**High Speed 2 Port Valve**

**SX10 Series**

**High speed response**

- **ON:** 0.45 ms ± 0.05 ms
- **OFF:** 0.4 ms ± 0.05 ms

**50 L/min 80 W type**

- The response time is measured based on SMC test conditions. (Not guaranteed values)

**Long service life:** 5 billion cycles or more

SMC’s original valve and coil structure realizes a longer product life and requires less maintenance frequency.

(50 L/min type, 24 VDC, 0.25 MPa. Based on SMC life test conditions.)

**High frequency:** 1200 Hz

Good followability and response to successive electrical signal input. Continuous operation possible.

- **50 L/min 80 W type**

**2 mounting types**

- Quick disconnect type
- Screw mount type

The manifold base should be prepared by users.

**Low power consumption:** 4 W

Continuous energization for extended periods is possible.
Compact and Space-saving

- The manifold base should be prepared by users.

Manifold minimum mounting pitch

9.5 mm

Width

9 mm

Height

30.4 mm

(Screw mount type)

Reduction in installation labor

(Quick disconnect type)

Can be mounted/removed in one action and no tools required.

Required time for attachment/detachment: Approx. 5 seconds (per unit)

Reduces installation time for multiple numbers of valves.

Variations/Purpose of Usage (Guide)

Flow Rate/Operating Frequency

(Supply pressure 0.25 MPa, 24 VDC, Duty ratio 1:1)

High flow

150

Medium flow

100

Super energy-saving type

50

Low flow

150 250 350 400 500 550 650 750 1200

Operating frequency (Hz)

50 L/min 100 L/min 150 L/min

Power consumption

Continuous energization

Ultra high frequency type 500 to 1200 Hz

For power saving driver (Refer to page 511.)

—

80 W, 40 W

0.4 ms 0.55 ms 0.75 ms

High frequency type 250 to 550 Hz

Control driver is not necessary.

(Note)

10 W

0.4 ms 0.55 ms 0.75 ms

Super energy-saving type 150 to 350 Hz

Control driver is not necessary.

Possible

4 W

0.4 ms 0.55 ms 0.75 ms

(1) Ultra high frequency type 500 to 1200 Hz

(2) High frequency type 250 to 550 Hz

(3) Super energy-saving type 150 to 350 Hz

(Note) Please consult with SMC for continuous energization.

Coil temperature rise: 5°C

(4 W type)

Power consumption

Temperature rise

4 W type

5°C

10 W type

14°C

Filter attached type available

Filter is mounted to port 1 (IN). Filter is mounted to port 1 (IN) for quick disconnect type as well.

Filter is mounted to port 1 (IN).
## High Speed 2 Port Valve

### Variations

All models have the same body size.

<table>
<thead>
<tr>
<th>Flow rate</th>
<th>Power consumption</th>
<th>100 Hz</th>
<th>500 Hz</th>
<th>Operating frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low flow type</td>
<td>80 W</td>
<td></td>
<td></td>
<td>1200 Hz</td>
</tr>
<tr>
<td></td>
<td>40 W</td>
<td></td>
<td></td>
<td>1000 Hz</td>
</tr>
<tr>
<td></td>
<td>10 W</td>
<td></td>
<td>350 Hz</td>
<td>550 Hz</td>
</tr>
<tr>
<td></td>
<td>4 W</td>
<td></td>
<td></td>
<td>200 Hz</td>
</tr>
<tr>
<td>Medium flow type</td>
<td>80 W</td>
<td></td>
<td></td>
<td>650 Hz</td>
</tr>
<tr>
<td></td>
<td>40 W</td>
<td></td>
<td></td>
<td>550 Hz</td>
</tr>
<tr>
<td></td>
<td>10 W</td>
<td></td>
<td>300 Hz</td>
<td>300 Hz</td>
</tr>
<tr>
<td></td>
<td>4 W</td>
<td></td>
<td></td>
<td>200 Hz</td>
</tr>
<tr>
<td>High flow type</td>
<td>80 W</td>
<td></td>
<td></td>
<td>600 Hz</td>
</tr>
<tr>
<td></td>
<td>40 W</td>
<td></td>
<td></td>
<td>500 Hz</td>
</tr>
<tr>
<td></td>
<td>10 W</td>
<td></td>
<td>250 Hz</td>
<td>250 Hz</td>
</tr>
<tr>
<td></td>
<td>4 W</td>
<td></td>
<td></td>
<td>150 Hz</td>
</tr>
</tbody>
</table>

