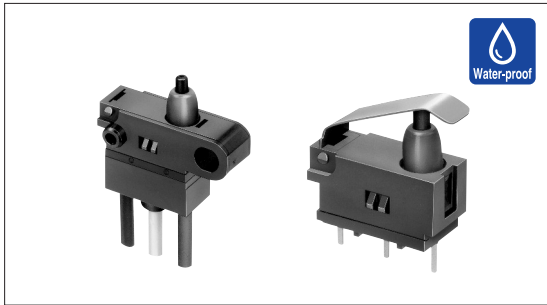


# Detector Switch Water-proof Type

## SPVQ1 Series



Water-proof structure with 3mm long travel.



### Typical Specifications

Items		Specifications	
Rating (max.) / (min.) (Resistive load)		0.1A 12V DC/50 $\mu$ A 3V DC	
Contact resistance (Initial/After operating life)		500m $\Omega$ max./1 $\Omega$ max.	
Operating force		Push type	Actuator type
		2N max.	5.9N max.
Operating life	Without load	300,000cycles	
	With load	300,000cycles (0.1A 12V DC)	

### Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

Custom-  
Products

### Product Line

Poles	Positions	Changeover timing	Operating part shape	Terminal type	Main body form	Minimum order unit (pcs)	Product No.	Drawing No.
1	2	Non shorting	Push	For PC board	Normal	2,400	SPVQ140100	1
					Boss - right side		SPVQ140200	5
					Boss - left side		SPVQ140300	6
					Boss - both sides		SPVQ140400	7
			Actuator A	Normal	2,400	SPVQ130200	1	
				Boss - right side		SPVQ130400	5	
				Boss - left side		SPVQ130500	6	
				Boss - both sides		SPVQ130600	7	
			Actuator B	Normal	2,400	SPVQ130300	1	
				Boss - right side		SPVQ130700	5	
				Boss - left side		SPVQ130800	6	
				Boss - both sides		SPVQ130900	7	
			Push	With wire	With a screw hole	720	SPVQ120500※	2
					Boss - right side	400	SPVQ120600※	8
					Boss - left side		SPVQ120700※	9
					Boss - both sides		SPVQ120800※	10
			Actuator A	With a screw hole	720	SPVQ111200※	3	
				Boss - right side	400	SPVQ111400※	8	
				Boss - left side		SPVQ111500※	9	
				Boss - both sides		SPVQ111600※	10	
Actuator B	With a screw hole	720	SPVQ111700※	4				
	Boss - right side	400	SPVQ111800※	8				
	Boss - left side		SPVQ111900※	9				
	Boss - both sides		SPVQ112000※	10				

### Packing Specifications

#### Bulk

Product No.	Number of packages (pcs.)		Export package measurements (mm)
	1 case /Japan	1 case /export packing	
SPVQ130200, SPVQ130300, SPVQ130400, SPVQ130500, SPVQ130600, SPVQ130700, SPVQ130800, SPVQ130900, SPVQ140100, SPVQ140200, SPVQ140300, SPVQ140400	600	2,400	540×360×230
SPVQ111200, SPVQ111700, SPVQ120500	180	720	555×375×223
SPVQ111400, SPVQ111500, SPVQ111600, SPVQ111800, SPVQ111900, SPVQ112000, SPVQ120600, SPVQ120700, SPVQ120800	100	400	540×360×230

#### Notes

- ※ The length of lead wire is 250mm. For length modification, please contact us.
- This unit cannot be used in water.
- Product with wire will be build-to-order.
- Please place purchase orders per minimum order unit N (integer).



