Contents for Standard Size Toggles



Medium Capacity Page A101

15~20A Power Level Solder Lug, Quick Connect Terminals **Bushing Mount** Single & Double Pole



Medium Capacity Page A106

15~20A Power Level Solder Lug, Screw Lug, Quick Connect Terminals **Bushing Mount** One through Four Pole



High Capacity Page A117

30A Power Level Screw Lug Terminals **Bushing Mount or Mounting Screws** Double Pole & Three Pole



GENERAL SPECIFICATIONS FOR S1 ~ S29

Electrical Capacity (Resistive & Inductive Load)

Shown in the following tables Power Level:

Other Ratings

Contact Resistance: 10 milliohms maximum

Insulation Resistance: 1,000 megohms minimum @ 500V DC 2,000V AC minimum for 1 minute minimum **Dielectric Strength:**

Mechanical Life: 30,000 operations minimum for S5AW, S8AW, S9AW, S25AW, S28AW, S29AW

50,000 operations minimum for all other models

Electrical Life: 25,000 operations minimum Angle of Throw (α): Shown in tables on following pages

Materials & Finishes

Brass with chrome plating Toggle: Brass with chrome plating **Bushing:**

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 Silver alloy capped on copper with silver plating **Stationary Contacts:**

> Terminals: Brass with tin plating

Environmental Data

Operating Temp Range: -30°C through +70°C (-22°F through +158°F) for Splashproof models;

-10°C through +70°C (+14°F through +158°F) for all other models

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

Installation

1.47Nm (13 lb•in) for single nut on AW & AL models Mounting Torque:

2.94Nm (26 lb•in) for double nut on other models

Maximum Panel Thickness: Shown beneath panel cutout in switch dimension drawings **Soldering Time & Temperature:** Manual Soldering: See Profile A in Supplement section.

Standards & Certifications

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.

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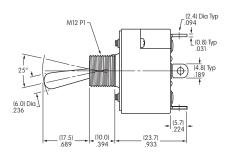
| | | | | | S | INGL | E POLE W | /ITH S | OLDE | R LUG | | | | |
|---------------------------|-------------------|------------------------|--------------------|--------------------------|-------------------|---------|-----------------|----------|-------|------------|------------|-----------|------------------------------|-------------------|
| * UL, cULus & with mar | & CSA reking on s | cognized witch (see | only wl e Gener | nen ordered al Specs) | То | ggle Po | sition/Connecte | d Termin | als | | Electrical | Capacity | | |
| | * A | pprovo | ıls | | Dov | ٧n | Center | U | р | | Resistive | | Inductive | |
| Model | lR。 | c 711° us | (1) | Pole & Throw | Keywo | 197 | - | - | | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | Angle of Throw |
| 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 8 | - | SI | PST | 1. | INTERNA CONNEC | | SPDT | 3 • 2 | (COM) | | N | | al numbers a on the switc | |

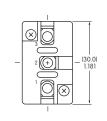
Notes: Standard Hardware: AT504M Knurled Nut, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section. Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



S2A









S1A does not have terminal 2

Maximum Panel Thickness: .158" (4.0mm)

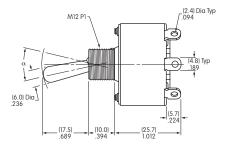
| | | | | | | D | OUBLE | POLE | WITI | H SOLD | ER LUG | | | | |
|---|----------------------------|-------------|-----------------|------------|-----------------|----|----------------------|--------------|-----------|----------------------|------------|------------|-----------|-------------------|-------------------|
| | * UL, cULus 8 with mark | | | | | То | ggle Positio | on/Conne | cted Teri | minals | | Electrical | Capacity | | |
| | | * 4 | Approvo | als | | D | own | Center | | Up | | Resistive | | Inductive | α= |
| | Model | <i>L</i> R。 | c 91 °us | (1) | Pole & Throw | Ke | yway¬ | - | • | - | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | Angle of Throw |
| Ī | \$21A | _ | | _ | 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 & Schemat | | DPST | 1. | 3 4 | | INTERNAL CONNECTI | on DP | DT 3 • | 2 (COM) • 1 6 | 5 • 4 | ١ | | al numbers o | |

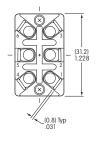
Notes: Standard Hardware: AT504M Knurled Nut, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section. Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



S₆A









S21A does not have terminals 2 & 5





SINGLE POLE WITH QUICK CONNECT

| | | | | To | oggle Po | sition/Connected | l Termina | ls | | Electrica | l Capacity | | |
|-------|-------------|-------------|-----------------|-------|----------|------------------|-----------|-----|------------|------------|------------|-------------------|-------------------|
| | Appro | ovals | | Dov | wn | Center | U | р | | Resistive | | Inductive | |
| Model | <i>LR</i> 。 | (P) | Pole & Throw | Keywo | шу¬ | | - | | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | Angle of Throw |
| S1F | _ | | SPST | ON | 1-3 | NONE | OFF | _ | 15A | 6A | 20A | 8A | 25° |
| S2F | _ | | SPDT | ON | 2-3 | NONE | ON | 2-1 | 15A | 6A | 20A | 8A | 25° |
| S3F | | _ | SPDT | ON | 2-3 | OFF | ON | 2-1 | 15A | 6A | 20A | 8A | 25° |

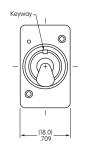
Throw & **Schematics:**

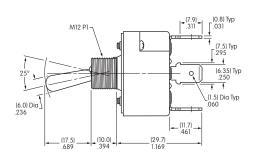


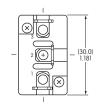
2 (COM)

Note: Terminal numbers are actually on the switch

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











Maximum Panel Thickness: .158" (4.0mm)

S2F

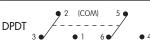
S1F does not have terminal 2

DOUBLE POLE WITH QUICK CONNECT

| | | | | 1 | Toggle Positio | on/Connec | ted Tern | ninals | | Electrica | l Capacity | | |
|-------|-------------|-------|-----------------|----|----------------|-----------|----------|---------|------------|------------|------------|-------------------|-------------------|
| | Appr | ovals | | | Down | Center | | Up | | Resistive | | Inductive | α= |
| Model | <i>LR</i> 。 | 48 | Pole & Throw | Ke | Keyway¬ | | • | - | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | Angle of Throw |
| \$21F | _ | | 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:**

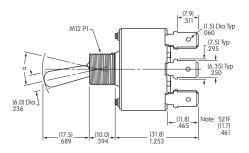


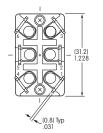


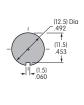
Note: Terminal numbers are actually on the switch

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.











