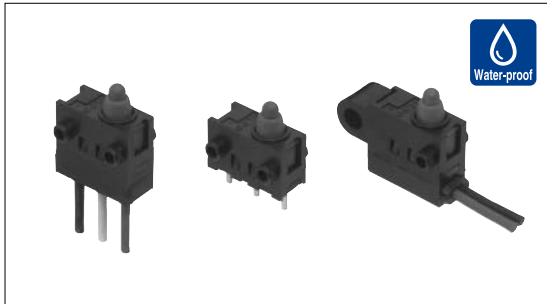


# Detector Switch Water-proof Type

SPVQ3 Series



Long travel type applicable to operation without an actuator.



## Typical Specifications

Items		Specifications	
Rating (max.) (min.) (Resistive load)		0.1A 12V DC/50μA 5V DC	0.1A 12V DC/1mA 5V DC
Voltage drop (Initial/After operating life)		0.2V max./0.3V max.	
Operating force		Push type	Actuator type
		1 ± 0.5N	3N max.
Operating life		Normal type	Long life type
		Without load	300,000cycles 1,200,000cycles
		With load	300,000cycles (0.1A 12V DC) 1,200,000cycles (0.1A 12V DC)

## Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

Custom-  
Products

## Product Line

Operating life	Poles	Positions	Changeover timing	Operating mode	Terminal type	Main body form	Minimum order unit (pcs)	Product No.	Drawing No.
300,000 cycles	1	2	Non shorting	Push	For PC board	Normal	5,200	SPVQ380400	1
						Boss - right side		SPVQ380300	
						Boss - left side		SPVQ380201	
					Boss - both sides	SPVQ380100			
					Solder terminal	Boss - right side		SPVQ380700	
						Boss - left side		SPVQ380600	
						Boss - both sides		SPVQ380500	
					Right angle	Boss - right side		SPVQ380900	
					Left angle	Boss - left side		SPVQ380800	
		With wire (Downwards)		With a screw hole	SPVQ361000※				
				Boss - right side	SPVQ361100※				
				Boss - left side	SPVQ361200※				
		With wire (Right side)		Boss - both sides	SPVQ361300※				
				With a screw hole	SPVQ361400※				
				Boss - right side	SPVQ361500※				
		With wire (Left side)		Boss - left side	SPVQ361600※				
				Boss - both sides	SPVQ361700※				
				Boss - right side	SPVQ361800※				
	With wire (Left side)	Boss - left side	SPVQ361900※						
		Boss - both sides	SPVQ362000※						
		Boss - right side	SPVQ362000※						
	1	2	Non shorting	Actuator A	For PC board	Normal	5,200	SPVQ370400	1
						Boss - right side		SPVQ370300	
						Boss - left side		SPVQ370200	
					Boss - both sides	SPVQ370100			
					Solder terminal	Boss - right side		SPVQ370700	
						Boss - left side		SPVQ370600	
						Boss - both sides		SPVQ370500	
					Right angle	Boss - right side		SPVQ370900	
					Left angle	Boss - left side		SPVQ370800	
		With wire (Downwards)		With a screw hole	SPVQ350100※				
				Boss - right side	SPVQ350200※				
				Boss - left side	SPVQ350300※				
		With wire (Right side)		Boss - both sides	SPVQ350400※				
				With a screw hole	SPVQ350500※				
				Boss - right side	SPVQ350600※				
With wire (Left side)		Boss - left side		SPVQ350700※					
		Boss - both sides		SPVQ350800※					
		Boss - right side		SPVQ350900※					
With wire (Left side)	Boss - left side	SPVQ351000※							
	Boss - both sides	SPVQ351100※							
	Boss - right side	SPVQ351100※							

