

## GENERAL SPECIFICATIONS FOR S1 ~ S29

A  
Toggles

## Electrical Capacity (Resistive &amp; 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<br>50,000 operations minimum for all other models |
| Electrical Life:             | 25,000 operations minimum                                                                                             |
| Angle of Throw ( $\alpha$ ): | Shown in tables on following pages                                                                                    |

Pushbuttons

Illuminated PB

## Materials &amp; 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;<br>-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<br>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 &amp; Certifications

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

Touch

Indicators

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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 |         |        |                | Angle of Throw |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------|---------|--------|----------------|----------------|
| Model                                                                                     | * Approvals                                                                       |                                                                                   |                                                                                   | Pole & Throw                        | Down<br> | Center<br> | Up<br> | Resistive           |         |        | Inductive      |                |
|                                                                                           |  |  |  |                                     |                                                                                           |                                                                                             |                                                                                         | 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

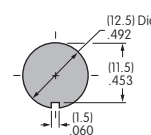
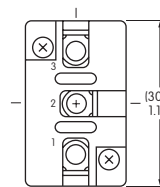
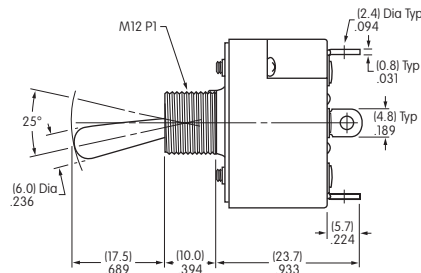
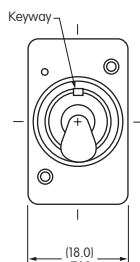


Note: Terminal numbers are actually on the switch

**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

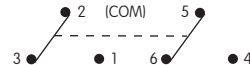
| * UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs) |                                                                                     |                                                                                     |                                   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



DPDT

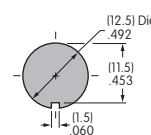
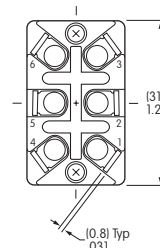
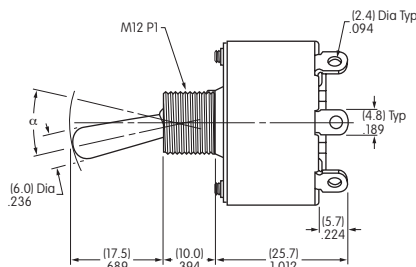
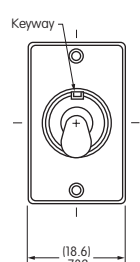


Note: Terminal numbers are actually on the switch

**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



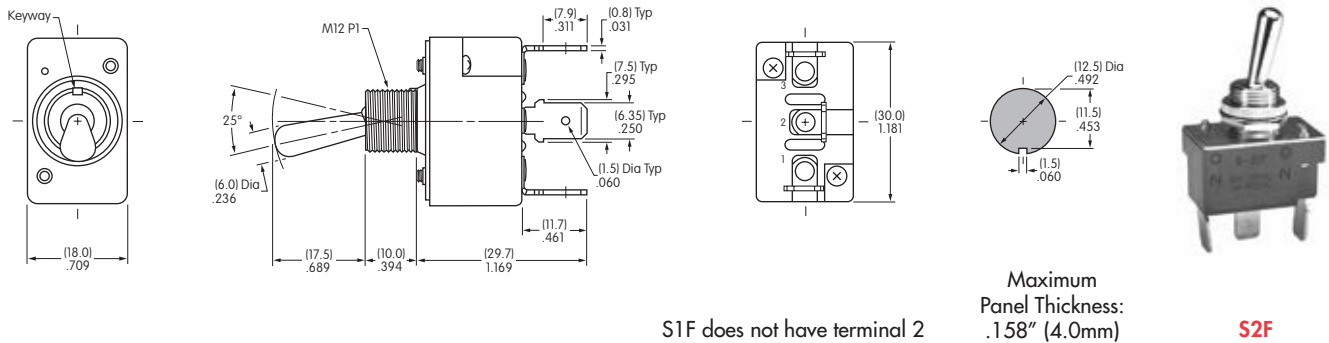
Maximum Panel Thickness: .158" (4.0mm)

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 |
|                                                                                                                                                                                              |  |  |                                     | <br><small>Keyway</small> |  |  | 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°            |
| <b>Throw &amp; Schematics:</b>                                                                                                                                                               |                                                                                   |                                                                                   |                                     |                                                                                                            |                                                                                   |                                                                                   |                     | Note: Terminal numbers are actually on the switch |        |                |                |
| SPST  INTERNAL CONNECTION  |                                                                                   |                                                                                   |                                     |                                                                                                            |                                                                                   |                                                                                   |                     |                                                   |        |                |                |

**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<br>  | Pole & Throw | Down<br> <small>Keyway</small> |         | Center<br> | Up<br> |     | Resistive           |    |     | Inductive | $\alpha$ =<br>Angle<br>of Throw |
|       |                                                                                                                                                                                      |              | AC 125V                                                                                                           | AC 250V | DC 30V                                                                                        | AC 125V<br>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



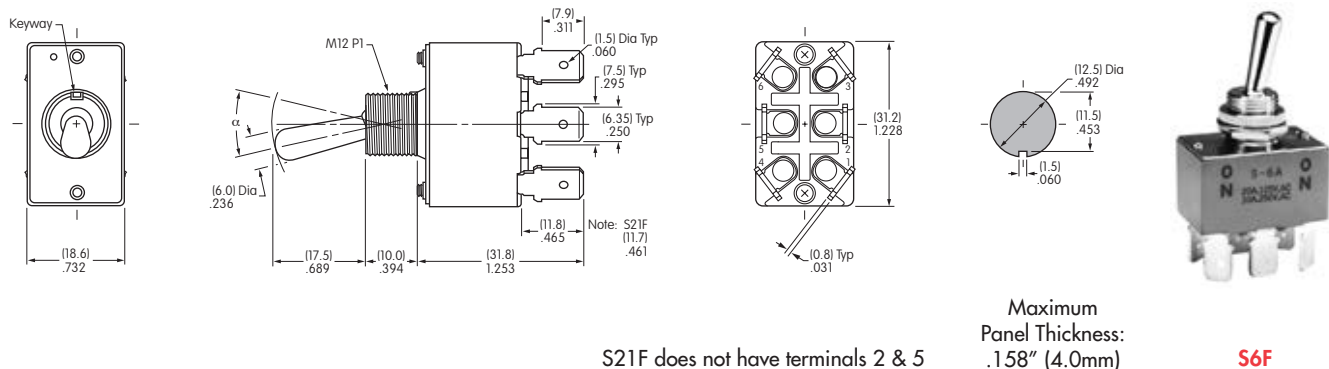
INTERNAL CONNECTION

DPDT



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.



