

GENERAL SPECIFICATIONS FOR S1 ~ S29

A
Toggles

Electrical Capacity (Resistive & Inductive Load)

Power Level: Shown in the following tables

Rockers

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 (α):	Shown in tables on following pages

Pushbuttons

Illuminated PB

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

Programmable

Keylocks

Rotaries

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 and lever lock panel seal models meet IP67 of IEC 60529 Standards

Slides

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.

Tactiles

Tilt

Standards & Certifications

UL:	File No. E44145 - Recognized only when ordered with marking on switch. Add "/U" or "/CUL" to end of part number to order UL recognized switch. UL or cULus recognition designated beside part numbers on following pages. See Supplement section to find UL or cULus rating details.
CSA:	File No. 023535_0_000 - Certified only when ordered with marking on switch. Add "/C" to end of part number to order CSA certified switch. CSA certification designated beside part numbers on following pages. See Supplement section to find CSA rating details.

Touch

Indicators

Accessories

Supplement

Toggles

Rockers

Pushbuttons

Illuminated PB

Programmable

Keylocks

Rotaries

Slides

Tactiles

Tilt

Touch

Indicators

Accessories

Supplement

SINGLE POLE WITH SOLDER LUG

* UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)				Toggle Position/Connected Terminals				Electrical Capacity				
Model	* Approvals			Pole & Throw	Down	Center	Up	Resistive			Inductive	Angle of Throw
								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



SPDT



Note: Terminal numbers are actually on the switch

Throw & Schematics:

SPST



SPDT

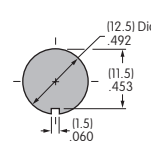
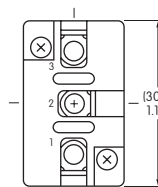
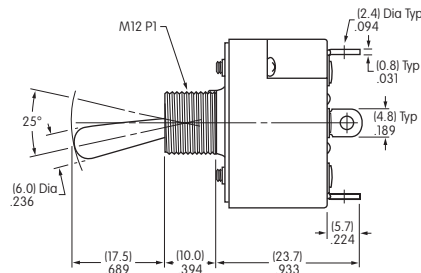
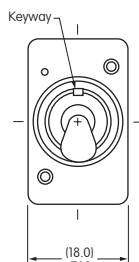


Note: Terminal numbers are actually on the switch

Notes: Standard Hardware: AT504M Knurled Nut, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section.
Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



S2A



Maximum Panel Thickness: .158" (4.0mm)

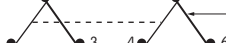
S1A does not have terminal 2

DOUBLE POLE WITH SOLDER LUG

* UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)				Toggle Position/Connected Terminals				Electrical Capacity				
Model	* Approvals			Pole & Throw	Down	Center	Up	Resistive			Inductive	α = Angle of Throw
								AC 125V	AC 250V	DC 30V	AC 125V PF 0.6	
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°

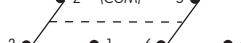
Throw & Schematics:

DPST



INTERNAL CONNECTION

DPDT



(COM)

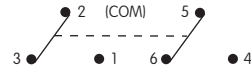
Note: Terminal numbers are actually on the switch

Throw & Schematics:

DPST



DPDT

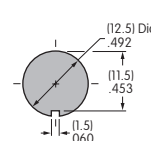
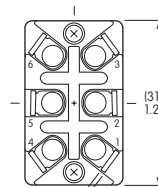
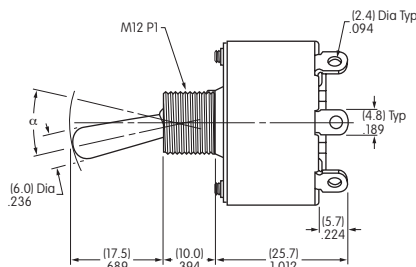
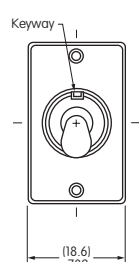


Note: Terminal numbers are actually on the switch

Notes: Standard Hardware: AT504M Knurled Nut, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section.
Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



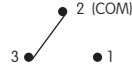
S6A



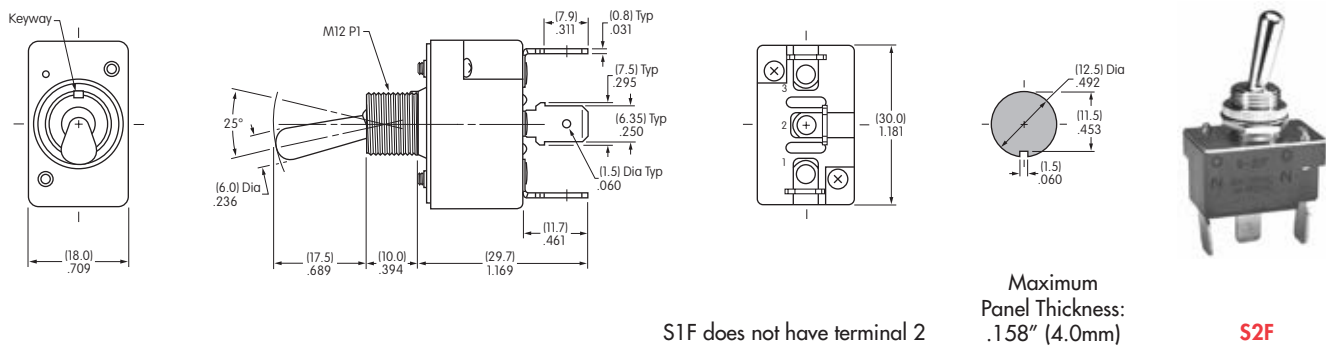
Maximum Panel Thickness: .158" (4.0mm)

S21A does not have terminals 2 & 5

SINGLE POLE WITH QUICK CONNECT

			Toggle Position/Connected Terminals			Electrical Capacity					
Model	Approvals		Pole & Throw	Down	Center	Up	Resistive			Inductive	Angle of Throw
				 Keyway			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:							Note: Terminal numbers are actually on the switch				
SPST SPDT											

Notes: Standard Hardware: AT504M Knurled Nut, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section.
Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



DOUBLE POLE WITH QUICK CONNECT

			Toggle Position/Connected Terminals				Electrical Capacity					
Model	Approvals  	Pole & Throw	Down  Keyway		Center 	Up 		Resistive			Inductive	α = Angle of Throw
							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

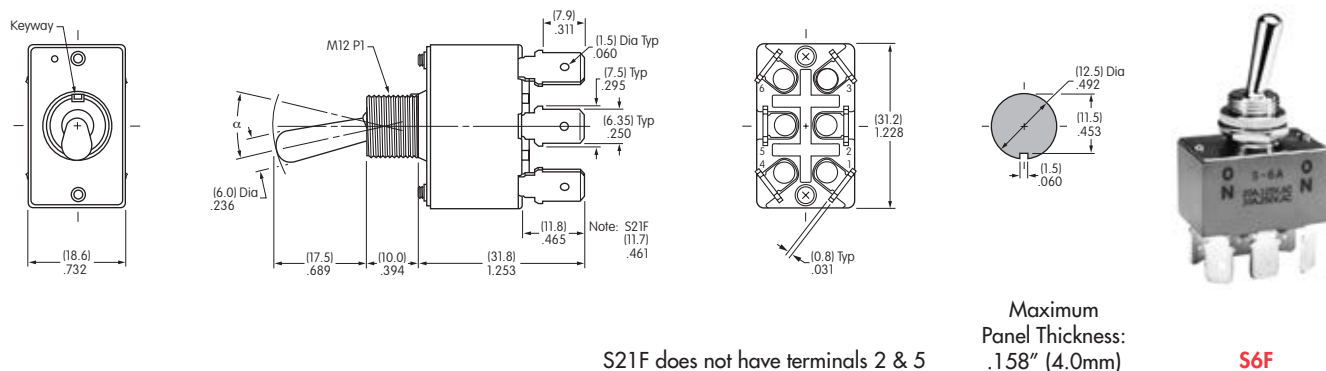
DPDT



(COM)

