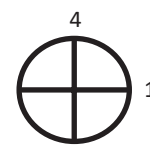
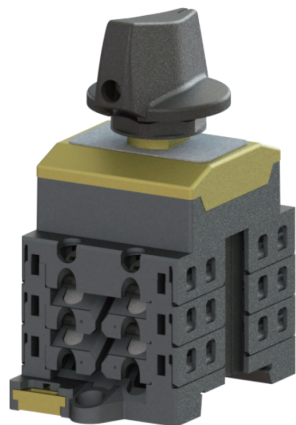




Data Sheet Santon X-Type switch XC+150.20DL2E-D

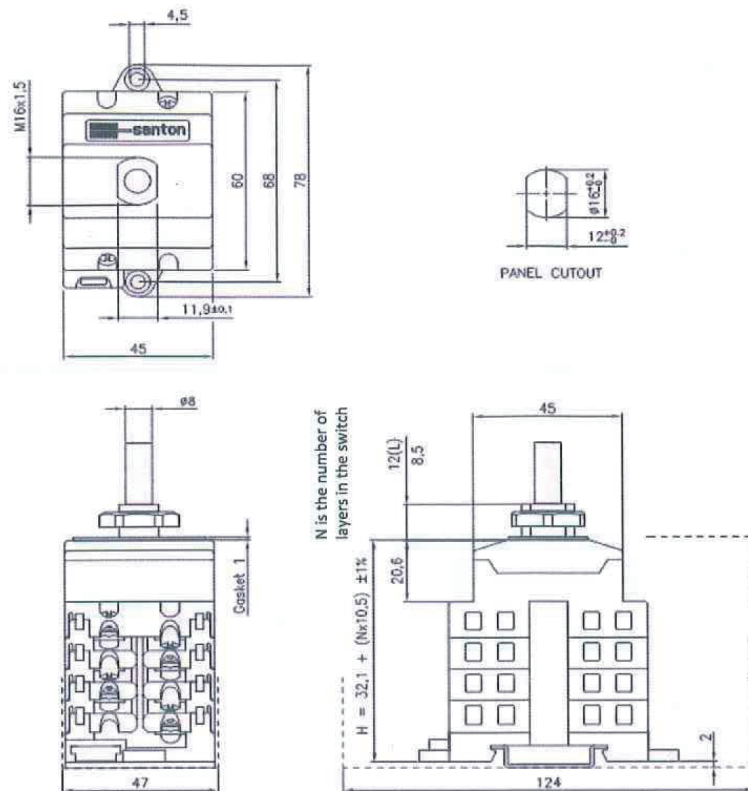
Switch disconnecter for solar application according to IEC PV1 certified CCC certification pending



| Terminals Scheme | | | | | | | | | |
|------------------|------------|-------|--------|-----------|-------|--------------|---|---|---|
| Layer No. | Front Side | | Symbol | Rear Side | | On Positions | | | |
| | Left | Right | | Left | Right | 1 | 2 | 3 | 4 |
| 3 | -1 | | | -1 | | | | X | |
| 2 | | +1 | | | +1 | X | | | |
| 1 | | | empty | | | | | | |

