

Detector Switch Water-proof Type

SPVQ1 Series



Long stroke of 3mm, Water-proof structure.

Detector

Push

Slide

Rotary

Encoders

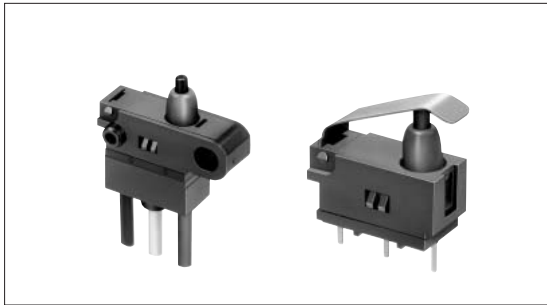
Power

Dual-in-line
Package Type

Multi Control
Devices

TACT Switch™

Custom-
Products



Features

- This is a Water-proof type detection switch.
- The water resistance conforms to IP67.
- 3mm-travel.
- Variety: Apply wire-harness, actuator, and available wide varieties.

Applications

- For detection operations of mechanisms in automobiles and water systems

Typical Specifications

Items		Specifications	
Rating (max.) / (min.) (Resistive load)		0.1A 12V DC/50μA 3V DC	
Contact resistance (Initial performance/After lifetime)		500mΩ max./1Ω max.	
Operating force		Push type	Actuator type
		2N max.	5.9N max.
Operating life	Without load	300,000 cycles	
	With load	300,000 cycles (0.1A 12V DC)	

Products Line

Poles	Positions	Changeover timing	Operating mode	Terminal style	Main body form	Products No.	Drawing No.
1	2	Non shorting	Push	For PC board	Normal	SPVQ140100	1
					Boss in the right	SPVQ140200	5
					Boss in the left	SPVQ140300	6
					Boss in the both sides	SPVQ140400	7
			Normal		SPVQ130200	1	
			Boss in the right		SPVQ130400	5	
			Boss in the left		SPVQ130500	6	
			Boss in the both sides		SPVQ130600	7	
			Normal		SPVQ130300	1	
			Boss in the right		SPVQ130700	5	
			Boss in the left	SPVQ130800	6		
			Boss in the both sides	SPVQ130900	7		
			Push	With wire	With a screw hole	SPVQ120500※	2
					Boss in the right	SPVQ120600※	8
					Boss in the left	SPVQ120700※	9
					Boss in the both sides	SPVQ120800※	10
					With a screw hole	SPVQ111200※	3
					Boss in the right	SPVQ111400※	8
			Actuator A	With wire	Boss in the left	SPVQ111500※	9
					Boss in the both sides	SPVQ111600※	10
With a screw hole	SPVQ111700※	4					
Boss in the right	SPVQ111800※	8					
Actuator B	With wire	Boss in the left	SPVQ111900※	9			
		Boss in the both sides	SPVQ112000※	10			

Notes

- ※ The length of leads is 250mm. Consult us separately if you need different lengths.
- This unit cannot be used in the water.

Dimensions

Unit:mm

No.	Style	Operation form
1		<p>Push</p> <p>Actuator A</p> <p>Actuator B</p>
2		
3		

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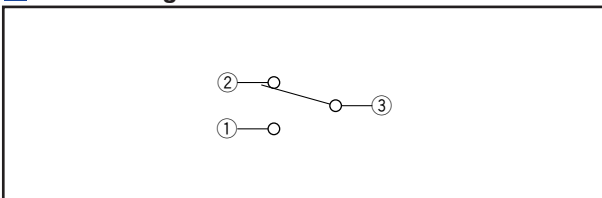
Custom-
Products