### Select a model according to applications and purposes.

- **High speed response required for both ON and OFF**
  - Select the 80 W or 40 W type.

- **High speed response required for OFF only without use of special control circuit**
  - Select the 10 W type.

- **Saving energy and continuous energization required**
  - Select the 4 W type.

*Current needs to be limited.*

<table>
<thead>
<tr>
<th>Model</th>
<th>Power consumption</th>
<th>Flow rate</th>
<th>Max. operating frequency</th>
<th>Response time (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX10-A</td>
<td>80 W</td>
<td>50 L/min</td>
<td>1200 Hz</td>
<td>0.45 0.4</td>
</tr>
<tr>
<td></td>
<td>40 W</td>
<td>50 L/min</td>
<td>1000 Hz</td>
<td>0.55 0.4</td>
</tr>
<tr>
<td>SX10-E</td>
<td>80 W</td>
<td>100 L/min</td>
<td>650 Hz</td>
<td>0.55 0.55</td>
</tr>
<tr>
<td></td>
<td>40 W</td>
<td>100 L/min</td>
<td>550 Hz</td>
<td>0.7 0.55</td>
</tr>
<tr>
<td>SX10-J</td>
<td>80 W</td>
<td>150 L/min</td>
<td>600 Hz</td>
<td>0.6 0.75</td>
</tr>
<tr>
<td></td>
<td>40 W</td>
<td>150 L/min</td>
<td>500 Hz</td>
<td>0.8 0.75</td>
</tr>
</tbody>
</table>

*Please consult with SMC for continuous energization.*

<table>
<thead>
<tr>
<th>Model</th>
<th>Power consumption</th>
<th>Flow rate</th>
<th>Max. operating frequency</th>
<th>Response time (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX10-C</td>
<td>10 W</td>
<td>50 L/min</td>
<td>550 Hz</td>
<td>0.9 0.4</td>
</tr>
<tr>
<td></td>
<td>10 W</td>
<td>100 L/min</td>
<td>300 Hz</td>
<td>1.1 0.55</td>
</tr>
<tr>
<td></td>
<td>10 W</td>
<td>150 L/min</td>
<td>250 Hz</td>
<td>1.35 0.75</td>
</tr>
</tbody>
</table>

*Continuous energization is possible.*
How to Order

Specifications

Valve mounting
1 Screw mount type (Note)
2 Quick disconnect type

Filter (IN port)
Nil Without filter
F With filter (Note)

Note) Flow reduction rate
50 L/min: 5% or less
100 L/min: 5 to 10%
150 L/min: 10 to 15%

Flow rate/Operating frequency (at 24 VDC, 0.25 MPa)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Flow rate (L/min)</th>
<th>Power consumption (W)</th>
<th>Max. operating frequency (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>80</td>
<td>1200</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>40</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>10</td>
<td>550</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>80</td>
<td>650</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>40</td>
<td>550</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>10</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>4</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>80</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>40</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>10</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>4</td>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>

Lead wire (grommet) length
G 300 mm
H 500 mm
J 1000 mm

Flow rate characteristics (without filter)