Contacts are made in "X" marked position.
Symbols for interconnection: [

| Technical data | Symbol | Merit | Unit |
|--|---|-------|------|
| rated operational voltage (DC poles) | Ue | 1500 | V dc |
| rated operational current (DC poles) | Ie | 20 | A dc |
| rated operational voltage (DC poles) | Ue | 1000 | V dc |
| rated operational current (DC poles) | Ie | 50 | A dc |
| rated operational voltage (DC poles) | Ue | 800 | V dc |
| rated operational current (DC poles) | Ie | 60 | A dc |
| method of mounting | both bottom and single hole mounting [D] | | |
| number of DC poles | 2 | | |
| utilization category DC | DC-PV1 | | |
| actuator | standard black, with thread through the shaft [D] | | |
| positions | OFF at 12 hr, ON at 3 hr [E] | | |
| rated impulse withstand voltage | Uimp | 8 | kV |
| insulation voltage | Ui | 1500 | V |
| rated thermal current uninterrupted duty | Iu | 60 | A |
| rated short-time withstand current (1s) | Icw | 750 | A |
| rated short-circuit making capacity | Icm | 1,4 | kA |
| rated conditional short-circuit current | | 5 | kA |
| method of operation | independent manual operation | | |
| minimum required dimensions of enclosures L x W x H* (on DIN-rail H = +2mm) {space envelope} | 124 x 47 x 63,6 | | mm |
| * see the drawing for the height of the switch. The number of layers N is: | 3 | | |
| knob operation force | max. | 1,4 | mm |
| tightening torque terminal screws M4 , min. - max. | 1,5 | 1,7 | Nm |
| tightening torque panel mounting nut, min. - max. | 2,0 | 2,5 | Nm |
| tightening torque M3 screw in the standard black knob, min. - max. | 0,5 | 0,7 | Nm |
| ambient temperature allowed between | - 40 to + 70 | | °C |
| storage temperature allowed between | - 40 to + 80 | | °C |
| maximum relative humidity, without condensation at 20°C | 90 % | | |
| pollution degree | 2 | | |
| IP rating terminals | IP20 | | |
| IP rating gland of the shaft in case of single hole panel mounting | IP65 | | |
| rated operational voltage (AC poles) | Ue | | V ac |
| rated operational current (AC poles) | Ie | | A ac |
| number of AC poles (for general use) | | | |
| minimum required fine wire cross-section: IEC60947-1, table 9 | mm ² | | |
| auxiliary contact(s), AC15 | No auxiliary contact | | |
| auxiliary contact ratings | | | |
| weight | - | 194 | g |
| accessories: | - | | |



Mounting instructions

In the application all ratings according to the datasheet have to be respected. After mounting, the wiring must be checked and the switch must operate smoothly. When building the switch in an enclosure, the space envelope must be respected according to the applicable standards.

Maintenance

The X type switches are designed for a very long life but it is advised to do some simple yearly maintenance.

- Check the installation for signs of overload or overheating. The terminals may not exceed the limit of 85°C under full load.
- By operating the switch a few times (5x) the contacts will clean themselves and the switch will have a longer life.

Connection details

| Description | Symbol | Values | | | | Unit |
|---|--------|--------|-----|---|---|-----------------|
| Rated operational current (DC poles) | Ie | 20 | 50 | - | - | A dc |
| Required fine wire cross-section (minimal): IEC60947-1, table 9 | A | 4 | 2x6 | - | - | mm ² |
| max power dissipation | P | 0.0 | 0.0 | - | - | W |

The terminals, without interconnection can take copper wires up to 6 mm².

The recommended Spade Tongue Terminals may have a maximum width of 9 mm.

For CSA and UL applications, registered Spade Tongue Terminals must be used.

The registration numbers are UL: E13288 and CSA: LR7189 (for instance type 165015 from Tyco).

Registered Spade Tongue Terminals

| Recommend Manufacturer | Type number | Wire size (AWG) | Wire size (mm ²) | Color |
|------------------------|---------------|-----------------|---|--------|
| JST | FVD2-YS4A | AWG 16 – AWG 14 | 1,0 – 2,5 mm ² | Blue |
| TE connectivity | C-165012 | AWG 16 – AWG 14 | 1,0 – 2,5 mm ² | Blue |
| Vogt | 3635c | AWG 16 – AWG 14 | 1,5 – 2,5 mm ² | Blue |
| TE connectivity | C-165015 | AWG 12 - AWG 10 | 3,0 - 6,0 mm ² | Yellow |
| Vogt | 3652c / 3653c | AWG 12 - AWG 10 | 3,0 - 6,0 mm ² | Yellow |
| Santon (JST) | 52A1256.35 | AWG 8 - AWG 10 | 10,5mm ² -16mm ² *1 | *2 |

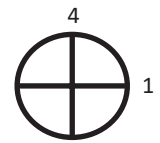
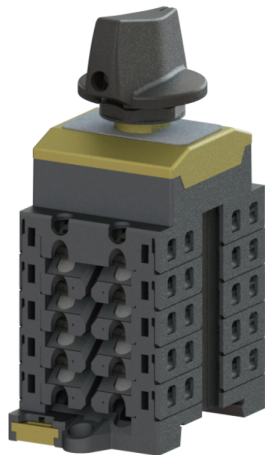
*1 16mm² only with fine stranded wire or two 6mm² is also possible

