

## GENERAL SPECIFICATIONS FOR S1 ~ S29

### Electrical Capacity (Resistive & Inductive Load)

**Power Level:** Shown in the following tables

### Other Ratings

**Contact Resistance:** 10 milliohms maximum  
**Insulation Resistance:** 1,000 megohms minimum @ 500V DC  
**Dielectric Strength:** 2,000V AC minimum for 1 minute minimum  
**Mechanical Life:** 30,000 operations minimum for S5AW, S8AW, S9AW, S25AW, S28AW, S29AW  
 50,000 operations minimum for all other models  
**Electrical Life:** 25,000 operations minimum  
**Angle of Throw ( $\alpha$ ):** Shown in tables on following pages

### Materials & Finishes

**Toggle:** Brass with chrome plating  
**Bushing:** Brass with chrome plating  
**Case:** Phenolic resin  
**Case Cover:** Steel with zinc plating  
**Movable Contactor:** Copper with silver plating  
**Movable Contacts:** Silver alloy capped on copper with silver plating  
**Stationary Contacts:** Silver alloy capped on copper with silver plating  
**Terminals:** Brass with tin plating for S1 ~ S9AW;  
 brass with silver plating for S21 ~ S29AW

### Environmental Data

**Operating Temp Range:** -30°C through +70°C (-22°F through +158°F) for Splashproof models;  
 -10°C through +70°C (+14°F through +158°F) for all other models  
**Sealing:** Splashproof & lever lock panel seal models meet IP67 standard













### Installation

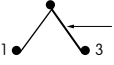
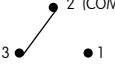
**Mounting Torque:** 1.47Nm (13 lb•in) for single nut on AW & AL models  
 2.94Nm (26 lb•in) for double nut on other models  
**Maximum Panel Thickness:** Shown beneath panel cutout in switch dimension drawings  
**Soldering Time & Temperature:** Manual Soldering: See Profile A in Supplement section.

### Standards & Certifications

**UL Recognized:** Designated with UL recognized symbol beside part numbers on following pages  
 See Supplement section to find UL rating details. UL File No. WOYR2.E44145  
 Add "/U" to end of part number to order UL mark on switch.  
**C-UL Recognized:** Designated with C-UL recognized symbol beside part numbers on following pages  
 See Supplement section to find C-UL rating details. C-UL File No. WOYR8.E44145  
 Add "/C-UL" to end of part number to order C-UL mark on switch.  
**CSA Certified:** Designated with CSA certified symbol beside part numbers on following pages  
 See Supplement section to find CSA rating details. File No. 023535-0-000  
 Add "/C" to end of part number to order CSA mark on switch.

### SINGLE POLE WITH SOLDER LUG

Model	Approvals	Pole & Throw	Toggle Position/Connected Terminals						Electrical Capacity				Angle of Throw
			Down 	Center 	Up 		Resistive			Inductive			
					Keyway		1	2	AC 125V	AC 250V	DC 30V	AC 125V PF 0.6	
S1A	  	SPST	ON	1-3	NONE	OFF	—	15A	6A	20A	8A	25°	
S2A	  	SPDT	ON	2-3	NONE	ON	2-1	15A	6A	20A	8A	25°	
S3A	  	SPDT	ON	2-3	OFF	ON	2-1	15A	6A	20A	8A	25°	

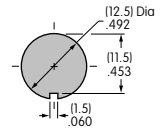
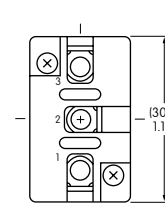
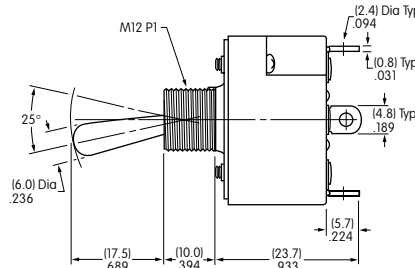
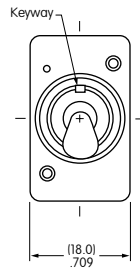
**Throw & Schematics:** SPST  INTERNAL CONNECTION SPDT  2 (COM)

Note: Terminal numbers are actually on the switch

• Standard Hardware: AT504M Knurled Nut, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section.