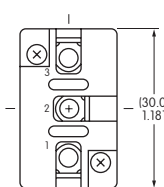
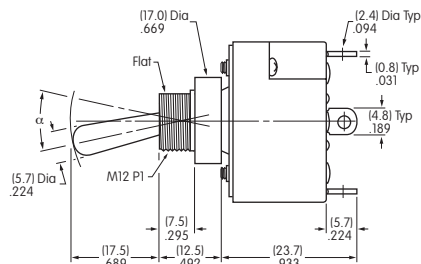
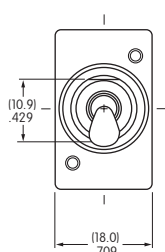
### SINGLE POLE SOLDER LUG WITH PANEL SEAL

|                     |           |   | Toggle Position/Connected Terminals<br>( ) = Momentary |                      |                        |                    | Electrical Capacity                               |            |           |                                 |
|---------------------|-----------|---|--------------------------------------------------------|----------------------|------------------------|--------------------|---------------------------------------------------|------------|-----------|---------------------------------|
| Model               | Approvals |   | Pole & Throw                                           | <div>Down<br/></div> | <div>Center<br/></div> | <div>Up<br/></div> | Resistive                                         |            |           | $\alpha$ =<br>Angle<br>of Throw |
|                     |           |   |                                                        |                      |                        |                    | AC<br>125V                                        | AC<br>250V | DC<br>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: |           |   |                                                        |                      |                        |                    | Note: Terminal numbers are actually on the switch |            |           |                                 |
|                     |           |   | SPST                                                   |                      |                        |                    | SPDT                                              |            |           |                                 |

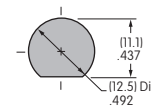
**Notes:** Standard Hardware: AT503M Face Hex Nut, Lockwasher, AT537 O-ring. See Accessories & Hardware section. For **.250" Quick Connect terminals**, add "F" to end of part number. See **Quick Connect terminal** dimensions on previous page. For further information, contact factory. Panel Seal models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



S2AW

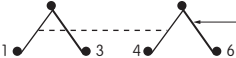
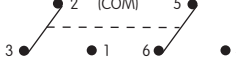


S1AW does not have terminal 2



Maximum Panel Thickness: .158" (4.0mm)

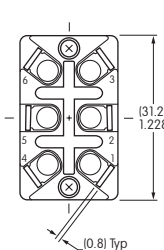
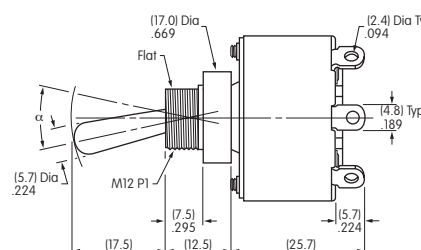
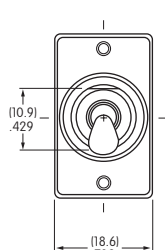
### DOUBLE POLE SOLDER LUG WITH PANEL SEAL

|                     |                                                                                     |                                                                                     | Toggle Position/Connected Terminals<br>( ) = Momentary |                                                                                             |         |                                                                                               |                                                                                           | Electrical Capacity                                                                  |           |     |                                                   |                              |
|---------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------|-----|---------------------------------------------------|------------------------------|
| Model               | Approvals                                                                           |                                                                                     | Pole & Throw                                           | Down<br> |         | Center<br> | Up<br> |                                                                                      | Resistive |     |                                                   | $\alpha$ =<br>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 |                              |

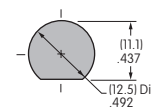
**Notes:** Standard Hardware: AT503M Face Hex Nut, Lockwasher, AT537 O-ring. See Accessories & Hardware section. For **.250" Quick Connect terminals**, add "F" to end of part number. See **Quick Connect terminal** dimensions on previous page. For further information, contact factory. Panel Seal models 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

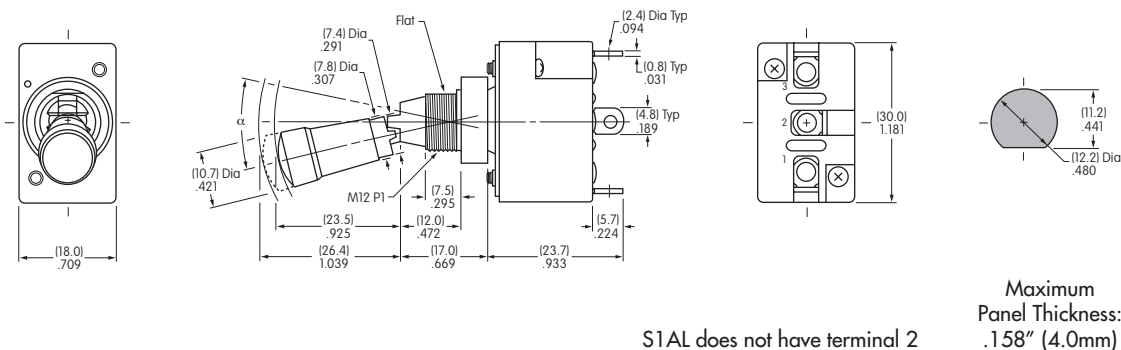


Maximum Panel Thickness: .158" (4.0mm)

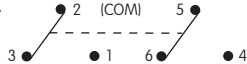
## SINGLE POLE SOLDER LUG WITH LOCKING LEVER & PANEL SEAL

| Model               | Approvals<br>  | Pole & Throw | Toggle Position/Connected Terminals                                                                                                                                                                          |                                                                                             |                                                                                         | Electrical Capacity                               |         |        |                | $\alpha =$<br>Angle of Throw |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------|---------|--------|----------------|------------------------------|
|                     |                                                                                                                                                                                  |              | Down<br>                                                                                                                    | Center<br> | Up<br> | 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<br>SPDT  2 (COM) |                                                                                             |                                                                                         | Note: Terminal numbers are actually on the switch |         |        |                |                              |

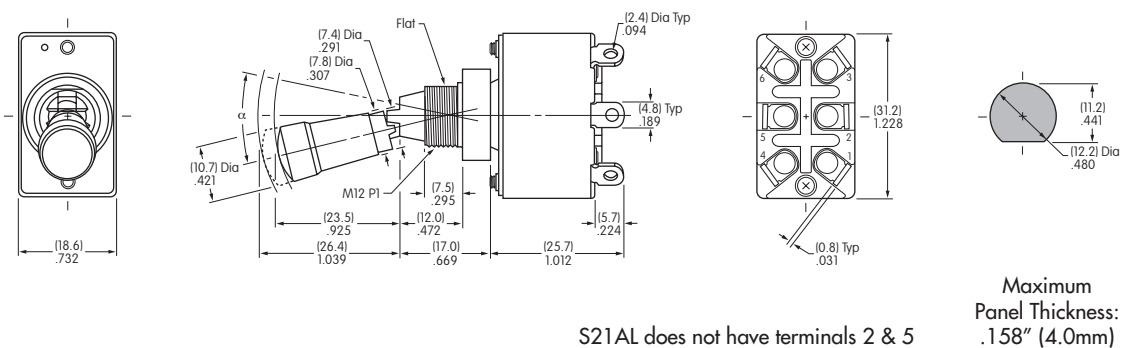
**Notes:** Standard Hardware: AT503M Face Hex Nut, Lockwasher, AT537 O-ring. See Accessories & Hardware section.  
 Locking Lever & Panel Seal models meet IP67 of IEC 60529 Standards at front panel (dust tight and water protected from effects of temporary immersion).



## DOUBLE POLE SOLDER LUG WITH LOCKING LEVER & PANEL SEAL

| Model               | *Approvals<br>  | Pole & Throw | Toggle Position/Connected Terminals                                                                                                                                                                                 |                                                                                               |                                                                                           | Electrical Capacity                               |         |        |                | $\alpha =$<br>Angle of Throw |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------|---------|--------|----------------|------------------------------|
|                     |                                                                                                                                                                                       |              | Down<br>                                                                                                                         | Center<br> | Up<br> | 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<br>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).



## GENERAL SPECIFICATIONS FOR S301 ~ S339

## Electrical Capacity (Resistive &amp; Inductive Load)

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

## Other Ratings

|                                              |                                                                                                                                |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Contact Resistance:</b>                   | 10 milliohms maximum                                                                                                           |
| <b>Insulation Resistance:</b>                | 1,000 megohms minimum @ 500V DC                                                                                                |
| <b>Dielectric Strength:</b>                  | 2,000V AC minimum for 1 minute minimum                                                                                         |
| <b>Mechanical Life:</b>                      | 50,000 operations minimum                                                                                                      |
| <b>Electrical Life:</b>                      | 6,000 operations minimum for S331F; 15,000 operations minimum for all other S331s;<br>25,000 operations minimum for all others |
| <b>Angle of Throw (<math>\alpha</math>):</b> | Shown on following tables                                                                                                      |

## Materials &amp; Finishes

|                                           |                                                                 |
|-------------------------------------------|-----------------------------------------------------------------|
| <b>Toggle:</b>                            | PBT for flatted lever; brass with chrome plating for all others |
| <b>Bushing:</b>                           | Brass with chrome plating                                       |
| <b>Case:</b>                              | Melamine phenol                                                 |
| <b>Case Cover:</b>                        | Steel with zinc plating                                         |
| <b>Movable Contactor:</b>                 | Copper with silver plating                                      |
| <b>Movable &amp; Stationary Contacts:</b> | Silver alloy capped on copper with silver plating               |
| <b>Terminals:</b>                         | 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.