*2 Optional: A yellow finger safe sleeve for the Spade Tongue Terminal (Santon 52A1256.35) can be ordered under item number 52A1564.00



Data Sheet Santon X-Type switch XC+150.20DL4E-D

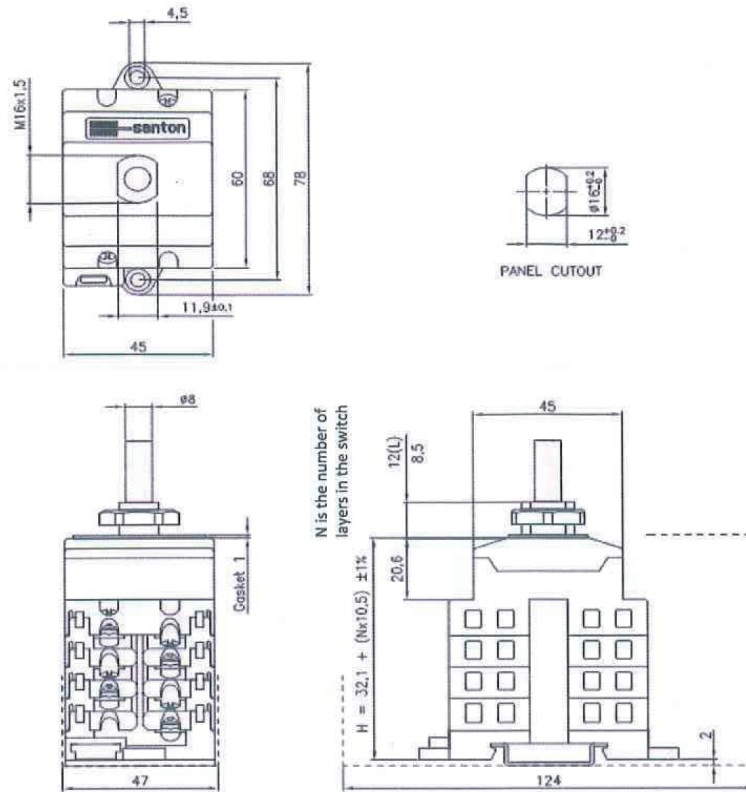
Switch disconnector for solar application according to IEC PV1 certified CCC certification pending



| Terminals Scheme | | | | | | | | | |
|------------------|------------|-------|--------|-----------|-------|--------------|---|---|---|
| Layer No. | Front Side | | Symbol | Rear Side | | On Positions | | | |
| | Left | Right | | Left | Right | 1 | 2 | 3 | 4 |
| 5 | +2 | | | +2 | | | X | | |
| 4 | | -2 | | | -2 | | X | | |
| 3 | -1 | | | | -1 | | X | | |
| 2 | | +1 | | | +1 | | X | | |
| 1 | | | empty | | | | | | |