Note: Terminal numbers are actually on the switch

Notes: Standard Hardware: AT504M Knurled Nut, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section.
Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



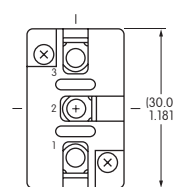
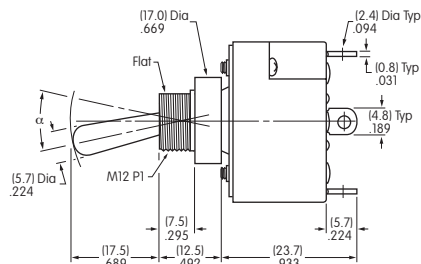
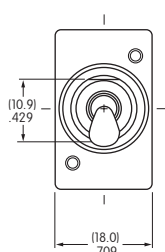
SINGLE POLE SOLDER LUG WITH PANEL SEAL

			Toggle Position/Connected Terminals () = Momentary				Electrical Capacity						
Model	Approvals		Pole & Throw	Down 		Center 		Up 		Resistive			α = Angle of Throw
								AC 125V	AC 250V	DC 30V			
S1AW	—	—	SPST	ON 1-3	NONE	OFF —	15A	6A	20A	24°			
S2AW	—	—	SPDT	ON 2-3	NONE	ON 2-1	15A	6A	20A	24°			
S3AW	—	—	SPDT	ON 2-3	OFF	ON 2-1	15A	6A	20A	28°			
S5AW	—	—	SPDT	ON 2-3	NONE	(ON) 2-1	15A	6A	20A	20°			
S8AW	—	—	SPDT	(ON) 2-3	OFF	(ON) 2-1	15A	6A	20A	24°			
S9AW	—	—	SPDT	ON 2-3	OFF	(ON) 2-1	15A	6A	20A	24°			
Throw & Schematics:			SPST			SPDT			Note: Terminal numbers are actually on the switch				

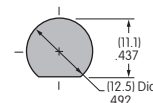
Notes: Standard Hardware: AT503M Face Hex Nut, Lockwasher, AT537 O-ring. See Accessories & Hardware section. For **.250" Quick Connect terminals**, add "F" to end of part number. See **Quick Connect terminal** dimensions on previous page. For further information, contact factory. Panel Seal models meet IP67 of IEC 60529 Standards at front panel (dust tight and water protected from effects of temporary immersion).



S2AW



S1AW does not have terminal 2



Maximum Panel Thickness: .158" (4.0mm)

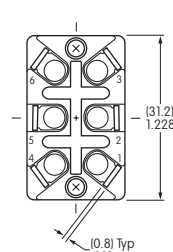
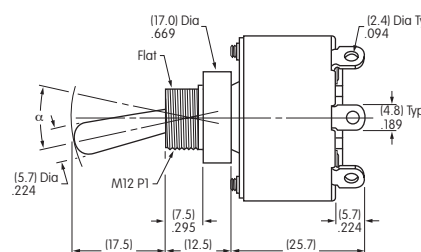
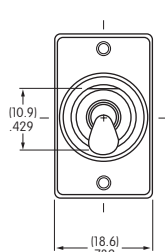
DOUBLE POLE SOLDER LUG WITH PANEL SEAL

			Toggle Position/Connected Terminals () = Momentary				Electrical Capacity				
Model	Approvals  	Pole & Throw	Down 		Center 	Up 		Resistive			α = Angle of Throw
							AC 125V	AC 250V	DC 30V		
S21AW	— —	DPST	ON	1-3 4-6	NONE	OFF	—	15A	15A	15A	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 				DPDT 			Note: Terminal numbers are actually on the switch	

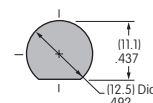
Notes: Standard Hardware: AT503M Face Hex Nut, Lockwasher, AT537 O-ring. See Accessories & Hardware section. For **.250" Quick Connect terminals**, add "F" to end of part number. See **Quick Connect terminal** dimensions on previous page. For further information, contact factory. Panel Seal models meet IP67 of IEC 60529 Standards at front panel (dust tight and water protected from effects of temporary immersion).



S6AW



S21AW does not have terminals 2 & 5

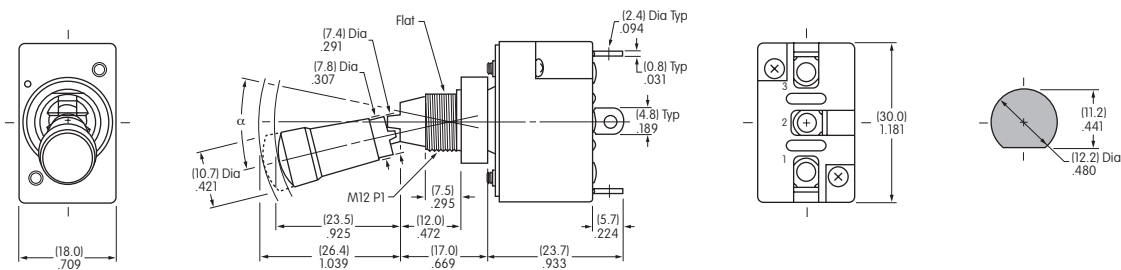


Maximum Panel Thickness: .158" (4.0mm)

SINGLE POLE SOLDER LUG 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 SPDT  2 (COM)			Note: Terminal numbers are actually on the switch				

Notes: Standard Hardware: AT503M Face Hex Nut, Lockwasher, AT537 O-ring. See Accessories & Hardware section.
 Locking Lever & Panel Seal models meet IP67 of IEC 60529 Standards at front panel (dust tight and water protected from effects of temporary immersion).

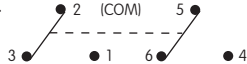


S1AL does not have terminal 2

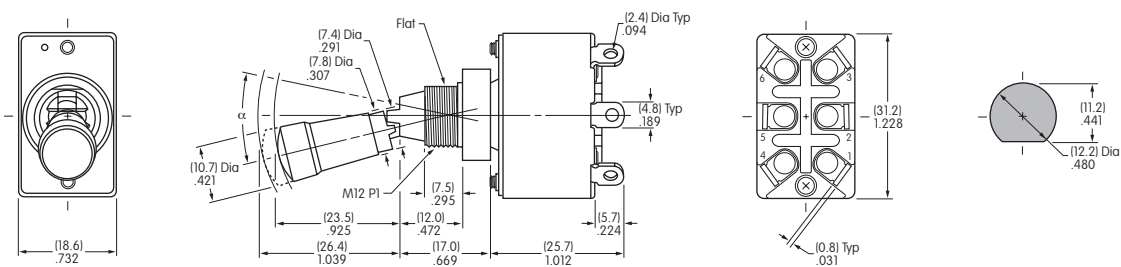
Maximum Panel Thickness:
.158" (4.0mm)

S2AL

DOUBLE POLE SOLDER LUG 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 DPDT  2 (COM) 5			Note: Terminal numbers are actually on the switch				

Notes: Standard Hardware: AT503M Face Hex Nut, Lockwasher, AT537 O-ring. See Accessories & Hardware section.
 Locking Lever & Panel Seal models meet IP67 of IEC 60529 Standards at front panel (dust tight and water protected from effects of temporary immersion).



