润泽流体 RUNZE FLUID | Key Components for Analytical Instrument
Ecological Closed-loop Supplier

V 1.0

SV-04M Switching Valve User Manual

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

润泽流体
RUNZE FLUID

Catalogue

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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.

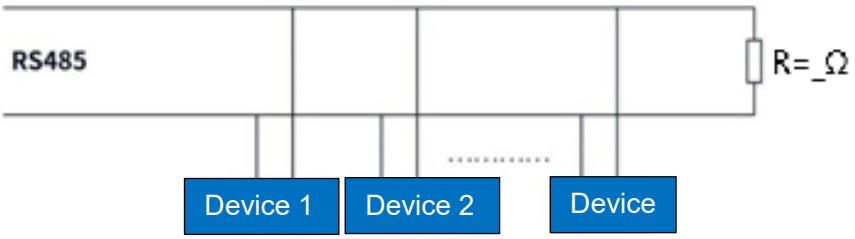
1.2 Product Overview

The SV-04M multi-channel selector valve and SV04B-M metering valve are switching valves that control a stepper motor through commands from a host computer, rotating the rotor to designated port positions to achieve fluid path 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-channel selector valve/metering valve is an electrically-driven sampling valve independently developed by Nanjing RunZe Fluid Control Equipment Co., Ltd., also known as an electric rotary valve or electric rotating valve.

(2) Control: It controls the stepper motor through commands from the host computer, rotating the rotor to designated port positions to achieve fluid path switching. The serial communication protocol supports RS232/RS485 bus.

(3) Corrosion Resistance: This selector valve uses an aluminum oxide ceramic valve core, making it suitable for various corrosive liquids. The valve head is made from a combination of PPS and aluminum oxide ceramic, and is maintenance-free.

(4) Valve Core Structure: The valve core employs a multi-directional self-adaptive plane fitting method, which can effectively extend the product's service life. (This structure has been applied for a utility model patent, patent number: CN204852471U).

(5) Power: The valve body rotation uses an imported NMB planetary gearbox motor as the power device, offering extremely high reliability.

(6) Positioning: Valve port positioning uses an absolute position encoder, which can effectively solve the problem of inaccurate positioning after gearbox wear. It also has the advantages of being pollution-resistant and dust-resistant.

(7) Controller Interface: 2.50mm pitch XH terminal.

(8) Usage: The selector valve is widely used for fluid sample collection and distribution.

(9) Application Scenarios: Environmental testing instruments, laboratory analysis instruments, medical analysis instruments, chromatographs, etc.

Before using the motorized sampling valve, please carefully read the "Instructions Manual" and follow the specified requirements.