Contacts are made in "X" marked position.
Symbols for interconnection: [

| Technical data | Symbol | Merit | Unit |
|--|---|-------|--------------------|
| rated operational voltage (DC poles) | Ue | | 1500 V dc |
| rated operational current (DC poles) | Ie | | 20 A dc |
| rated operational voltage (DC poles) | Ue | | 1000 V dc |
| rated operational current (DC poles) | Ie | | 50 A dc |
| rated operational voltage (DC poles) | Ue | | 800 V dc |
| rated operational current (DC poles) | Ie | | 60 A dc |
| method of mounting | both bottom and single hole mounting [D] | | |
| number of DC poles | 4 | | |
| utilization category DC | DC-PV1 | | |
| actuator | standard black, with thread through the shaft [D] | | |
| positions | OFF at 12 hr, ON at 3 hr [E] | | |
| rated impulse withstand voltage | Uimp | | 8 kV |
| insulation voltage | Ui | | 1500 V |
| rated thermal current uninterrupted duty | Iu | | 60 A |
| rated short-time withstand current (1s) | Icw | | 750 A |
| rated short-circuit making capacity | Icm | | 1,4 kA |
| rated conditional short-circuit current | | | 5 kA |
| method of operation | independent manual operation | | |
| minimum required dimensions of enclosures L x W x H* (on DIN-rail H = +2mm) {space envelope} | | | 124 x 47 x 84,6 mm |
| * see the drawing for the height of the switch. The number of layers N is: | 5 | | |
| knob operation force | | max. | 1,4 mm |
| tightening torque terminal screws M4, min. - max. | | 1,5 | 1,7 Nm |
| tightening torque panel mounting nut, min. - max. | | 2,0 | 2,5 Nm |
| tightening torque M3 screw in the standard black knob, min. - max. | | 0,5 | 0,7 Nm |
| ambient temperature allowed between | - 40 to + 70 °C | | |
| storage temperature allowed between | - 40 to + 80 °C | | |
| maximum relative humidity, without condensation at 20°C | 90 % | | |
| pollution degree | 2 | | |
| IP rating terminals | IP20 | | |
| IP rating gland of the shaft in case of single hole panel mounting | IP65 | | |
| rated operational voltage (AC poles) | Ue | | V ac |
| rated operational current (AC poles) | Ie | | A ac |
| number of AC poles (for general use) | | | |
| minimum required fine wire cross-section: IEC60947-1, table 9 | mm ² | | |
| auxiliary contact(s), AC15 | No auxiliary contact | | |
| auxiliary contact ratings | | | |
| weight | - | | 254 g |
| accessories: | - | | |



Mounting instructions

In the application all ratings according to the datasheet have to be respected. After mounting, the wiring must be checked and the switch must operate smoothly. When building the switch in an enclosure, the space envelope must be respected according to the applicable standards.

Maintenance

The X type switches are designed for a very long life but it is advised to do some simple yearly maintenance.

- Check the installation for signs of overload or overheating. The terminals may not exceed the limit of 85°C under full load.
- By operating the switch a few times (5x) the contacts will clean themselves and the switch will have a longer life.

Connection details

| Description | Symbol | Values | | | | Unit |
|---|--------|--------|-----|---|---|-----------------|
| Rated operational current (DC poles) | Ie | 20 | 50 | - | - | A dc |
| Required fine wire cross-section (minimal): IEC60947-1, table 9 | A | 4 | 2x6 | - | - | mm ² |
| max power dissipation | P | 0.0 | 0.0 | - | - | W |

The terminals, without interconnection can take copper wires up to 6 mm².

The recommended Spade Tongue Terminals may have a maximum width of 9 mm.

For CSA and UL applications, registered Spade Tongue Terminals must be used.

The registration numbers are UL: E13288 and CSA: LR7189 (for instance type 165015 from Tyco).

Registered Spade Tongue Terminals

| Recommend Manufacturer | Type number | Wire size (AWG) | Wire size (mm ²) | Color |
|------------------------|---------------|-----------------|---|--------|
| JST | FVD2-YS4A | AWG 16 – AWG 14 | 1,0 – 2,5 mm ² | Blue |
| TE connectivity | C-165012 | AWG 16 – AWG 14 | 1,0 – 2,5 mm ² | Blue |
| Vogt | 3635c | AWG 16 – AWG 14 | 1,5 – 2,5 mm ² | Blue |
| TE connectivity | C-165015 | AWG 12 - AWG 10 | 3,0 - 6,0 mm ² | Yellow |
| Vogt | 3652c / 3653c | AWG 12 - AWG 10 | 3,0 - 6,0 mm ² | Yellow |
| Santon (JST) | 52A1256.35 | AWG 8 - AWG 10 | 10,5mm ² -16mm ² *1 | *2 |

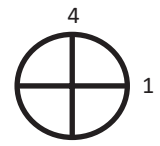
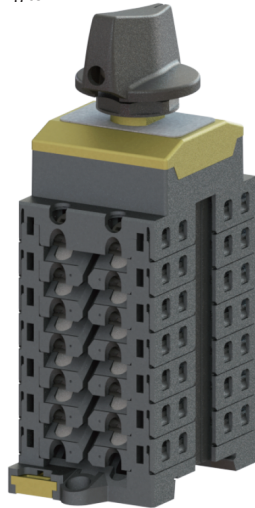
*1 16mm² only with fine stranded wire or two 6mm² is also possible