**Product Line**

Operating life	Poles	Positions	Changeover timing	Operating mode	Terminal type	Main body form	Minimum order unit ( pcs )	Product No.	Drawing No.			
300,000 cycles	1	2	Non shorting	Actuator B	For PC board	Normal	5,200	SPVQ371300	1			
						Boss - right side		SPVQ371200				
						Boss - left side		SPVQ371100				
						Boss - both sides		SPVQ371000				
					Solder terminal	Boss - right side		SPVQ371600	2			
						Boss - left side		SPVQ371500				
						Boss - both sides		SPVQ371400				
					Right angle	Boss - right side		SPVQ371800	3			
		Boss - left side		SPVQ371700								
		1		1	2	Push	For PC board	Normal	5,200	SPVQ340400	1	
								Boss - right side		SPVQ340300		
								Boss - left side		SPVQ340200		
								Boss - both sides		SPVQ340100		
					Solder terminal		Boss - right side	SPVQ340700		2		
							Boss - left side	SPVQ340600				
							Boss - both sides	SPVQ340500				
Right angle	Boss - right side		SPVQ340900		3							
	Boss - left side	SPVQ340800										
1	1	2	Push	With wire ( Downwards )	With a screw hole	1,600	SPVQ320100※	5				
					Boss - right side		SPVQ320200※					
					Boss - left side		SPVQ320300※					
					Boss - both sides		SPVQ320400※					
1	1	1	Push	With wire ( Right side )	With a screw hole	1,600	SPVQ320500※	7				
					Boss - right side		SPVQ320600※					
					Boss - left side		SPVQ320700※					
					Boss - both sides		SPVQ320800※					
1	1	1	Push	With wire ( Left side )	Boss - right side	1,600	SPVQ320900※	9				
					Boss - left side		SPVQ321000※					
					Boss - both sides		SPVQ321100※					
1,200,000 cycles	1	2	Non shorting	Push	For PC board	Normal	5,200	SPVQ330400	1			
						Boss - right side		SPVQ330300				
						Boss - left side		SPVQ330200				
						Boss - both sides		SPVQ330100				
					Solder terminal	Boss - right side		SPVQ330700	2			
						Boss - left side		SPVQ330600				
						Boss - both sides		SPVQ330500				
					Right angle	Boss - right side		SPVQ330900	3			
		Boss - left side		SPVQ330800								
		1		1	2	Push	With wire ( Downwards )	With a screw hole	1,600	SPVQ310100※	5	
								Boss - right side		SPVQ310200※		
								Boss - left side		SPVQ310300※		
								Boss - both sides		SPVQ310400※		
							With wire ( Right side )	With a screw hole		1,600	SPVQ310500※	7
								Boss - right side			SPVQ310600※	
								Boss - left side			SPVQ310700※	
								Boss - both sides			SPVQ310800※	
		With wire ( Left side )		Boss - right side	1,600	SPVQ310900※	9					
				Boss - left side		SPVQ311000※						
				Boss - both sides		SPVQ311100※						