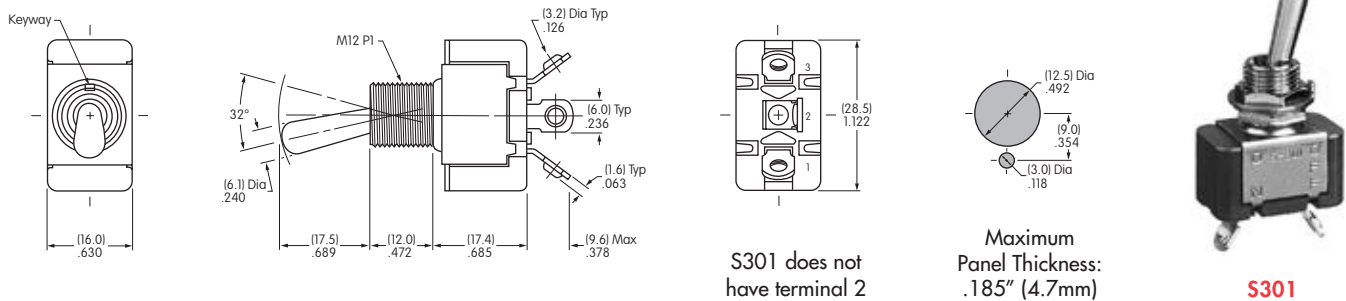
## Standards &amp; Certifications

- 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

## SINGLE POLE WITH SOLDER LUG

| * UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs) |                                                                                   |                                                                                   |                                                                                   | Toggle Position/Connected Terminals<br>( ) = Momentary |                                                                                   |                                                                                   |                                                                                   | Electrical Capacity |                                                   |        |                |                |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------|---------------------------------------------------|--------|----------------|----------------|
| Model                                                                                     | * Approvals                                                                       |                                                                                   |                                                                                   | Pole & Throw                                           | Down<br><small>Keyway</small>                                                     | Center                                                                            | Up                                                                                | Resistive           |                                                   |        | Inductive      | Angle of Throw |
|                                                                                           |  |  |  |                                                        |  |  |  | AC 125V             | AC 250V                                           | DC 30V | AC 125V PF 0.6 |                |
| S301                                                                                      | ✓                                                                                 | ✓                                                                                 | ✓                                                                                 | SPST                                                   | ON 1-3                                                                            | NONE                                                                              | OFF —                                                                             | 15A                 | 6A                                                | 20A    | 10A            | 32°            |
| S302                                                                                      | ✓                                                                                 | ✓                                                                                 | ✓                                                                                 | SPDT                                                   | ON 2-3                                                                            | NONE                                                                              | ON 2-1                                                                            | 15A                 | 6A                                                | 20A    | 10A            | 32°            |
| S303                                                                                      | ✓                                                                                 | ✓                                                                                 | ✓                                                                                 | SPDT                                                   | ON 2-3                                                                            | OFF                                                                               | ON 2-1                                                                            | 15A                 | 6A                                                | 20A    | 10A            | 32°            |
| S305                                                                                      | —                                                                                 | —                                                                                 | ✓                                                                                 | SPDT                                                   | ON 2-3                                                                            | NONE                                                                              | (ON) 2-1                                                                          | 15A                 | 6A                                                | 20A    | 8A             | 32°            |
| S308                                                                                      | —                                                                                 | —                                                                                 | ✓                                                                                 | SPDT                                                   | (ON) 2-3                                                                          | OFF                                                                               | (ON) 2-1                                                                          | 15A                 | 6A                                                | 20A    | 8A             | 32°            |
| S309                                                                                      | —                                                                                 | —                                                                                 | ✓                                                                                 | 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                                                   |  |                                                                                   |                                                                                   |                     |                                                   |        |                |                |

**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.

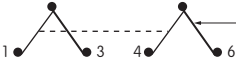


## DOUBLE POLE WITH SOLDER LUG

| * UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs) |                                                                                     |                                                                                     |                                                                                     | Toggle Position/Connected Terminals<br>( ) = Momentary |                                                                                             |                                                                                               |                                                                                           |           | Electrical Capacity |        |                                |                              |  |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------|---------------------|--------|--------------------------------|------------------------------|--|
| Model                                                                                     | * Approvals                                                                         |                                                                                     |                                                                                     | Pole & Throw                                           | Down<br> | Center<br> | Up<br> | Resistive |                     |        | Inductive<br>AC 125V<br>PF 0.6 | $\alpha$ =<br>Angle of Throw |  |
|                                                                                           |  |  |  |                                                        |                                                                                             |                                                                                               |                                                                                           | AC 125V   | AC 250V             | DC 30V |                                |                              |  |
| S331                                                                                      | ✓                                                                                   | ✓                                                                                   | ✓                                                                                   | DPST                                                   | ON 1-3 4-6                                                                                  | NONE                                                                                          | OFF —                                                                                     | 20A       | 20A                 | 20A    | 10A                            | 25°                          |  |
| S332                                                                                      | ✓                                                                                   | ✓                                                                                   | ✓                                                                                   | DPDT                                                   | ON 2-3 5-6                                                                                  | NONE                                                                                          | ON 2-1 5-4                                                                                | 20A       | 15A                 | 20A    | 10A                            | 25°                          |  |
| S333                                                                                      | ✓                                                                                   | ✓                                                                                   | ✓                                                                                   | DPDT                                                   | ON 2-3 5-6                                                                                  | OFF                                                                                           | ON 2-1 5-4                                                                                | 20A       | 15A                 | 20A    | 10A                            | 30°                          |  |
| S335                                                                                      | ✓                                                                                   | ✓                                                                                   | ✓                                                                                   | DPDT                                                   | ON 2-3 5-6                                                                                  | NONE                                                                                          | (ON) 2-1 5-4                                                                              | 15A       | 6A                  | 20A    | 8A                             | 25°                          |  |
| S338                                                                                      | ✓                                                                                   | ✓                                                                                   | —                                                                                   | DPDT                                                   | (ON) 2-3 5-6                                                                                | OFF                                                                                           | (ON) 2-1 5-4                                                                              | 15A       | 6A                  | 20A    | 8A                             | 25°                          |  |
| S339                                                                                      | ✓                                                                                   | ✓                                                                                   | —                                                                                   | DPDT                                                   | ON 2-3 5-6                                                                                  | OFF                                                                                           | (ON) 2-1 5-4                                                                              | 15A       | 6A                  | 20A    | 8A                             | 25°                          |  |

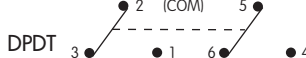
Throw & Schematics:

DPST



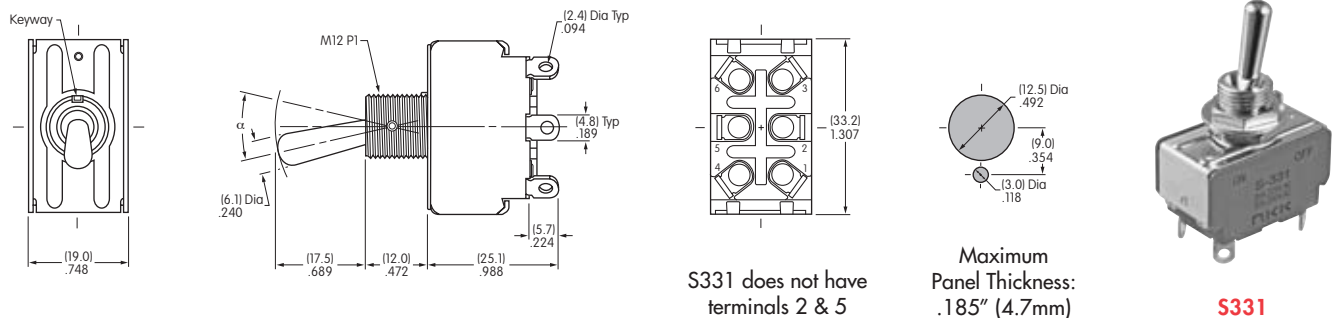
INTERNAL CONNECTION

DPDT



Note: Terminal numbers are actually on the switch

**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.



## DOUBLE POLE WITH SOLDER LUG &amp; FLATTED LEVER

| * UL & cULus recognized only when ordered with marking on switch (see General Specs) |                                                                                   |                                                                                   |                                                                                   | Toggle Position/Connected Terminals<br>( ) = Momentary |                                                                                   |                                                                                   |                                                                                   |           |         | Electrical Capacity |                |                           |  |  |
|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------|---------|---------------------|----------------|---------------------------|--|--|
| Model                                                                                | * Approvals                                                                       |                                                                                   |                                                                                   | Pole & Throw                                           | Down                                                                              | Center                                                                            | Up                                                                                | Resistive |         |                     | Inductive      | $\alpha$ = 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:

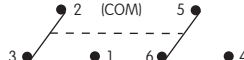
DPST



INTERNAL CONNECTION



DPDT



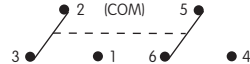
Note: Terminal numbers are actually on the switch

Throw &amp; Schematics:

DPST



DPDT

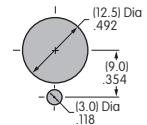
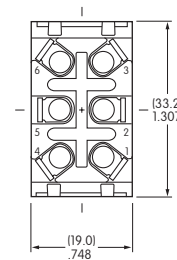
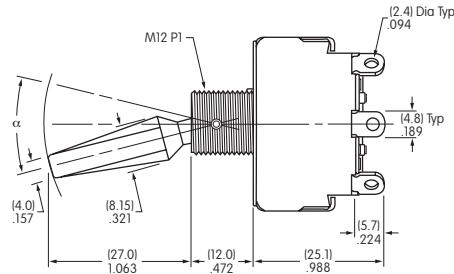
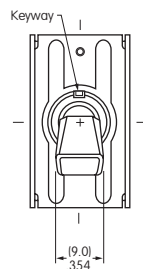


Note: Terminal numbers are actually on the switch

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



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<br>( ) = Momentary |                                                                                           |                                                                                             |                                                                                         | Electrical Capacity |         |        |                | $\alpha$ = Angle of Throw |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------|---------|--------|----------------|---------------------------|
| Model                                                                                     | * Approvals                                                                       |                                                                                   |                                                                                   | Pole & Throw                                           | Down<br> | Center<br> | Up<br> | Resistive           |         |        | Inductive      |                           |
|                                                                                           |  |  |  |                                                        |                                                                                           |                                                                                             |                                                                                         | 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:

SPST

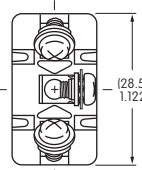
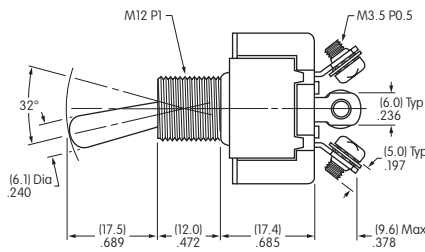
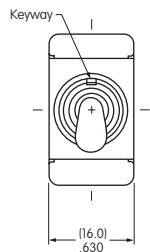


SPDT

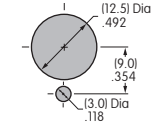


Note: Terminal numbers are actually on the switch

**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

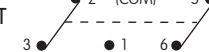
| * UL & cULus recognized only when ordered with marking on switch (see General Specs) |                                                                                     |                                                                                     |                                                                                     | Toggle Position/Connected Terminals<br>( ) = Momentary |                                                                                             |                                                                                               |                                                                                           | Electrical Capacity |         |        |                | $\alpha$ = Angle of Throw |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------|---------|--------|----------------|---------------------------|
| Model                                                                                | * Approvals                                                                         |                                                                                     |                                                                                     | Pole & Throw                                           | Down<br> | Center<br> | Up<br> | Resistive           |         |        | Inductive      |                           |
|                                                                                      |  |  |  |                                                        |                                                                                             |                                                                                               |                                                                                           | AC 125V             | AC 250V | DC 30V | AC 125V PF 0.6 |                           |
| 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

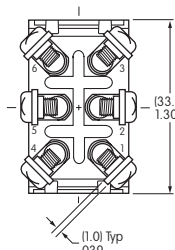
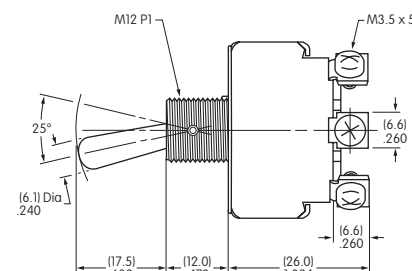
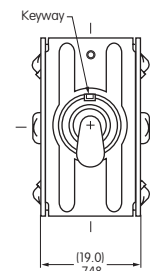


DPDT

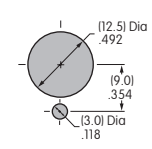


Note: Terminal numbers are actually on the switch

**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 |        |                |  | $\alpha$ =<br>Angle of Throw |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------|---------------------|--------|----------------|--|------------------------------|
| Model                                                                                     | * Approvals                                                                       |                                                                                   |                                                                                   | Pole & Throw | Down                                                                                                       | Center                                                                            | Up                                                                                | Resistive |                     |        | Inductive      |  |                              |
|                                                                                           |  |  |  |              | <br><small>Keyway</small> |  |  | 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



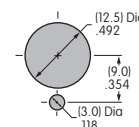
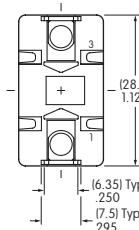
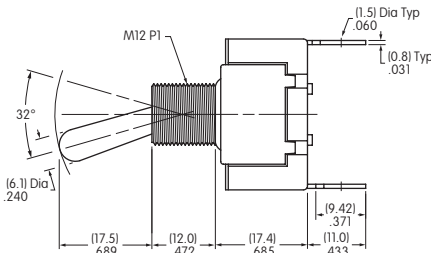
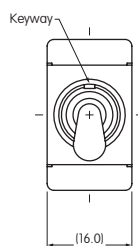
INTERNAL CONNECTION

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



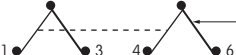
Maximum Panel Thickness: .185" (4.7mm)

### DOUBLE POLE WITH QUICK CONNECT

| * UL & cULus recognized only when ordered with marking on switch (see General Specs) |                                                                                     |                                                                                     |                                                                                     | Toggle Position/Connected Terminals<br>( ) = Momentary |                                                                                     |                                                                                     |                                                                                     | Electrical Capacity |         |        |                |                           |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------|---------|--------|----------------|---------------------------|
| Model                                                                                | * Approvals                                                                         |                                                                                     |                                                                                     | Pole & Throw                                           | Down                                                                                | Center                                                                              | Up                                                                                  | Resistive           |         |        | Inductive      | $\alpha$ = Angle of Throw |
|                                                                                      |  |  |  |                                                        |  |  |  | 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

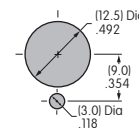
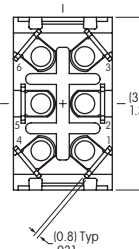
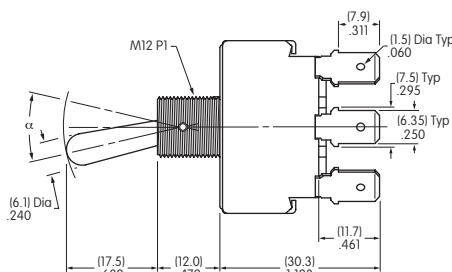
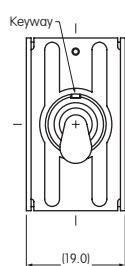