*2 Optional: A yellow finger safe sleeve for the Spade Tongue Terminal (Santon 52A1256.35) can be ordered under item number 52A1564.00



Data Sheet Santon X-Type switch XC+150.20DL6E-D

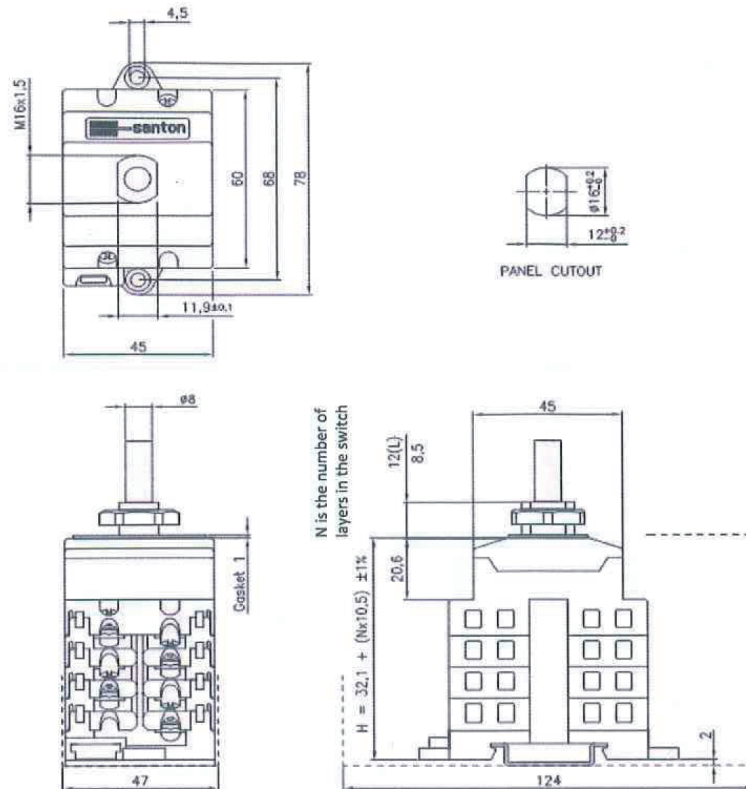
Switch disconnecter for solar application according to IEC PV1 certified CCC certification pending



| Terminals Scheme | | | | | | | | | |
|------------------|------------|-------|--------|-----------|-------|--------------|---|---|---|
| Layer No. | Front Side | | Symbol | Rear Side | | On Positions | | | |
| | Left | Right | | Left | Right | 1 | 2 | 3 | 4 |
| 7 | -3 | | — / — | -3 | | | | X | |
| 6 | | +3 | — \ — | | +3 | | | X | |
| 5 | +2 | | — / — | +2 | | | | X | |
| 4 | | -2 | — \ — | | -2 | | | X | |
| 3 | -1 | | — / — | -1 | | | | X | |
| 2 | | +1 | — \ — | | +1 | | | X | |
| 1 | | | empty | | | | | | |