Dimensions

Unit:mm

No.	Style	Operation form
8	<p>Technical drawing of Style 8 detector switch. Dimensions include: 8, 7.5, $\phi 1.6$, 2.6, 0.4, 2.6, 0.4, 3-0.6, 2.9, 10.4, 5, 5, 2.6, 4.5, 3.5, 6.15, 8.45, 9.15, 5.8, 5, 3.5, (0.4). Labels include: Total travel position, ON starting position, Terminal No.①, Terminal No.②, Terminal No.③.</p>	<p>Push</p> <p>Operation form diagram for Style 8 showing 'Push' operation. Dimensions include: 6.15, 8.45, 9.15. Labels include: Total travel position, ON starting position.</p>
9	<p>Technical drawing of Style 9 detector switch. Dimensions include: 5.8, 5, 3.5, 8, 7.5, $\phi 1.6$, 9.15, 8.45, 6.15, 2.6, 0.4, 0.4, 2.6, 2.9, 8.5, 3.5, 10.4, 11.6, 1.8, (1.5). Labels include: ON starting position, Total travel position, Terminal No.①, Terminal No.②, Terminal No.③, CO.3, CO.3.</p>	<p>Actuator A</p> <p>Operation form diagram for Style 9 showing 'Actuator A' operation. Dimensions include: 7.2, 9.8, 10.5. Labels include: Total travel position, ON starting position.</p>
10	<p>Technical drawing of Style 10 detector switch. Dimensions include: 8, 7.5, $\phi 1.6$, 3.5, 8.5, 2.9, 0.4, 0.4, 2.6, 6.15, 8.45, 9.15, (1.5), 1.8, 10.4, 11.6. Labels include: ON starting position, Total travel position, Terminal No.①, Terminal No.②, Terminal No.③, CO.3, CO.3.</p>	<p>Actuator B</p> <p>Operation form diagram for Style 10 showing 'Actuator B' operation. Dimensions include: 6.2, 9, 10. Labels include: Total travel position, ON starting position.</p>

Circuit Diagram



Detector

Push

Slide

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Products Specifications

Items		Series											
		SPVP	SPVC1	SPVN	SPVS	SPVG	SSCW	SPVL	SPVQ1	SPVQ3	SPVQ4	SSCN	
Detector	Operating temperature range	-10°C to +60°C					-40°C to +85°C	-10°C to +60°C	-40°C to +85°C				
	Rating (max.) (Resistive load)	1mA 5V DC	10mA 16V DC	1mA 5V DC		50mA 20V DC	0.1A 12V DC	1mA 5V DC	0.1A 12V DC				
Push	Electrical performance	Initial contact resistance	5 Ω max.	1 Ω max.	2 Ω max.		500mΩ max.		2 Ω max.	500mΩ max.			
Slide		Insulation resistance	100MΩ min. 100V DC					100MΩ min. 250V DC	100MΩ min. 100V DC	100MΩ min. 500V DC			
Rotary		Voltage proof	100V AC for 1 min.					250V AC for 1 min.	100V AC for 1 min.	500V AC for 1 min.			
Encoders	Mechanical performance	Robustness of terminal	0.5N for 1 min.	3N for 1 min.	0.5N for 1 min.		—	1N for 1 min.	3N for 1 min.				
Power		Robustness of actuator	5N	10N	5N	10N	20N	5N	20N		10N		
Dual-in-line Package Type		Vibration	10 to 55 to 10Hz/min., the amplitude is 1.5mm for all the frequencies, in the 3 direction of X, Y and Z for 2 hours respectively										
Multi Control Devices	Resistance to soldering heat	Manual soldering	350±5°C, 3s max.	350±10°C, 3 ⁺¹ s	350±5°C, 3s max.		—	350±5°C, 3s max.	300±10°C, 3 ⁺¹ s				
TACT Switch™		Dip soldering	—	260±5°C, 3s max.	—			—		260±5°C, 5±1s		—	
Custom-Products		Reflow soldering	Please see P.72	—	Please see P.72		—	Please see P.72	—				
Durability	Operating life without load	50,000 cycles 10Ω max.	25,000 cycles 2Ω max.	50,000 cycles 5Ω max.		100,000 cycles 1Ω max.		50,000 cycles 5Ω max.	300,000 cycles 1Ω max.	300,000 cycles or 1,000,000 cycles 1Ω max.	300,000 cycles 1Ω max.	100,000 cycles 1Ω max.	
	Operating life with load	(1mA 5V DC) 50,000 cycles 10Ω max.	(10mA 16V DC) 25,000 cycles 2Ω max.	(1mA 5V DC) 50,000 cycles 5Ω max.		(50mA 20V DC) 100,000 cycles 1Ω max.	(0.1A 12V DC) 100,000 cycles 1Ω max.	(1mA 5V DC) 50,000 cycles 5Ω max.	(0.1A 12V DC) 300,000 cycles 1Ω max.	(0.1A 12V DC) 300,000 cycles or 1,000,000 cycles 1Ω max.	(0.1A 12V DC) 300,000 cycles 1Ω max.	(0.1A 12V DC) 100,000 cycles 1Ω max.	
Environmental performance	Cold	-20±2°C for 96h					-40±2°C for 96h	-40±2°C for 500h	-20±2°C for 96h	-40±2°C for 500h			
	Dry heat	85±2°C for 96h					85±2°C for 500h		85±2°C for 96h	85±2°C for 500h			
	Damp heat	40±2°C, 90 to 95%RH for 96h					60±2°C, 90 to 95%RH for 500h	40±2°C, 90 to 95%RH for 96h	60±2°C, 90 to 95%RH for 500h				