Automotive  
Use

Dimensions

Unit:mm

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

Custom-  
Products

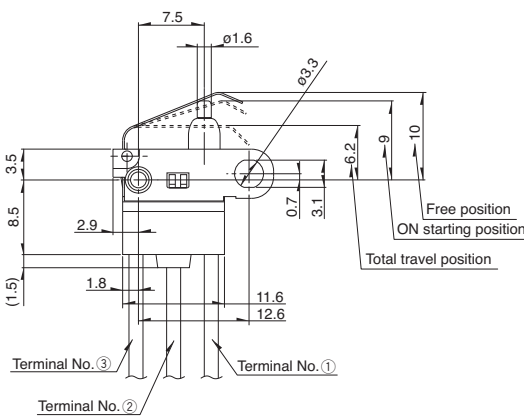
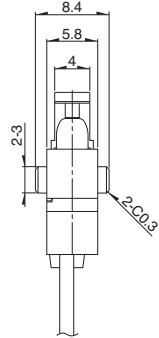
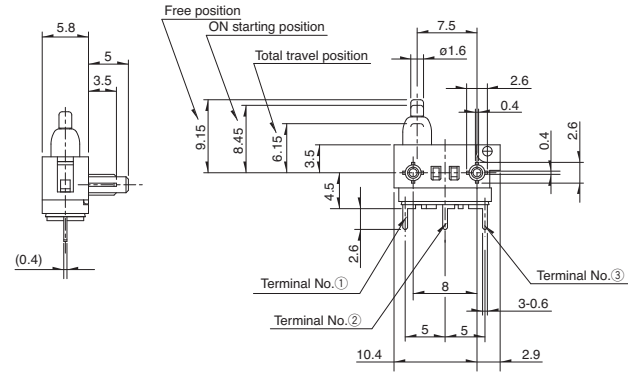
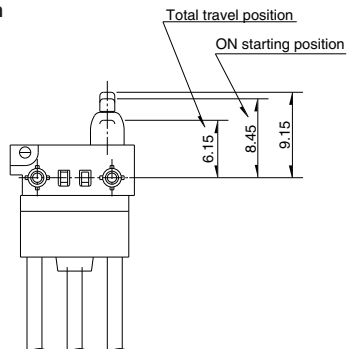
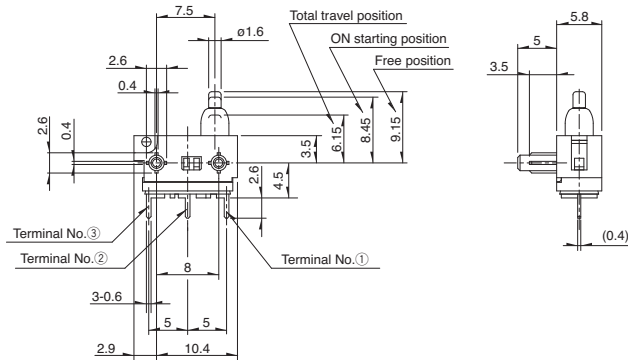
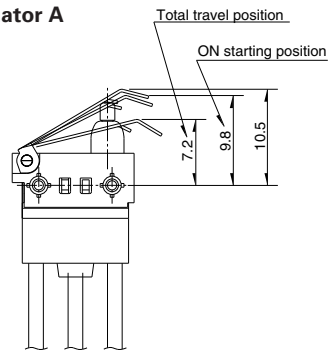
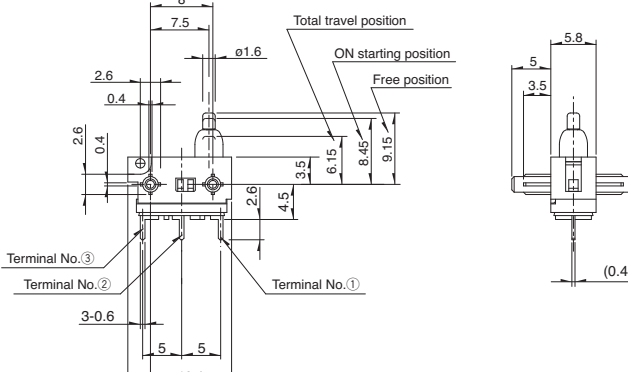
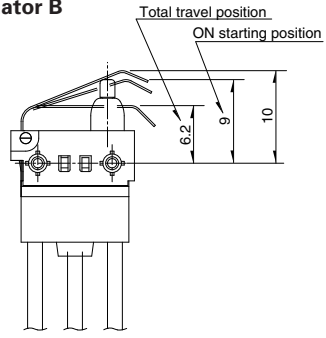
No.	Style	Actuator configuration
1	<p>Technical drawing of Style 1 detector switch. Side view shows dimensions: 3.5, <math>\phi 1.6</math>, 8, 10.65, 12.95, 13.65, 13.3, 5, 5, 6.4, 3-0.6, 0.6, 0.6. Labels include Terminal No. ③, Terminal No. ②, Terminal No. ①, ON starting position, Free position, and Total travel position. Front view shows dimensions: 5.8, (0.4).</p>	<p><b>Push</b></p> <p>ON starting position 10.65 12.95 13.65 Total travel position</p> <p><b>Actuator A</b></p> <p>ON starting position 11.7 14.3 15 Total travel position</p> <p><b>Actuator B</b></p> <p>ON starting position 10.7 13.5 14.5 Total travel position</p>
2	<p>Technical drawing of Style 2 detector switch. Side view shows dimensions: 7.5, <math>\phi 1.6</math>, 3.5, 8.5, 2.9, 0.7, 3.1, 6.15, 8.45, 9.15, 11.6, 12.6, 1.8, (1.5). Labels include Terminal No. ③, Terminal No. ②, Terminal No. ①, ON starting position, Free position, and Total travel position. Front view shows dimensions: 8.4, 5.8, 2-3, <math>\phi 3.3</math>, 2-0.3.</p>	
3	<p>Technical drawing of Style 3 detector switch. Side view shows dimensions: 7.5, <math>\phi 1.6</math>, 3.5, 8.5, 2.9, 0.7, 3.1, 7.2, 9.8, 10.5, 12.6, 11.6, 1.8, (1.5). Labels include Terminal No. ③, Terminal No. ②, Terminal No. ①, Total travel position, ON starting position, and Free position. Front view shows dimensions: 8.4, 5.8, 3.8, 2-3, <math>\phi 3.3</math>.</p>	