Contacts are made in "X" marked position.
Symbols for interconnection: [

| Technical data | Symbol | Merit | Unit |
|--|---|-------|---------------------|
| rated operational voltage (DC poles) | Ue | | 1500 V dc |
| rated operational current (DC poles) | Ie | | 20 A dc |
| rated operational voltage (DC poles) | Ue | | 1000 V dc |
| rated operational current (DC poles) | Ie | | 50 A dc |
| rated operational voltage (DC poles) | Ue | | 800 V dc |
| rated operational current (DC poles) | Ie | | 60 A dc |
| method of mounting | both bottom and single hole mounting [D] | | |
| number of DC poles | 6 | | |
| utilization category DC | DC-PV1 | | |
| actuator | standard black, with thread through the shaft [D] | | |
| positions | OFF at 12 hr, ON at 3 hr [E] | | |
| rated impulse withstand voltage | Uimp | | 8 kV |
| insulation voltage | Ui | | 1500 V |
| rated thermal current uninterrupted duty | Iu | | 60 A |
| rated short-time withstand current (1s) | Icw | | 750 A |
| rated short-circuit making capacity | Icm | | 1,4 kA |
| rated conditional short-circuit current | | | 5 kA |
| method of operation | independent manual operation | | |
| minimum required dimensions of enclosures L x W x H* (on DIN-rail H = +2mm) {space envelope} | | | 124 x 47 x 105,6 mm |
| * see the drawing for the height of the switch. The number of layers N is: | 7 | | |
| knob operation force | | max. | 1,4 mm |
| tightening torque terminal screws M4, min. - max. | | 1,5 | 1,7 Nm |
| tightening torque panel mounting nut, min. - max. | | 2,0 | 2,5 Nm |
| tightening torque M3 screw in the standard black knob, min. - max. | | 0,5 | 0,7 Nm |
| ambient temperature allowed between | - 40 to + 70 °C | | |
| storage temperature allowed between | - 40 to + 80 °C | | |
| maximum relative humidity, without condensation at 20°C | 90 % | | |
| pollution degree | 2 | | |
| IP rating terminals | IP20 | | |
| IP rating gland of the shaft in case of single hole panel mounting | IP65 | | |
| rated operational voltage (AC poles) | Ue | | V ac |
| rated operational current (AC poles) | Ie | | A ac |
| number of AC poles (for general use) | | | |
| minimum required fine wire cross-section: IEC60947-1, table 9 | mm ² | | |
| auxiliary contact(s), AC15 | No auxiliary contact | | |
| auxiliary contact ratings | | | |
| weight | - | | 315 g |
| accessories: | - | | |



Mounting instructions

In the application all ratings according to the datasheet have to be respected. After mounting, the wiring must be checked and the switch must operate smoothly. When building the switch in an enclosure, the space envelope must be respected according to the applicable standards.

Maintenance

The X type switches are designed for a very long life but it is advised to do some simple yearly maintenance.

- Check the installation for signs of overload or overheating. The terminals may not exceed the limit of 85°C under full load.
- By operating the switch a few times (5x) the contacts will clean themselves and the switch will have a longer life.

Connection details

| Description | Symbol | Values | | | | Unit |
|---|--------|--------|-----|---|---|-----------------|
| Rated operational current (DC poles) | Ie | 20 | 50 | - | - | A dc |
| Required fine wire cross-section (minimal): IEC60947-1, table 9 | A | 4 | 2x6 | - | - | mm ² |
| max power dissipation | P | 0.0 | 0.0 | - | - | W |

The terminals, without interconnection can take copper wires up to 6 mm².

The recommended Spade Tongue Terminals may have a maximum width of 9 mm.

For CSA and UL applications, registered Spade Tongue Terminals must be used.

The registration numbers are UL: E13288 and CSA: LR7189 (for instance type 165015 from Tyco).

Registered Spade Tongue Terminals

| Recommend Manufacturer | Type number | Wire size (AWG) | Wire size (mm ²) | Color |
|------------------------|---------------|-----------------|---|--------|
| JST | FVD2-YS4A | AWG 16 – AWG 14 | 1,0 – 2,5 mm ² | Blue |
| TE connectivity | C-165012 | AWG 16 – AWG 14 | 1,0 – 2,5 mm ² | Blue |
| Vogt | 3635c | AWG 16 – AWG 14 | 1,5 – 2,5 mm ² | Blue |
| TE connectivity | C-165015 | AWG 12 - AWG 10 | 3,0 - 6,0 mm ² | Yellow |
| Vogt | 3652c / 3653c | AWG 12 - AWG 10 | 3,0 - 6,0 mm ² | Yellow |
| Santon (JST) | 52A1256.35 | AWG 8 - AWG 10 | 10,5mm ² -16mm ² *1 | *2 |

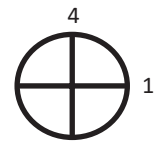
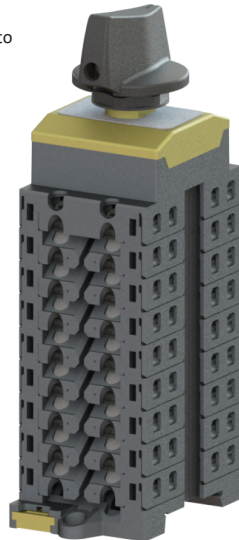
*1 16mm² only with fine stranded wire or two 6mm² is also possible