Note: Terminal numbers are actually on the switch

**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 &amp; 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 ( $\alpha$ ):** Shown on following tables

## Materials &amp; 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 &amp; 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

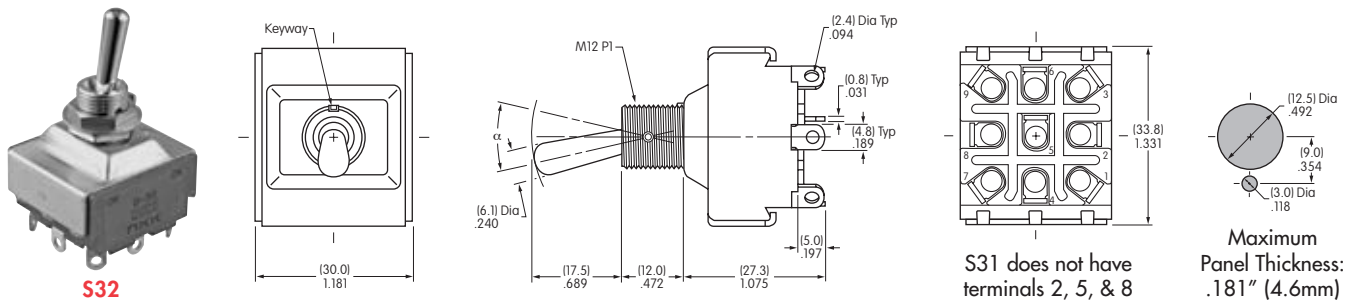
Supplement

### THREE POLE WITH SOLDER LUG

| * UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs) |                                                                                   |                                                                                   |                                                                                   | Toggle Position/Connected Terminals<br>( ) = Momentary |                                                                                           |             |        |                                                                                          | Electrical Capacity |           |                |     |           |                              |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------|--------|------------------------------------------------------------------------------------------|---------------------|-----------|----------------|-----|-----------|------------------------------|
| Model                                                                                     | * Approvals                                                                       |                                                                                   |                                                                                   | Pole & Throw                                           | Down<br> |             | Center | Up<br> |                     | Resistive |                |     | Inductive | $\alpha$ =<br>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.

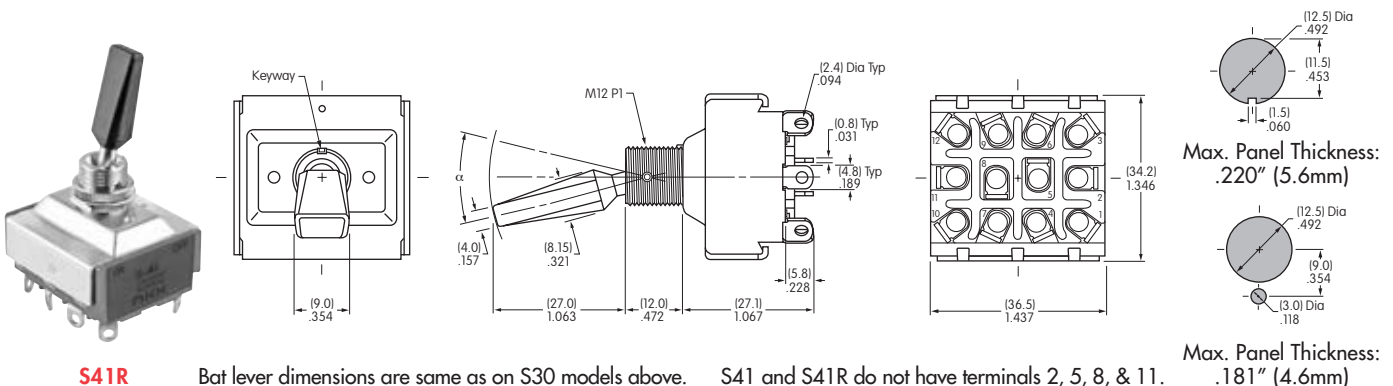


### FOUR POLE WITH SOLDER LUG

| * UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs) |                                                                                     |                                                                                     |                                                                                     | Toggle Position/Connected Terminals<br>( ) = Momentary |                                                                                                                      |     |     |                                                                                               |                                                                                           |        | Electrical Capacity |                   |     |    |           |                              |     |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-----|-----|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------|---------------------|-------------------|-----|----|-----------|------------------------------|-----|
| Model<br>Suffix R =<br>Flatted Lever                                                      | * Approvals                                                                         |                                                                                     |                                                                                     | Pole & Throw                                           | Down<br><small>Keyway</small><br> |     |     | Center<br> | Up<br> |        |                     | Resistive         |     |    | Inductive | $\alpha$ =<br>Angle of Throw |     |
|                                                                                           |  |  |  |                                                        |                                                                                                                      |     |     | 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

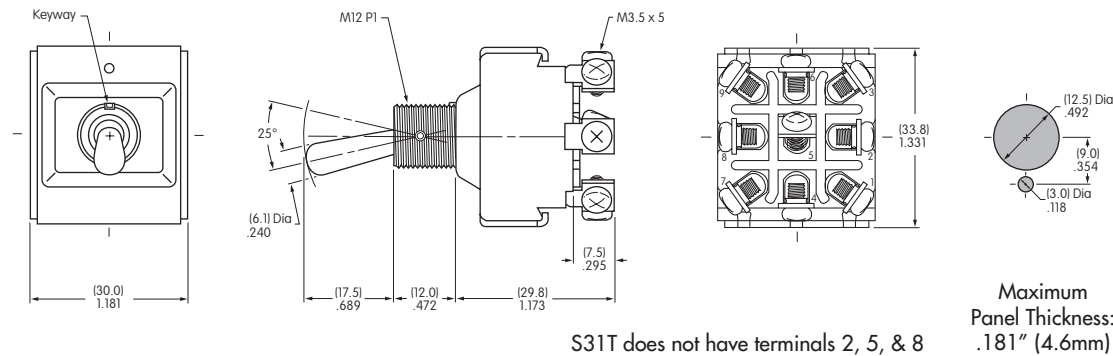
| * UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)                                                                                                                                                                                                                                                                                         |                                                                                   |                                                                                   |                                                                                   | Toggle Position/Connected Terminals |                                                                                   |                                                                                   |                                                                                   |                | Electrical Capacity |        |                |                |    |                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------|---------------------|--------|----------------|----------------|----|---------------------------|
| Model                                                                                                                                                                                                                                                                                                                                                                             | * Approvals                                                                       |                                                                                   |                                                                                   | Pole & Throw                        | Down                                                                              |                                                                                   | Center                                                                            | Up             | Resistive           |        |                | Inductive      |    | $\alpha$ = 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°                       |
| <div><div><div>Throw &amp; Schematics:</div><div><div>3PST</div><div>INTERNAL CONNECTION</div></div></div><div><div>3PDT</div><div>(COM)</div></div></div> <div>Note: Terminal numbers are on the switch</div> |                                                                                   |                                                                                   |                                                                                   |                                     |                                                                                   |                                                                                   |                                                                                   |                |                     |        |                |                |    |                           |

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.