2.2 Naming Rules and Selection

2.2.1 Model Parameters

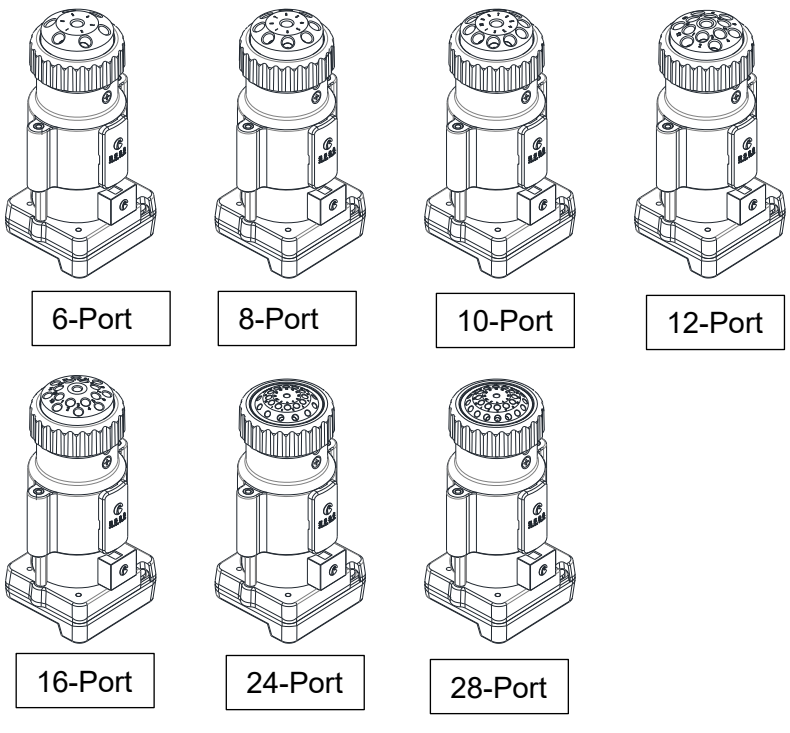
QHF-SV04B-M - X - U - T06 - K1.2 - C

QHF-SV04M QHF-SV04M-B QHF-SV04B-M	Model Number
X	Slope Type
U	PPS
X	SUS304
K	PEEK
F	PCTFE
	Valve Head Material
T6	6 Port
T06	6 Port
T8	8 Port
T08	8 Port
T10	10 Port
T12	12 Port
T16	16 Port
T24	24 Port
T28	28 Port
K0.6	Orifice 0.6mm
K0.8	Orifice 0.8mm
K1.0	Orifice 1.0mm
K1.2	Orifice 1.2mm
K1.5	Orifice 1.5mm
C	Ceramic Valve Cartridge
S	Sapphire Valve Cartridge

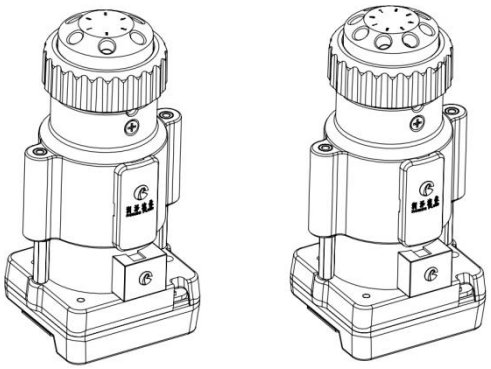
Example: A 10-port selector valve (channel diameter 1.2mm/ceramic valve core/PPS material valve head cover) would be named: QHF-SV04M-B-X-U-T10-K1.2-C

2.2.2 Product Selection

Selector valves can be categorized by the number of channels as 6-port, 8-port, 10-port, 12-port, 16-port, 24-port, and 28-port. The products are shown in the figure below:



valves can be categorized by the number of channels as 6-port and 8-port. The products are shown in the figure below:



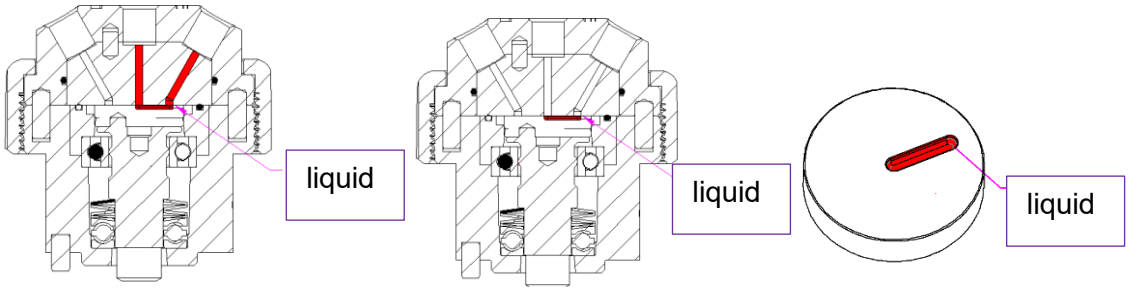
2.3 Product Technical Parameters

Name	Specifications				
Number of channels	6/8/10	12	16	24	28
Flow path diameter	1.2mm	1.2mm	1.0mm	0.6mm	0.6mm
Wetted material	Ceramic				
Port-to-port volume (dead volume)	27.5μL	26.3μL/27μL Note 1	24.1μL/25.1μL Note 1	4.4μL	4.7μL
Rotor groove volume (dead volume)	5μL	5μL	3.1μL	1.3μL	1.55μL
Valve head cover material	PPS Customizable: PEEK, PCTFE, SUS304 stainless steel	SUS304 stainless steel Customizable: PEEK, PCTFE	PEEK Customizable: SUS304 stainless steel, PCTFE		
Pressure resistance	Gas pressure: 0-0.6Mpa; Water pressure: 0-1.0Mpa				
Initial position detection	Automatic reset to initial position after power-on (this function can be selectively enabled or disabled)				
Interface	1/4-28UNF thread			10-32UNF thread	6-40UNF thread
Replaceable parts	Replace stator, rotor seal				

Name	Specifications				
Switching performance	Multiple positions, random start				
Optional drive board	No				
Switching time	≤4s/revolution				
Maximum driving force/torque	4N/m				
Communication interface	RS232/RS485 bus				
Communication rate	RS232/485 bus: 9600bps/19200bps/38400bps/57600bps/115200bps				
Communication protocol	RUNZE/ASCII, (Modbus requires customization)				
Device address and parameter settings	Communication interface				
Applicable power supply	DC24V/3A				
Working environment temperature	0-50°C				
Working relative humidity	≤80% non-condensing state				
Dimensions (LWH)	63.751.1121mm				
Device weight	0.442kg				

Note 1: Since the SV-04M multi-channel selector valve T12/T16 valve head channels are distributed in two circles (as shown in Figure 2-4), there are two dead volume parameter values.

2.3.1 Port-to-port volume diagram **Figure 2-3-2** Rotor groove volume diagram



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.

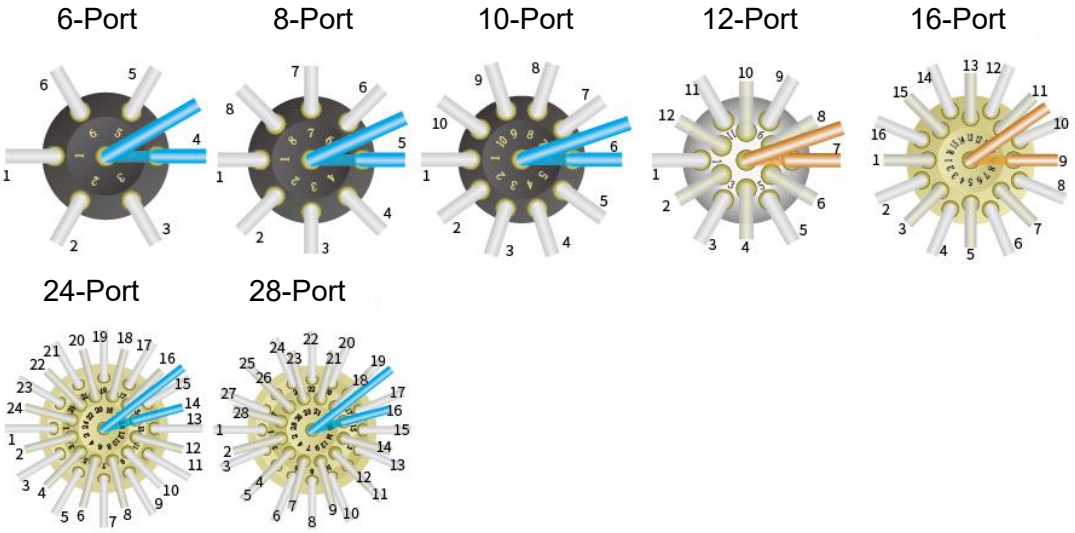


Figure 2-4

Reset direction: The SV-04M reset direction is counterclockwise (cannot be changed)