*2 Optional: A yellow finger safe sleeve for the Spade Tongue Terminal (Santon 52A1256.35) can be ordered under item number 52A1564.00



Data Sheet Santon X-Type switch XC+150.20DL8E-D

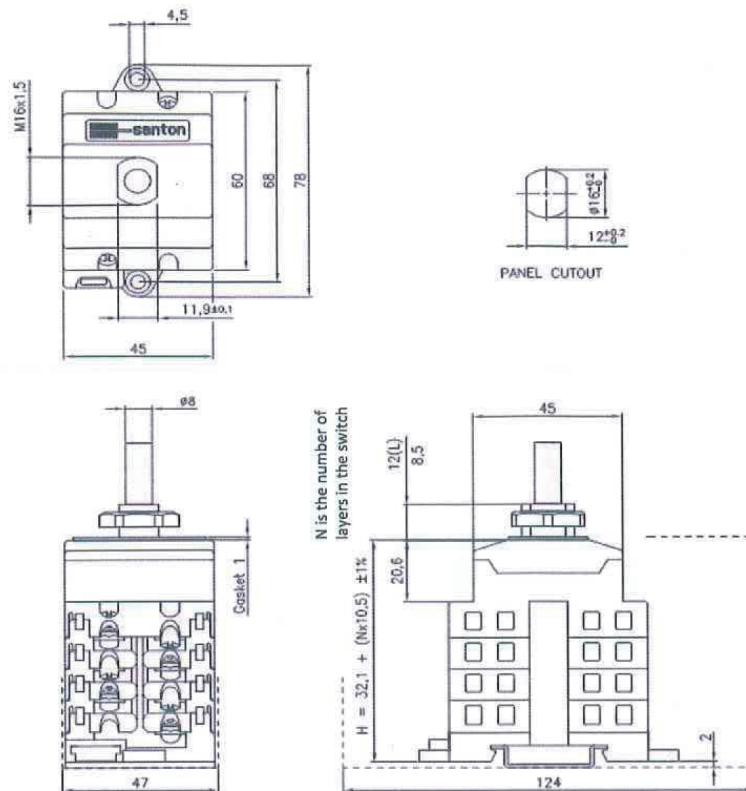
Switch disconnecter for solar application according to IEC PV1 certified CCC certification pending



| Terminals Scheme | | | | | | | | | |
|------------------|------------|-------|--------|-----------|-------|--------------|---|---|---|
| Layer No. | Front Side | | Symbol | Rear Side | | On Positions | | | |
| | Left | Right | | Left | Right | 1 | 2 | 3 | 4 |
| 9 | +4 | | — / — | +4 | | | | X | |
| 8 | | -4 | — / — | | -4 | X | | | |
| 7 | -3 | | — / — | -3 | | X | | | |
| 6 | | +3 | — / — | | +3 | X | | | |
| 5 | +2 | | — / — | +2 | | X | | | |
| 4 | | -2 | — / — | | -2 | X | | | |
| 3 | -1 | | — / — | -1 | | X | | | |
| 2 | | +1 | — / — | | +1 | X | | | |
| 1 | | | empty | | | | | | |