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

**Detector**

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Push

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Slide

---

Rotary

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Encoders

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Power

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Dual-in-line  
Package Type

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TACT Switch™

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Custom-  
Products

**Product Line**

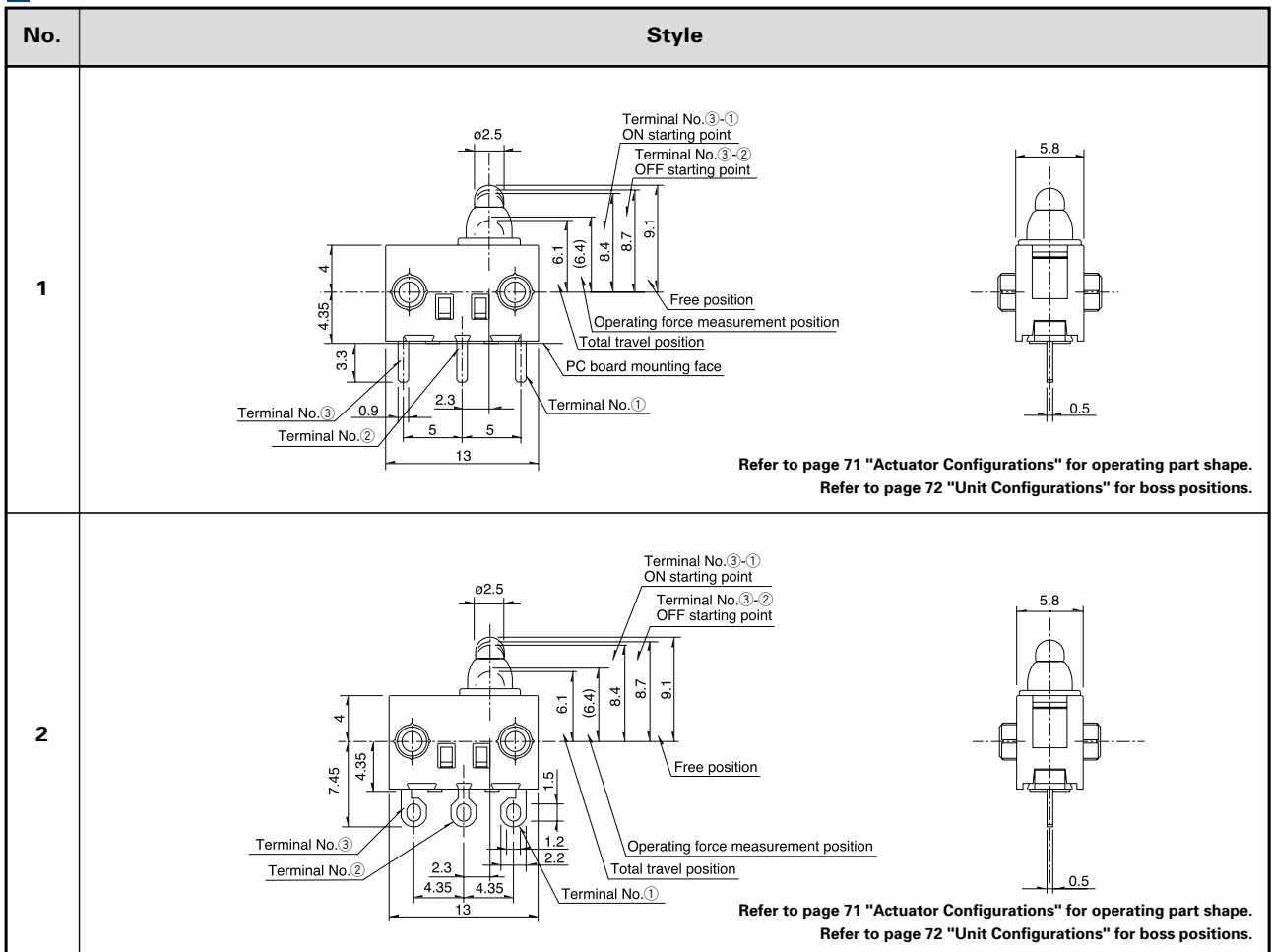
Operating life	Poles	Positions	Changeover timing	Operating mode	Terminal type	Main body form	Minimum order unit ( pcs )	Product No.	Drawing No.				
1,200,000 cycles	1	2	Non shorting	Actuator B	For PC board	Normal	5,200	SPVQ331300	1				
						Boss - right side		SPVQ331200					
						Boss - left side		SPVQ331100					
						Boss - both sides		SPVQ331000					
					Solder terminal	Boss - right side		SPVQ331600	2				
						Boss - left side		SPVQ331500					
						Boss - both sides		SPVQ331400					
					Right angle	Boss - right side		SPVQ331800	3				
						Left angle		SPVQ331700		4			
		1			1	1	Non shorting	Actuator B	With wire ( Downwards )	With a screw hole	1,600	SPVQ311200※	5
										Boss - right side		SPVQ311300※	
										Boss - left side		SPVQ311400※	
									With wire ( Right side )	Boss - both sides		SPVQ311500※	6
										With a screw hole		SPVQ311600※	
										Boss - right side		SPVQ311700※	
									With wire ( Left side )	Boss - left side		SPVQ311800※	8
										Boss - both sides		SPVQ311900※	
										Boss - right side		SPVQ312000※	
With wire ( Left side )	Boss - left side	SPVQ312100※											
	Boss - both sides	SPVQ312200※											

**Note**

- 1.This unit cannot be used in water.
- 2.※Unless specified, the length of the lead wire is 250mm. Color is either red, black or yellow. For length modification, please consult us.
- 3.※Unless circuit is specified, wired ( downward )types will apply three wires.
- 4.※Please specify circuits( N.O. or N.C. )for wired ( side )types. Unless specified, the circuit will apply N.O.
- 5.Please place purchase orders per minimum order unit( integer ).