S21AL does not have terminals 2 & 5

Maximum Panel Thickness:
.158" (4.0mm)

S6AL

GENERAL SPECIFICATIONS FOR S301 ~ S339

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:	50,000 operations minimum
Electrical Life:	6,000 operations minimum for S331F; 15,000 operations minimum for all other S331s; 25,000 operations minimum for all others
Angle of Throw (α):	Shown on following tables

Materials & Finishes

Toggle:	PBT for flatted lever; brass with chrome plating for all others
Bushing:	Brass with chrome plating
Case:	Melamine phenol
Case Cover:	Steel with zinc plating
Movable Contactor:	Copper with silver plating
Movable & Stationary Contacts:	Silver alloy capped on copper with silver plating
Terminals:	Brass with tin plating

Environmental Data

Operating Temperature Range: $-10^{\circ}\text{C} \sim +70^{\circ}\text{C}$ ($+14^{\circ}\text{F} \sim +158^{\circ}\text{F}$)

Installation

Mounting Torque: 2.94Nm (26 lb•in) for double nut; 1.47Nm (13 lb•in) for single nut
Soldering Time & Temperature: Manual Soldering: See Profile A in Supplement section.

Standards & Certifications

- UL:** File No. E44145 - Recognized only when ordered with marking on switch.
 Add "/U" or "/CUL" to end of part number to order UL recognized switch.
 UL or cULus recognition designated beside part numbers on following pages.
 See Supplement section to find UL or cULus rating details.
- CSA:** File No. 023535_0_000 - Certified only when ordered with marking on switch.
 Add "/C" to end of part number to order CSA certified switch.
 CSA certification designated beside part numbers on following pages.
 See Supplement section to find CSA rating details

Series S

At Toggles

Rocks

buttons



Variable	Illustration
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Progre

Keylo



DOUBLE POLE WITH SOLDER LUG & FLATTED LEVER

* UL & cULus recognized only when ordered with marking on switch (see General Specs)				Toggle Position/Connected Terminals () = Momentary						Electrical Capacity				
Model	* Approvals			Pole & Throw	Down	Center	Up	Resistive			Inductive	α = Angle of Throw		
								AC 125V	AC 250V	DC 30V	AC 125V PF 0.6			
S331R	✓	✓	—	DPST	ON 1-3 4-6	NONE	OFF —	20A	20A	20A	10A	25°		
S332R	✓	✓	—	DPDT	ON 2-3 5-6	NONE	ON 2-1 5-4	20A	15A	20A	10A	25°		
S333R	✓	✓	—	DPDT	ON 2-3 5-6	OFF	ON 2-1 5-4	20A	15A	20A	10A	30°		
S338R	✓	✓	—	DPDT	(ON) 2-3 5-6	OFF	(ON) 2-1 5-4	15A	6A	20A	8A	25°		
S339R	✓	✓	—	DPDT	ON 2-3 5-6	OFF	(ON) 2-1 5-4	15A	6A	20A	8A	25°		

Throw & Schematics:

DPST



INTERNAL CONNECTION

DPDT



Note: Terminal numbers are actually on the switch

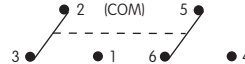
Throw & Schematics:

DPST



INTERNAL CONNECTION

DPDT

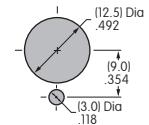
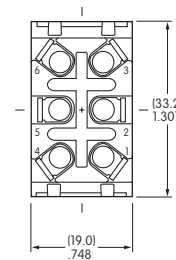
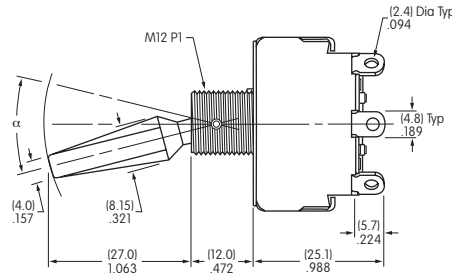
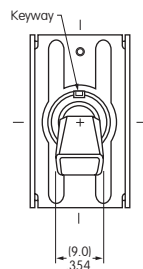


Note: Terminal numbers are actually on the switch

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



S331R



S331R does not have terminals 2 & 5

Maximum Panel Thickness: .220" (5.6mm)

SINGLE POLE WITH SCREW LUG

* UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)				Toggle Position/Connected Terminals () = Momentary					Electrical Capacity									
Model	* Approvals			Pole & Throw	Down 		Center 	Up 	Resistive			Inductive	α = Angle of Throw					
					AC 125V	AC 250V	DC 30V	AC 125V PF 0.6										
S301T	✓	✓	✓	SPST	ON	1-3	NONE	OFF —	15A	6A	20A	10A	32°					
S302T	✓	✓	✓	SPDT	ON	2-3	NONE	ON 2-1	15A	6A	20A	10A	32°					
S303T	✓	✓	✓	SPDT	ON	2-3	OFF	ON 2-1	15A	6A	20A	10A	32°					
S305T	—	—	✓	SPDT	ON	2-3	NONE	(ON) 2-1	15A	6A	20A	8A	32°					
S308T	—	—	✓	SPDT	(ON)	2-3	OFF	(ON) 2-1	15A	6A	20A	8A	32°					
S309T	—	—	✓	SPDT	ON	2-3	OFF	(ON) 2-1	15A	6A	20A	8A	32°					
Throw & Schematics:									Note: Terminal numbers are actually on the switch									
SPST									SPDT									

Throw & Schematics:

SPST

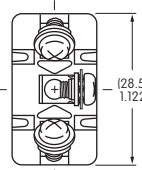
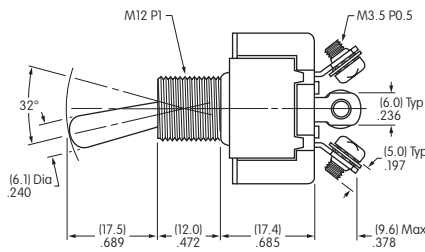
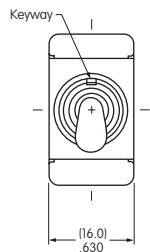


SPDT

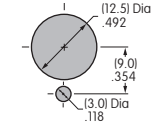


Note: Terminal numbers are actually on the switch

Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section. Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



S301T does not have terminal 2



Maximum Panel Thickness: .185" (4.7mm)