Contacts are made in "X" marked position.
Symbols for interconnection: [

| Technical data | Symbol | Merit | Unit |
|--|---|-------|------|
| rated operational voltage (DC poles) | Ue | 1500 | V dc |
| rated operational current (DC poles) | Ie | 20 | A dc |
| rated operational voltage (DC poles) | Ue | 1000 | V dc |
| rated operational current (DC poles) | Ie | 50 | A dc |
| rated operational voltage (DC poles) | Ue | 800 | V dc |
| rated operational current (DC poles) | Ie | 60 | A dc |
| method of mounting | both bottom and single hole mounting [D] | | |
| number of DC poles | 8 | | |
| utilization category DC | DC-PV1 | | |
| actuator | standard black, with thread through the shaft [D] | | |
| positions | OFF at 12 hr, ON at 3 hr [E] | | |
| rated impulse withstand voltage | Uimp | 8 | kV |
| insulation voltage | Ui | 1500 | V |
| rated thermal current uninterrupted duty | Iu | 60 | A |
| rated short-time withstand current (1s) | Icw | 750 | A |
| rated short-circuit making capacity | Icm | 1,4 | kA |
| rated conditional short-circuit current | | 5 | kA |
| method of operation | independent manual operation | | |
| minimum required dimensions of enclosures L x W x H* (on DIN-rail H = +2mm) {space envelope} | 124 x 47 x 126,6 | | mm |
| * see the drawing for the height of the switch. The number of layers N is: | 9 | | |
| knob operation force | max. | 1,4 | Nm |
| tightening torque terminal screws M4, min. - max. | 1,5 | 1,7 | Nm |
| tightening torque panel mounting nut, min. - max. | 2,0 | 2,5 | Nm |
| tightening torque M3 screw in the standard black knob, min. - max. | 0,5 | 0,7 | Nm |
| ambient temperature allowed between | - 40 to + 70 °C | | |
| storage temperature allowed between | - 40 to + 80 °C | | |
| maximum relative humidity, without condensation at 20°C | 90 % | | |
| pollution degree | 2 | | |
| IP rating terminals | IP20 | | |
| IP rating gland of the shaft in case of single hole panel mounting | IP65 | | |
| rated operational voltage (AC poles) | Ue | | V ac |
| rated operational current (AC poles) | Ie | | A ac |
| number of AC poles (for general use) | | | |
| minimum required fine wire cross-section: IEC60947-1, table 9 | mm ² | | |
| auxiliary contact(s), AC15 | No auxiliary contact | | |
| auxiliary contact ratings | | | |
| weight | - | 384 | g |
| accessories: | - | | |



Mounting instructions

In the application all ratings according to the datasheet have to be respected. After mounting, the wiring must be checked and the switch must operate smoothly. When building the switch in an enclosure, the space envelope must be respected according to the applicable standards.

Maintenance

The X type switches are designed for a very long life but it is advised to do some simple yearly maintenance.

- Check the installation for signs of overload or overheating. The terminals may not exceed the limit of 85°C under full load.
- By operating the switch a few times (5x) the contacts will clean themselves and the switch will have a longer life.

Connection details

| Description | Symbol | Values | | | | Unit |
|---|--------|--------|-----|---|---|-----------------|
| Rated operational current (DC poles) | Ie | 20 | 50 | - | - | A dc |
| Required fine wire cross-section (minimal): IEC60947-1, table 9 | A | 4 | 2x6 | - | - | mm ² |
| max power dissipation | P | 0.0 | 0.0 | - | - | W |

The terminals, without interconnection can take copper wires up to 6 mm².

The recommended Spade Tongue Terminals may have a maximum width of 9 mm.

For CSA and UL applications, registered Spade Tongue Terminals must be used.

The registration numbers are UL: E13288 and CSA: LR7189 (for instance type 165015 from Tyco).

Registered Spade Tongue Terminals

| Recommend Manufacturer | Type number | Wire size (AWG) | Wire size (mm ²) | Color |
|------------------------|---------------|-----------------|---|--------|
| JST | FVD2-YS4A | AWG 16 – AWG 14 | 1,0 – 2,5 mm ² | Blue |
| TE connectivity | C-165012 | AWG 16 – AWG 14 | 1,0 – 2,5 mm ² | Blue |
| Vogt | 3635c | AWG 16 – AWG 14 | 1,5 – 2,5 mm ² | Blue |
| TE connectivity | C-165015 | AWG 12 - AWG 10 | 3,0 - 6,0 mm ² | Yellow |
| Vogt | 3652c / 3653c | AWG 12 - AWG 10 | 3,0 - 6,0 mm ² | Yellow |
| Santon (JST) | 52A1256.35 | AWG 8 - AWG 10 | 10,5mm ² -16mm ² *1 | *2 |

*1 16mm² only with fine stranded wire or two 6mm² is also possible

*2 Optional: A yellow finger safe sleeve for the Spade Tongue Terminal (Santon 52A1256.35) can be ordered under item number 52A1564.00