S2A

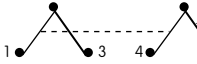
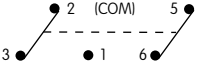


Maximum Panel Thickness: .158" (4.0mm)

S1A does not have terminal 2

### DOUBLE POLE WITH SOLDER LUG

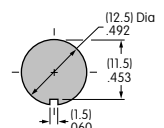
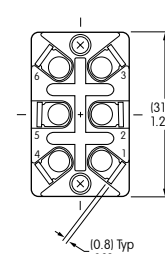
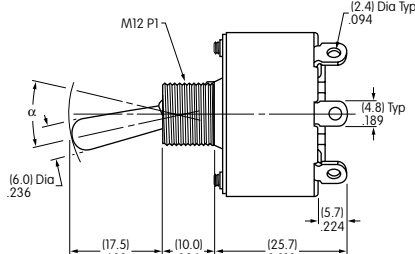
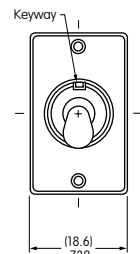
Model	Approvals	Pole & Throw	Toggle Position/Connected Terminals						Electrical Capacity				α = Angle of Throw
			Down 	Center 	Up 		Resistive			Inductive			
					Keyway		1	2	3	4	AC 125V	AC 250V	
S21A	— —	DPST	ON	1-3 4-6	NONE	OFF	—	15A	15A	15A	8A	21°	
S6A	  	DPDT	ON	2-3 5-6	NONE	ON	2-1 5-4	20A	10A	20A	8A	21°	
S7A	—	DPDT	ON	2-3 5-6	OFF	ON	2-1 5-4	20A	10A	20A	8A	28°	

**Throw & Schematics:** DPST  INTERNAL CONNECTION DPDT  2 (COM) 5

Note: Terminal numbers are actually on the switch






S6A





Maximum Panel Thickness: .158" (4.0mm)

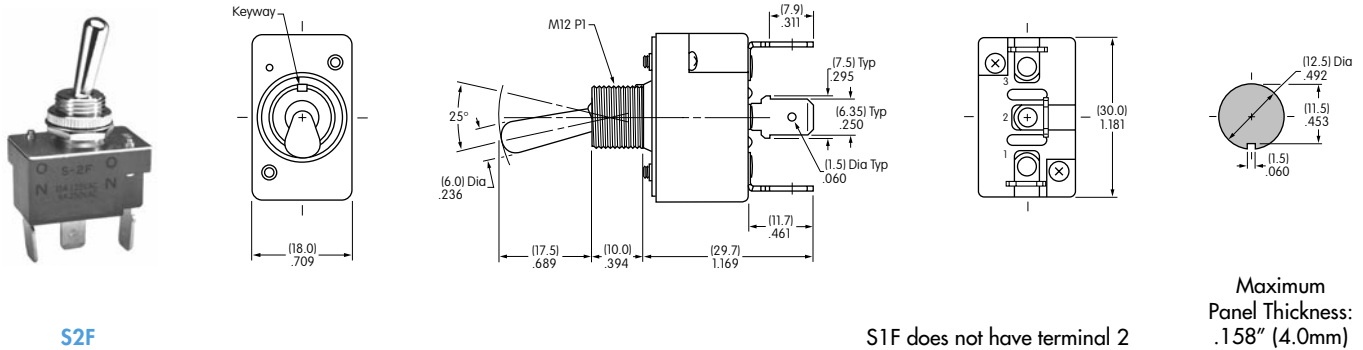
S21A does not have terminals 2 & 5

### SINGLE POLE WITH QUICK CONNECT




Model	Approvals	Pole & Throw	Toggle Position/Connected Terminals					Electrical Capacity				Angle of Throw
			Down 	Center 	Up 	Resistive			Inductive			
						AC 125V	AC 250V	DC 30V	AC 125V PF 0.6			
S1F	— —	SPST	ON 1-3	NONE	OFF —	15A	6A	20A	8A	25°		
S2F	— —	SPDT	ON 2-3	NONE	ON 2-1	15A	6A	20A	8A	25°		
S3F	— —	SPDT	ON 2-3	OFF	ON 2-1	15A	6A	20A	8A	25°		