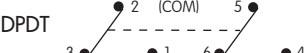
S301T

DOUBLE POLE WITH SCREW LUG

* UL & cULus recognized only when ordered with marking on switch (see General Specs)					Toggle Position/Connected Terminals () = Momentary					Electrical Capacity				
Model	* Approvals			Pole & Throw	Down 	Center 	Up 	Resistive			Inductive AC 125V PF 0.6	α = Angle of Throw		
								AC 125V	AC 250V	DC 30V				
S331T	✓	✓	—	DPST	ON 1-3 4-6	NONE	OFF —	15A	15A	15A	10A	25°		
S332T	✓	✓	—	DPDT	ON 2-3 5-6	NONE	ON 2-1 5-4	15A	15A	15A	10A	25°		
S333T	✓	✓	—	DPDT	ON 2-3 5-6	OFF	ON 2-1 5-4	15A	15A	15A	10A	30°		
S335T	✓	✓	—	DPDT	ON 2-3 5-6	NONE	(ON) 2-1 5-4	15A	6A	20A	8A	25°		
S338T	✓	✓	—	DPDT	(ON) 2-3 5-6	OFF	(ON) 2-1 5-4	15A	6A	20A	8A	25°		
S339T	✓	✓	—	DPDT	ON 2-3 5-6	OFF	(ON) 2-1 5-4	15A	6A	20A	8A	25°		

Throw & Schematics:

DPST

DPDT

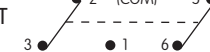
Note: Terminal numbers are actually on the switch

Throw & Schematics:

DPST

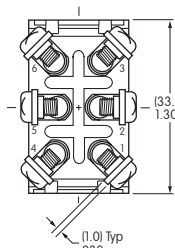
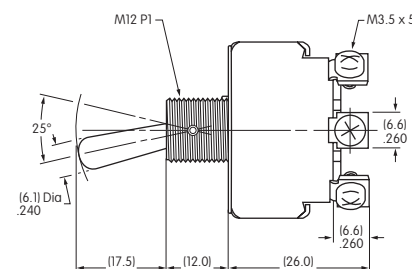
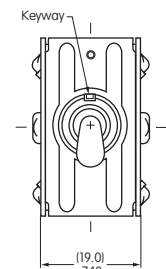


DPDT

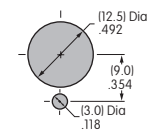


Note: Terminal numbers are actually on the switch

Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section. Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



S331T does not have terminals 2 & 5



Maximum Panel Thickness: .185" (4.7mm)



S331T

Toggles

Rockers

Pushbuttons

Illuminated PB

Programmable

Keylocks

Rotaries

Slides

Tactiles

Tilt

Touch

Indicators

Accessories

Supplement

SINGLE POLE WITH QUICK CONNECT

* UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)					Toggle Position/Connected Terminals				Electrical Capacity				α = Angle of Throw
Model	* Approvals			Pole & Throw	Down	Center	Up	Resistive			Inductive		
					 Keyway			AC 125V	AC 250V	DC 30V	AC 125V PF 0.6		
S301F	✓	✓	✓	SPST	ON 1-3	NONE	OFF —	15A	6A	20A	10A		

Throw & Schematics:

SPST



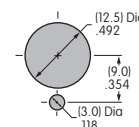
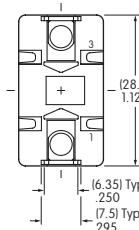
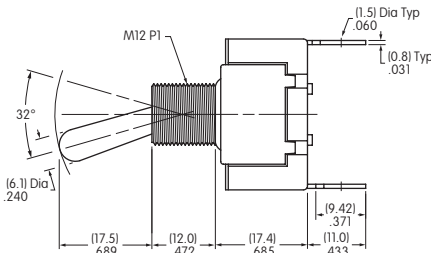
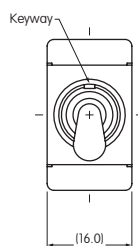
INTERNAL CONNECTION

Note: Terminal numbers are actually on the switch

Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section. Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



S301F



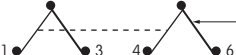
Maximum Panel Thickness: .185" (4.7mm)

DOUBLE POLE WITH QUICK CONNECT

* UL & cULus recognized only when ordered with marking on switch (see General Specs)				Toggle Position/Connected Terminals () = Momentary				Electrical Capacity				
Model	* Approvals			Pole & Throw	Down	Center	Up	Resistive			Inductive	α = Angle of Throw
					 Keyway			AC 125V	AC 250V	DC 30V	AC 125V PF 0.6	
S331F	✓	✓	—	DPST	ON 1-3 4-6	NONE	OFF —	20A	20A	20A	10A	25°
S332F	✓	✓	—	DPDT	ON 2-3 5-6	NONE	ON 2-1 5-4	20A	15A	20A	10A	25°
S333F	✓	✓	—	DPDT	ON 2-3 5-6	OFF	ON 2-1 5-4	20A	15A	20A	10A	30°
S335F	—	—	—	DPDT	ON 2-3 5-6	NONE	(ON) 2-1 5-4	15A	6A	20A	8A	25°

Throw & Schematics:

DPST



INTERNAL CONNECTION

DPDT

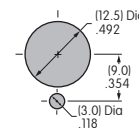
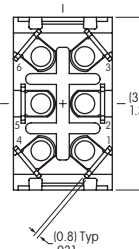
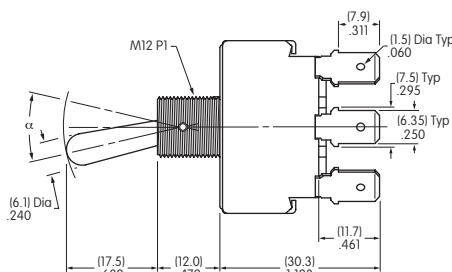
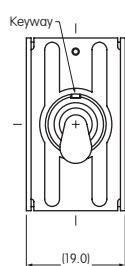


Note: Terminal numbers are actually on the switch

Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section. Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



S332F



Maximum Panel Thickness: .185" (4.7mm)

S331F does not have terminals 2 & 5

GENERAL SPECIFICATIONS FOR S31 ~ S49

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: 50,000 operations minimum

Electrical Life: 25,000 operations minimum for all models (Resistive Load)

6,000 operations minimum for S31, S32, S33, S31F, S32F, S33F, S31T, S32T, S33T;
S41/S41R, S42/S42R, S43/S43R, S41F, S42F, S43F, S41T, S42T, S43T
(Inductive Load)

Angle of Throw (α): Shown on following tables

Materials & Finishes

Toggle: PBT resin for flatted lever; brass with chrome plating for all others

Bushing: Brass with chrome plating

Case: Phenolic resin

Case Cover: Steel with chromate plating over 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

Environmental Data

Operating Temp Range: -10°C through +70°C (+14°F through +158°F)

Installation

Mounting Torque: 2.94Nm (26 lb•in) for double nut

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: File No. E44145 - Recognized only when ordered with marking on switch.
Add "/U" or "/CUL" to end of part number to order UL recognized switch.
UL or cULus recognition designated beside part numbers on following pages.
See Supplement section to find UL or cULus rating details.

CSA: File No. 023535_0_000 - Certified only when ordered with marking on switch.
Add "/C" to end of part number to order CSA certified switch.
CSA certification designated beside part numbers on following pages.
See Supplement section to find CSA rating details.