Maximum Panel Thickness: .158" (4.0mm)

S6F



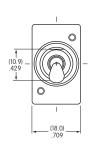
S21F does not have terminals 2 & 5

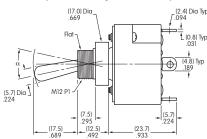
SINGLE POLE SOLDER LUG WITH PANEL SEAL

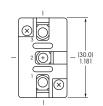
| | | | | | Toggle Po | sition/Connecte () = Momentar | | ; | El | ectrical Capac | ity | |
|-----------------|-------------|--------------|-----------------|-------|------------------|-----------------------------------|-----------|--------|------------|----------------|---------------------------------|-------------------|
| | Appr | ovals | - 1 - | | wn | Center | U | р | | Resistive | | α = |
| Model | <i>LR</i> 。 | (IP) | Pole & Throw | Flat- | — | | | - - | AC 125V | AC 250V | DC 30V | Angle of Throw |
| \$1AW | _ | _ | 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 Scheme | | SPS | ST 1. | | RNAL INECTION | SPDT | 3 • 2 (C) | | | | erminal numl actually on the | |

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).











S1AW does not have terminal 2

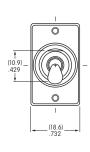
Maximum Panel Thickness: .158" (4.0mm)

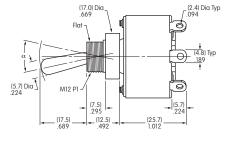
DOUBLE POLE SOLDER LUG WITH PANEL SEAL

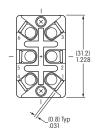
| | | | | | Toggle Posit | tion/Connect) = Momento | | als | Ele | ectrical Capac | city | |
|-------------------|-------------|------------|-----------------|------|------------------------|-----------------------------|------|----------|------------|----------------|------------------------------|-------------------|
| | Appr | ovals | | | Down | Center | | Up | | Resistive | | α = |
| Model | <i>LR</i> 。 | (1) | Pole & Throw | Flo | | | • | - | AC 125V | AC 250V | DC 30V | Angle of Throw |
| 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 & Schematic | | PST | <u></u> | | INTERNAL CONNECTION | DPDT | / | (COM) 5 | · 4 | | erminal num ctually on th | |

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).









S21AW does not have terminals 2 & 5

Maximum Panel Thickness: .158" (4.0mm)

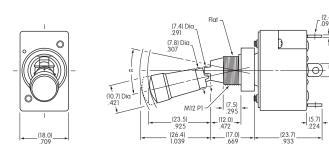


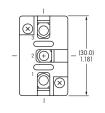
Supplement | Accessories

SINGLE POLE SOLDER LUG WITH LOCKING LEVER & PANEL SEAL

| | | | | To | oggle Po | sition/Connecte | d Termina | ıls | | Electrica | l Capacity | | |
|-------------------|-----|------------------|-----------------|------|----------------|-----------------|-----------|-------|------------|------------|------------|----------------------------------|-------------------|
| | Арр | rovals | | Dov | wn | Center | U | Jp | | Resistive | | Inductive | α = |
| Model | lR. | c 711° us | Pole & Throw | Keyw | ay 🥆 | | | | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | Angle of Throw |
| 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 8 Schema | | Ş | SPST | | INTERN CONN | NAL ECTION | SPDT | 2 2 2 | 2 (COM) | | | al numbers ar ly on the switc | |

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).









Maximum Panel Thickness: .158" (4.0mm)

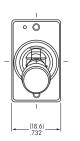
S2AL

S1AL does not have terminal 2

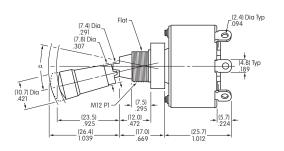
| * UL & cUL ordered v (se | with ma | | switch | To | oggle Positio | n/Connec | ted Term | inals | | Electrica | l Capacity | | |
|--------------------------------|---------|------------------|-----------------|----|---------------|-------------|----------|-----------|------------|------------|--------------|-------------------|-------------------|
| | *Арр | rovals | | | Oown | Center | | Up | | Resistive | | Inductive | α = |
| Model | lR. | c 911 °us | Pole & Throw | Ke | yway¬ | | • | | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | Angle of Throw |
| 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 & | | DPST | * | • | ·── INTERNA | Δ1 C | OPDT | 9 2 (COM) | 5 9 | | Note: Termin | al numbers are | 9 |

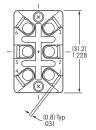
DOUBLE POLE SOLDER LUG WITH LOCKING LEVER & PANEL SEAL

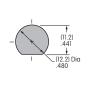
Notes: Standard Hardware: AT503M Face Hex Nut, Lockwasher, AT537 O-ring. See Accessories & Hardware section. Locking Lever & Panel Seal models meet IP67 of IEC 60529 Standards at front panel (dust tight and water protected from effects of temporary immersion).