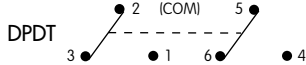
**Throw & Schematics:** SPST  INTERNAL CONNECTION  Note: Terminal numbers are actually on the switch

• Standard Hardware: AT504M Knurled Nut, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section.

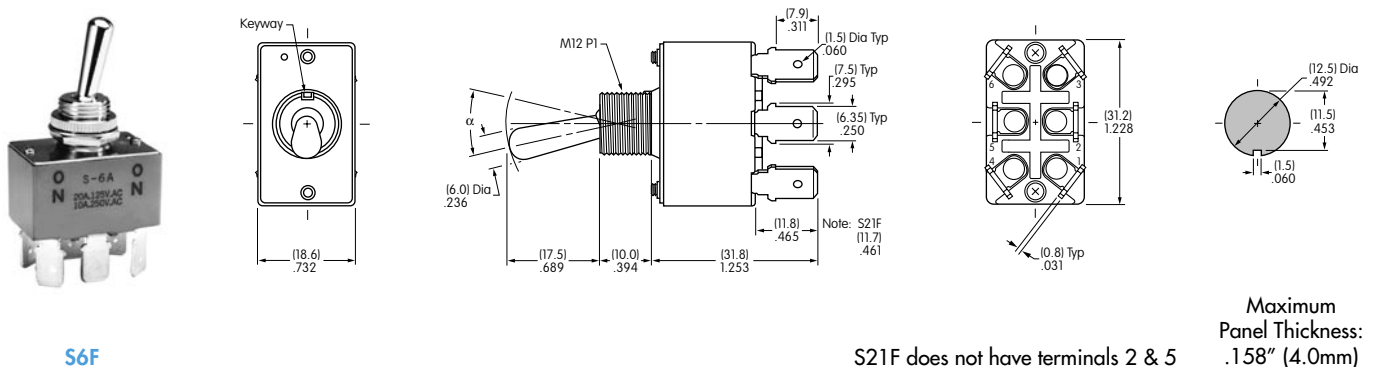


### DOUBLE POLE WITH QUICK CONNECT




Model	Approvals	Pole & Throw	Toggle Position/Connected Terminals					Electrical Capacity				α = Angle of Throw
			Down 	Center 	Up 	Resistive			Inductive			
						AC 125V	AC 250V	DC 30V	AC 125V PF 0.6			
S21F	— —	DPST	ON 1-3 4-6	NONE	OFF —	15A	15A	15A	8A	21°		
S6F	— —	DPDT	ON 2-3 5-6	NONE	ON 2-1 5-4	20A	10A	20A	8A	21°		
S7F	— —	DPDT	ON 2-3 5-6	OFF	ON 2-1 5-4	20A	10A	20A	8A	28°		



**Throw & Schematics:** DPST  INTERNAL CONNECTION  Note: Terminal numbers are actually on the switch

• Standard Hardware: AT504M Knurled Nut, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section.