**Dimensions**

Unit:mm



Dimensions

Unit:mm

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

Custom-  
Products

No.	Style
3	<p>Terminal No.③-① ON starting point Terminal No.③-② OFF starting point</p> <p>Free position Operating force measurement position Total travel position</p> <p>Terminal No.③ Terminal No.② Terminal No.①</p> <p>PC board mounting face</p> <p>Refer to page 71 "Actuator Configurations" for operating part shape.</p>
4	<p>Terminal No.③-① ON starting point Terminal No.③-② OFF starting point</p> <p>Free position Operating force measurement position Total travel position</p> <p>Terminal No.③ Terminal No.② Terminal No.①</p> <p>PC board mounting face</p> <p>Refer to page 71 "Actuator Configurations" for operating part shape.</p>
5	<p>Terminal No.③-① ON starting point Terminal No.③-② OFF starting point</p> <p>Free position Operating force measurement position Total travel position</p> <p>Terminal No.③ Terminal No.② Terminal No.①</p> <p>Hole (for M3)</p> <p>Wire</p> <p>Refer to page 71 "Actuator Configurations" for operating part shape.</p>
6	<p>Terminal No.③-① ON starting point Terminal No.③-② OFF starting point</p> <p>Free position Operating force measurement position Total travel position</p> <p>Terminal No.③ Terminal No.② Terminal No.①</p> <p>Wire</p> <p>Refer to page 71 "Actuator Configurations" for operating part shape. Refer to page 72 "Unit Configurations" for boss positions.</p>

Dimensions

Unit:mm

No.	Style
7	<p>Technical drawing of detector switch style 7. Side view shows dimensions: 2.2 (wire offset), 3.3 (hole offset), 6.1 (total height), 3.1 (hole depth), 4 (actuator height), 6.1 (actuator offset), 6.4 (ON start offset), 8.4 (ON start distance), 8.7 (OFF start distance), 9.1 (total travel distance), 11 (width), 2 (terminal offset), 13.6 (total width), 3.2 (bottom offset). Front view shows 5.8 (actuator width). Labels include: Wire, Terminal No.③, Terminal No.① or ②, Terminal No.③-① ON starting point, Terminal No.③-② OFF starting point, Hole (for M3), Free position, Operating force measurement position, Total travel position.</p> <p>Refer to below "Actuator Configurations" for operating part shape.</p>
8	<p>Technical drawing of detector switch style 8. Side view shows dimensions: 4 (actuator height), 6.1 (actuator offset), 6.4 (ON start offset), 8.4 (ON start distance), 8.7 (OFF start distance), 9.1 (total travel distance), 11 (width), 2 (terminal offset). Front view shows 5.8 (actuator width). Labels include: Wire, Terminal No.③, Terminal No.① or ②, Terminal No.③-① ON starting point, Terminal No.③-② OFF starting point, Free position, Operating force measurement position, Total travel position.</p> <p>Refer to below "Actuator Configurations" for operating part shape. Refer to page 72 "Unit Configurations" for boss positions.</p>
9	<p>Technical drawing of detector switch style 9. Side view shows dimensions: 4 (actuator height), 6.1 (actuator offset), 6.4 (ON start offset), 8.4 (ON start distance), 8.7 (OFF start distance), 9.1 (total travel distance), 11 (width), 2 (terminal offset). Front view shows 5.8 (actuator width). Labels include: Terminal No.① or ②, Terminal No.③, Wire, Terminal No.③-① ON starting point, Terminal No.③-② OFF starting point, Free position, Operating force measurement position, Total travel position.</p> <p>Refer to below "Actuator Configurations" for operating part shape. Refer to page 72 "Unit Configurations" for boss positions.</p>

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

Custom-  
Products

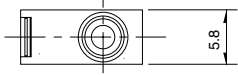
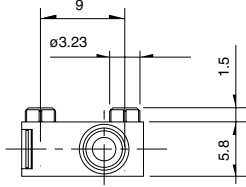
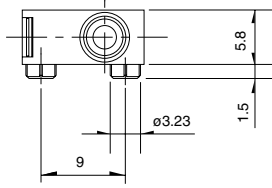
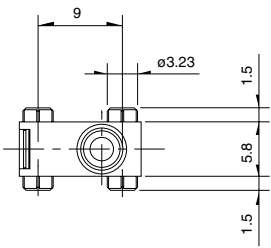
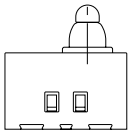
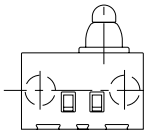
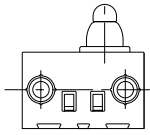
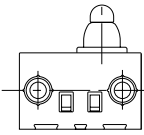
Actuator Configurations