Schematics:







actually on the switch

Maximum Panel Thickness: .158" (4.0mm)



S6AL

S21AL does not have terminals 2 & 5

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GENERAL SPECIFICATIONS FOR \$301 ~ \$339

Electrical Capacity (Resistive & Inductive Load)

Power Level: Shown in the following tables

Other Ratings

10 milliohms maximum **Contact Resistance:**

1,000 megohms minimum @ 500V DC **Insulation Resistance:** 2,000V AC minimum for 1 minute minimum **Dielectric Strength:**

Mechanical Life: 50,000 operations minimum

Electrical Life: 6,000 operations minimum for S331F; 15,000 operations minimum for all other S331s;

25,000 operations minimum for all others

Angle of Throw (α): Shown on following tables

Materials & Finishes

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

Bushing: Brass with chrome plating

Case: Melamine phenol Steel with zinc plating **Case Cover:** Movable Contactor: Copper with silver plating

Movable & Stationary Contacts: Silver alloy capped on copper with silver plating

> Terminals: Brass with tin plating

Environmental Data

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

Installation

2.94Nm (26 lb•in) for double nut; 1.47Nm (13 lb•in) for single nut **Mounting Torque:**

Soldering Time & Temperature: Manual Soldering: See Profile A in Supplement section.

Standards & Certifications

UL: File No. E44145 - Recognized only when ordered with marking on switch.

Add "/U" or "/CUL" to end of part number to order UL recognized switch. UL or cULus recognition designated beside part numbers on following pages.

See Supplement section to find UL or cULus rating details.

CSA: File No. 023535_0_000 - Certified only when ordered with marking on switch.

Add "/C" to end of part number to order CSA certified switch.

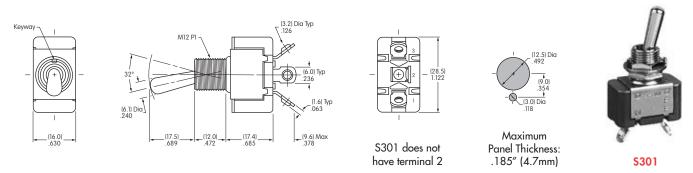
CSA certification designated beside part numbers on following pages.

See Supplement section to find CSA rating details

SINGLE POLE WITH SOLDER LUG

| UL, cULus & with mar | | | | hen ordered ral Specs) | Tog | gle Posit (| ion/Connect) = Momento | | nals | | Electrical | Capacity | | |
|-------------------------|-------------|-----------------|------|---------------------------|----------------|----------------|----------------------------|-------|----------------|------------|------------|-----------|----------------------------------|-------------------|
| | * A | pprov | als | D 1 0 | Dov | wn | Center | U | р | | Resistive | | Inductive | |
| Model | <i>LR</i> 。 | c SU °us | 40 | Pole & Throw | Keywo | ау¬ | - | | | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | Angle of Throw |
| 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 & | | | SPST | 1 | INTERI CONN | NAL IECTION | SPD | T 3 • | 2 (COM) • 1 | | ١ | | al numbers ar ly on the switc | |

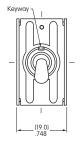
Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section. Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.

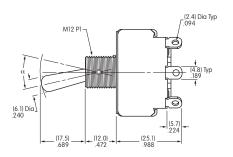


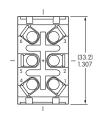
DOUBLE POLE WITH SOLDER LUG

| * UL, cULus & with mar | | | | | 1 | Toggle Positi (| on/Connect) = Moment | ted Terminals ary | | Electrica | l Capacity | | |
|---------------------------|----------------------------------|------------------|-------------|-----------------|------|-------------------------|-----------------------|----------------------|--------------|------------|------------|-------------------|-------------------|
| | * 4 | Approva | ıls | | | Oown | Center | Up | | Resistive | | Inductive | α = |
| Model | LR. | c 91 0°us | (P) | Pole & Throw | Ke | yway¬ | - | ~ | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | Angle of Throw |
| \$331 | / | / | / | 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 | 1 <i>5</i> A | 6A | 20A | 8A | 25° |
| \$338 | / | / | _ | DPDT | (ON) | 2-3 5-6 | OFF | (ON) 2-1 5-4 | 1 <i>5</i> A | 6A | 20A | 8A | 25° |
| \$339 | / | / | | DPDT | ON | 2-3 5-6 | OFF | (ON) 2-1 5-4 | 1 <i>5</i> A | 6A | 20A | 8A | 25° |
| | S339 / Throw & Schematics: | | 1.0 | 3 4 | | — INTERNAL CONNECTIO | N DPD1 | / | 59 | N | | al numbers ar | |

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.







S331 does not have terminals 2 & 5



Maximum Panel Thickness: .185" (4.7mm)



S331



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| | aman | 5 | |
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| _ | no mo no | | |
| - | nomo | 5 | |
| - | no mo no | | |
| - | no mo no | | |
| | no mo no | | |

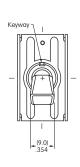
| | | | | DOU | BLE P | OLE WI | TH SOL | .DER | LUG & I | FLATTE | D LEVE | R | | |
|-----------|---------|--------------------------------------|------------|-----------------|----------|-------------------|---------------------------|------|----------|--------------|------------|--------------|-------------------|--------------------------|
| * UL & cU | with mo | gnized on Irking on General Sp | świtch | ordered | T | oggle Positi (| on/Connect) = Momente | | nals | | Electrico | al Capacity | | |
| | * 4 | Approve | als | | | Oown | Center | | Up | | Resistive | | Inductive | |
| Model | lR. | c SN °us | (SP | Pole & Throw | Ke | yway¬ | - | - | — | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | α = Angle of Throw |
| 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 | 1 <i>5</i> A | 6A | 20A | 8A | 25° |
| S339R | / | / | _ | DPDT | ON | 2-3 5-6 | OFF | (ON) | 2-1 5-4 | 1 <i>5</i> A | 6A | 20A | 8A | 25° |
| Throw 8 | Ç. | DPST | * | | ^ | -INTERNAL | DPDT | 2 2 | (COM) 5 | | N | lote: Termin | al numbers ai | re |

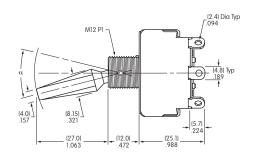
Notes: Standard Hardware: AT504M Knurled Nut, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section.