### SINGLE POLE WITH PANEL SEAL

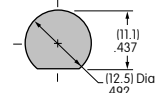
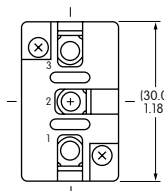
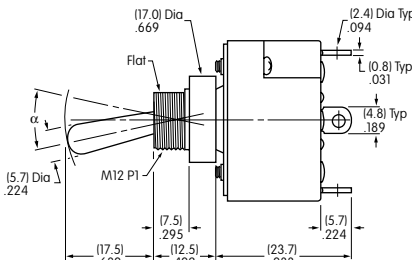
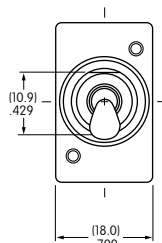
Model	Approvals	Pole & Throw	Toggle Position/Connected Terminals ( ) = Momentary					Electrical Capacity				$\alpha$ = Angle of Throw
			Down 	Center 	Up 	Resistive			Inductive			
						AC 125V	AC 250V	DC 30V	AC 125V			
S1AW	— —	SPST	ON 1-3	NONE	OFF —	15A	6A	20A	200W	24°		
S2AW	— —	SPDT	ON 2-3	NONE	ON 2-1	15A	6A	20A	200W	24°		
S3AW	— —	SPDT	ON 2-3	OFF	ON 2-1	15A	6A	20A	200W	28°		
S5AW	— —	SPDT	ON 2-3	NONE	(ON) 2-1	15A	6A	20A	200W	20°		
S8AW	— —	SPDT	(ON) 2-3	OFF	(ON) 2-1	15A	6A	20A	200W	24°		
S9AW	— —	SPDT	ON 2-3	OFF	(ON) 2-1	15A	6A	20A	200W	24°		

**Throw & Schematics:** SPST  INTERNAL CONNECTION  Note: Terminal numbers are actually on the switch

- Standard Hardware: AT503M Face Hex Nut, AT508 Lockwasher, AT537 O-ring. See Accessories & Hardware section.
- Contact factory for availability of .250" (6.35mm) quick connect terminals.






S2AW

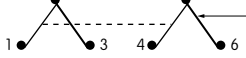
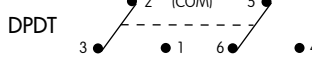


Maximum Panel Thickness: .158" (4.0mm)

S1AW does not have terminal 2

### DOUBLE POLE WITH PANEL SEAL

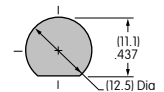
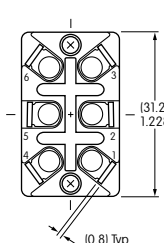
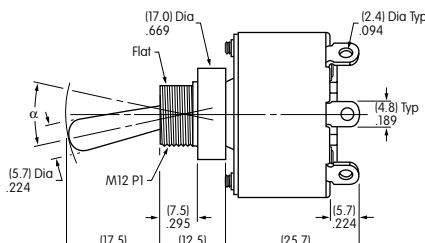
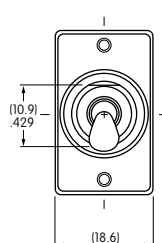
Model	Approvals	Pole & Throw	Toggle Position/Connected Terminals ( ) = Momentary					Electrical Capacity				$\alpha$ = Angle of Throw
			Down 	Center 	Up 	Resistive			Inductive			
						AC 125V	AC 250V	DC 30V	AC 125V			
S21AW	— —	DPST	ON 1-3 4-6	NONE	OFF —	15A	15A	15A	200W	22°		
S6AW	— —	DPDT	ON 2-3 5-6	NONE	ON 2-1 5-4	20A	10A	20A	—	22°		
S7AW	— —	DPDT	ON 2-3 5-6	OFF	ON 2-1 5-4	20A	10A	20A	—	28°		
S25AW	— —	DPDT	ON 2-3 5-6	NONE	(ON) 2-1 5-4	15A	6A	20A	—	20°		
S28AW	— —	DPDT	(ON) 2-3 5-6	OFF	(ON) 2-1 5-4	15A	6A	20A	—	22°		
S29AW	— —	DPDT	ON 2-3 5-6	OFF	(ON) 2-1 5-4	15A	6A	20A	—	22°		

**Throw & Schematics:** DPST  INTERNAL CONNECTION  Note: Terminal numbers are actually on the switch

- Standard Hardware: AT503M Face Hex Nut, AT508 Lockwasher, AT537 O-ring. See Accessories & Hardware section.
- Contact factory for availability of .250" (6.35mm) quick connect terminals.