Reset position: The SV-04M reset position is at port #1

2.4.2 Valve Body Channel Diagram (Metering 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 2-5.

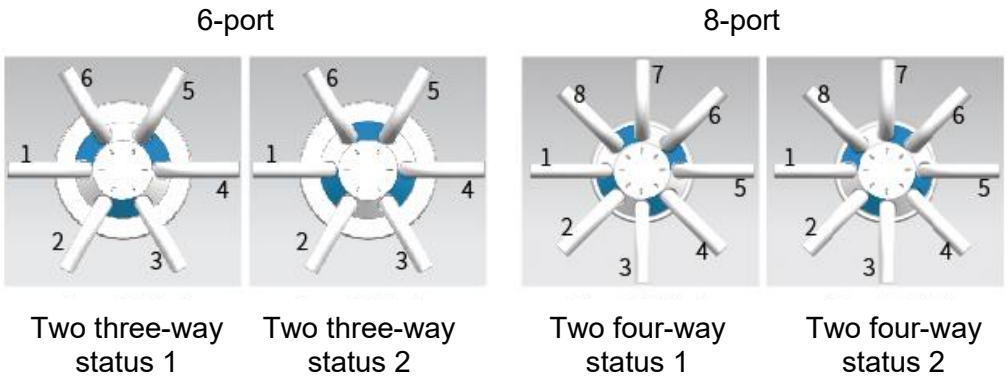


图 2-5

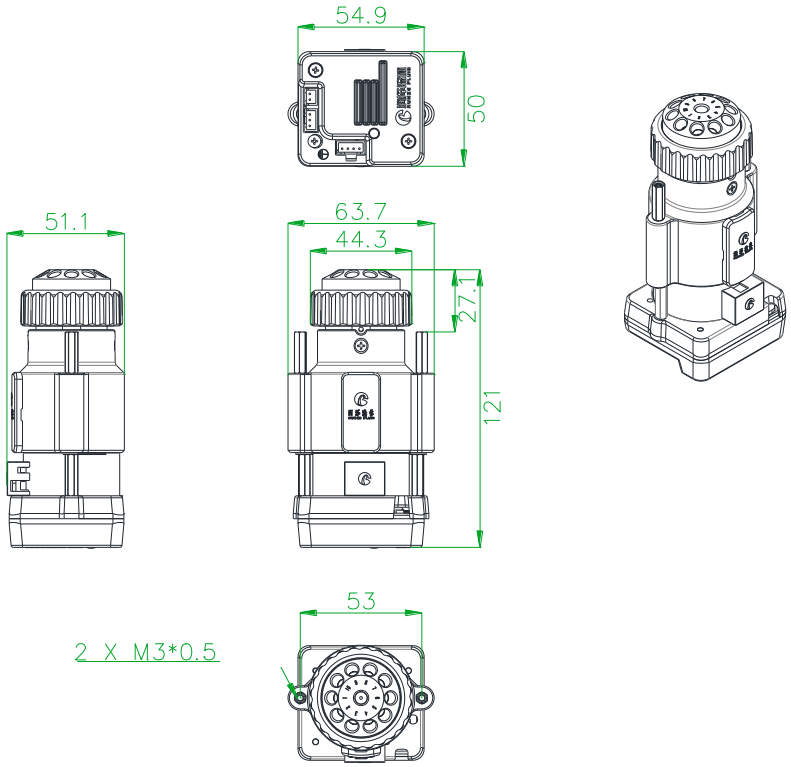
Reset direction: The SV04B-M reset direction is counterclockwise (cannot be changed)

