



To use this product safely

Please read this before use. For general precautions of valves refer to Intro 29.

Individual precautions: Pilot-operated 5-port valve 4SA0, 4SB0 series

During design and selection

1. surge suppressor

Caution

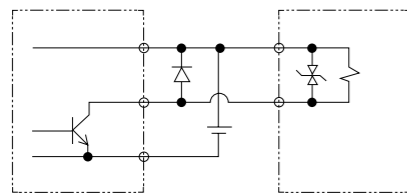
The surge suppressor included with the solenoid valve is intended to protect the output contacts of the solenoid valve driver. It cannot be expected to provide protection for other peripheral equipment, and surge effects may cause damage or malfunction. Conversely, it may absorb surges generated by other equipment, potentially causing damage such as burnout. Please note the following points.

The surge suppressor functions to limit the solenoid valve surge voltage, which can reach several hundred volts, to a low voltage level that the output contacts can withstand. Depending on the output circuit used, this may be insufficient and cause destruction or malfunction. Please determine whether to use it based on the surge voltage limiting level of the solenoid valve in use, the withstand voltage and circuit configuration of the output equipment, and the degree of return delay time. If necessary, implement additional surge countermeasures. Note that solenoid valves with surge suppressors in the 4G series can suppress reverse voltage surges generated at OFF to the levels shown in the table below.

Rated Voltage	Reverse Voltage at OFF
12 VDC	Approx. 27 V
24 VDC	Approx. 47 V

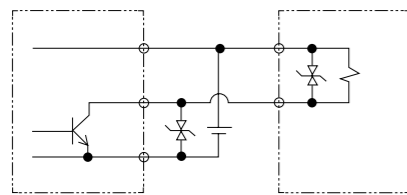
If the output unit is of the NPN type, the output transistor may be subjected to a surge voltage equal to the voltage in the table above plus the power supply voltage. Therefore, please install a contact protection circuit.

[Output transistor protection circuit included Example 1]



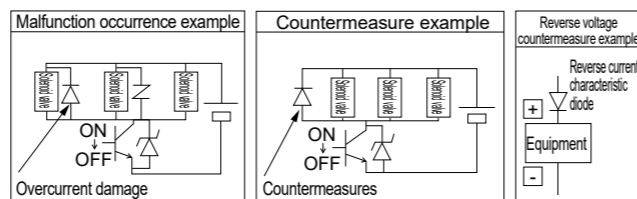
Programmable controller side Valve side

[Output transistor protection circuit included Example 2]



Programmable controller side Valve side

When other equipment or solenoid valves are connected in parallel to a solenoid valve, a reverse voltage surge generated when the solenoid valve is turned OFF is applied to those devices. Even with a solenoid valve with a surge suppressor for 24 VDC, the surge voltage can reach as high as -tens of volts depending on the model, and this reverse polarity voltage may damage or cause malfunctions in other parallel-connected devices. Avoid parallel connection with devices sensitive to reverse polarity voltage (e.g., LED indicators). In addition, in the case of driving multiple solenoid valves in parallel, the surge from other solenoid valves flows into the surge suppressor of one solenoid valve with a surge suppressor, potentially burning out the surge suppressor depending on the current value. Even when driving multiple solenoid valves with surge suppressors in parallel, the surge current may concentrate in the surge suppressor with the lowest limiting voltage, similarly causing burnout. Even with solenoid valves of the same model number, variations in the surge suppressor limiting voltage can lead to burnout in the worst case. Avoid driving multiple solenoid valves in parallel.



If the surge suppressor integrated in a solenoid valve is damaged by overvoltage or overcurrent from a source other than that solenoid valve, it will often enter a short-circuit state. Therefore, after damage occurs, a high current flows when the output is ON, and in the worst case, there is a possibility of damage or fire in the output circuit or solenoid valve. Do not continue energization while in a faulty state. In addition, to prevent a large current from continuing to flow, install an overcurrent protection circuit in the power supply or driving circuit, or use a power supply with overcurrent protection.

2. Low Heat Generation and Power Saving Circuit Built-in Type

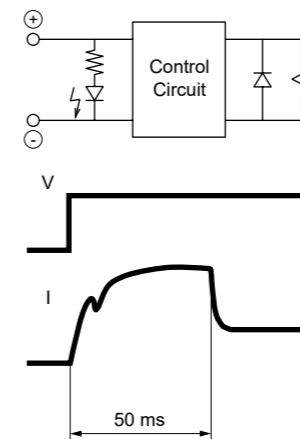
Caution

Do not use in environments where vibration or shock exceeds specifications. This may cause valve malfunction.

The low heat and power saving circuit integrated type has an integrated current control circuit in the valve and is structured to reduce the current value when the coil is held in attraction. Note that the polarity is for plus common only.

Specifications for Low-Heat, Power-Saving Built-In Circuit Type

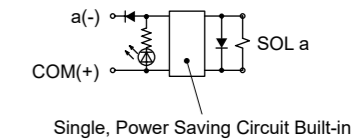
Item	Content	
	At Startup	During Holding
Energizing Current A	DC 24	0.025
	DC 24	0.013
Power Consumption W	DC 24	0.7
	DC 24	0.3



3. Extreme Properties

Caution

When the low heat and power saving circuit integrated type is selected, it is exclusively for plus common connection. Please pay attention to the connection polarity. For details on Surge Suppressors, please also see "1. Surge Suppressor" on P. 1244.



If a momentary power failure of 30 ms or less occurs in the drive power supply of the solenoid valve, the energized state cannot be maintained. If a disturbance such as a momentary power failure of 30 ms or less occurs in the power supply to the solenoid valve during a continuous energized state, turn off the energization for 50 ms or more to turn the solenoid valve ON again.

For precautions during installation, setup, adjustment, use, and maintenance, Please visit the CKD equipment product website (<https://www.ckd.co.jp/kiki/en/>) → "Model Number" → [Instruction manual].