S6AW

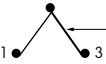
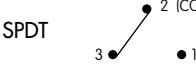


Maximum Panel Thickness: .158" (4.0mm)

S21AW does not have terminals 2 & 5

### SINGLE POLE WITH LOCKING LEVER & PANEL SEAL

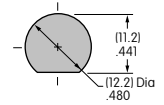
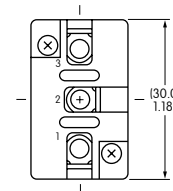
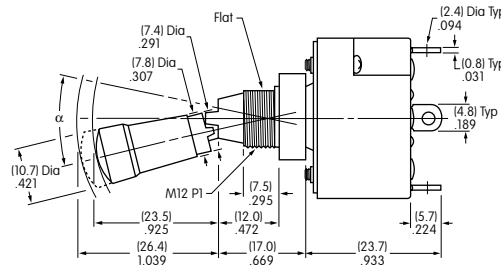
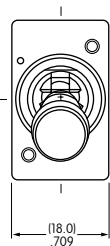
Model	Approvals	Pole & Throw	Toggle Position/Connected Terminals			Electrical Capacity				$\alpha$ = Angle of Throw
			Down 	Center 	Up 	Resistive			Inductive	
						AC 125V	AC 250V	DC 30V	AC 125V PF 0.6	
S1AL	— —	SPST	ON 1-3	NONE	OFF —	15A	6A	20A	8A	24°
S2AL	— —	SPDT	ON 2-3	NONE	ON 2-1	15A	6A	20A	8A	24°
S3AL	— —	SPDT	ON 2-3	OFF	ON 2-1	15A	6A	20A	8A	28°

**Throw & Schematics:** SPST  INTERNAL CONNECTION  Note: Terminal numbers are actually on the switch

• Standard Hardware: AT503M Face Hex Nut, AT508 Lockwasher, AT537 O-ring. See Accessories & Hardware section.






S2AL

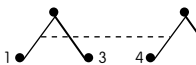
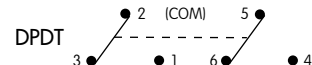


Maximum Panel Thickness: .158" (4.0mm)

S1AL does not have terminal 2

### DOUBLE POLE WITH LOCKING LEVER & PANEL SEAL

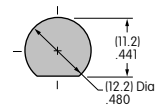
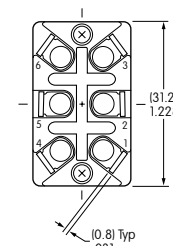
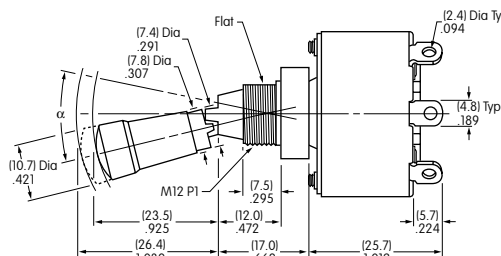
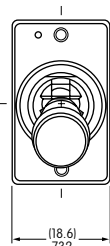
Model	Approvals	Pole & Throw	Toggle Position/Connected Terminals			Electrical Capacity				$\alpha$ = Angle of Throw
			Down 	Center 	Up 	Resistive			Inductive	
						AC 125V	AC 250V	DC 30V	AC 125V PF 0.6	
S21AL	— —	DPST	ON 1-3 4-6	NONE	OFF —	15A	15A	15A	8A	22°
S6AL	— —	DPDT	ON 2-3 5-6	NONE	ON 2-1 5-4	20A	10A	20A	8A	22°
S7AL	— —	DPDT	ON 2-3 5-6	OFF	ON 2-1 5-4	20A	10A	20A	8A	28°

**Throw & Schematics:** DPST  INTERNAL CONNECTION  Note: Terminal numbers are actually on the switch

• Standard Hardware: AT503M Face Hex Nut, AT508 Lockwasher, AT537 O-ring. See Accessories & Hardware section.



S6AL



Maximum Panel Thickness: .158" (4.0mm)

S21AL does not have terminals 2 & 5