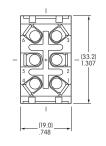


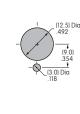
S331R

Schematics:









actually on the switch

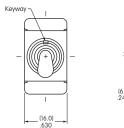
S331R does not have terminals 2 & 5

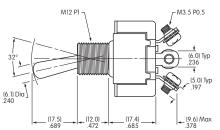
Maximum Panel Thickness: .220" (5.6mm)

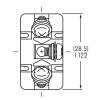
SINGLE POLE WITH SCREW LUG

| * UL, cULus & with mar | | | | nen ordered ral Specs) | Tog | gle Posit (| rion/Connect) = Momento | | nals | | Electrical | Capacity | | |
|---------------------------|-------------|------------------|------------|---------------------------|-----------------|----------------|-----------------------------|------|----------------|------------|------------|-----------|----------------------------------|-------------------|
| | * A | Approva | ls | | Dov | ٧n | Center | U | p | | Resistive | | Inductive | α = |
| Model | <i>LR</i> 。 | c 711 °us | (1) | Pole & Throw | Keywo | шу¬ | - | - | | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | Angle of Throw |
| 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 & Schemat | - | S | PST | 1. | INTERN CONNE | | SPD | Г | 2 (COM) • 1 | | N | | al numbers ar y 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

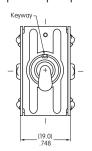
Maximum Panel Thickness: .185" (4.7mm)

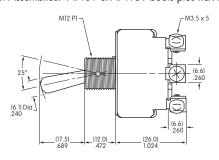
S301T

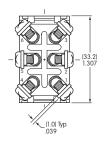
DOUBLE POLE WITH SCREW LUG

| | | nized only vitch (see | | ordered with I Specs) | To | oggle Positio () | on/Connect = Momento | | nals | | Electrica | l Capacity | | |
|---------|-------------|--------------------------|------------|--------------------------|------|--------------------------|-------------------------|------|----------|--------------|------------|------------|--------------------------------|-------------------|
| | * 🖊 | pprov | als | | D | own | Center | | Up | | Resistive | | Inductive | α = |
| Model | <i>LR</i> 。 | c 91 0°us | (SP | Pole & Throw | Key | way¬ | - | • | — | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | Angle of Throw |
| 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 | 1 <i>5</i> A | 6A | 20A | 8A | 25° |
| S339T | / | / | | DPDT | ON | 2-3 5-6 | OFF | (ON) | 2-1 5-4 | 15A | 6A | 20A | 8A | 25° |
| Throw & | | DPST | 1. | 3 4 | | - INTERNAL CONNECTION | DPDT | 3. | 2 (COM) | 5 9 | N | | al numbers a y on the swite | |

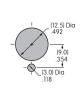
Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section. Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.







S331T does not have terminals 2 & 5



Maximum Panel Thickness: .185" (4.7mm)



S331T



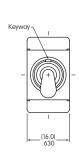
Rotaries

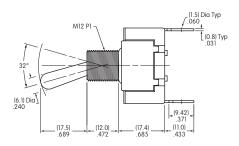
Touch

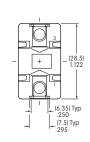
| | | | | | SINC | GLE P | OLE WIT | H QU | ICK C | ONNE | СТ | | | |
|----------------------------|-------------|------------------|------------|-----------------|---------|-------------------|--------------|-----------|-------|------------|------------|-------------------|----------------------------------|-----|
| * UL, cULus 8 with mark | | | | | Tog | ıgle Posi | tion/Connect | ed Termin | als | | Electrica | l Capacity | | |
| | * 🖊 | pprova | ls | | Dov | wn | Center | U | р | | Resistive | | Inductive | α = |
| Model | <i>L</i> R. | c 711° us | (P | Pole & Throw | Keyw | ау¬ | - | | = | AC 125V | AC 250V | AC 125V PF 0.6 | Angle of Throw | |
| S301F | > | / | / | SPST | ON | 1-3 | NONE | OFF | _ | 15A | 6A | 20A | 10A | 32° |
| Throw & Schematic | | | | | <u></u> | INTERNA CONNEC | | | | | ١ | | nal numbers a lly on the swit | |

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

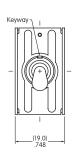
Maximum Panel Thickness: .185" (4.7mm)

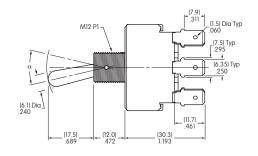
| | | | | | DOU | IBLE PO | LE WIT | TH QU | JICK CO | DNNEC | T | | | |
|------------------------|-----|--------------------------|------------|-----------------|-----|--------------------------|-----------------------|-------|----------|------------|------------|------------|--------------------------------|-------------------|
| * UL & cULus markin | | zed only v tch (see G | | | To | oggle Positio | on/Connec = Moment | | inals | | Electrica | l Capacity | | |
| | * 🖊 | pprova | ıls | | 0 | Oown | Center | | Up | | Resistive | | Inductive | α= |
| Model | lR. | c 91 0°us | (1) | Pole & Throw | | yway¬ | T | • | — | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | Angle of Throw |
| 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 & Schematic | | DPST 1 | Å | 3 4 | • 6 | - INTERNAL CONNECTION | DPDT | 3 • | 2 (COM) | • 4 | Z | | al numbers a y on the swite | |

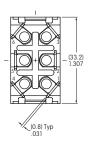
Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section. Optional Splashproof Boot Assemblies: AT401 & AT4181 boots plus hex nut & o-ring. See Accessories & Hardware section.