A
Toggles

Rockers

Pushbuttons

Illuminated PB

Programmable

Keylocks

Rotaries

Slides

Tactiles

Tilt

Touch

Indicators

Accessories

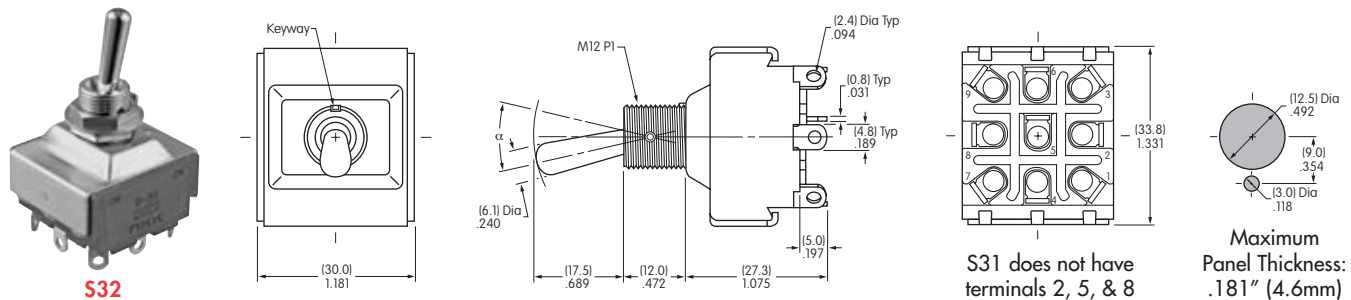
Supplement

THREE POLE WITH SOLDER LUG

* UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)				Toggle Position/Connected Terminals () = Momentary					Electrical Capacity				
Model	* Approvals			Pole & Throw	Down Keyway	Center	Up		Resistive			Inductive	α = Angle of Throw
								AC 125V	AC 250V	DC 30V	AC 125V PF 0.6		
S31	✓	✓	✓	3PST	ON 1-3 4-6 7-9	NONE	OFF	—	20A	9A	20A	10A	25°
S32	✓	✓	✓	3PDT	ON 2-3 5-6 8-9	NONE	ON	2-1 5-4 8-7	20A	9A	20A	10A	25°
S33	✓	✓	✓	3PDT	ON 2-3 5-6 8-9	OFF	ON	2-1 5-4 8-7	20A	9A	20A	10A	30°
S35	✓	✓	✓	3PDT	ON 2-3 5-6 8-9	NONE	(ON)	2-1 5-4 8-7	15A	6A	20A	8A	25°
S38	✓	✓	✓	3PDT	(ON) 2-3 5-6 8-9	OFF	(ON)	2-1 5-4 8-7	15A	6A	15A	8A	25°
S39	✓	✓	✓	3PDT	ON 2-3 5-6 8-9	OFF	(ON)	2-1 5-4 8-7	15A	6A	15A	8A	25°

Throw & Schematics: 3PST 3PDT **Note:** Terminal numbers are on the switch

Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section. Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.

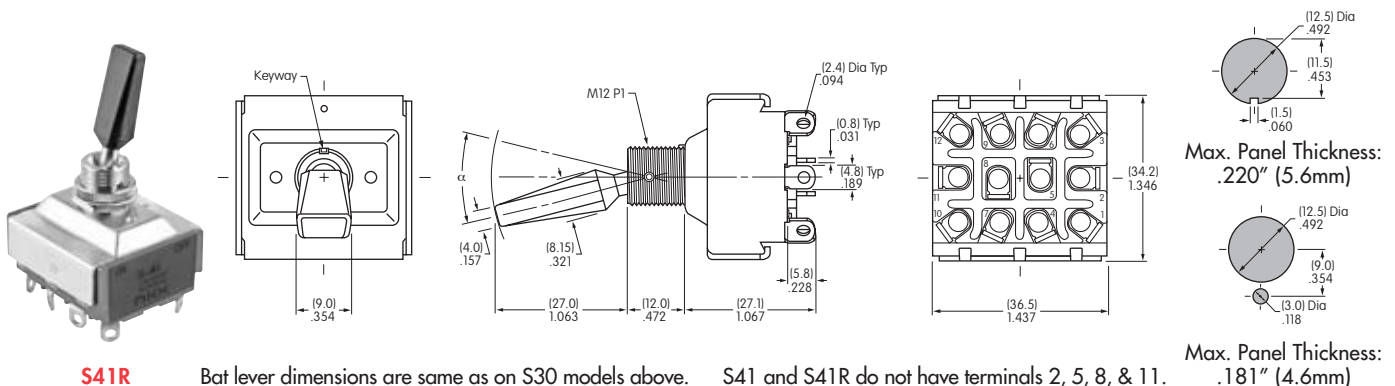


FOUR POLE WITH SOLDER LUG

* UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)				Toggle Position/Connected Terminals () = Momentary								Electrical Capacity								
Model Suffix R = Flatted Lever	* Approvals			Pole & Throw	Down Keyway				Center	Up				Resistive			Inductive	α = Angle of Throw		
					ON	1-3	4-6	7-9		10-12	OFF	2-1	5-4	8-7	11-10	AC 125V	AC 250V		DC 30V	AC 125V PF 0.6
S41/S41R	✓	✓	✓	4PST	ON	1-3	4-6	7-9	10-12	NONE	OFF	—	—	20A	9A	20A	10A	25°		
S42/S42R	✓	✓	✓	4PDT	ON	2-3	5-6	8-9	11-12	NONE	ON	2-1	5-4	8-7	11-10	20A	9A	20A	10A	25°
S43/S43R	✓	✓	✓	4PDT	ON	2-3	5-6	8-9	11-12	OFF	ON	2-1	5-4	8-7	11-10	20A	9A	20A	10A	30°
S45 —	✓	✓	—	4PDT	ON	2-3	5-6	8-9	11-12	NONE	(ON)	2-1	5-4	8-7	11-10	15A	6A	20A	8A	25°
S48/S48R	✓	✓	—	4PDT	(ON)	2-3	5-6	8-9	11-12	OFF	(ON)	2-1	5-4	8-7	11-10	15A	6A	20A	8A	25°
S49/S49R	✓	✓	—	4PDT	ON	2-3	5-6	8-9	11-12	OFF	(ON)	2-1	5-4	8-7	11-10	15A	6A	20A	8A	25°

Throw & Schematics: 4PST 4PDT **Note:** Terminal numbers are on the switch

Notes: Standard Hardware for **Bat Lever**: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut; for **Flatted Lever (R)**: AT504M Knurled Face Nut, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section. Optional Splashproof Boot Assemblies (only for bat lever models): AT401 & AT4181 boots plus hex nut and o-ring. See Accessories & Hardware section.



Bat lever dimensions are same as on S30 models above. S41 and S41R do not have terminals 2, 5, 8, & 11.