Automotive  
Use

Dimensions

Unit:mm

No.	Style	
4		
5		<p data-bbox="1077 806 1348 840"><b>Actuator configuration</b></p> <p data-bbox="997 862 1061 896"><b>Push</b></p> 
6		<p data-bbox="997 1265 1125 1299"><b>Actuator A</b></p> 
7		<p data-bbox="997 1680 1125 1713"><b>Actuator B</b></p> 

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

Custom-  
Products



Automotive  
Use

Dimensions

Unit:mm

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

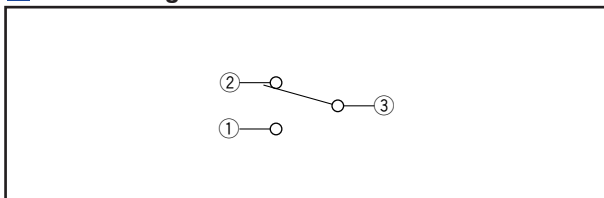
Custom-  
Products



Automotive  
Use

No.	Style	Actuator configuration
8	<p>Technical drawing of Style 8 detector switch. Dimensions include: 5.8, 5, 3.5, 8, 7.5, <math>\phi 1.6</math>, 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: Free position, ON starting position, Total travel position, Terminal No.①, Terminal No.②, Terminal No.③, and C0.3 C0.3.</p>	<p>Push</p> <p>Actuator configuration diagram for Style 8 showing a push actuator. Labels include: Total travel position and ON starting position. Dimensions shown: 6.15, 8.45, 9.15.</p>
9	<p>Technical drawing of Style 9 detector switch. Dimensions include: 8, 7.5, <math>\phi 1.6</math>, 5.8, 5, 3.5, 3.5, 8.5, 2.9, 0.4, 0.4, 2.6, 2.6, 6.15, 8.45, 9.15, (1.5), 1.8, 10.4, 11.6. Labels include: Free position, ON starting position, Total travel position, Terminal No.①, Terminal No.②, Terminal No.③, and C0.3 C0.3.</p>	<p>Actuator A</p> <p>Actuator configuration diagram for Style 9 showing Actuator A. Labels include: Total travel position and ON starting position. Dimensions shown: 7.2, 9.8, 10.5.</p>
10	<p>Technical drawing of Style 10 detector switch. Dimensions include: 8, 7.5, <math>\phi 1.6</math>, 5.8, 5, 3.5, 3.5, 8.5, 2.9, 0.4, 0.4, 2.6, 2.6, 6.15, 8.45, 9.15, (1.5), 1.8, 10.4, 11.6. Labels include: Free position, ON starting position, Total travel position, Terminal No.①, Terminal No.②, Terminal No.③, and C0.3 C0.3.</p>	<p>Actuator B</p> <p>Actuator configuration diagram for Style 10 showing Actuator B. Labels include: Total travel position and ON starting position. Dimensions shown: 6.2, 9, 10.</p>