S332F









S331F does not have terminals 2 & 5





GENERAL SPECIFICATIONS FOR S31 ~ S49

Electrical Capacity (Resistive & Inductive Load)

Power Level: Shown in the following tables

Other Ratings

Contact Resistance: 10 milliohms maximum

Insulation Resistance: 1,000 megohms minimum @ 500V DC **Dielectric Strength:** 2,000V AC minimum for 1 minute minimum

Mechanical Life: 50,000 operations minimum

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

6,000 operations minimum for S31, S32, S33, S31F, S32F, S33F, S31T, S32T, S33T;

S41/S41R, S42/S42R, S43/S43R, S41F, S42F, S43F, S41T, S42T, S43T

(Inductive Load)

Angle of Throw (α): Shown on following tables

Materials & Finishes

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

Bushing: Brass with chrome plating

Phenolic resin

Case Cover: Steel with chromate plating over zinc plating

Movable Contactor: Copper with silver plating

Movable Contacts: Silver alloy capped on copper with silver plating Stationary Contacts: Silver alloy capped on copper with silver plating

Terminals: Brass with tin plating

Environmental Data

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

Installation

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

Maximum Panel Thickness: Shown beneath panel cutout in switch dimension drawings **Soldering Time & Temperature:** Manual Soldering: See Profile A in Supplement section.

Standards & Certifications

UL: File No. E44145 - Recognized only when ordered with marking on switch.

Add "/U" or "/CUL" to end of part number to order UL recognized switch. UL or cULus recognition designated beside part numbers on following pages.

See Supplement section to find UL or cULus rating details.

CSA: File No. 023535_0_000 - Certified only when ordered with marking on switch.

Add "/C" to end of part number to order CSA certified switch.

CSA certification designated beside part numbers on following pages.

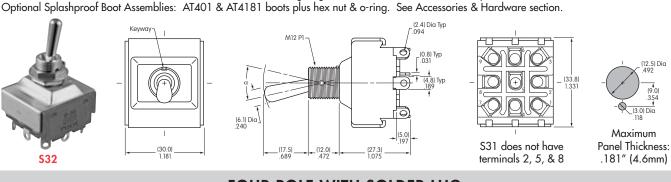
See Supplement section to find CSA rating details.

THREE POLE WITH SOLDER LUG

| * UL, cULus 8 with mark | | | | | | Toggle Positio | n/Connec = Moment | | ninals | | Electrico | ıl Capacit | у | |
|----------------------------|-------------|------------------|------------|-----------------|----------|----------------|----------------------|------|-------------------|--------------|------------|------------|-------------------|--------------------------|
| | * A | pprovo | ıls | | | Down | Center | | Up | | Resistive | | Inductive | α = |
| Model | <i>L</i> R. | c FLL °us | (1) | Pole & Throw | | Keyway | - | | - | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | Angle of Throw |
| 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 | 1 <i>5</i> A | 6A | 20A | 8A | 25° |
| S38 | / | / | / | 3PDT | (ON) | 2-3 5-6 8-9 | OFF | (ON) | 2-1 5-4 8-7 | 1 <i>5</i> A | 6A | 15A | 8A | 25° |
| S39 | / | / | / | 3PDT | ON | 2-3 5-6 8-9 | OFF | (ON) | 2-1 5-4 8-7 | 1 <i>5</i> A | 6A | 15A | 8A | 25° |
| Throw & Schematic | | 3PST | À | 3 4 | ^ | Z | ERNAL NNECTION | 3PD | T 2 2 2 3 • 1 6 6 | / | OM) 8 | | | al numbers the switch |

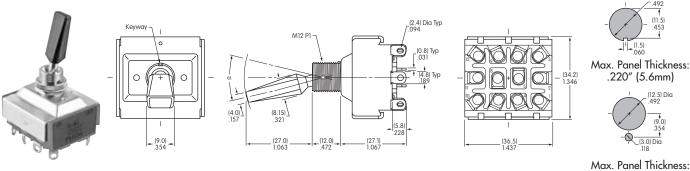
Notes: Standard Hardware: AT503M Face Hex Nut, AT506M Locking Ring, AT508 Lockwasher, AT527M Backup Hex Nut. See Accessories & Hardware section.

●1 6 **●**⁄



| * UL, cULus & C with markin | | | | | | | Togg | | n/Conne = Momer | | rmino | als | | | E | lectrico | al Cap | acity | |
|--------------------------------|-------------|------------------|-----|-----------------|------|-----|---------|-------|----------------------|------|-------|----------|-----|-------|------------|------------|-----------|-------------------|--------------------|
| Model | * 4 | Approva | ıls | _ | | C | own | | Center | | | Up | | | F | Resistiv | е | Inductive | α = |
| Suffix R = Flatted Lever | <i>L</i> R. | c 91 0°us | 40 | Pole & Throw | | Key | way¬ | | - | | • | <u> </u> | | | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | Angle of Throw |
| 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 | À | | | | • | / | | ITERNAL ONNECTION | 4PDT | Ž | | 5 | (COM) | 8 | | - 10 | nur | ninal nbers are |

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.

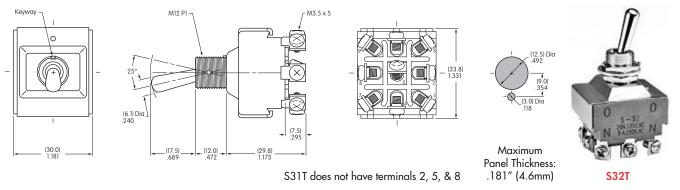


.181" (4.6mm)

on the switch

| h marking on switch (see General Sp *Approvals | | | al Specs) | | Toggle Position | n/Connecte | ed lerr | ninals | | Ele | ctrical | Capacity | | |
|---|------------------------------|------------|-----------------|-------------------------------------|--|--|--|--|--|--|--|--|--|--|
| *A | pprova | ls | | | Down | Center | | Up | R | esistive |) | Indu | ctive | ~ - |
| <i>LR</i> . | c SU °us | (1) | Pole & Throw | | Keyway- | - | | | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | AC 250V PF 0.6 | α = Angle of Throw |
| / | / | / | 3PST | ON | 1-3 4-6 7-9 | NONE | OFF | _ | 20A | 9A | 20A | 10A | 5A | 25° |
| / | / | / | 3PDT | ON | 2-3 5-6 8-9 | NONE | ON | 2-1 5-4 8-7 | 20A | 9A | 20A | 10A | 5A | 25° |
| / | / | / | 3PDT | ON | 2-3 5-6 8-9 | OFF | ON | 2-1 5-4 8-7 | 20A | 9A | 20A | 10A | 5A | 30° |
| 1 | <i>A V V V V V V V V V V</i> | ## CPU US | | Pole & Throw Y Y Y 3PST Y Y Y 3PDT | Pole & Throw Po | Pole & Throw Po | Pole & Throw Po | Pole & Throw Po | Pole & Throw Po | Pole & Throw Po | Pole & Throw Po | Pole & Throw Po | Pole & Throw Po | Pole & Throw Po |