THREE POLE WITH SCREW LUG

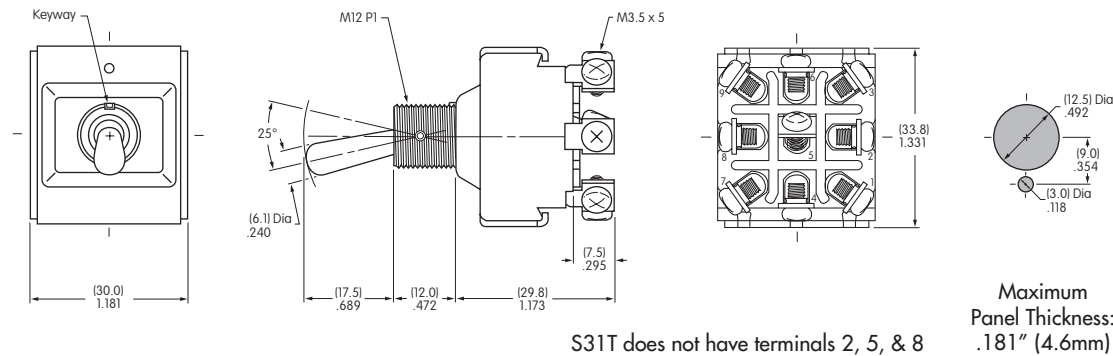
* UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)				Toggle Position/Connected Terminals					Electrical Capacity						
Model	* Approvals			Pole & Throw	Down		Center	Up		Resistive			Inductive		α = Angle of Throw
								AC 125V	AC 250V	DC 30V	AC 125V PF 0.6	AC 250V PF 0.6			
S31T	✓	✓	✓	3PST	ON	1-3 4-6 7-9	NONE	OFF	—	20A	9A	20A	10A	5A	25°
S32T	✓	✓	✓	3PDT	ON	2-3 5-6 8-9	NONE	ON	2-1 5-4 8-7	20A	9A	20A	10A	5A	25°
S33T	✓	✓	✓	3PDT	ON	2-3 5-6 8-9	OFF	ON	2-1 5-4 8-7	20A	9A	20A	10A	5A	30°
Throw & Schematics: 3PST  INTERNAL CONNECTION 3PDT  (COM) Note: Terminal numbers are on the switch															

Throw & Schematics:



Note: Terminal numbers are on the switch

Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section. Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



FOUR POLE WITH SCREW LUG

* UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)				Toggle Position/Connected Terminals							Electrical Capacity										
Model	* Approvals			Pole & Throw	Down 				Center 	Up 				Resistive			Inductive		α = Angle of Throw		
												AC 125V	AC 250V	DC 30V	AC 125V PF 0.6	AC 250V PF 0.6					
S41T	✓	✓	✓	4PST	ON	1-3	4-6	7-9	10-12	NONE	OFF	—				20A	9A	20A	10A	5A	25°
S42T	✓	✓	✓	4PDT	ON	2-3	5-6	8-9	11-12	NONE	ON	2-1	5-4	8-7	11-10	20A	9A	20A	10A	5A	25°
S43T	✓	✓	✓	4PDT	ON	2-3	5-6	8-9	11-12	OFF	ON	2-1	5-4	8-7	11-10	20A	9A	20A	10A	5A	30°

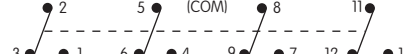
Throw & Schematics:

4PST



INTERNAL CONNECTION

4PDT



(COM)

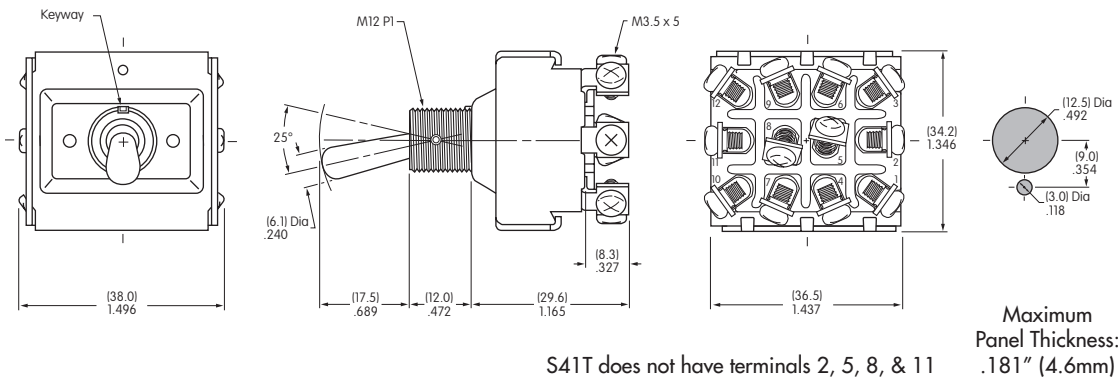
Note: Terminal numbers are on the switch

Throw & Schematics:



Note: Terminal numbers are on the switch

Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section. Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



THREE POLE WITH QUICK CONNECT

* UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)

Model	* Approvals			Pole & Throw	Toggle Position/Connected Terminals			Electrical Capacity				$\alpha =$ Angle of Throw
	UL	cULus	CSA		Down 	Center 	Up 	Resistive			Inductive	
S31F	✓	✓	✓	3PST	ON 1-3 4-6 7-9	NONE	OFF —	AC 125V 20A	AC 250V 9A	DC 30V 20A	AC 125V PF 0.6 10A	25°
S32F	✓	✓	✓	3PDT	ON 2-3 5-6 8-9	NONE	ON 2-1 5-4 8-7	20A	9A	20A	10A	25°
S33F	✓	✓	✓	3PDT	ON 2-3 5-6 8-9	OFF	ON 2-1 5-4 8-7	20A	9A	20A	10A	30°

Throw & Schematics:

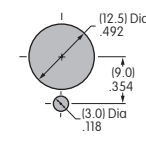
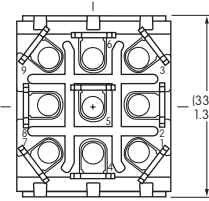
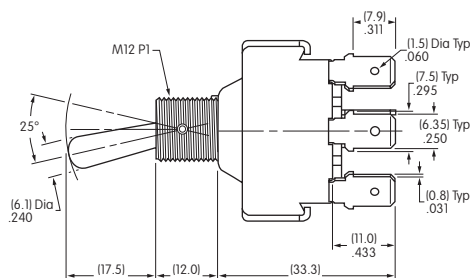
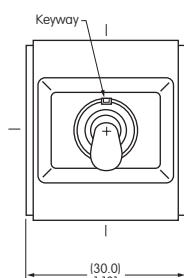


Note: Terminal numbers are on the switch

Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section. Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



S31F



Maximum Panel Thickness: .181" (4.6mm)

S31F does not have terminals 2, 5, & 8

FOUR POLE WITH QUICK CONNECT

* UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)

Model	* Approvals			Pole & Throw	Toggle Position/Connected Terminals			Electrical Capacity				$\alpha =$ Angle of Throw
	UL	cULus	CSA		Down 	Center 	Up 	Resistive			Inductive	
S41F	✓	✓	✓	4PST	ON 1-3 4-6 7-9 10-12	NONE	OFF —	AC 125V 20A	AC 250V 9A	DC 30V 20A	AC 125V PF 0.6 10A	25°
S42F	✓	✓	✓	4PDT	ON 2-3 5-6 8-9 11-12	NONE	ON 2-1 5-4 8-7 11-10	20A	9A	20A	10A	25°
S43F	✓	✓	✓	4PDT	ON 2-3 5-6 8-9 11-12	OFF	ON 2-1 5-4 8-7 11-10	20A	9A	20A	10A	30°

Throw & Schematics:

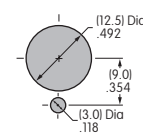
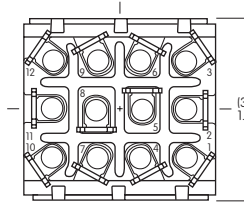
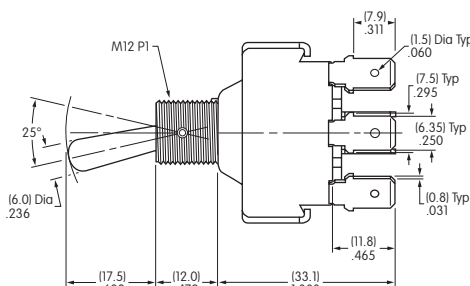
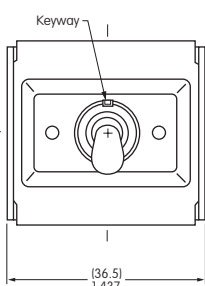


Note: Terminal numbers are on the switch

Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section. Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



S42F



Maximum Panel Thickness: .181" (4.6mm)

S41F does not have terminals 2, 5, 8, & 11

GENERAL SPECIFICATIONS FOR S421 ~ S429

A
Toggles

Electrical Capacity (Resistive & Inductive Load)

Power Level: Shown in the following tables

Rockers

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:	50,000 operations minimum
Electrical Life:	15,000 operations minimum
Angle of Throw (α):	Shown in tables on following pages

Pushbuttons

Illuminated PB

Programmable

Materials & Finishes

Toggle:	Brass with chrome plating
Bushing:	Brass with chrome plating
Case:	Melamine phenol
Case Cover:	Steel with chromate plating over 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

Keylocks

Rotaries

Environmental Data

Operating Temp Range: -10°C through $+70^{\circ}\text{C}$ ($+14^{\circ}\text{F}$ through $+158^{\circ}\text{F}$)

Slides

Installation

Mounting Torque:	2.94Nm (26 lb•in) for double nut
Maximum Panel Thickness:	Shown beneath panel cutout in switch dimension drawings
Soldering Time & Temperature:	Manual Soldering: See Profile A in Supplement section.

Tactiles

Tilt

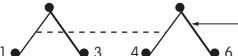
Touch

Indicators

Accessories

Supplement

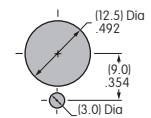
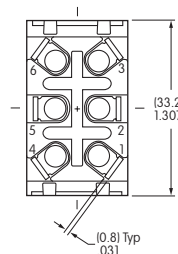
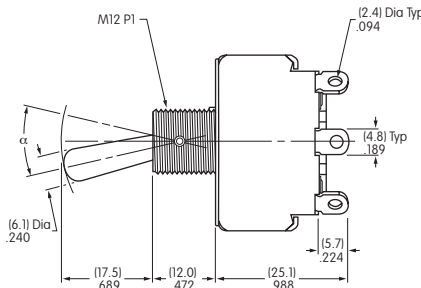
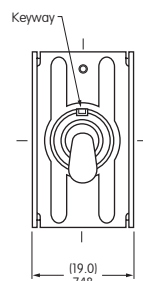
DOUBLE POLE WITH SOLDER LUG

			Toggle Position/Connected Terminals () = Momentary				Electrical Capacity						
Model	Approvals  	Pole & Throw	Down 		Center 	Up 		Resistive		Inductive		Motor Load	α = Angle of Throw
							AC 125V	AC 250V	PF 0.75 - 0.8		AC 125V		
									AC 125V	AC 250V			
S421	— —	DPST	ON	1-3 4-6	NONE	OFF	—	20A	20A	20A	20A	750W	24°
S422	— —	DPDT	ON	2-3 5-6	NONE	ON	2-1 5-4	20A	20A	20A	20A	750W	24°
S423	— —	DPDT	ON	2-3 5-6	OFF	ON	2-1 5-4	20A	20A	20A	20A	750W	28°
S425	— —	DPDT	ON	2-3 5-6	NONE	(ON)	2-1 5-4	15A	15A	15A	15A	400W	24°
S428	— —	DPDT	(ON)	2-3 5-6	OFF	(ON)	2-1 5-4	15A	15A	15A	15A	400W	24°
S429	— —	DPDT	ON	2-3 5-6	OFF	(ON)	2-1 5-4	15A	15A	15A	15A	400W	24°
Throw & Schematics:			DPST  INTERNAL CONNECTION				DPDT 				Note: Terminal numbers are on the switch		

Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section.
Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



S422



Maximum Panel Thickness: .185" (4.7mm)

S421 does not have terminals 2 & 5

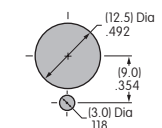
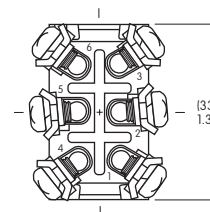
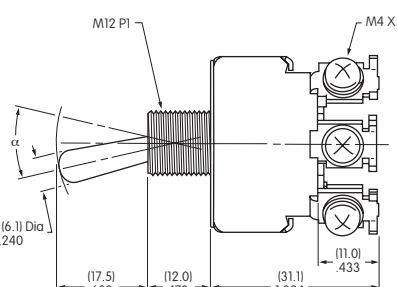
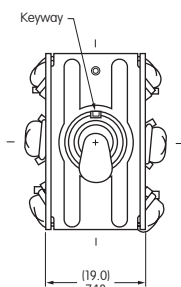
DOUBLE POLE WITH SCREW LUG

			Toggle Position/Connected Terminals () = Momentary				Electrical Capacity					
Model	Approvals  	Pole & Throw	Down 		Center 	Up 	Resistive		Inductive		Motor Load	α = Angle of Throw
							AC 125V	AC 250V	PF 0.75 - 0.8		AC 125V	
									AC 125V	AC 250V		
S421T	— —	DPST	ON	1-3 4-6	NONE	OFF —	20A	20A	20A	20A	750W	24°
S422T	— —	DPDT	ON	2-3 5-6	NONE	ON 2-1 5-4	20A	20A	20A	20A	750W	24°
S423T	— —	DPDT	ON	2-3 5-6	OFF	ON 2-1 5-4	20A	20A	20A	20A	750W	28°
S425T	— —	DPDT	ON	2-3 5-6	NONE	(ON) 2-1 5-4	15A	15A	15A	15A	400W	24°
S428T	— —	DPDT	(ON)	2-3 5-6	OFF	(ON) 2-1 5-4	15A	15A	15A	15A	400W	24°
S429T	— —	DPDT	ON	2-3 5-6	OFF	(ON) 2-1 5-4	15A	15A	15A	15A	400W	24°
Throw & Schematics:											Note: Terminal numbers are on the switch	
DPST 			INTERNAL CONNECTION				DPDT 					

Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section.
Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



S423T



Maximum Panel Thickness: .185" (4.7mm)

S421T does not have terminals 2 & 5

GENERAL SPECIFICATIONS FOR S800s

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:	50,000 operations minimum
Electrical Life:	10,000 operations minimum for S800Ds 25,000 operations minimum for S800s

Materials & Finishes

Toggle:	Brass with chrome plating
Bushing:	Brass with chrome plating
Case:	Melamine phenol
Case Cover:	Steel with chromate plating over zinc plating
Movable Contactor Plate:	Copper with silver plating
Movable & Stationary Contacts:	Silver alloy capped on copper with silver plating
Common Terminals:	Brass
Contact Terminals:	Brass with silver or nickel plating

Environmental Data

Operating Temp Range: -10°C through +70°C (+14°F through +158°F)

Installation

Mounting Torque:	2.94Nm (26 lb•in) for double nut
Maximum Panel Thickness:	Shown beneath panel cutout in switch dimension drawings

Standards & Certifications

UL:	File No. E44145 - Recognized only when ordered with marking on switch. Add "/U" or "/CUL" to end of part number to order UL recognized switch. UL or cULus recognition designated beside part numbers on following pages. See Supplement section to find UL or cULus rating details.
CSA:	File No. 023535_0_000 - Certified only when ordered with marking on switch. Add "/C" to end of part number to order CSA certified switch. CSA certification designated beside part numbers on following pages. See Supplement section to find CSA rating details.