Chapter 3: Hardware Setup

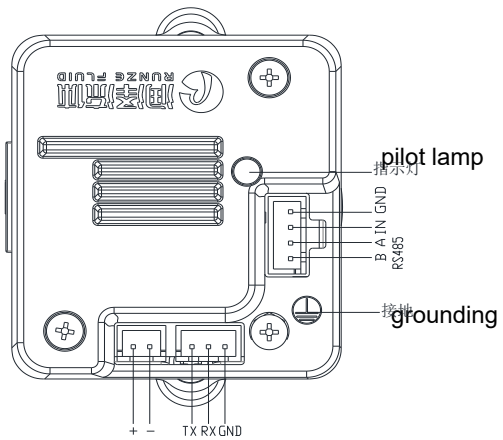
3.1 Valve Installation

3.1.1 Product Dimension Drawing (unit: mm)

The product installation dimensions are shown in the dimension drawing below



3.2 Port definition

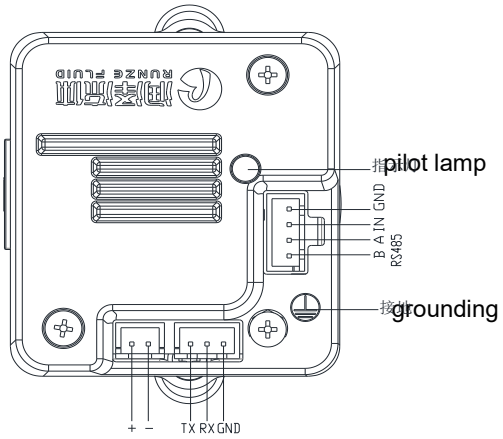


Port Name	Function
+	DC24V positive pole
-	DC24V negative pole
TX	RS232 data input
RX	RS232 data output
GND	RS232 ground wire
A	RS485A
B	RS485B

Table 3-2 Drive Board Port Description

3.3 Grounding Method Description

1. It is recommended to use copper wire with a cross-sectional area of no less than 50mm² or galvanized iron wire with a cross-sectional area of no less than 100mm² for the grounding wire.
2. Grounding terminal position of the switch valve.
3. Grounding method: After removing the grounding screw, insert a round washer and then tighten the screw. The other end should be connected to the equipotential terminal or the metal outer shell of the chassis of the equipment provided by your company.



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-04M 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 SV-04M 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 SV-04M 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 SV-04M 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 SV-04M 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.

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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	-	

Code B2	Abbreviation	Parameter Description	B3	B4
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)

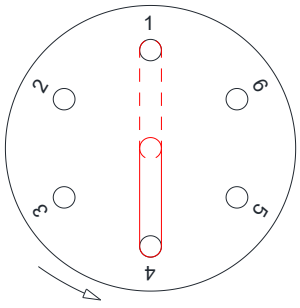
Code B2	Abbreviation	Parameter Description	B3	B4
0x44	Motor Rotation via Code Disc, Automatically Select Optimal Path	Based on the number of channels of the switching valve (e.g., 10-channel switching valve, B3=0xXX, B4=0x00, where XX ranges from 01 to 0A)	B3=0xXX (e.g., 01-10)	B4=0x00
0x45/0x4F	Origin 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.



Example 2: 0xA4: Switch Hole Position in Required Direction (Switching Valve)

If the current valve is in position 1:

- **Target**: Rotate clockwise to position 4
- **Command**: 0xA4
- **Parameter**: 0x0504 (i.e., rotate through hole 5 to reach hole 4)

The valve will rotate clockwise, passing through hole 5 to reach hole 4 (the clockwise direction described

in B4 will not be repeated in subsequent examples).
As shown in **Figure 3-2** below:

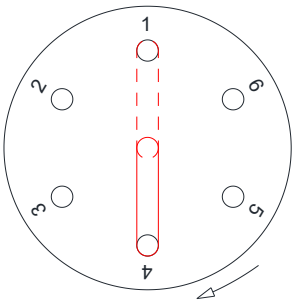


图 3-2

Example 2: If the Valve is in the Reset Position (Dosing Valve)

- **Target: Three-way state 1, connecting port 1 to port 6**
- **Command: 0x44**
- **Parameter: 0x01**

Then the valve will switch to the specified port configuration, as shown in Figure 3-3 below:

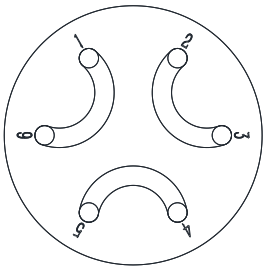
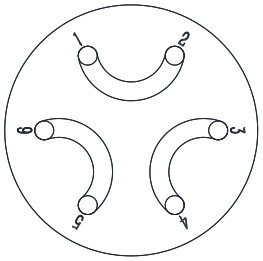


图 3-3

Example 3: If the Valve is in the Reset Position

- **Target**: Three-way state 2, connecting port 1 to port 2
- **Command**: 0x44
- **Parameter**: 0x02

Then the valve will switch to the specified port configuration, as shown in **Figure 3-4** below:



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**.