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

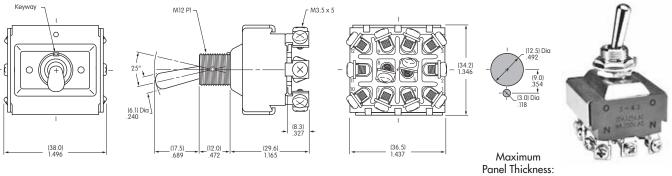


FOUR POLE WITH SCREW LUG

| | | | | | | | | OK I | OLL V | v | | /IXE 1 | | | | | | | | | |
|-----------------------|----------|------------------|------------|--------------------|----|-----|---------|-----------|----------|----------|-------|--------|-----|-------|------------|------------|-----------|----------------------|----------------------|--------------------------|---|
| * UL, cULu ordered | l with n | | on swi | | | | Toggl | e Positio | on/Conne | cted Te | ermin | als | | | | Elect | rical Co | apacity | | | |
| | * 🖊 | pprov | als | | | | Own | | Center | | | Up | | | R | esistive | ; | Indu | ctive | o. – | |
| Model | lR. | c 'RU °us | (1) | Pole & Throw | | Ke | eyway¬ | | - | | • | | 1 | | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | AC 250V PF 0.6 | α = Angle of Throw | _ |
| 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° | |

4PST 4PDT Note: Throw & Terminal numbers **Schematics:** 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.



S41T does not have terminals 2, 5, 8, & 11

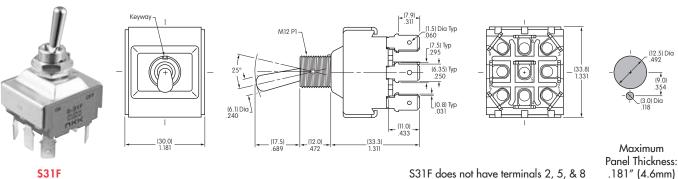
www.nkkswitches.com

.181" (4.6mm)

Ė Indicators

| | | | | | TH | IREE POLE | WITH | QUI | CK | CONN | ECT | | | | |
|----------------------------|-------------|------------------|-----------|-----------------|----|-----------------|---------------------|----------|----------------------------|----------|------------|------------|-----------|-------------------|--------------------------|
| * UL, cULus & with mark | | | | | | Toggle Position | on/Connec | ted Terr | ninal | s | | Electrica | l Capo | icity | |
| | *A | pprova | ls | | | Down | Center | | Up | o | | Resistive | | Inductive | |
| Model | <i>LR</i> 。 | c FLL °us | @P | Pole & Throw | | Keyway¬ | | | | = | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | α = Angle of Throw |
| \$31F | / | / | / | 3PST | ON | 1-3 4-6 7-9 | NONE | OFF | | _ | 20A | 9A | 20/ | 10A | 25° |
| S32F | / | / | / | 3PDT | ON | 2-3 5-6 8-9 | NONE | ON | 2-1 | 5-4 8-7 | 20A | 9A | 204 | 10A | 25° |
| S33F | / | / | / | 3PDT | ON | 2-3 5-6 8-9 | OFF | ON | 2-1 | 5-4 8-7 | 20A | 9A | 204 | 10A | 30° |
| Throw & Schemati | | 3PST | Å | 3 4 | 6 | | TERNAL DNNECTION | 3PC | 0 T 3 • ∕ | •1 6 e | 5 • (CO) | M) 9 8 | | | ıl numbers 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.

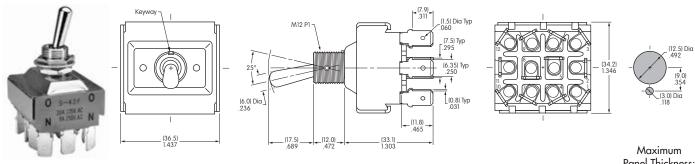


S31F does not have terminals 2, 5, & 8

| | | | | | F | OUR F | POL | E WI | TH QU | ICK | CC | 1NC | 1EC | T | | | | | |
|-----------------------------|-------------|-------------------------|-------------------|-------------------------|----|---------|-------|------------|----------|---------|------|-----|-----|-------|------------|------------|-----------|-------------------|-------------------|
| * UL, cULus & with marki | CSA reco | ognized o vitch (see | nly who Genera | en ordered Il Specs) | | | Toggl | le Positio | on/Conne | cted Te | rmin | als | | | E | lectrica | l Cap | acity | |
| | * A | pprova | ls | | | Dov | vn | | Center | | | Up | | | R | esistiv | • | Inductive | α= |
| Model | <i>L</i> R。 | c 711° us | (P) | Pole & Throw | | Keywo | IY 🦳 | | | | | ~ | | | AC 125V | AC 250V | DC 30V | AC 125V PF 0.6 | Angle of Throw |
| \$41F | / | / | / | 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° |
| \$43F | / | / | / | 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° |



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.