A
Toggles

Rockers

Pushbuttons

Illuminated PB

Programmable

Keylocks

Rotaries

Slides

Tactiles

Tilt

Touch

Indicators

Accessories

Supplement

Supplement

Downloaded from Arrow.com.

DOUBLE POLE WITH SCREW LUG & FLATTED LEVER

* UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)

* UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)				Toggle Position/Connected Terminals						Electrical Capacity								
Model	* Approvals			Pole & Throw	Down		Center	Up		Resistive					Inductive L/R = 3ms			
								DC 30V	DC 48V	DC 125V	DC 250V	DC 400V	DC 24V	DC 48V	DC 125V	DC 250V		
S821D	✓	✓	✓	DPST	ON	2-3 5-6	NONE	OFF	—	30A	30A	20A	15A	4A (10A)	15A	10A	6A	3A
S822D	✓	✓	✓	DPDT	ON	2-3 5-6	NONE	ON	2-1 5-4	30A	30A	20A	15A	4A	15A	10A	6A	3A
S823D	✓	✓	✓	DPDT	ON	2-3 5-6	OFF	ON	2-1 5-4	30A	30A	15A	7.5A	—	15A	10A	6A	3A

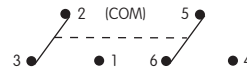
() capacity is due to wiring. Refer to instructions below.

Throw & Schematics:

DPST

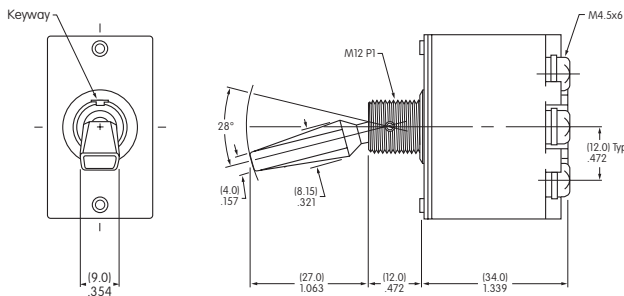


DPDT

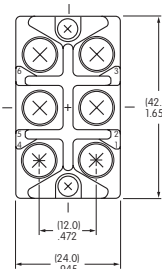


Note: Terminal numbers are on the switch

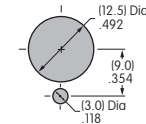
Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section.



Double Pole



S821D does not have terminals 1 & 4



Maximum Panel Thickness: .177" (4.5mm)



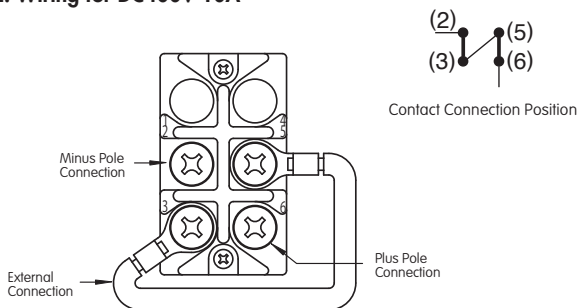
S822D

400V DC WIRING INSTRUCTIONS

1. DC Switch Use

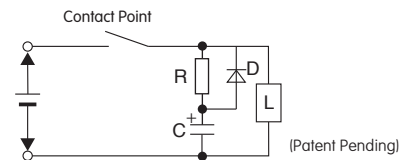
- Middle terminal shall be the minus pole when using DC circuit. Switch case is marked with (+) and (-).
- Do not store near (5cm) highly magnetic items.
- If actuation is interrupted when switching from ON to OFF, arcing may continue and switch could be burned.

2. Wiring for DC400V 10A



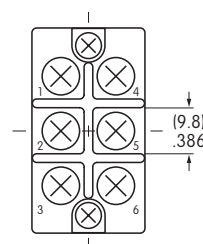
3. Inductive Load

Inductive loads produce an arc caused by counter-electromotive force when opening the circuit. Recommend inserting spark elimination circuit. Contact factory for details.



4. Compressed Terminal Connection

When connecting screw terminal with compressed terminal, select compressed terminal using drawing below.



THREE POLE WITH SCREW LUG & FLATTED LEVER

* UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)

* UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)				Toggle Position/Connected Terminals				Electrical Capacity							
Model	*Approvals			Pole & Throw	Down	Center	Up	Resistive				Inductive L/R = 3ms			
								DC 30V	DC 48V	DC 125V	DC 250V	DC 24V	DC 48V	DC 125V	DC 250V
S831D	✓	✓	✓	3PST	ON 2-3 5-6 8-9	NONE	OFF —	30A	30A	15A	7.5A	15A	10A	6A	3A
S832D	✓	✓	✓	3PDT	ON 2-3 5-6 8-9	NONE	ON 2-1 5-4 8-7	30A	30A	15A	7.5A	15A	10A	6A	3A
S833D	✓	✓	✓	3PDT	ON 2-3 5-6 8-9	OFF	ON 2-1 5-4 8-7	30A	30A	15A	7.5A	15A	10A	6A	3A

Throw & Schematics:

3PST



3PDT



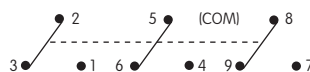
Note: Terminal numbers are on the switch

Throw & Schematics:

3PST

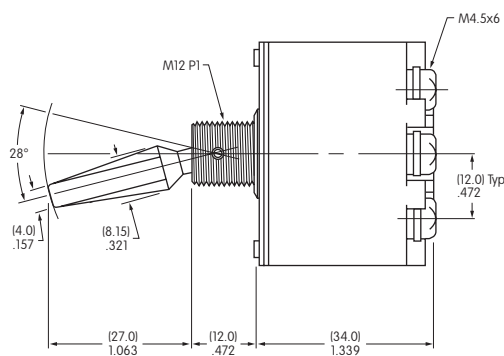
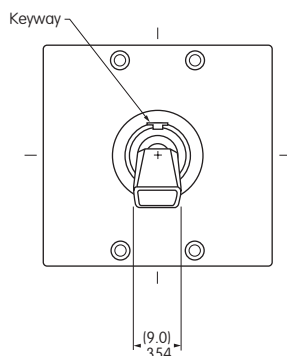


3PDT

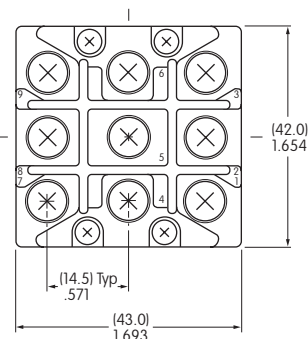


Note: Terminal numbers are on the switch

Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section.



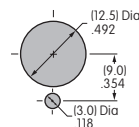
Three Pole



S831D does not have terminals 1, 4 & 7.
Positive (+) must be connected to end terminals
& negative to common terminals.



S832D



Maximum
Panel Thickness:
.177" (4.5mm)