<table>
<thead>
<tr>
<th>Flow rate (L/min)</th>
<th>50</th>
<th>100</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption (W)</td>
<td>80</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>C (dm³/s/bar)</td>
<td>0.24</td>
<td>0.47</td>
<td>0.70</td>
</tr>
<tr>
<td>b</td>
<td>0.24</td>
<td>0.28</td>
<td>0.21</td>
</tr>
<tr>
<td>Cv</td>
<td>0.06</td>
<td>0.12</td>
<td>0.17</td>
</tr>
<tr>
<td>Response time (ms)</td>
<td>0.45</td>
<td>0.55</td>
<td>0.55</td>
</tr>
<tr>
<td>[at 0.25 MPa]</td>
<td>0.9</td>
<td>1.25</td>
<td>1.25</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>1,200</td>
<td>1,000</td>
<td>750</td>
</tr>
</tbody>
</table>

Pressure/Flow Rate Characteristics (without filter)

Note 1) 24 VDC, Duty ratio 1:1
80 W: Current needs to be limited by using an energy saving driver circuit.
40 W: Current needs to be limited by using an energy saving driver circuit.
10 W: Energizing time is one second at a maximum. Please consult with SMC for continuous energization.
4 W: Continuous energization is possible.

Note 2) The response time and maximum operating frequency are not guaranteed. (Actual values based on SMC test conditions)
**High Speed 2 Port Valve**  
**SX10 Series**

### Dimensions

**SX12-G Quick disconnect type**

Manifold base recommended dimensions

**Sectional view A-A (2:1)**

2 (OUT) port  
2 (OUT) port  
1 (IN) port

Base mounting hole

Valve mounting pitch

Depth 4 or more

Depth 4 or more

ø7.1 ±0.05

C or R6.3

C or R6.3

2.4

2 (OUT)

1 (IN)

1 (IN) port

3 or more

3 or more

5 or more
**Dimensions**

**SX11-G Screw mount type**

- **Electrical entry can be on either side, right or left.**

- **Operates by supplying pressure to either side.**

### Manifold base recommended dimensions

- **Base mounting hole**
- **M3 x 0.5 Thread depth 5**
- **2 (OUT) port**
- **1 (IN) port**
- **Lead wire length**

### Electrical entry

- **2 (OUT) port**
- **1 (IN) port**

### Sectional view A-A (2:1)

- **ø46 or more**
- **HZ12.5**
- **1 (IN) port**
Control Method (Operation example with an energy saving driver circuit)

1. Control with 2 power supplies, starting power supply and holding power supply. Switching system from high voltage to low voltage.

- High-voltage power supply (24 VDC)
- Low-voltage power supply (Note)

2. High speed switching control of high voltage by PWM control*. (*: PWM control circuit not currently available.)

Specific Product Precautions

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 17 to 19 for 2 Port Solenoid Valve for Fluid Control Precautions.

Continuous Energization (at 24 VDC)

- Power consumption 80 W type: Not available
  - When operating with an energy saving driver, continuous energization with the holding voltage of 3 to 6 VDC is possible.
- Power consumption 40 W type: Not available
  - When operating with an energy saving driver, continuous energization with the holding voltage of 4 to 8 VDC is possible.
- Power consumption 10 W type: Please consult with SMC.
  - When operating with an energy saving driver, continuous energization with the holding voltage of 8 to 16 VDC is possible.
- Power consumption 4 W type: Available

Energized Time/Non-energized Time (When not using power saving driver)

- Non-energized time (OFF) must be set longer than the energized time (ON).
- For use with voltages other than 24 VDC, please consult with SMC with the operating condition information of pressure, voltage, energized time and non-energized time.

Others

- If the valve is energized without air supply, the coil may be burned. Make sure to supply pressure to the valve when energizing.
- Please contact SMC for the product usage with a voltage at 75 VDC or more. Standard required by CE mark is different.
- Since this valve is air return (differential pressure return) type, the valve may not close due to back pressure when the flow on the downstream side is restricted extremely.
- Since this valve is air return (differential pressure return) type, the air is discharged to the OUT side momentarily until the valve returns when the IN side is pressurized. Be careful when pressurizing the valve.