Unit:mm

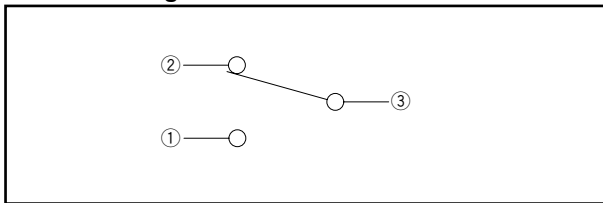
Push	Actuator A	Actuator B
<p>Diagram of push actuator configuration. Dimensions: 6.1 (total height), 4.35 (terminal offset), 8.4 (ON start distance), 8.7 (OFF start distance), 9.1 (total travel distance). Labels: OFF starting point, ON starting point, Total travel position.</p>	<p>Diagram of Actuator A configuration. Dimensions: 5.85 (total height), 4.35 (terminal offset), 9.2 (ON start distance), 9.7 (OFF start distance), 11.2 (total travel distance). Labels: OFF starting point, ON starting point, Total travel position.</p>	<p>Diagram of Actuator B configuration. Dimensions: 8.1 (total height), 4.35 (terminal offset), 11.9 (ON start distance), 12.4 (OFF start distance), 13.95 (total travel distance). Labels: OFF starting point, ON starting point, Total travel position.</p>

■ Unit Configurations



















Unit:mm

	Normal	Boss - right side	Boss - left side	Boss - both sides
<b>Detector</b>				
Push				
Slide				
Rotary				
Encoders				
Power				
Dual-in-line Package Type				
TACT Switch™				
Custom-Products				

■ Circuit Diagram



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

Series	General-purpose Type		Water-proof Type					Telephone-hook Type	
	SSCW	SPVQ5	SPVQ1	SPVQ3	SPVQ4	SPVQ6	SSCN	SPPY5	
Photo									
Operation type			 1-way  2-way	 1-way  2-way					
Operating temperature range	-40 to +85							-10 to +60	
Rating (max.) (Resistive load)	0.1A 20V DC	0.1A 12V DC					0.1mA 3V DC min. 50mA 48V DC max.		
Rating (min.) (Resistive load)	100μA 3V DC	50μA 3V DC	50μA 3V DC or 1mA 5V DC	50μA 3V DC	50μA 5V DC	100μA 3V DC	0.1mA 3V DC		
Electrical performance	Initial contact resistance	500m max.						100m max.	
	Insulation resistance	100M min. 250V DC	100M min. 500V DC						
	Voltage proof	250V AC for 1 minute	500V AC for 1 minute						
Mechanical performance	Terminal strength	3N for 1 minute					5N for 1 minute		
	Actuator strength	20N					10N	5N	
Durability	Operating life without Load	100,000cycles 1 max.	300,000cycles 1 max.	300,000cycles or 1,200,000cycles 1 max.	300,000cycles 1 max.	100,000cycles 1 max.	300,000cycles 1 max.		
	Operating life with Load	(0.1mA 12V DC) 100,000cycles 1 max.	(0.1A 12V DC) 300,000cycles 1 max.	(0.1A 12V DC) 300,000cycles or 1,200,000 1 max.	(0.1A 12V DC) 300,000cycles 1 max.	(0.1A 12V DC) 100,000cycles 1 max.	(1mA 3V DC) 300,000cycles 1 max. or (50mA 60V DC) 100,000cycles 1 max.		
Environmental performance	Cold	-40 ± 2 for 500h						-20 ± 2 for 96h	
	Dry heat	85 ± 2 for 500h						85 ± 2 for 96h	
	Damp heat	60 ± 2 , 90 to 95%RH for 500h						40 ± 2 , 90 to 95%RH for 96h	
Dimensions (mm)	W	13.1	13.8	13.3	13	14.7	13.3	13	14.4
	D	11.35		5.8		5.4	5.3	25	28.6
	H	5.3	5.8	8	8.35	7.6	7	5	7.15
Soldering	Manual soldering	300 ± 10 , 3 <sup>+1</sup> s						350 ± 5 , 3s max.	
	Dip soldering	260 ± 5 , 5 ± 1s							
	Reflow soldering							Please see P.79	
Number of poles	1							2	
Operation force	1N max.	2N max.	2N max. 5.9N max.	1 ± 0.5N	1 ± 0.3N	1 ± 0.5N	2N max.	0.8N max.	
Page	61	62	63	67	73	74	76	77	

- Detector
- Push
- Slide
- Rotary
- Encoders
- Power
- Dual-in-line Package Type
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