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

Panel Thickness: .181" (4.6mm)



S42F

GENERAL SPECIFICATIONS FOR \$421 ~ \$429

Electrical Capacity (Resistive & Inductive Load)

Power Level: Shown in the following tables

Other Ratings

10 milliohms maximum **Contact Resistance:**

Insulation Resistance: 1,000 megohms minimum @ 500V DC **Dielectric Strength:** 2,000V AC minimum for 1 minute minimum

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

Materials & Finishes

Toggle: Brass with chrome plating **Bushing:** Brass with chrome plating Case: Melamine phenol

Case Cover: Steel with chromate plating over zinc plating

Movable Contactor: Copper with silver plating

Movable Contacts: Silver alloy capped on copper with silver plating Silver alloy capped on copper with silver plating **Stationary Contacts:**

> **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 Manual Soldering: See Profile A in Supplement section. **Soldering Time & Temperature:**



Schematics:

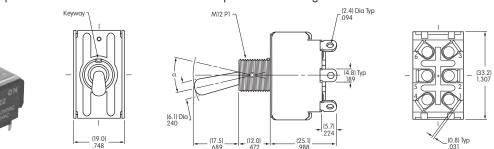
S422

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| DOUB | LE POL | E WITH SOLDE | R LUG | |
|------|--------------------------|----------------------------|-----------|--------------|
| | on/Connect) = Moment | ed Terminals ary | Electri | cal Capacity |
| own | Center | Up | Pasistiva | Inductiv |

| | | | | | Toggle Positi | on/Connect) = Moment | | nals | | Electri | | | | |
|-------------|-------------|------------|--------|------|---------------|-----------------------|------|---------|-------|---------|---------|-------------|---------------|----------|
| | Approvals | | | Down | | Center | | Up | | stive | Indu | ctive | Motor Load | α = |
| | | <i>←</i> | Pole & | Ke | Keyway | | | | AC | AC | PF 0.7 | 5 - 0.8 | AC | Angle |
| Model | <i>L</i> R。 | (1) | Throw | | | | | | 125V | 250V | AC 125V | AC 250V | 125V | of Throw |
| \$421 | | | DPST | ON | 1-3 4-6 | NONE | OFF | _ | 20A | 20A | 20A | 20A | 750W | 24° |
| \$422 | | _ | 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° |
| \$425 | | _ | 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 & | | DPST | Å | | INTEI | RNAL | DPDT | 2 (00 | OM) 5 | • | 1 | Note: Termi | inal numbers | |

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.



S421 does not have terminals 2 & 5

| -\(\frac{\psi}{(3.0) \text{ Dia}}\) |
|-------------------------------------|
| Maximum Panel Thickness |

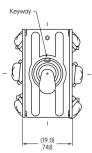
are on the switch

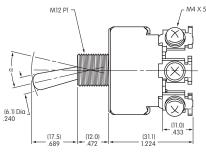
DOUBLE POLE WITH SCREW LUG

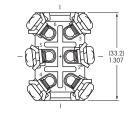
| | | | | Toggle Position/Connected Terminals () = Momentary | | | | | | Electri | | | | |
|--------------|-------------|----------|----------|---|---------|--------|-----------------|---------|-------|---------|-------------|------------|---------------|----------|
| | Approvals | | | Down | | Center | | Up | Resi | stive | Indu | ıctive | Motor Load | α = |
| | 51 @ | | Pole & | Keyway¬ | | | | | AC AC | | PF 0.7 | 75 - 0.8 | AC | Angle |
| Model | <i>L</i> R。 | ® | Throw | | | | | _ | 125V | 250V | AC 125V | AC 250V | 125V | of Throw |
| 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 & DPST | | | INTERNAL | | | DPDT | PDT 2 (COM) 5 P | | | ı | Note: Termi | inal numbe | rs | |

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.





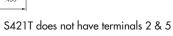






Maximum

Panel Thickness: .185" (4.7mm)





GENERAL SPECIFICATIONS FOR S800s

Electrical Capacity (Resistive & Inductive Load)

Power Level: Shown in the following tables

Other Ratings

Contact Resistance: 10 milliohms maximum

Insulation Resistance: 1,000 megohms minimum @ 500V DC Dielectric Strength: 2,000V AC minimum for 1 minute minimum

Mechanical Life: 50,000 operations minimum

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

Materials & Finishes

Toggle: Brass with chrome plating **Bushing:** Brass with chrome plating

Case: Melamine phenol

Case Cover: Steel with chromate plating over zinc plating

Movable Contactor Plate: Copper with silver plating

Movable & Stationary Contacts: Silver alloy capped on copper with silver plating

Common Terminals: Brass

Contact Terminals: Brass with silver or nickel plating

Environmental Data

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

Installation

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

Maximum Panel Thickness: Shown beneath panel cutout in switch dimension drawings

Standards & Certifications

UL: File No. E44145 - Recognized only when ordered with marking on switch.

Add "/U" or "/CUL" to end of part number to order UL recognized switch. UL or cULus recognition designated beside part numbers on following pages.

See Supplement section to find UL or cULus rating details.

CSA: File No. 023535_0_000 - Certified only when ordered with marking on switch.

Add "/C" to end of part number to order CSA certified switch.

CSA certification designated beside part numbers on following pages.

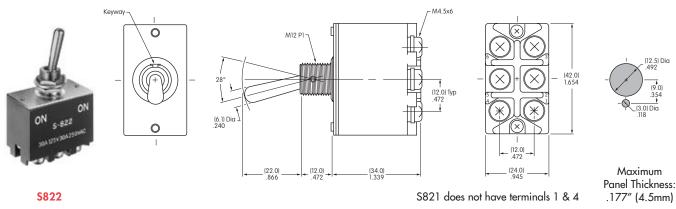
See Supplement section to find CSA rating details.