Circuit Diagram



## List of Varieties (General-purpose Type / Water-proof Type)

- Detector
- Push
- Slide
- Rotary
- Encoders
- Power
- Dual-in-line Package Type
- TACT Switch™
- Custom-Products

Series	General-purpose Type				Water-proof Type			
	SPVT	SPVL	SSCW	SPVQ5	SPVQ1	SPVQ3	SPVQ4H	
Photo								
Operation type					 			
Operating temperature range	-40°C to +85°C							
Automotive use	●	●	●	●	●	●	●	
Rating (max.) (Resistive load)	50mA 20V DC	1mA 5V DC	0.1A 12V DC					
Rating (min.) (Resistive load)	100μA 3V DC	50μA 3V DC	100μA 3V DC	50μA 3V DC		50μA 5V DC or 1mA 5V DC	1mA 5V DC	
Electrical performance	Initial contact resistance	500mΩ max.	2Ω max.	500mΩ max.				
	Insulation resistance	100MΩ min. 100V DC		100MΩ min. 250V DC	100MΩ min. 500V DC			
	Voltage proof	100V AC for 1 minute		250V AC for 1 minute	500V AC for 1 minute			
Mechanical performance	Terminal strength	0.5N for 1 minute	1N for 1 minute	—————		3N for 1 minute Wire strength 30N for 1 minute Applicable to product with wire	Wire strength 30N for 1 minute	
	Actuator strength	10N	5N	20N				
Durability	Operating life without Load	100,000cycles 1Ω max.	50,000cycles 5Ω max.	100,000cycles 1Ω max.	300,000cycles 1Ω max.		300,000cycles 1Ω max.	
	Operating life with Load	(50mA 20V DC) 100,000cycles 1Ω max.	(1mA 5V DC) 50,000cycles 5Ω max.	(0.1A 12V DC) 100,000cycles 1Ω max.	(0.1A 12V DC) 300,000cycles 1Ω max.		(0.1A 12V DC) 300,000cycles 1Ω max.	
Environmental performance	Cold	-40±2°C for 500h						
	Dry heat	85±2°C for 500h						
	Damp heat	40±2°C, 90 to 95%RH for 500h	60±2°C, 90 to 95%RH for 500h					
Dimensions (mm)	W	5.6	5.55	13.1	13.8	13.3	13	19
	D	6.5	6.6	11.35		5.8		6
	H	1.9	1	5.3	5.8	8	8.35	11.9
Soldering	Manual soldering	350±5°C, 3s max.			—————		300±10°C, 3 <sup>+</sup> 1s	
	Dip soldering	—————			—————		260±5°C, 5±1s	
	Reflow soldering	Please see P.97			—————			
Number of poles	1							
Operation force	0.4N max.	0.35N max.	1N max.	2N max.	2N max. 5.9N max.	3N max.		
Page	68	71	72	73	74	78	84	

- Detector Switches Soldering Conditions .....97
- Detector Switches Cautions .....98

### Note

●marks in "Available for automotive use" indicate that all of the series products can work at the operating temperature range from -40°C to +85°C.