.15
V1.2	Revised Specification and Model Naming Rules	2025.3.12
V1.3	PSU Wetted Material Changed to PPS	2025.04.08

Chapter 8 Technical Services

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