**S32T**

## 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<br> |      |     |     | Center<br> | Up<br> |                     |                   |                | Resistive |     |     | Inductive |     | $\alpha$ = Angle of Throw |
|                                                                                           |  |  |  |                                     | ON 1-3 4-6 7-9 10-12                                                                        | NONE | OFF | —   | 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° |                           |

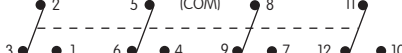
Throw & Schematics:

4PST



INTERNAL CONNECTION

4PDT



(COM)

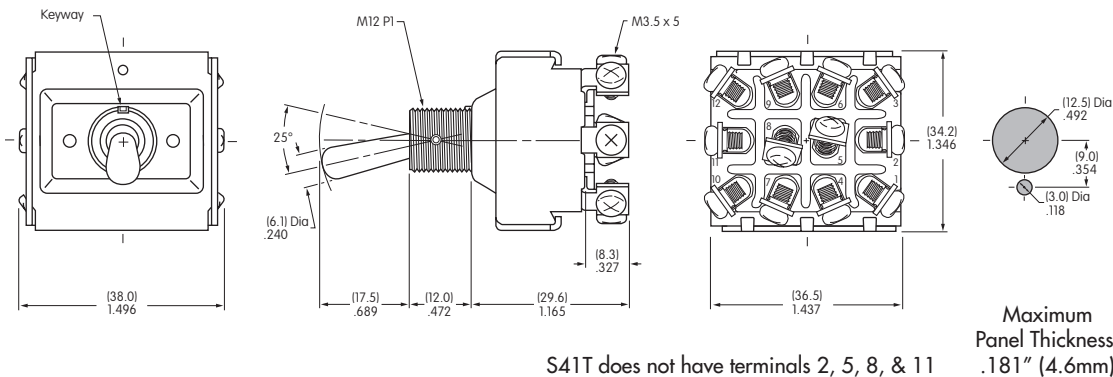
Note: Terminal numbers are on the switch

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.



**S42T**

### THREE POLE WITH QUICK CONNECT

| * 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<br> | Center<br> | Up<br> | Resistive           |         |        | Inductive      | $\alpha =$<br>Angle of Throw |
|                                                                                           |  |  |  |                                     |                                                                                           |                                                                                             |                                                                                         | AC 125V             | AC 250V | DC 30V | AC 125V PF 0.6 |                              |
| S31F                                                                                      | ✓                                                                                 | ✓                                                                                 | ✓                                                                                 | 3PST                                | ON 1-3 4-6 7-9                                                                            | NONE                                                                                        | OFF —                                                                                   | 20A                 | 9A      | 20A    | 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°                          |

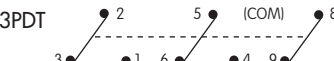
Throw & Schematics:

3PST



INTERNAL CONNECTION

3PDT



(COM)

Note: Terminal numbers are on the switch

Throw & Schematics:

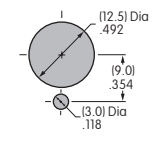
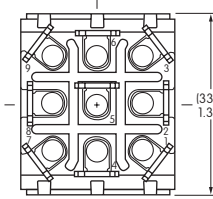
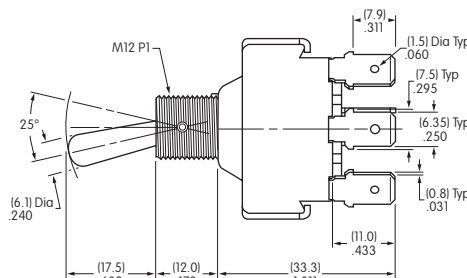
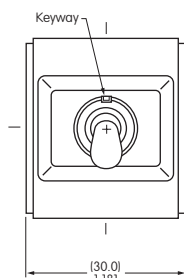


Note: Terminal numbers are on the switch

**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.



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) |                                                                                     |                                                                                     |                                                                                     | Toggle Position/Connected Terminals |                                                                                     |                                                                                     |                                                                                      | Electrical Capacity |         |        |                |                           |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------|---------|--------|----------------|---------------------------|
| Model                                                                                     | * Approvals                                                                         |                                                                                     |                                                                                     | Pole & Throw                        | Down                                                                                | Center                                                                              | Up                                                                                   | Resistive           |         |        | Inductive      | $\alpha$ = Angle of Throw |
|                                                                                           |  |  |  |                                     |  |  |  | AC 125V             | AC 250V | DC 30V | AC 125V PF 0.6 |                           |
| S41F                                                                                      | ✓                                                                                   | ✓                                                                                   | ✓                                                                                   | 4PST                                | ON 1-3 4-6 7-9 10-12                                                                | NONE                                                                                | OFF —                                                                                | 20A                 | 9A      | 20A    | 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:

4PST



INTERNAL CONNECTION

4PDT



(COM)

Note: Terminal numbers are on the switch

Throw & Schematics:

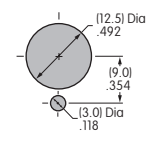
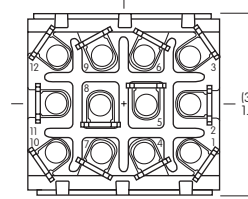
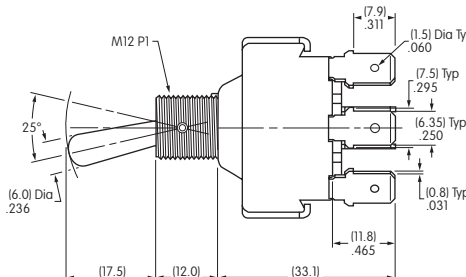
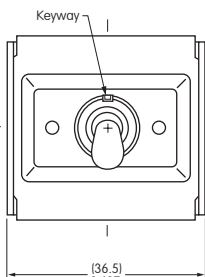


Note: Terminal numbers are on the switch

**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.



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 &amp; Inductive Load)

Power Level: Shown in the following tables

Rockers

## Other Ratings

|                                              |                                        |
|----------------------------------------------|----------------------------------------|
| <b>Contact Resistance:</b>                   | 10 milliohms maximum                   |
| <b>Insulation Resistance:</b>                | 1,000 megohms minimum @ 500V DC        |
| <b>Dielectric Strength:</b>                  | 2,000V AC minimum for 1 minute minimum |
| <b>Mechanical Life:</b>                      | 50,000 operations minimum              |
| <b>Electrical Life:</b>                      | 15,000 operations minimum              |
| <b>Angle of Throw (<math>\alpha</math>):</b> | Shown in tables on following pages     |

Pushbuttons

Illuminated PB

Programmable

## Materials &amp; Finishes

|                             |                                                   |
|-----------------------------|---------------------------------------------------|
| <b>Toggle:</b>              | Brass with chrome plating                         |
| <b>Bushing:</b>             | Brass with chrome plating                         |
| <b>Case:</b>                | Melamine phenol                                   |
| <b>Case Cover:</b>          | Steel with chromate plating over zinc plating     |
| <b>Movable Contactor:</b>   | Copper with silver plating                        |
| <b>Movable Contacts:</b>    | Silver alloy capped on copper with silver plating |
| <b>Stationary Contacts:</b> | Silver alloy capped on copper with silver plating |
| <b>Terminals:</b>           | Brass with tin plating                            |

Keylocks

Rotaries

## Environmental Data

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

Slides

## Installation

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

Tactiles

Tilt

Touch

Indicators

Accessories

Supplement

### DOUBLE POLE WITH SOLDER LUG

|       |                                                                                   |                                                                                   | Toggle Position/Connected Terminals<br>( ) = Momentary |                                                                                           |                                                                                   |                                                                                             | Electrical Capacity |                                                                                         |               |           |         |           |  |            |                              |
|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------|---------------|-----------|---------|-----------|--|------------|------------------------------|
| Model | Approvals                                                                         |                                                                                   | Pole & Throw                                           | Down<br> |                                                                                   | Center<br> |                     | Up<br> |               | Resistive |         | Inductive |  | Motor Load | $\alpha$ =<br>Angle of Throw |
|       |  |  |                                                        | Keyway   |  |            | AC 125V             | AC 250V                                                                                 | PF 0.75 - 0.8 |           | AC 125V |           |  |            |                              |
|       |                                                                                   |                                                                                   |                                                        |                                                                                           |                                                                                   |                                                                                             |                     |                                                                                         | AC 125V       | AC 250V   |         | 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