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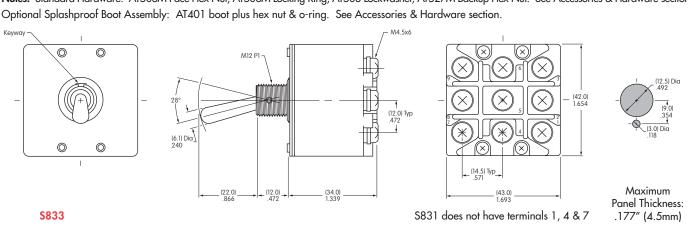
| | | | | | | DOUB | SLE PO | LE W | ITH SC | REW | LUG | | | | | | | |
|-------------|--------------------------|-------------------------------------|-------------|--------------------|-------------|---------------|------------|---------|---------|---------------------|------------------|-----------|------------|-------------------|-------------------|------------|--|--|
| | ered wit | SA recogr th markin General S | g on s | only when witch | To | oggle Positio | n/Connecte | ed Term | inals | Electrical Capacity | | | | | | | | |
| | *Approvals | | | | Down | | Center | | Up | | Resi | stive | Indu | Motor Load | | | | |
| Model | <i>LR</i> 。 | c 911 °us | (P) | Pole & Throw | K | Keyway¬ | | 7 | | 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 | - | | |
| 5823 | / | / | / | DPDT | ON | 2-3 5-6 | OFF | ON | 2-1 5-4 | 30A | 30A | 30A | 1A | 30A | 15A | | | |
| | Throw & DPST Schematics: | | | OPST | 2 (COM) 5 9 | | | С |)PDT | 2 | (COM) • 1 6 • | 5 • | | umbers 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 | | | | | | | | ted Teri | minals | Electrical Capacity | | | | | | | |
| | * 4 | pprova | ls | | | Down | Center | | Up | Resistive | | | Inductive | | | | |
| Model | <i>L</i> R。 | c 711 °us | (P) | Pole & Throw | | Keyway ¬ | Ī | | | 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 | | |
| \$832 | / | / | / | 3PDT | ON | 2-3 5-6 8-9 | NONE | ON | 2-1 5-4 8-7 | 30A | 30A | 30A | 1A | 30A | 15A | | |
| \$833 | / | / | / | 3PDT | ON | 2-3 5-6 8-9 | OFF | ON | 2-1 5-4 8-7 | 30A | 30A | 30A | 1A | 30A | 15A | | |
| Throw & 3PST 2 Schematics: 3 6 6 | | | | | 9 2 | 5 • (COM) • | 8 | 3PDT | 3 • 1 6 | 5 • (0 | COM) • 8 | ● 7 | Note: | Terminal r | | | |

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





DOUBLE POLE WITH SCREW LUG & FLATTED LEVER

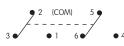
| * UL, cUL when o swite | rdere | | mark | ring on | Toggle Position/Connected Terminals | | | | | | | Electrical Capacity | | | | | | | | | | |
|------------------------------|-------------|-----------------|--------|---------|-------------------------------------|---------|------|-----|-----|-----|-----------|---------------------|------|------|----------|---------------------|-----|------|------|--|--|--|
| | *Approvals | | | | | Down | | | Up | | Resistive | | | | | Inductive L/R = 3ms | | | | | | |
| | | | Pole & | | Keyway ¬ | | | _ | | DC | DC | DC | DC | DC | DC | DC | DC | DC | | | | |
| Model | <i>LR</i> 。 | c FU °us | 9 | Throw | | | | | | | 30V | 48V | 125V | 250V | 400V | 24V | 48V | 125V | 250V | | | |
| \$821D | / | / | / | DPST | ON | 2-3 5-6 | NONE | OFF | _ | | 30A | 30A | 20A | 15A | 4A (10A) | 15A | 10A | 6A | 3A | | | |
| \$822D | / | / | / | DPDT | ON | 2-3 5-6 | NONE | ON | 2-1 | 5-4 | 30A | 30A | 20A | 15A | 4A | 15A | 10A | 6A | 3A | | | |
| S823D | ' ' ' | | 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:**

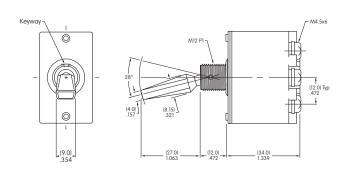




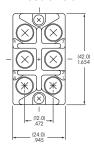


Note: Terminal numbers are on the switch

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

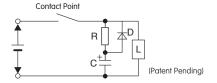
400V DC WIRING INSTRUCTIONS

1. DC Switch Use

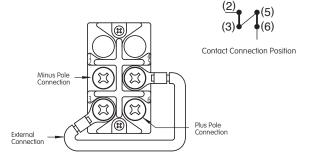
- Middle terminal shall be the minus pole when using DC circuit. Switch case is marked with (+) and (-).
- Do not store near (5cm) highly magnetic items.
- If actuation is interrupted when switching from ON to OFF, arcing may continue and switch could be burned.

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.

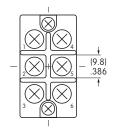


2. Wiring for DC400V 10A



4. Compressed Terminal Connection

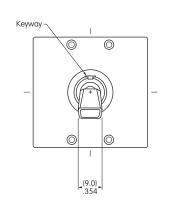
When connecting screw terminal with compressed terminal, select compressed terminal using drawing below.

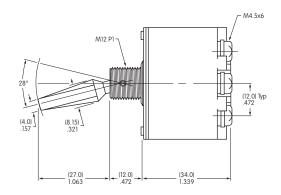


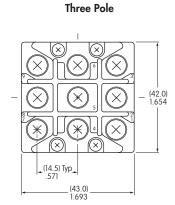
Supplement | Accessories

| | THREE POLE WITH SCREW LUG & FLATTED LEVER | | | | | | | | | | | | | | |
|---------------------|---|-----------------------------------|------------|-----------------|----------------|---------------------|----------------|-----------|-----------|--------------|------------|---------------------|-----------|------------------------|------------|
| * UL, cULu order | ed with | A recogr n markin General S | g on sv | | Toggle Positi | Electrical Capacity | | | | | | | | | |
| *Approvals | | | | | Down | Center | Up | | Res | istive | | Inductive L/R = 3ms | | | |
| Model | lR. | c 91 ° us | (P) | Pole & Throw | Keyway¬ | - | ~ | 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 | 1 <i>5</i> A | 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: | | 3F | PST | 3 • 2 | 5 • (COM) • | 8 | 3PDT 2 | 5 9 | (COM) | 8 | 7 | Note | | ninal nur on the sv | |

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







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





Maximum Panel Thickness: .177" (4.5mm)