4.4 Valve Head Replacement and Maintenance Procedure

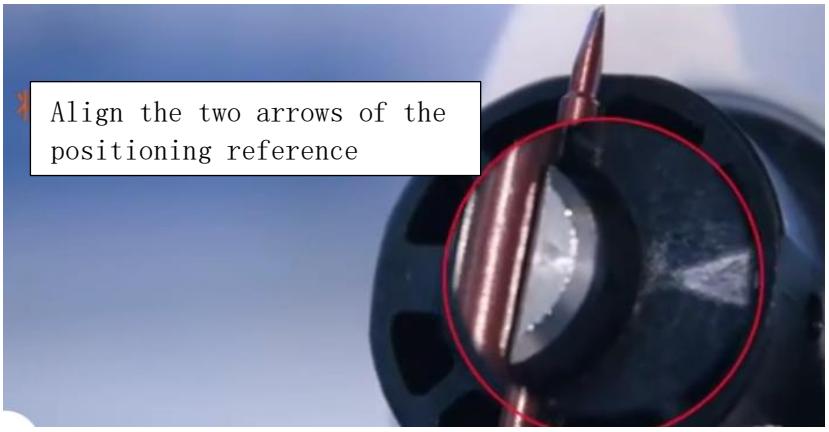
4.4.1 Valve Head Disassembly and Installation

Use a **PH1 Phillips screwdriver** to remove the **countersunk screws** on both sides, as shown in the diagram.

Then, use a **flathead screwdriver** to detach the valve head.

After removing the head and powering the device on, switch the **gearbox** to **port 1**.

Rotate the new valve head to the position shown in the diagram, which corresponds to Port 1.



Secure the new valve head directly onto the SV-04M gearbox, ensuring the positioning pin aligns correctly.

Finally, fasten the countersunk Phillips screws onto the SV-04M to ensure proper installation.

4.4.2 Valve Head Maintenance Procedure

During use, if the switching valve produces abnormal noise when changing ports or fails to reach the designated position after switching, and a query using command 0x4A returns 0x05, this indicates a **motor stall**.

The following are preventive measures to avoid valve jamming:

1. **Before storing individual switching valves**, inject protective fluid into the valve prior to storage.
2. **If the switching valve is already installed in equipment**, and the entire device is stored as a unit, protective fluid must be injected into the switching valve in the order of its port switching sequence.
3. **After injecting protective fluid into each channel**, store the valve in an environment with a **temperature between 0–50°C**, **relative humidity below 85%**, and **no condensation**.
4. **Before using the treated switching valve**, customers must be aware that the protective fluid forms a water film inside the valve. Therefore, **the valve must be flushed with water before testing**. The number of rinses should be determined based on the customer's actual operating conditions.

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 Commands

A. Quick Command Reference

Code B2	Abbreviation	Parameter Description B3 B4
0x20	Query Address	Address range: 0x0000 to 0x007F, default 0x00
0x3E	Query Motor Status	B3 = 0x00, B4 = 0x00
0x44	Motor rotates by code wheel, automatically selects optimal path	Depends on the actual number of channels of the switch valve, for example: 10-channel valve: B3 = 0xXX, B4 = 0x00 (XX range: 01–0A); 6-channel valve: B3 = 0xXX, B4 = 0x00 (XX range: 01–06). For 6-hole valves, status 1 is 1-6 channels, for 8-hole valves, status 1 is 1-2 channels
0x4A	Query Motor Status	B3 = 0x00, B4 = 0x00
0x45/0x4F	Reset to origin	B3 = 0x00, B4 = 0x00, the valve runs to the origin position, which overlaps with the reset position of the 0x45 command
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 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 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	2025.5.13

Chapter 8Technical Services

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