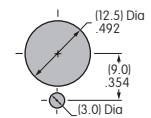
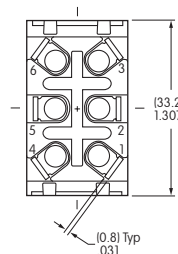
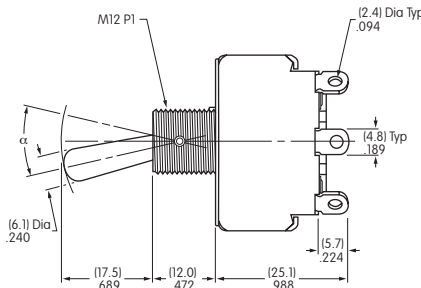
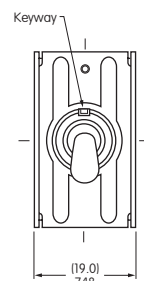
(COM)

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<br>( ) = Momentary |                                                                                     |                                                                                     |                                                                                     | Electrical Capacity |         |               |         |            |                           |
|-------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------|---------|---------------|---------|------------|---------------------------|
| Model | Approvals                                                                           |                                                                                     | Pole & Throw                                           | Down                                                                                | Center                                                                              | Up                                                                                  | Resistive           |         | Inductive     |         | Motor Load | $\alpha$ = 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°                       |

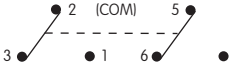
Throw & Schematics:

DPST



INTERNAL CONNECTION

DPDT



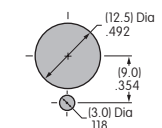
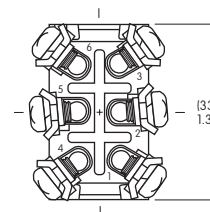
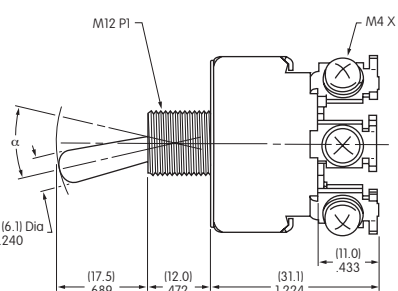
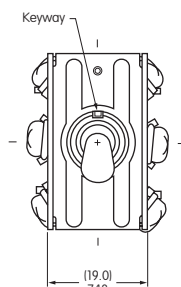
(COM)

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.



**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

|                               |                                                                             |
|-------------------------------|-----------------------------------------------------------------------------|
| <b>Contact Resistance:</b>    | 10 milliohms maximum                                                        |
| <b>Insulation Resistance:</b> | 1,000 megohms minimum @ 500V DC                                             |
| <b>Dielectric Strength:</b>   | 2,000V AC minimum for 1 minute minimum                                      |
| <b>Mechanical Life:</b>       | 50,000 operations minimum                                                   |
| <b>Electrical Life:</b>       | 10,000 operations minimum for S800Ds<br>25,000 operations minimum for S800s |

### Materials & Finishes

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

### Environmental Data

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

### Installation

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

### Standards & Certifications

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

A  
Toggles

Rockers

Pushbuttons

Illuminated PB

Programmable

Keylocks

Rotaries

Slides

Tactiles

Tilt

Touch

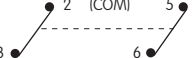
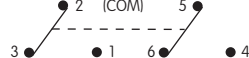
Indicators

Accessories

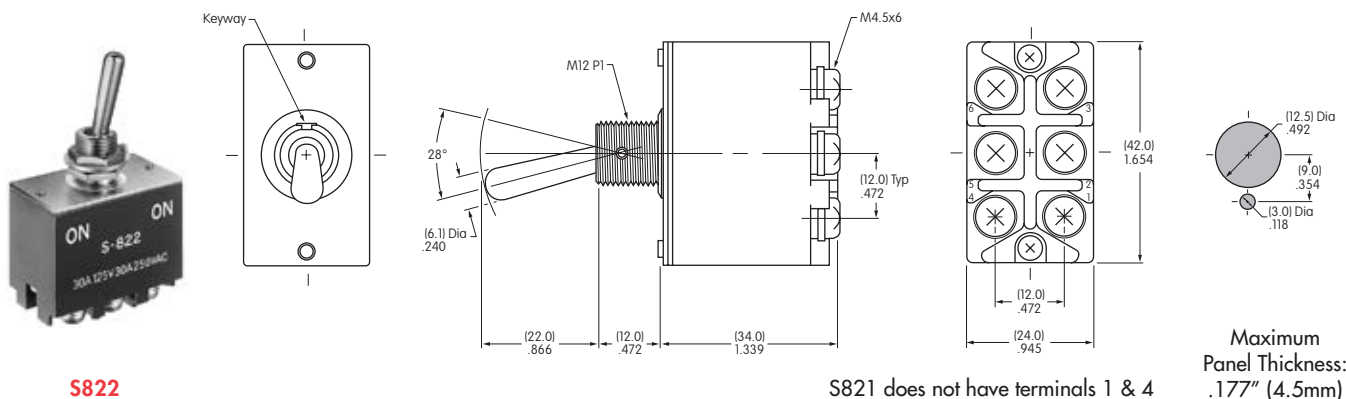
Supplement

Toggles  
A  
Rockers  
Pushbuttons  
Illuminated PB  
Programmable  
Keylocks  
Rotaries  
Slides  
Tactiles  
Tilt  
Touch  
Indicators  
Accessories  
Supplement

### DOUBLE 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                                |                | Motor Load |
|                                                                                           |  |  |  |                                     |  |  |  | AC 125V             | AC 250V                                                                            | DC 30V | DC 125V | AC 125V PF 0.6                           | AC 250V PF 0.6 | AC 125V    |
| S821                                                                                      | ✓                                                                                 | ✓                                                                                 | ✓                                                                                 | DPST                                | ON 2-3 5-6                                                                        | NONE                                                                              | OFF —                                                                             | 30A                 | 30A                                                                                | 30A    | 1A      | 30A                                      | 15A            | 750W       |
| S822                                                                                      | ✓                                                                                 | ✓                                                                                 | ✓                                                                                 | DPDT                                | ON 2-3 5-6                                                                        | NONE                                                                              | ON 2-1 5-4                                                                        | 30A                 | 30A                                                                                | 30A    | 1A      | 30A                                      | 15A            | —          |
| S823                                                                                      | ✓                                                                                 | ✓                                                                                 | ✓                                                                                 | DPDT                                | ON 2-3 5-6                                                                        | OFF                                                                               | ON 2-1 5-4                                                                        | 30A                 | 30A                                                                                | 30A    | 1A      | 30A                                      | 15A            | —          |
| Throw & Schematics:                                                                       |                                                                                   |                                                                                   |                                                                                   | DPST                                |  |                                                                                   |                                                                                   | DPDT                |  |        |         | Note: Terminal numbers are on the switch |                |            |

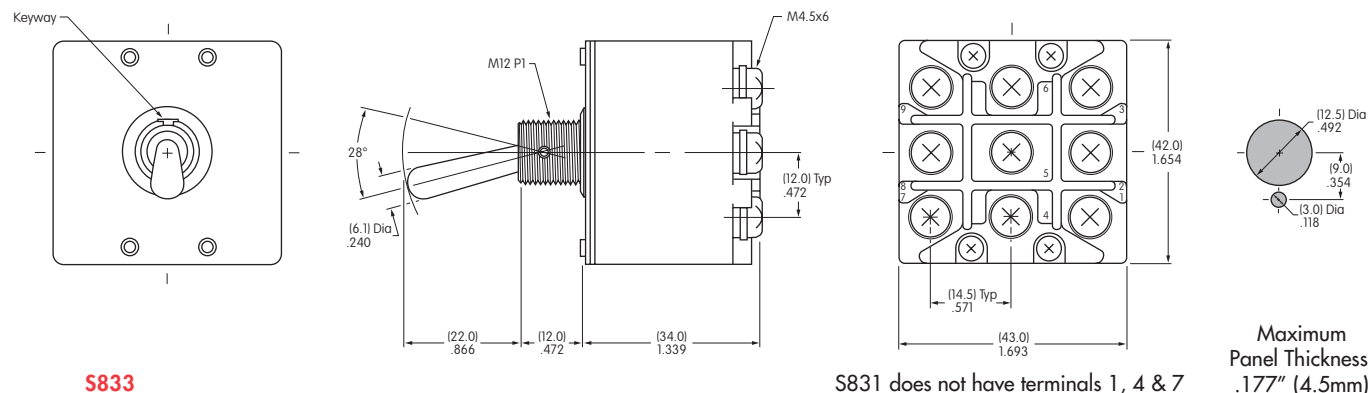
**Notes:** Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section.  
Optional Splashproof Boot Assembly: AT401 boot plus hex nut & o-ring. See Accessories & Hardware section.



### 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<br> | Center<br> | Up<br> | Resistive |                     |        |         | Inductive                                                                            |                |                                          |  |
|                                                                                           |  |  |  |                                                                                     |                                                                                             |                                                                                               |                                                                                           | AC 125V   | AC 250V             | DC 30V | DC 125V | AC 125V PF 0.6                                                                       | AC 250V PF 0.6 |                                          |  |
| S831                                                                                      | ✓                                                                                   | ✓                                                                                   | ✓                                                                                   | 3PST                                                                                | ON 2-3 5-6 8-9                                                                              | NONE                                                                                          | OFF —                                                                                     | 30A       | 30A                 | 30A    | 1A      | 30A                                                                                  | 15A            |                                          |  |
| S832                                                                                      | ✓                                                                                   | ✓                                                                                   | ✓                                                                                   | 3PDT                                                                                | ON 2-3 5-6 8-9                                                                              | NONE                                                                                          | ON 2-1 5-4 8-7                                                                            | 30A       | 30A                 | 30A    | 1A      | 30A                                                                                  | 15A            |                                          |  |
| S833                                                                                      | ✓                                                                                   | ✓                                                                                   | ✓                                                                                   | 3PDT                                                                                | ON 2-3 5-6 8-9                                                                              | OFF                                                                                           | ON 2-1 5-4 8-7                                                                            | 30A       | 30A                 | 30A    | 1A      | 30A                                                                                  | 15A            |                                          |  |
| Throw & Schematics:                                                                       |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                             |                                                                                               |                                                                                           |           |                     |        |         |                                                                                      |                | Note: Terminal numbers are on the switch |  |
| 3PST                                                                                      |                                                                                     |                                                                                     |                                                                                     |  |                                                                                             |                                                                                               |                                                                                           | 3PDT      |                     |        |         |  |                |                                          |  |

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



## DOUBLE POLE WITH SCREW LUG & FLATTED LEVER

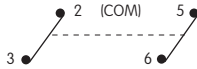
\* UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs)

| * UL, cULus & CSA recognized only<br>when ordered with marking on<br>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 |

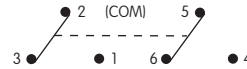
( ) capacity is due to wiring. Refer to instructions below.

Throw & Schematics:

DPST

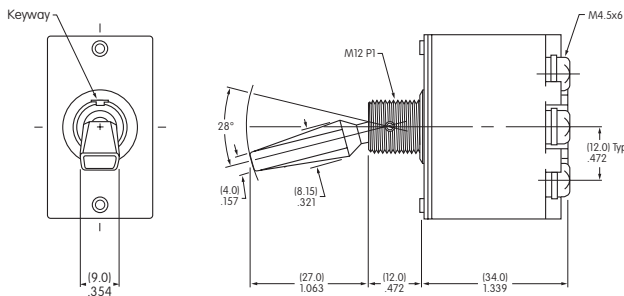


DPDT

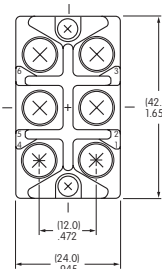


Note: Terminal numbers are on the switch

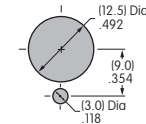
Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section.



### Double Pole



S821D does not have terminals 1 & 4



Maximum Panel Thickness: .177" (4.5mm)



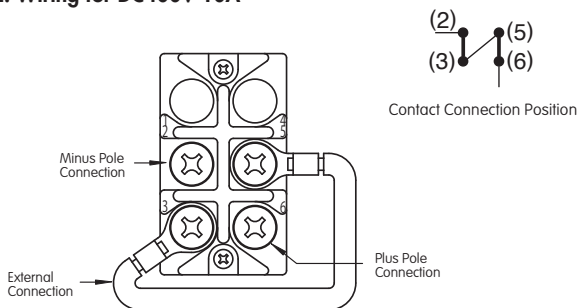
S822D

## 400V DC WIRING INSTRUCTIONS

### 1. DC Switch Use

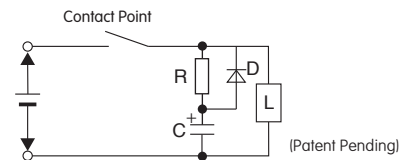
- Middle terminal shall be the minus pole when using DC circuit. Switch case is marked with (+) and (-).
- Do not store near (5cm) highly magnetic items.
- If actuation is interrupted when switching from ON to OFF, arcing may continue and switch could be burned.

### 2. Wiring for DC400V 10A



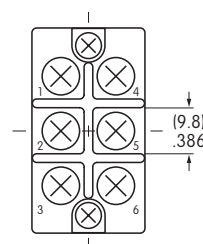
### 3. Inductive Load

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.



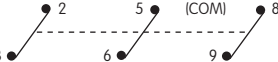
### THREE POLE WITH SCREW LUG & FLATTED LEVER

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

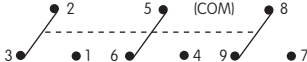
| * UL, cULus & CSA recognized only when ordered with marking on switch (see General Specs) |                                                                                   |                                                                                   |                                                                                   | Toggle Position/Connected Terminals |                                                                                                            |                                                                                   |                                                                                   | Electrical Capacity |        |         |         |                     |        |         |         |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------|--------|---------|---------|---------------------|--------|---------|---------|
| Model                                                                                     | *Approvals                                                                        |                                                                                   |                                                                                   | Pole & Throw                        | Down                                                                                                       | Center                                                                            | Up                                                                                | Resistive           |        |         |         | Inductive L/R = 3ms |        |         |         |
|                                                                                           |  |  |  |                                     | <br><small>Keyway</small> |  |  | 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



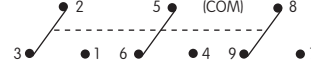
Note: Terminal numbers are on the switch

Throw & Schematics:

3PST

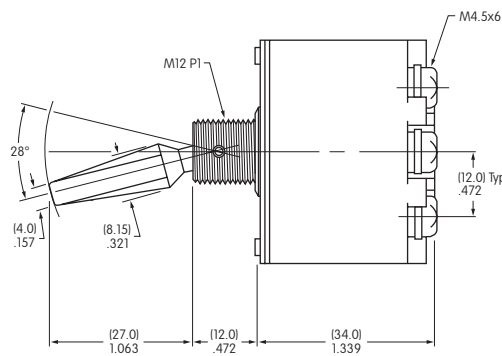
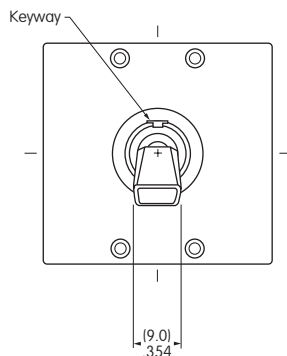


3PDT

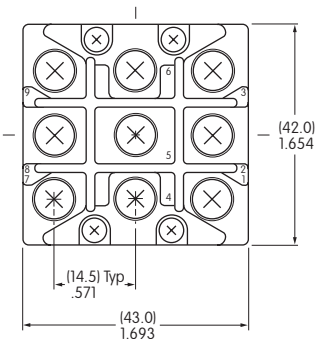


Note: Terminal numbers are on the switch

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



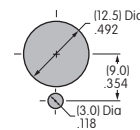
#### Three Pole



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)